

**Fauna of  
New Zealand**  
Ko te Aitanga Pepeke  
o Aotearoa

## **INVERTEBRATE SYSTEMATICS ADVISORY GROUP**

### **REPRESENTATIVES OF LANDCARE RESEARCH**

**Dr D. Choquenot**

*Private Bag 92170, Auckland, New Zealand*

**Dr T.K. Crosby and Dr R. J. B. Hoare**

*Private Bag 92170, Auckland, New Zealand*

### **REPRESENTATIVE OF UNIVERSITIES**

**Dr R.M. Emberson**

*Ecology and Entomology Group  
Soil, Plant, and Ecological Sciences Division  
P.O. Box 84, Lincoln University, New Zealand*

### **REPRESENTATIVE OF MUSEUMS**

**Mr R.L. Palma**

*Natural Environment Department  
Museum of New Zealand Te Papa Tongarewa  
P.O. Box 467, Wellington, New Zealand*

### **REPRESENTATIVE OF OVERSEAS INSTITUTIONS**

**Dr M. J. Fletcher**

*Director of the Collections  
NSW Agricultural Scientific Collections Unit  
Forest Road, Orange NSW 2800, Australia*

\* \* \*

### **SERIES EDITOR**

**Dr T. K. Crosby**

*Private Bag 92170, Auckland, New Zealand*

**Fauna of New Zealand  
Ko te Aitanga Pepeke o Aotearoa**

**Number / Nama 52**

# **Raphignathoidea**

**(Acari: Prostigmata)**

**Qing-Hai Fan**

**College of Plant Protection, Fujian Agricultural and Forestry University,  
Fuzhou 350002, China**

**fanqh@acarology.org**

**and**

**Zhi-Qiang Zhang**

**Landcare Research, Private Bag 92170, Auckland, New Zealand  
ZhangZ@landcareresearch.co.nz**



**Manaaki  
Whenua  
P R E S S**

**Lincoln, Canterbury, New Zealand  
2005**

Copyright © Landcare Research New Zealand Ltd 2005

No part of this work covered by copyright may be reproduced or copied in any form or by any means (graphic, electronic, or mechanical, including photocopying, recording, taping information retrieval systems, or otherwise) without the written permission of the publisher.

#### Cataloguing in publication

FAN, QING-HAI

Raphignathoidea (Acari: Prostigmata) / Qing-Hai Fan & Zhi-Qiang Zhang

– Lincoln, Canterbury, N.Z. : Manaaki Whenua Press, 2005.

(Fauna of New Zealand, ISSN 0111–5383 ; no. 52).

ISBN 0-478-09371-3

1. Raphignathoidea — Classification. 2. Raphignathoidea — Identification. 3. Stigmaeidae — Classification. 4. Stigmaeidae — Identification. I. Zhang, Zhi-Qiang, 1963 II. Title III. Series  
UDC 595.42

#### Suggested citation:

Fan, Q.-H.; Zhang, Z.-Q. 2005. Raphignathoidea (Acari: Prostigmata). *Fauna of New Zealand* 52, 400 pp.

Prepared for publication by the series editor using computer-based text processing and layout at Landcare Research, Private Bag 92170, Auckland, New Zealand

Māori text by H. Jacob, Auckland.

Published by Manaaki Whenua Press, Landcare Research, P.O. Box 40, Lincoln, Canterbury, N.Z.

Website: <http://www.mwpress.co.nz/>

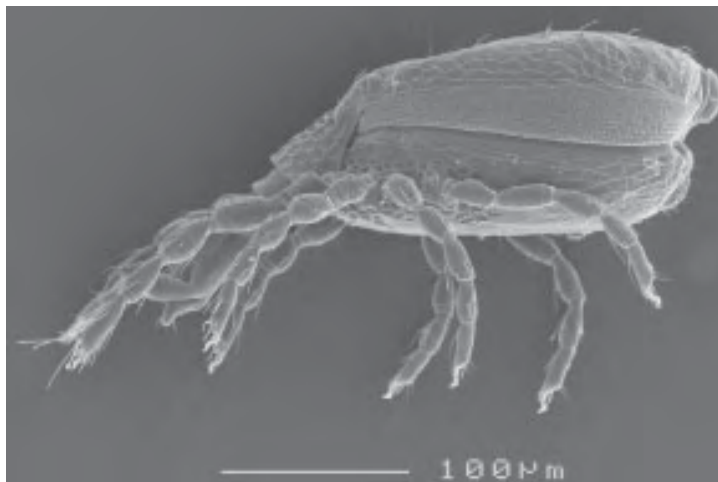
Printed by PrintLink Ltd, Wellington

Front cover: *Mecognatha hirsuta* Wood (Illustrator: Qing-Hai Fan).

Publication of the *Fauna of New Zealand* series is the result of a research investment by the Foundation for Research, Science and Technology under contract number C09X0202.

## POPULAR SUMMARY

## HE WHAKARĀPOPOTOTANGA

Class **Arachnida**Subclass **Acari**Supraorder **Acariformes**Order **Prostigmata**Superfamily **Raphignathoidea****Raphignathoid mites**

Mites of the superfamily Raphignathoidea are biological control agents of spider mites, eriophyid mites, and scale insects in agriculture and forestry. The majority of the species are free-living predators, but a few are phytophages, feeding on moss, and symbionts/parasites of insects.

The superfamily can be dated back at least 56 million years. It belongs to the supraorder Acariformes, order Prostigmata, and comprises about 770 species, and 57 genera in eleven families. They are worldwide in distribution, abundant in most of the geographical regions, and are even found in the Antarctic region.

They pass through five or six stages to complete their life cycles. The development from the egg to adult can be completed in 1 to 3 weeks. The males develop slightly faster than females. Their reproduction is arrhenotokous, meaning males result from unfertilised eggs. The sex ratio of offspring from mated females is female-biased.

As generalist predators, most raphignathoids show some degrees of prey preference. In addition to mites and small insects, they also feed on pollen, and can develop and reproduce on various kinds of pollens.

Taxonomic studies on this superfamily in New Zealand were initiated by Wood in the mid 1960s. Subsequently, he published a series of studies on Stigmaeidae (1966, 1967, 1968, 1970, 1971*b*, 1971*c*, 1981). Luxton (1973) described three new species of the Cryptognathidae, and Bolland (1991) described a new species of the Camerobiidae. Fan & Zhang recently published two more articles on Stigmaeidae (2002*a*, 2002*b*).

(continued overleaf)

**Illustration / Whakaahua: *Cryptognathus* sp.**

Whakamahia ai ngā pūwereriki o te whānau nui Raphignathoidea hei patu ā-koiora i ngā pūwereriki pūngāwerewere, ngā pūwereriki eriophyid, me ngā ngārara unahi i roto i ngā kawenga ahuhenua, whakatipu rākau. Ko te nuinga o ngā momo, he konihi hāereere noa. Heoi anō, ko ētahi he kai pūkohu, ko ētahi anō he hanga ka piritahi, ka pirinoa rānei ki tētahi momo pepeke.

E ora ana ngā tūpuna taketake o te whānau nui nei i te 56 miriona tau ki muri. Ko Acariformes te pūtoi o runga, ko Prostigmata te pūtoi, e 770 pea ngā momo, e 57 pea ngā puninga i roto i ngā whānau tekau mā tahi. Kua marara ki ngā tōpito katoa o te ao, ā, kei te huhua tonu ki te nuinga o ngā momo takiwā o te ao. Arā hoki ētahi kei te Kōpakatanga ki te Tonga.

E rima, e ono rānei ō rātou tūātipu mai i te whānautanga ā, mate noa. Kotahi ki te toru wiki e whanake ana mai i te hua ki te hanga pakeke. He paku tere ake te pakari haere o ngā toa i ngā uwaha. Mō te wāhi ki ngā uri ka puta ake, ki te whakatōkia te hua, he uwaha te putanga, ki te kore e whakatōkia, he toa te putanga. Heoi, i roto i ngā uri o ngā uwaha ka aitia, he maha ake ngā uwaha.

O ngā hanga konihi, kei tēnā momo tāna tino kai, kei tēnā anō tāna. I tua atu i te kai pūwereriki me ērā atu pepeke iti, ko te hae anō tētahi o ā rātou kai, ā, tērā ka tipu haere, ka whakaputa uri i runga i ngā momo hae huhua.

I tīmataria e Wood ngā rangahau whakarōpū i tēnei whānau nui i Aotearoa i ngā tau waenga o ngā 1960. I muri

(haere tonu)

In this contribution the mite superfamily Raphignathoidea (Acari: Prostigmata) is comprehensively revised. Keys to world families and genera are provided. The taxonomy, biology, and ecology of world Raphignathoidea are briefly reviewed so the 76 species, including 21 new species, now recognised from New Zealand can be placed in context. The species belong to 20 genera (including 1 new genus) and 5 families. All species are diagnosed, keyed, described, and illustrated, and notes are provided on the taxonomic references, habitats, and distribution of each species.



Contributor **Qing-Hai Fan** was born in North China and educated in South China, graduating with a PhD in entomology from Fujian Agricultural University in 1996. From 1985 to 2001 he served as an assistant lecturer, lecturer, and associate professor in Fujian Agricultural University. He has been a professor of entomology at Fujian Agricultural and Forestry University since 2002. He has taught courses including Plant Quarantine, Agricultural Entomology, Urban Entomology, and Acarology. From 2001 to 2002, as a visiting scientist in Queensland University, Australia, he worked on Australian mites with Dr David E. Walter. He came to New Zealand in 2003 to study bulb mites with Dr Zhi-Qiang Zhang as an acarologist in Landcare Research, and then worked on the devastating honeybee pest, *Varroa* mite, as a research associate at Massey University. He is the Production Editor of Systematic & Applied Acarology. He has written more than 50 journal papers on the systematics, biology, and control of mites and insects. He published a book on the Australasia and Oceania bulb mites in collaboration with Dr Zhi-Qiang Zhang. His main interests are the systematics of mites (especially the superfamilies Raphignathoidea, Tetranychoida, and Acaroidea) and pest management.

(continued overleaf)

mai, ka puta i a ia tētahi raupapa rangahau mō ngāi Stigmaeidae (1966, 1967, 1968, 1970, 1971*b*, 1971*c*, 1981). Nā Luxton (1973) i whakaahua ā-kupu ētahi momo hou e toru o ngāi Cryptognathidae, nā Bolland (1991) i whakaahua tētahi momo Camerobiidae. I nā tata nei, ka whakaputaina e Fan rāua ko Zhang ētahi atu tuhinga e rua mō ngāi Stigmaeidae (2002*a*, 2002*b*).

I tēnei o ngā putanga, ka āta whiriwhiria anō te whānau nui Raphignathoidea (Acari: Prostigmata). Ka takoto hoki he ara tautohu mō ngā whānau me ngā puninga o te ao. Ka tirohia anō te whakarōpūtanga, te koiora, me te taupuhi kaiao o ngāi Raphignathoidea puta noa i te ao, kia noho ai ngā momo e 76 o Aotearoa, tae atu ki ngā momo hou e 21 kua kitea, ki tōna horopaki e tika ana. Nō ētahi puninga e 20 (ko tētahi he puninga hou) me ētahi whānau e rima ngā momo nei. Katoa ngā momo kua āta tohua ō rātau āhuatanga matua e rerekē ai tētahi i tētahi, kua tuhia he ara tautohu, kua whakaahuatia ā-kupu, ā-pikitia, kua tuhia anō he kōrero mō ngā tohutoro whakarōpū, ngā kāinga noho, me te tītaringa o tēnā momo, o tēnā.

I whānau mai a **Qing-Hai Fan** i Haina ki te Raki, ka kuraina ki Haina ki te Tonga, me te whiwhi i tana Tākutanga mātai pepeke i te Whare Wānanga Ahuwhenua Fujian i te tau 1996. Mai i te tau 1985 ki te 2001, ka noho ia ki ngā tūranga o te pūkenga āwhina, te pūkenga, me te pūkenga tōrua i taua Whare Wānanga anō. Mai i te tau 2002, he ahorangī mātai pepeke ia i te Whare Wānanga Ahuwhenua, Whakatipu Rākau Fujian. Ko te Tauārai Tipu, te Mātai Pepeke Ahuwhenua, te Mātai Pepeke Noho Tāone me te Mātai Pūwereriki ētahi o ngā kaupapa kua whakaakona e ia. I te tau 2001 me te 2002, i a ia e toro ana i te Whare Wānanga o Queensland i Ahitereiria, ka mahi tahi rāua ko Tākuta David E. Walter ki te tiroiro i ngā pūwereriki o Ahitereiria. I te tau 2003 ka rere mai ki Aotearoa, ka rangahau i ngā pūwereriki 'pātaka porotaka' i te taha o Tākuta Zhi-Qiang Zhang, i raro i te maru o Manaaki Whenua. Kātahi ia ka mahi hei kairangahau i Te Kunenga ki Pūrehuroa, he āta tiroiro tāna i te pūwereriki *Varroa* e patupatu ana i ngā pī-miere. Ko ia te gītita Waihanga o Systematic and Applied Acarology. He nui ake i te 50 ngā tuhinga hautaka kua oti i a ia e pā ana ki ngā whakapapa, te koiora, me te here i ngā pūwereriki me ētahi atu pepeke. Kua whakaputaina e rāua ko Tākuta Zhi-Qiang Zhang tētahi pukapuka e pā ana ki ngā pūwereriki pātaka porotaka o Ahitereiria me Te Moana-nui-a-Kiwa. Ko ngā kaupapa e ngākau nuitia ana e ia, ko ngā whakapapa pūwereriki (me tino kōrero i konei ko ērā o ngā whānau nui Raphignathoidea, Tetranychoida, me Acaroidea), me te here i ngā rauropi kino.

(haere tonu)



Contributor **Zhi-Qiang Zhang** was born in Shanghai, China and educated at Fudan University (Shanghai), graduating in 1985 with a BSc in Zoology. He began his studies on mite systematics and biology at the Graduate School, Fudan University, in 1985, and then continued his postgraduate studies between 1988 and 1992 at Cornell University, Ithaca, New York, where he received his PhD in entomology for research on mite predator-prey ecology. Between 1992 and 1994 he worked as a postdoctoral insect ecologist at Oregon State University, Corvallis, Oregon, on a biological weed control project headed by Dr Peter McEvoy. From 1994 to 1999 he was the acarologist with CAB International Institute of Entomology based in the Natural History Museum in London. While employed at CAB International he also served as a Technical Officer of the BioNET-INTERNATIONAL from 1998 to 1999. In 1999, he moved to New Zealand and has since been the acarologist for Landcare Research, working on mite systematics and biology.

Dr Zhang holds an honorary research fellowship at the Natural History Museum, an adjunct professorship at Fudan University, and an honorary professorship at Fujian Academy of Agricultural Sciences (Fujian, China). He has published several monographs on mites and more than 100 refereed papers on arthropod systematics, ecology, and pest management. He is the editor and an editorial board member of several international journals of acarology, entomology, and zoology. He is the President of the Systematic & Applied Acarology Society and is also on the Executive Committee of the International Congress of Acarology.

I whānau mai a **Zhi-Qiang Zhang** i Shanghai, i Haina, ka whai i te mātauranga i te Whare Wānanga Fudan (Shanghai). Nō te tau 1985 ka whiwhi ia i tana Tohu Paetahi, ko te Mātauranga Kararehe te kaupapa. Ka tīmata tana rangahau i ngā whakapapa me te koiora pūwereriki i te Kura Paerua, i te Whare Wānanga Fudan, i te tau 1985, ā, ka haere tonu ana akoranga paerua mai i te 1988 ki te 1992 i te Whare Wānanga o Cornell, i Ithaca, Te Āporo Nui. I reira ka riro i a ia tana Tākutatanga mātai pepeke, ko te kaupapa whāiti, ko te taupuhi kaiao o ngā pūwereriki konihi me ngā hanga ka kainga e rātou. Mai i te tau 1992 ki te 1994, ka mahi ia hei kaimātai pepeke taupuhi kaiao i te Whare Wānanga o Oregon, i Corvallis, Oregon, i runga i tētahi kaupapa here ā-koiora i te tarutaru, he mea whakataki nā Tākuta Peter McEvoy. Mai i te tau 1994 ki te 1999, he kaimātai pūwereriki ia mā te CAB Pūtahi Mātai Pepeke o te Ao, i te Whare Pupuri Taonga o te Ao Tūroa, i Rānana. I a ia e mahi ana mā CAB International, ko ia anō te Āpiha Hangarau o te BioNET-INTERNATIONAL mai i te 1998 ki te 1999. I te tau 1999, ka neke ia ki Aotearoa, ā, mai i tērā wā, ko ia te kaimātai pūwereriki o Manaaki Whenua, e whakapau kaha ana ki ngā whakapapa me te koiora pūwereriki.

He paewai rangahau hōnore a Tākuta Zhang i te Whare Pupuri Taonga o te Ao Tūroa, he ahorangī turuki ia i te Whare Wānanga Fudan, he ahorangī hōnore anō ia i te Kura Tiketike Fujian mō ngā Mātauranga Ahuwhenua (Fujian, China). Inā kē te maha o ngā tuhinga aronga whāiti kua puta i a ia e pā ana ki te pūwereriki, he neke atu i te 100 ana tuhinga, he mea arotake e tētahi atu, e pā ana ki ngā whakapapa, te taupuhi kaiao me te here i ngā hanga kino o te ao angawaho. Ko ia te ētita, me tētahi o ngā mema o ngā poari ētita o te maha atu o ngā hautaka o te ao e aro whāiti ana ki te mātai pūwereriki, te mātai pepeke, me te mātauranga kararehe. Ko ia anō te Perehitene o te Systematic & Applied Acarology Society, ā, kei runga ia i te Komiti Whāiti o te Whakarauikatanga Mātai Pūwereriki o te Ao.

---

Translation by **H. Jacob**





## ABSTRACT

The mite superfamily Raphignathoidea (Acari: Prostigmata) is comprehensively revised. Keys to world families and genera of Raphignathoidea are included. The taxonomy, biology, and ecology of world Raphignathoidea are briefly reviewed. 76 species belonging to 20 genera and 5 families recognised as occurring in New Zealand, are diagnosed, keyed, and described. Known stages (if specimens available) of New Zealand raphignathoid species are described and illustrated with line drawings, and notes are provided on the taxonomic references, habitats, and distribution of each species.

The following 21 species are described as new: *Tycherobius aotearoa*, *Mecognatha parilis*, *Mecognatha rara*, *Raphignathus atomatus*, *Raphignathus crustus*, *Agistemus mecotrichus*, *Eustigmaeus eburneus*, *Eustigmaeus edentatus*, *Eustigmaeus ptilosetus*, *Mediolata delicata*, *Mediolata polyocularis*, *Mediolata whenua*, *Mediolata woodi*, *Mediolata xerxes*, *Mediolata zonaria*, *Mullederia procurrens*, *Mullederia scutellaris*, *Pseudostigmaeus schizopeltatus*, *Storchia hendersonae*, *Zetzellia biscutata*, and *Zetzellia spiculosa*. A new genus, *Scutastigmaeus* **gen. n.**, is described. The following 3 new combinations are proposed for three species that were previously placed in *Stigmaeus*: *Scutastigmaeus confusus* (Wood), *Scutastigmaeus longisetis* (Wood), and *Scutastigmaeus montanus* (Wood).

Keywords: Acari, Prostigmata, Raphignathoidea, taxonomy, keys, New Zealand.

Fan, Qing-Hai; Zhang, Zhi-Qiang 2005. Raphignathoidea (Acari: Prostigmata). *Fauna of New Zealand* 52, 400 pp.

Received: 2 September 2003. Accepted: 1 March 2004.

## CONTENTS

Checklist of taxa .....	9
Acknowledgments .....	10
Introduction .....	11
Characters, biology, techniques and conventions .....	12
Descriptions .....	21
References .....	111
Appendices .....	118
Illustrations .....	126
Distribution maps .....	376
Taxonomic index .....	385
Habitat and host index .....	391

## CHECKLIST OF TAXA

Superfamily RAPHIGNATHOIDEA .....	21
Family Camerobiidae Southcott .....	22
Genus <i>Neophyllobius</i> Berlese .....	23
<i>Neophyllobius sturmerwoodi</i> Bolland .....	23

Genus <i>Tycherobius</i> Bolland .....	25
<i>Tycherobius aotearoa</i> sp. n. ....	25
Family Cryptognathidae Oudemans .....	25
Genus <i>Cryptognathus</i> Kramer .....	26
<i>Cryptognathus striatus</i> Luxton .....	26
<i>Cryptognathus vulgaris</i> Luxton .....	27
Genus <i>Favognathus</i> Luxton .....	28
<i>Favognathus leopardus</i> Luxton .....	28
Family Mecognathidae Gerson & Walter .....	29
Genus <i>Mecognatha</i> Wood .....	29
<i>Mecognatha hirsuta</i> Wood .....	30
<i>Mecognatha parilis</i> sp. n. ....	31
<i>Mecognatha rara</i> sp. n. ....	32
Family Raphignathidae Kramer .....	33
Genus <i>Raphignathus</i> Dugés .....	34
<i>Raphignathus atomatus</i> sp. n. ....	34
<i>Raphignathus collegiatus</i> Atyeo, Baker & Crossley .....	35
<i>Raphignathus crustus</i> sp. n. ....	36
<i>Raphignathus gracilis</i> (Rack) .....	37

Family Stigmaeidae Oudemans .....	38	<i>Pseudostigmaeus longisetis</i> Wood .....	85
Genus <i>Agistemus</i> Summers .....	40	<i>Pseudostigmaeus schizopeltatus</i> sp. n. ....	86
<i>Agistemus collyerae</i> González-Rodríguez .....	41	<i>Pseudostigmaeus striatus</i> Wood .....	87
<i>Agistemus longisetus</i> González-Rodríguez ...	42	Genus <i>Scutastigmaeus</i> gen. n. ....	88
<i>Agistemus mecotrichus</i> sp. n. ....	44	<i>Scutastigmaeus confusus</i> (Wood) .....	89
<i>Agistemus novazelandicus</i> González-Rodríguez	45	<i>Scutastigmaeus longisetis</i> (Wood) .....	90
.....	45	<i>Scutastigmaeus montanus</i> (Wood) .....	90
<i>Agistemus subreticulatus</i> (Wood) .....	46	Genus <i>Stigmaeus</i> Koch .....	91
Genus <i>Cheylostigmaeus</i> Willmann .....	47	<i>Stigmaeus arboricola</i> Wood .....	92
<i>Cheylostigmaeus luxtoni</i> Wood .....	47	<i>Stigmaeus brevisetis</i> Wood .....	93
Genus <i>Eryngiopus</i> Summers .....	48	<i>Stigmaeus campbellensis</i> Wood .....	94
<i>Eryngiopus arboreus</i> Wood .....	48	<i>Stigmaeus luxtoni</i> Wood .....	94
<i>Eryngiopus bifidus</i> Wood .....	50	<i>Stigmaeus novazealandicus</i> Wood .....	95
<i>Eryngiopus nelsonensis</i> Wood .....	51	<i>Stigmaeus rotundus</i> Wood .....	97
<i>Eryngiopus similis</i> Wood .....	52	<i>Stigmaeus rupicola</i> Wood .....	97
Genus <i>Eustigmaeus</i> (Berlese) .....	53	<i>Stigmaeus summersi</i> Wood .....	98
<i>Eustigmaeus brevisetosus</i> (Wood) .....	54	Genus <i>Storchia</i> Oudemans .....	100
<i>Eustigmaeus clavigerus</i> (Wood) .....	55	<i>Storchia hendersonae</i> sp. n. ....	100
<i>Eustigmaeus corticolus</i> (Wood) .....	56	<i>Storchia robustus</i> (Berlese) .....	101
<i>Eustigmaeus distinctus</i> (Wood) .....	57	Genus <i>Summersiella</i> Gonzalez .....	101
<i>Eustigmaeus dumosus</i> (Wood) .....	58	<i>Summersiella coprosmae</i> (Wood) .....	102
<i>Eustigmaeus eburneus</i> sp. n. ....	59	Genus <i>Zetzellia</i> Oudemans .....	103
<i>Eustigmaeus edentatus</i> sp. n. ....	60	<i>Zetzellia antipoda</i> Wood .....	103
<i>Eustigmaeus granulosus</i> (Wood) .....	61	<i>Zetzellia biscutata</i> sp. n. ....	105
<i>Eustigmaeus manapouriensis</i> (Wood) .....	62	<i>Zetzellia gonzalezi</i> Wood .....	105
<i>Eustigmaeus mixtus</i> (Wood) .....	63	<i>Zetzellia maori</i> González-Rodríguez .....	106
<i>Eustigmaeus ptilosetus</i> sp. n. ....	64	<i>Zetzellia oudemansi</i> Wood .....	108
<i>Eustigmaeus simplex</i> (Wood) .....	65	<i>Zetzellia spiculosa</i> sp. n. ....	110
Genus <i>Ledermuelleriopsis</i> Willmann .....	66		
<i>Ledermuelleriopsis incisa</i> Wood .....	67		
<i>Ledermuelleriopsis spinosa</i> Wood .....	67		
Genus <i>Mediolata</i> Canestrini .....	68		
<i>Mediolata brevisetis</i> Wood .....	69		
<i>Mediolata delicata</i> sp. n. ....	70		
<i>Mediolata favulosa</i> Wood .....	71		
<i>Mediolata mollis</i> Wood .....	71		
<i>Mediolata oleariae</i> Wood .....	72		
<i>Mediolata polyocularis</i> sp. n. ....	73		
<i>Mediolata robusta</i> González-Rodríguez .....	73		
<i>Mediolata simplex</i> Wood .....	75		
<i>Mediolata whenua</i> sp. n. ....	76		
<i>Mediolata woodi</i> sp. n. ....	76		
<i>Mediolata xerxes</i> sp. n. ....	77		
<i>Mediolata zonaria</i> sp. n. ....	78		
Genus <i>Mullederia</i> Wood .....	79		
<i>Mullederia arborea</i> Wood .....	79		
<i>Mullederia procurrans</i> sp. n. ....	80		
<i>Mullederia scutellaris</i> sp. n. ....	80		
Genus <i>Primagistemus</i> Fan & Zhang .....	81		
<i>Primagistemus loadmani</i> (Wood) .....	81		
Genus <i>Pseudostigmaeus</i> Wood .....	82		
<i>Pseudostigmaeus collyerae</i> Wood .....	83		

## ACKNOWLEDGEMENTS

The senior author thanks the College of Plant Protection, Fujian Agricultural and Forestry University for providing facilities during the early stages of this study, and Dr David E. Walter and the Department of Zoology and Entomology, of The University of Queensland for hosting and providing space and facilities when this paper was finalised. He is also grateful to Dr Eddie A. Ueckermann (Plant Protection Research Institute, South Africa) for sending literature, Dr Ricardo Palma (Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand), and Dr Hans R. Bolland (Department of Pure and Applied Ecology, University of Amsterdam, The Netherlands) for loaning specimens. Rosa Henderson (Landcare Research, Auckland) prepared some specimens and typed the list of specimens, and Birgit Rhode (Landcare Research, Auckland) prepared the maps. We thank Dr Uri Gerson (Hebrew University of Jerusalem), Dr David E. Walter, and Dr Eddie A. Ueckermann for review and criticism of the manuscript. This project was funded in part by a contract from the Foundation for Research, Science and Technology, New Zealand (Contract C09X0202).

## INTRODUCTION

### Historical review

The Raphignathoidea is one of the old groups of the Acari, which can be dated back at least 56.5 million years. A cameroibiid mite, *Neophyllobius succineus* Bolland & Magowski, was discovered in Baltic amber of the Upper Eocene (Bolland & Magowski 1990). The first existent species, *Stigmaeus siculus* Berlese, 1883 (= *Acarus rubens* Schrank 1781) was described two centuries ago.

Raphignathoidea belongs to the mite superorder Acariformes, order Prostigmata. The superfamily was proposed by Grandjean (1944) to accommodate three families: Raphignathidae Kramer, 1877, Stigmaeidae Oudemans, 1931, and Caligonellidae Grandjean, 1944. Baker & Wharton (1952) placed the Stigmaeidae and Caligonellidae into synonymy with the Raphignathidae. Cunliffe (1955) first characterised the superfamily based on an analysis of leg tarsi, gnathosoma, genitalia, palps, and dorsal idiosomal setation, and then added Cryptognathidae Oudemans, 1902 and Pomerantziidae Baker, 1949 to the superfamily; he also mentioned that the latter might belong elsewhere. Southcott (1957) emended the definition of the superfamily and added two families, Cameroibiidae and Neophyllobiidae. Meyer & Ryke (1960) also made emendations to the superfamily. Summers (1966a) included three families, Eupalopsellidae Willmann, 1952, Cameroibiidae Southcott, 1957, and Neophyllobiidae Southcott, 1957, excluded Pomerantziidae and gave the first practical key to the families. Wood (1969) erected a

new family, Homocaligidae, from elements previously placed in Stigmaeidae. Gerson (1972b) synonymised the Neophyllobiidae with Cameroibiidae. Robaux (1975) erected a new family, Barbutiidae, from elements previously placed in Stigmaeidae. Gonzalez (1978) erected a new family, Xenocaligonellidae (= Xenocaligonellidae), which was previously included in Caligonellidae. Krantz (1978) included Pomerantziidae in the superfamily again, but his opinion has not been followed by most acarologists. Gerson & Walter (1998) added the tenth family and provided a key to the families. More recently, a new family, Dasythyreidae was erected by Walter & Gerson (1998). Thus the total number of families became eleven (Table 1) and the superfamily currently consists of about 770 valid species in 57 genera.

Modern research on the superfamily was initiated by Summers and his students (1957–1966) and Wood (1964–1981). A series of reviews/revisions at the level of the genus or family, especially on the family Stigmaeidae, were published.

In New Zealand, the taxonomic studies on this superfamily started in the mid 1960s (Wood 1964a, 1964b). Wood subsequently published a series of studies on Stigmaeidae (1966, 1967, 1968, 1970, 1971b, 1971c, 1981). Luxton (1973) described three new species of the Cryptognathidae and Bolland (1991) described a new species of the Cameroibiidae. Two more articles on Stigmaeidae were recently published by Fan & Zhang (2002a, 2002b).

**Table 1.** Systematic systems of Raphignathoidea by authors. \* = Walter & Gerson (1998).

Family	Grandjean (1944)	Cunliffe (1955)	Summers (1966a)	Krantz (1978)	Gerson & Walter (1998)
Raphignathidae	+	+	+	+	+
Caligonellidae	+	+	+	+	+
Stigmaeidae	+	+	+	+	+
Cryptognathidae		+	+	+	+
Eupalopsellidae			+	+	+
Cameroibiidae			+	+	+
Homocaligidae				+	+
Barbutiidae				+	+
Xenocaligonellidae					+
Mecognathidae					+
Dasythyreidae					+*

## MORPHOLOGICAL CHARACTERS

### ADULT FEMALE

**Gnathosoma** (Fig. 1–3). Projecting in front of prodosoma, or covered by prodosoma (Camerobiidae), rarely retractable (Cryptognathidae). Chelicerae (Fig. 1) basally fused, separate (most genera of Stigmaeidae) or conjunct (Homocaligidae, some genera of Stigmaeidae); conical, rarely stumpy (Camerobiidae); peritreme present, or absent (Eupalopsellidae, Homocaligidae, Mecognathidae, and Stigmaeidae). Palps (Fig. 2) stout, or slender (Eupalopsellidae and Mecognathidae); tibial claws prominent, or reduced (Raphignathidae), vestigial, or absent (Cryptognathidae, Eupalopsellidae, Mecognathidae, and Xenocaligonellidae); palptarsus commonly with 4 eupathidia, 3 of them ( $ul'\zeta$ ,  $ul''\zeta$ , and  $sul\zeta$ ) may be basally fused (Eupalopsellidae, Homocaligidae, Mecognathidae, and Stigmaeidae); counts of setae (excluding solenidia and eupathidia) from palps:  $1elcp$ , 0, 1–3, 1–2, 3 + 0–1 claw, 4 (1–3 in Barbutiidae, Camerobiidae, and some genera of Calignonellidae). Subcapitulum (Fig. 3) stumpy, sometimes basally elongate (Cryptognathidae) or terminally elongate (Eupalopsellidae and Mecognathidae), with 2 pairs of rostral setae, and 1 or 2 pairs of subcapitular setae (Eupalopsellidae, Homocaligidae, Mecognathidae, Raphignathidae, most genera of Stigmaeidae, and some genera of Calignonellidae).

**Idiosoma** (Fig. 4–5). Oval or round in dorsoventral view. Prodorsum with 2 pairs of vertical setae, rarely with 3 or more pairs (neotrichy, some of Camerobiidae and one genus of Dasythyreidae); with 2 pairs of scapular setae, sometimes with only 1 pair (some of Mecognathidae and Stigmaeidae), rarely with 3 or more pairs (neotrichy, one genus of Dasythyreidae); setae  $pdx$  (neotrichy) only present in Dasythyreidae and some genera of Camerobiidae; eyes present, sometimes absent (some Calignonellidae and Stigmaeidae); postocular bodies ( $pob$ ) present, sometimes absent (some Calignonellidae and Stigmaeidae). Dorsal hysterosoma with 5 series of dorsal idiosomal setae:  $c$ ,  $d$ ,  $e$ ,  $f$ , and  $h$  (pseudanal setae  $ps_{1-3}$  are associated with the anal opening and often ventrally located);  $c$ -series commonly with 2 pairs of setae, rarely with 1 pair (one genus of Mecognathidae and a few genera of Stigmaeidae), sometimes with 3 or more pairs (neotrichy, Dasythyreidae and Xenocaligonellidae);  $d$ -series with 1 pair of setae, or with 2 pairs (Barbutiidae, Camerobiidae, Eupalopsellidae, Homocaligidae, Mecognathidae, and most genera of Stigmaeidae), sometimes with more than 2 pairs (neotrichy, Dasythyreidae, Xenocaligonellidae, and one species of Camerobiidae);  $e$ -series with 1 pair of setae, or 2 pairs (Barbutiidae, Cryptognathidae, Camerobiidae, Eupalopsellidae, Homocaligidae, Mecognathidae, and

Stigmaeidae), sometimes with more than 2 pairs (neotrichy, Xenocaligonellidae, one genus of Dasythyreidae, and one species of Camerobiidae);  $f$ -series with 1 pair of setae, sometimes with 2 or more pairs (in Camerobiidae, Dasythyreidae, and Xenocaligonellidae);  $h$ -series with 2 pairs of setae, sometimes with 3 pairs (Raphignathidae, some genera of Calignonellidae, and Stigmaeidae) or more pairs (one genus of Dasythyreidae).

Ventral idiosoma (Fig. 5). Coxae II and III separate, sometimes contiguous (Cryptognathidae and Raphignathidae); ventral setae  $1a$  and  $3a$  present,  $4a$  present or absent (Xenocaligonellidae, a few Stigmaeidae); ventral opisthosoma with 1–5 pairs of aggenital setae; genital and anal valves separate (Barbutiidae, Calignonellidae, Cryptognathidae, and Raphignathidae), contiguous (Camerobiidae, Dasythyreidae, Xenocaligonellidae, and a few genera of Stigmaeidae), or fused (Eupalopsellidae, Homocaligidae, Mecognathidae, and most genera of Stigmaeidae), with 1–3 pairs of genital setae, and commonly with 3 pairs of pseudanal setae, rarely with 1 or 2 pairs (a few species of Calignonellidae and Camerobiidae); genital and anal opening longitudinal; genital folds present.

**Leg.** Tarsal claws present, sometimes absent (some genera of Stigmaeidae), rarely with tenent hairs (in Barbutiidae); empodium with tenent hairs directly arising from axis (Fig. 12, 40) or from shafts (Homocaligidae, Mecognathidae, and Stigmaeidae, Fig. 30, 48) or from vestigial axis (Eupalopsellidae); tarsal stalk sometimes prominent (Camerobiidae and Dasythyreidae); counts of solenidia on genua I–III: 1, 0–1, 0; on tibiae I–III: 0–3, 0–2, 0–1; on tarsi I–III: 1–2, 1–2, 0–1; counts of setae on legs I–IV: coxae (including  $1a$ ,  $3a$ , and  $4a$ ) 2–3 +  $1elcp$ , 0–2, 1–3, 1–3; trochanters 0–1, 0–1, 0–2, 0–1; femora 2–6, 1–6, 1–4, 1–4; genua 1–5, 0–5, 0–4, 0–4; tibiae 3–9, 2–8, 2–8, 2–7; tarsi 7–23, 6–21, 5–13, 1–13.

### ADULT MALE

Similar to adult female, but differs in: hysterosoma often somewhat tapered; first and second pseudanal setae often reduced; genital and anal openings fused; having aedeagus; solenidia  $\omega_2$  (= male  $\omega_{[male]}$ , Fig. 22) on tarsi I–II absent (Barbutiidae, Calignonellidae, Camerobiidae, Cryptognathidae, Dasythyreidae, Raphignathidae, and Xenocaligonellidae) or present (Eupalopsellidae, Homocaligidae, Mecognathidae, and Stigmaeidae); solenidia  $\omega$  or  $\omega_1$  enlarged.

### TRITONYMPH

Only members of Raphignathidae and Xenocaligonellidae are known to have this stage. It can be separated from the adult female by the absence of genital valves and folds, and the presence of 1 pair of genital setae in the female.

**DEUTONYMPH**

Similar to adult but without genital setae in both sexes; absence of genital folds in female and aedeagus in male.

**PROTONYMPH**

With 1 pair of subcapitular setae; ventral setae 4a and genital setae absent; with fewer setae in aggenital area and on segments of legs than deutonymph.

**LARVA**

Subcapitular setae, ventral setae 4a, genital, and aggenital setae absent; without leg IV; with fewer setae on segments of palps and legs than protonymph; leg I with 1 (*tc'*) or 2 (*tc'* and *tc''*) tactile setae (Calignonellidae, Cryptognathidae, Eupalopsellidae, Homocaligidae, Mecognathidae, Raphignathidae, and Stigmaeidae), or without tactile seta (Camerobiidae, Dasythyreidae, and Xenocalignonellidae).

**DEVELOPMENTAL STAGES**

Generally, there are 5 known stages in most members of Raphignathoidea: the egg, larva, protonymph, deutonymph, and adult. Only one species, *Agistemus exsertus* Gonzalez, has a known prelarval stage (Hanna *et al.* 1984). Mites of the genus *Raphignathus* have 3 nymphal stages: protonymph, deutonymph, and tritonymph (Meyer & Ueckermann 1989, and authors' unpublished observation). Three nymphal stages are also present in Xenocalignonellidae (Fan 2000).

**FEEDING HABITS**

According to our current knowledge, the majority of the Raphignathoidea are free-living predators (Table 2). Some species of Stigmaeidae and Dasythyreidae are found on insects, and a few species of Stigmaeidae are phytophages, feeding on moss. A couple of species of Xenocalignonellidae are possibly microphytophages, probably feeding on substances on the outer layer of tree bark.

**Table 2.** Feeding pattern of raphignathoid mites

Family	Predators	Phytophages	Parasites	Microphytophages
Barbutiidae	?			
Calignonellidae	+			
Camerobiidae	+			
Cryptognathidae	+			
Dasythyreidae			?	
Eupalopsellidae	+			
Homocaligidae	?			
Mecognathidae	?			
Raphignathidae	+			
Stigmaeidae	+	+	+	
Xenocalignonellidae				?

**Table 3.** Prey associations of genera of Raphignathoidea (\* = Unpublished data).

Predators	Prey
Calignonellidae	
<i>Molothrogathus</i>	Acari: Prostigmata: Tetranychidae
<i>Paraneognathus</i>	Acari: Astigmata: Acaridae* Prostigmata: Cheyletidae*
Camerobiidae	
<i>Neophyllobius</i>	Acari: Prostigmata: Tarsonemidae* Insecta: Homoptera: Diaspididae, Margarodidae
Eupalopsellidae	
<i>Eupalopsellus</i>	Acari: Prostigmata: Tetranychidae, Tenuipalpidae Insecta: Homoptera: Diaspididae
<i>Eupalopsis</i>	Insecta: Homoptera: Diaspididae
<i>Exothorhis</i>	Insecta: Homoptera: Diaspididae,
<i>Saniosulus</i>	Phoenicococcidae (Coccoidea)
Stigmaeidae	
<i>Agistemus</i>	Acari: Mesostigmata: Phytoseiidae Prostigmata: Eriophyidae, Stigmaeidae, Tarsonemidae, Tenuipalpidae, Tetranychidae, Tydeidae Insecta: Homoptera: Aleyrodidae, Coccoidea Lepidoptera: Pyralidae Pollen of plant: Caprifoliaceae, Euphorbiaceae, Palmae, Poaceae, Typhaceae
<i>Eryngiopus</i>	Insecta: Homoptera: Diaspididae
<i>Mediolata</i>	Acari: Prostigmata: Tetranychidae Insecta: Homoptera: Coccoidea
<i>Zetzellia</i>	Acari: Astigmata: Saproglyphidae Prostigmata: Eriophyidae, Stigmaeidae, Tarsonemidae, Tenuipalpidae, Tetranychidae Mesostigmata: Phytoseiidae Insecta: Homoptera: Coccoidea Lepidoptera: Pyralidae

**Table 4.** Insect hosts of Stigmaeidae

Stigmaeid species	Host	Author
<i>Eustigmaeus dyemkoumai</i> Abonnenc	Phlebotomine sandflies	Abonnenc 1970
<i>Eustigmaeus gamma</i> (Chaudri)	<i>Phlebotomus pius</i>	Chaudhri 1965
<i>Eustigmaeus gorgasi</i> (Chaudri)	Sandfly	Chaudhri 1965
<i>Eustigmaeus johnstoni</i> Zhang & Gerson	<i>Phlebotomus longicuspis</i> Nitzulescu, <i>Phlebotomus papatasi</i> (Scopoli), <i>Sergentomyia africana</i> (Newstead), <i>Sergentomyia dreyfussi</i> (Parrot), <i>Sergentomyia magna</i> (Sinto), <i>Sergentomyia</i> spp.	Zhang & Gerson 1995
	<i>Phlebotomus bergeroti</i> , <i>P. sergenti</i> <i>P. sergenti</i>	Shehata & Baker 1996 Ozbel <i>et al.</i> 1999
<i>Eustigmaeus parasiticus</i> (Chaudri)	<i>Phlebotomus</i>	Chaudhri 1965
<i>Eustigmaeus</i> sp.	Phlebotomine sandflies	Martinez <i>et al.</i> 1983
<i>Stigmaeus smithi</i> (Mitra & Mitra)	<i>Phlebotomus papatasi</i>	Mitra & Mitra 1953
<i>Stigmaeus sinai</i> Swift	<i>Phlebotomus papatasi</i>	Swift 1987
<i>Stigmaeus youngi</i> (Hirst)	"Flies" (probably sandflies)	Hirst 1926; Wood 1972

**Table 5.** Microhabitats of raphignathoid mites

	Foliage and branches	Trunk	Moss and lichen	Litter and soil	Animal nest or house
Barbutiidae				+	
Caligonellidae	+	+	+	+	+
Camerobiidae	+	+	+	+	
Cryptognathidae	+	+	+	+	+
Dasythyreidae		+		+	
Eupalopsellidae	+	+	+	+	
Homocaligidae	+			+	
Mecognathidae	+	+	+	+	
Raphignathidae	+	+	+	+	+
Stigmaeidae	+	+	+	+	+
Xenocaligonellididae		+		+	

**Predators.** Relatively little is known about the predatory habit of the Raphignathoidea (Table 3). Species of the two genera of Caligonellidae, *Molothrognathus* and *Paraneognathus*, are known to prey on spider mites on plants and on acarid mites and cheyletid mites in stored products. Species of the Camerobiidae are known to feed on crawlers of the scale insects and tarsonemid mites (Table 3). Members of Eupalopsellidae are mainly predators of mites and scale insects (Table 3). Species of Stigmaeidae feed on spider mites and other mites, as well as on small insects such as crawlers of scale insects (Table 3).

**Parasites.** Five species of *Eustigmaeus*, three species of *Stigmaeus* (both Stigmaeidae), and one species of *Dasythyreus* (Dasythyreidae) have been found on insects. Stigmaeids have so far been recorded on sandflies only

(Table 4). Whether these species have any negative effects on insect hosts is yet to be shown, although feeding scars were commonly observed and the nature of the mite-insect relationship was assumed to be parasitism by most authors (Table 4). A species of *Dasythyreus* was found on the pronotal-mesonotal interface of the eyed-click beetle *Alaus myops* (F.) and it is not known whether this mite feeds on the beetle (Walter & Gerson 1998).

**Phytophages and microphytophages.** Some members of *Eustigmaeus* (Stigmaeidae) were observed feeding on mosses (Gerson 1972a). *Xenocaligonellidus ovaerialis* De Leon (Xenocalignoellididae) was observed probing a tree bark surface (De Leon 1959). Another species, *Xenocaligonellidus smileyi* Hu & Liang, was observed scrubbing the substance on the outer layer of olive tree bark (Fan 2000).

## MICROHABITATS

Members of the superfamily are found on foliage, branches, trunks (tree bark and holes), moss and lichen, litter, soil, animal nests (birds, possum, and honeybee), stored products, and house dust (Table 5). A few are aquatic or sub-aquatic: *Anmerosella* and *Homocaligus* of Homocaligidae; and some species of *Caligohomus*, *Cheylostigmaeus*, *Eustigmaeus*, and *Ledermuelleriopsis* of Stigmaeidae.

## BIOLOGY

Compared with the Phytoseiidae, relatively little is known about the biology of the Raphignathoidea. Published records concern a handful of species from two main families, Stigmaeidae and Eupalopsellidae. The biology of the Stigmaeidae was reviewed by Santos & Laing (1985) in relation to their role as predators of Tetranychidae. Thistlewood *et al.* (1996) discussed the biology of Stigmaeidae in relation to their role as predators of the Eriophyoidea. The biology and application of Stigmaeidae, Camerobiidae, and Eupalopsellidae in biological control were reviewed by Gerson & Smiley (1990) and updated by Gerson *et al.* (2003).

**Life history.** The life cycle has been studied for only a few species: *Agistemus exsertus*, *A. floridanus*, *A. industani*, and *Zetzellia mali*. In general, development from egg to adult can be completed in 1–3 weeks, although the duration is affected by abiotic factors such as temperature and biotic factors such as the type and quantity of food (Collyer 1964; ElBadry *et al.* 1969a; Gerson & Blumberg 1969; Muma & Selhime 1971; Gerson 1972a; Inoue & Tanake 1983; Osman & Zaki 1986; Yue & Childers 1994; White & Laing 1977; El-Laithy 1998; Jamali *et al.* 2001; Arbabi & Singh 2002). The egg stage is invariably the longest among immature stages and often takes at least twice as long as the larval or each nymphal stage. The males develop slightly faster than females.

Reproduction is arrhenotokous and the offspring sex ratio of mated females is female-biased (Gerson 1972a; Arbabi & Singh 2002). Unmated females produce males only and start to lay eggs one day later than mated females (Rasmy & Hussein 1996). Multiple-mated females have shorter life spans but consume more prey and lay more eggs than single-mated females (Abou-Awad & Reda 1992; Rasmy & Hussein 1995). After a pre-ovipositional period of a few days, most females start to lay eggs for 1–2 weeks. Female reproductive rates (mostly between 1 to 4 eggs per day) are strongly affected by food type/quantity (ElBadry *et al.* 1969a; Yousef *et al.* 1982; Nawar 1992) and temperature (Inoue & Tanake 1983). The intrinsic rate of increase of *Agistemus exsertus* is 0.229 female offspring/

female/day at 25°C when feeding on eggs of *Panonychus citri* (Yue & Childers 1994) and 0.150 individuals/female/day at 27–29°C when feeding on *Tetranychus urticae* (Abou-Awad & ElSawi 1993), and that of *Z. mali* is 0.109 female offspring/female/day at 24±1°C when feeding on *Aculus schlechtendali* (White & Laing 1977).

Adult females of *Agistemus industani* live about as long as adult males but consume three times as many prey as males (Arbabi & Singh 2002).

**Diapause.** There appears to be a lack of diapause in raphignathoid mites, at least for the limited number of studies reported so far. *Eustigmaeus frigidus* apparently reproduces under both long-day (16 h) and short-day (9 h) photoperiodic regimes, without a reproductive diapause (Gerson 1972a). In Auckland, *Agistemus longisetus* breeds throughout the year on non-deciduous plants, without an overwintering phase (Collyer 1964).

## Feeding behaviour and predation

Unlike the phytoseiids, which can respond to kairomones associated with prey, *Zetzellia mali* does not detect kairomones and appears to search for prey by random encounters (Santos 1991). Once inside a prey patch or leaf, *Z. mali* increases its residence time in response to the presence of prey, but it also leaves a patch before all prey are consumed (Lawson & Walde 1993). *Saniusulus nudus* holds its prey by its anterior legs while inserting the chelicerae into the body of the prey; it then sucks the body fluids for 30–40 min or more and when finished pushes the shrivelled prey off the chelicerae with its long palps (Gerson & Blumberg 1969). *Agistemus exsertus* punctures tetranychid eggs but does not necessarily suck their contents completely (ElBadry *et al.* 1969b).

As generalist predators, most stigmaeids show some degrees of prey preference. *Zetzellia mali* tends to prefer the eriophyids over the economically more significant tetranychids (Santos 1976a; Clements & Harmsen 1993; Walde *et al.* 1995). *Agistemus exsertus* prefers immatures of *Tenuipalpus granati* to those of *Tetranychus urticae* (Yousef *et al.* 1982), and *Tetranychus cinnabarinus* to *Eutetranychus orientalis* (ElBadry *et al.* 1969b). When feeding on tetranychids, *Zetzellia mali* prefers eggs and only occasionally attacks resting and nymphal stages; this species never attacks adult spider mites (Santos 1976b; Clements & Harmsen 1990). *Agistemus exsertus* also develops faster and produces more eggs when feeding on eggs than it does when feeding on larvae or nymphs of *Tetranychus urticae* and *T. cucurbitacearum* (Hafez *et al.* 1983); it also develops faster when feeding on the eggs of *T. urticae* than it does on the eggs of *T. cucurbitacearum*, although the eggs of the latter prey were more attractive to the predator.

**Table 6.** Distribution of raphignathoid families and genera according to geographical regions and New Zealand. + = present; \* = unpublished data.

Family/genus	Palearctic	Nearctic	Neotropical	Afrotropical	Oriental	Australian	Antarctic	New Zealand
Barbutiidae	+				+*	+		
<i>Barbutia</i>	+	+			+*	+		
Caligonellidae	+	+		+	+	+		
<i>Caligonella</i>	+	+		+	+	+		
<i>Coptocheles</i>		+		+	+	+		
<i>Molothrognathus</i>	+	+		+	+	+		
<i>Neognathus</i>	+	+		+	+	+		
<i>Paraneognathus</i>	+			+	+			
Camerobiidae	+	+	+	+	+	+		+
<i>Bisetulobius</i>				+				
<i>Camerobia</i>	+				+	+		
<i>Decaphyllobius</i>	+	+		+	+	+*		
<i>Neophyllobius</i>	+	+	+	+	+	+		+
<i>Tillandsobius</i>		+				+*		
<i>Tycherobius</i>	+	+	+		+			+
Cryptognathidae	+	+	+	+	+	+		+
<i>Cryptognathus</i>	+	+				+		+
<i>Favognathus</i>	+	+	+	+	+	+		+
Dasythyreidae		+				+		
<i>Dasythyreus</i>		+						
<i>Xanthodasythyreus</i>						+		
Eupalopsellidae	+	+		+	+	+		
<i>Eupalopsellus</i>	+	+		+	+*			
<i>Eupalopsis</i>	+			+		+		
<i>Exothorhis</i>	+	+		+	+	+		
<i>Peltasellus</i>				+				
<i>Saniosulus</i>	+	+		+	+	+		
Homocaligidae	+	+		+	+	+		
<i>Annerossella</i>				+	+	+		
<i>Homocaligus</i>	+	+			+			
Mecognathidae		+		+	+	+		+
<i>Mecognatha</i>						+		+
<i>Paraeupalopsellus</i>		+		+	+			
Raphignathidae	+	+	+	+	+	+	+	+
<i>Neoraphignathus</i>		+						
<i>Raphignathus</i>	+	+	+	+	+	+	+	+
Stigmaeidae	+	+	+	+	+	+	+	+
<i>Agistemus</i>	+	+	+	+	+	+		+
<i>Caligohomus</i>		+						
<i>Cheylostigmaeus</i>	+	+		+	+	+*		+
<i>Eryngiopus</i>	+	+	+	+	+	+	+	+
<i>Eustigmaeus</i>	+	+	+	+	+	+		+
<i>Ledermulleriopsis</i>	+	+		+	+	+		+
<i>Macrostigmaeus</i>	+							
<i>Makilingeria</i>					+			
<i>Mediolata</i>	+	+		+	+	+		+
<i>Mendanaia</i>						+		
<i>Mullederia</i>				+	+	+		+
<i>Mullederiopsis</i>					+			
<i>Neilstigmaeus</i>						+		
<i>Parastigmaeus</i>				+				
<i>Paravillersia</i>	+							
<i>Pilonychiopus</i>				+				



Table 6 (continued).

Family/genus	Palaeartic	Nearctic	Neotropical	Afrotropical	Oriental	Australian	Antarctic	New Zealand
<i>Postumius</i>	+							
<i>Primagistemus</i>					+			+
<i>Prostigmaeus</i>	+			+				
<i>Pseudostigmaeus</i>	+				+	+		+
<i>Scutastigmaeus</i>								+
<i>Stigmaeus</i>	+	+	+	+	+	+		+
<i>Storchia</i>	+			+	+	+		+
<i>Summersiella</i>					+			+
<i>Villersia</i>	+							
<i>Villersiella</i>	+							
<i>Zetzellia</i>	+	+	+	+	+	+		+
<i>Zetzelliopsis</i>	+							
Xenocaligonellidae		+	+	+	+			
<i>Echinopsis</i>					+			
<i>Xenocaligonellidus</i>		+	+	+	+			

Predation rates vary with a number of biotic and abiotic factors. Within a certain range, the number of prey consumed increases with temperature (Afify *et al.* 1969) and prey density (Nawar 1992; Yue & Tsai 1995). *Agistemus exsertus*, for example, can consume 5.8 larvae per day of *Tetranychus urticae* at a prey density of 7 larvae; very high levels of prey decreased predator oviposition and feeding capacity (Nawar 1992). At very low prey densities, females of *Zetzellia mali* disproportionately reduce their predation and oviposition rates compared with high densities (Santos 1982). This response, as well as its ability to become cannibalistic, allows *Z. mali* to persist on apple leaves when few prey are present.

#### Intraguild predation and competition

Stigmaeids feed on and are fed upon by phytoseiids, especially when phytophagous mites are scarce — this may have both positive and negative impacts on their interactions and their roles in biological control (Clements & Harmsen 1992; Croft & MacRae 1993; Croft 1994; Slone & Croft 2001). At low prey densities, stigmaeids are more effective than phytoseiids because of their higher preference for prey eggs, higher oviposition relative to prey consumption, and the ability to consume their own eggs, whereas at high prey densities the higher maximum predation rate of phytoseiids gives them a higher efficacy (Clements & Harmsen 1992); a combination of stigmaeids and phytoseiids has greater efficacy than either alone over a wide range of prey densities. *Zetzellia mali* is usually less important than the phytoseiid *Typhlodromus pyri* in the direct reduction of the population growth rate of the eriophyid *Aculus schlechtendali* and acts later in the sea-

son than *T. pyri*, and the interference between these predator species is only occasionally strong enough to affect *A. schlechtendali* population dynamics (Walde *et al.* 1997). In the Northern U.S.A., where the phytoseiid mites *Typhlodromus pyri* and *Metaseiulus occidentalis* are common in apple orchards, *Z. mali* has a stronger impact on *M. occidentalis* than on *T. pyri* only (Croft & MacRae 1993), because *M. occidentalis* lays significantly more eggs in the primary foraging area of adult female *Z. mali* than *T. pyri* does (MacRae & Croft 1996).

#### Spatial distribution and seasonal fluctuations

Stigmaeids are unevenly distributed in orchards. The patterns of aggregation vary among different predator species and change with the season and population densities of their prey, competitors and predators (Holdsworth 1972; Hu *et al.* 1994; Slone & Croft 1998, 2001). *Agistemus terminalis*, for example, was more aggregated in the lower and western portions of the tree than in other portions (Hu *et al.* 1994). *Zetzellia mali* multiplied on the fruit-cluster leaves to become more numerous on the outside of the tree than on watersprouts (Holdsworth 1972). It is unknown how these mites move from tree to tree and disperse from orchard to orchard.

Raphignathoid seasonal fluctuations have been studied for *Zetzellia mali* (Rice *et al.* 1976; Hu *et al.* 1996), and for *Agistemus longisetus* in orchards (Collyer 1964). In apple orchards in Massachusetts, *Z. mali* was present in early spring and increased slowly until reaching peak levels in autumn (Hu *et al.* 1996). In apple and plum orchards in Auckland, *Agistemus longisetus* first appears in late December or early January, becomes abundant in February and sometimes reaches densities as high as 100 mites per leaf (Collyer 1964).

### Diet and rearing

The diets of most raphignathoids are too poorly known to allow rearing. Most stigmatids that have been studied have relatively broad ranges of food and are generalist predators (Table 3). In addition to mites and small insects, some stigmatids can also develop and reproduce on pollens of some plants (Abo Elghar *et al.* 1969; Wafa *et al.* 1969; Rasmy 1975; Rasmy *et al.* 1996). When feeding on the pollen of *Phoenix dactylifera*, *Zea mays*, and *Ricinus communis*, *Agistemus exsertus* does not develop as well as when feeding on *Tetranychus cinnabarinus*, but lays more eggs when feeding on the pollen of dates than on *T. cinnabarinus* (Wafa *et al.* 1969). This species can also develop normally on artificial diets composed of yeast, milk, amino acids, and sugar, but the number of eggs laid per female per day is two-thirds of that for mites reared on a natural diet of pollen (Reda 1990). The adult female lifespan on the artificial diet is equal to that on the standard diet.

### Economic importance and role in biological control

Raphignathoid mites are important biological control agents of spider mites, eriophyid mites, and scale insects in agriculture and forestry. Most species of the families Eupalopsellidae, Stigmatidae, Caligonellidae, and Camerobiidae are free-living predators (Meyer & Ueckermann 1989; Gerson & Smiley 1990). Among them the genera *Agistemus* and *Zetzellia* of the Stigmatidae and *Saniosulus* of the Eupalopsellidae are well-known biological control agents on plants. Gerson *et al.* (2003) reviewed the role and application of Eupalopsellidae and Stigmatidae in biological control.

### GEOGRAPHICAL DISTRIBUTION

Mites of the superfamily are worldwide in distribution, and abundant in the Palaearctic, Nearctic, Neotropical, Afrotropical, Oriental, and Australian Regions. *Raphignathus johnstoni* Womersley was even discovered in the Antarctic region (Womersley 1937). The raphignathoid faunas of the Palaearctic, Nearctic, Afrotropical, and Oriental Regions are relatively well known, but the Neotropical Region has only a few species recorded or described (Table 6).

## METHODS AND TECHNIQUES

### Collecting

Leaves and twigs were examined under a microscope and mites living on them were picked off. Those living in litter, moss, nests, soil, tree barks, and stored products were extracted by using Berlese funnels.

Specimens were stored in 70% ethanol with 3% glycerin for light microscope study, or in 95–100% ethanol for scanning electron microscope study.

### Preparation for study

#### Slide mounting.

Mites were cleared in Nesbitt's fluid (chloral hydrate 40 g, concentrated HCl 2.5 ml, distilled water 25 ml) for a few hours or days depending on the size and sclerotisation of specimens. Specimens were mounted in Hoyer's medium (chloral hydrate 200 g, crystalline gum arabic 30 g, glycerol 20 ml, distilled water 50 ml) or Heinze-PVA (chloral hydrate 100 g, glycerol 10 ml, polyvinyl alcohol 10 g, distilled water 60 ml, 85–92% lactic acid 35 ml). Slides were labelled with the collecting data and then placed in an oven at 45–50°C for several weeks until the medium was dry. Detailed methods for mite extracting, preparing and mounting are available in Walter & Proctor (2001).

#### Illustrations and measurements

Drawings were made in pencil using a camera lucida under a microscope and inked with Rotring Rapidograph Pens.

Measurements were made from slide-mounted specimens using stage-calibrated ocular micrometers. Chelicerae were measured from basal articulations to tips of movable digits. Palps were measured from bases of trochanters to tips of palpal tarsi. Idiosomal lengths were measured from the anterior to the posterior margins. Idiosomal widths were measured from maximum width of the idiosoma between leg II and III. Setae and solenidia were measured from alveoli to tips. Legs were measured from bases of trochanters to tips of claws. Femora of leg I were measured from ventral junction between trochanter and femur to junction between femur and genu. Genua I were measured from junction between femur and genu to junction between genu and tibia. Tibiae I were measured from junction between genu and tibia to junction between tibia and tarsus. Tarsi I were measured from posterior margins to tips of claws.

In the material examined, n/n indicates number of slides/number of specimens. Measurements  $x(y-z)$ :  $x$  is the measurement of the specimens (mostly are holotype or paratype) from which figure was drawn;  $y-z$  is the range of measurements. Female or male means adult unless indicated.

**Terminology.** The terminology of palp and leg chaetotaxy follows that of Grandjean (1944, 1946) and the terminology of idiosomal chaetotaxy follows Kethley (1990). All measurements are given in micrometers ( $\mu\text{m}$ ).

## LIST OF ABBREVIATIONS

### Gnathosoma

acc	accessory claw of palpal tibia
$\omega$	solenidion on palptarsus
elcp	supracoxal setae of palp
ro <sub>1</sub>	1st or internal pair of rostral setae
ro <sub>2</sub>	2nd or external pair of rostral setae
m	anterior or innermost pair of subcapitular setae
n	posterior pair of subcapitular setae

### Idiosoma

C	1st hypothesised segment of hysterosoma, revealed by a row of setae <i>c</i>
D	2nd hypothesised segment of hysterosoma, revealed by a row of setae <i>d</i>
E	3rd hypothesised segment of hysterosoma, revealed by a row of setae <i>e</i>
F	4th hypothesised segment of hysterosoma, revealed by a row of setae <i>f</i>
H	5th hypothesised segment of hysterosoma, revealed by a row of setae <i>h</i>
PS	6th hypothesised segment of hysterosoma, revealed by a row of setae <i>ps</i>
vi	internal pair of vertical setae
ve	external pair of vertical setae
vx	vertical setae (neotrichy)
pdx	prodorsal setae (neotrichy)
sci	internal pair of scapular setae
sce	external pair of scapular setae
pob	postocular body
c <sub>1</sub>	innermost (1st) pair of setae in 1st series or row on hysterosoma
c <sub>2</sub>	2nd pair of setae in 1st series or row on hysterosoma
d <sub>1</sub>	innermost (1st) pair of setae in 2nd series or row on hysterosoma
d <sub>2</sub>	2nd pair of setae in 2nd series or row on hysterosoma
e <sub>1</sub>	innermost (1st) pair of setae in 3rd series or row on hysterosoma
e <sub>2</sub>	2nd pair of setae in 3rd series or row on hysterosoma
f <sub>1</sub>	innermost (1st) pair of setae in 4th series or row on hysterosoma

f <sub>2</sub>	2nd pair of setae in 4th series or row on hysterosoma
h <sub>1</sub>	innermost (1st) pair of setae in 5th series or row on hysterosoma
h <sub>2</sub>	2nd pair of setae in 5th series or row on hysterosoma
h <sub>3</sub>	3rd pair of setae in 5th series or row on hysterosoma
ia	anterior pair of cupules (lyrifissures) on hysterosoma
im	middle pair of cupules (lyrifissures) on hysterosoma
ip	posterior pair of cupules (lyrifissures) on hysterosoma
ih	caudal pair of cupules (lyrifissures) on hysterosoma
1a	innermost (1st) pair of setae associated with bases of legs I
1b	2nd pair of setae associated with bases of legs I
1c	3rd pair of setae associated with bases of legs I
2b	2nd pair of setae associated with bases of legs II
2c	3rd pair of setae associated with bases of legs II
3a	innermost (1st) pair of setae associated with bases of legs III
3b	2nd pair of setae associated with bases of legs III
3c	3rd pair of setae associated with bases of legs III
4a	innermost (1st) pair of setae associated with bases of legs IV
4b	2nd pair of setae associated with bases of legs IV
4c	3rd pair of setae associated with bases of legs IV
ag <sub>1</sub>	anterior (1st) pair of aggenital setae
ag <sub>2</sub>	2nd pair of aggenital setae
ag <sub>3</sub>	3rd pair of aggenital setae
ag <sub>4</sub>	4th pair of aggenital setae
ag <sub>5</sub>	5th pair of aggenital setae
g <sub>1</sub>	anterior (1st) pair of genital setae
g <sub>2</sub>	2nd pair of genital setae
g <sub>3</sub>	3rd pair of aggenital setae
ps <sub>1</sub>	1st pair of pseudanal setae
ps <sub>2</sub>	2nd pair of pseudanal setae
ps <sub>3</sub>	3rd pair of pseudanal setae

### Legs

I $\omega$	solenidion on tarsus I
I $\omega$ <sub>1</sub>	anterior (1st) solenidion on tarsus I in male
I $\omega$ <sub>2</sub>	posterior (2nd) solenidion on tarsus I in male
I $\omega$ p	proximal solenidion on tarsus I in female
I $\phi$	solenidion on tibia I
I $\phi$ '	anteriorly located solenidion on tibia I
I $\phi$ "	posteriorly located solenidion on tibia I
I $\phi$ p	proximal solenidion on tibia I
I $\kappa$	sensillum on genu I

dFI	dorsalmost seta on femur I
dGI	dorsalmost seta on genu I
elcp	supracoxal setae of leg I
II $\omega$	solenidion on tarsus II
II $\omega$ <sub>1</sub>	anterior (1st) solenidion on tarsus II in male
II $\omega$ <sub>2</sub>	posterior (2nd) solenidion on tarsus II in male
II $\phi$	solenidion on tibia II
II $\phi$ '	anteriorly located solenidion on tibia II
II $\phi$ ''	posteriorly located solenidion on tibia II
II $\phi$ p	proximal solenidion on tibia II
II $\kappa$	sensillum on genu II
III $\omega$	solenidion on tarsus III
III $\omega$ <sub>1</sub>	anterior (1st) solenidion on tarsus III in male
III $\omega$ <sub>2</sub>	posterior (2nd) solenidion on tarsus III in male
III $\phi$ p	proximal solenidion on tibia III
IV $\omega$	solenidion on tarsus IV
IV $\omega$ <sub>1</sub>	anterior (1st) solenidion on tarsus IV in male
IV $\omega$ <sub>2</sub>	posterior (2nd) solenidion on tarsus IV in male
IV $\phi$ p	proximal solenidion on tibia IV

#### Abbreviations for museums and collections

BMNH	The Natural History Museum, London, U.K.
ISZA	Istituto Sperimentale per la Zoologia Agraria, Firenze, Italia.
MONZ	Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand.
NZAC	New Zealand Arthropod Collection, Landcare Research, Auckland, New Zealand
USNM	National Museum of Natural History, Smithsonian Institution, Washington DC, USA.
ZMH	Zoologischen Museum, Hamburg, Germany.

## Superfamily Raphignathoidea Grandjean

Raphignathoidea Grandjean, 1944: 104.

**Diagnosis. Adult female.** Chelicerae basally fused or separate; peritreme present or absent; palptibial claw prominent, reduced, or absent, palptarsus commonly with 4 eupathidia, eupathidia separated or basally fused, counts of setae (excluding solenidia and eupathidia) from palpcoxa to palptarsus: *1elcp*, 0, 1–3, 1–2, 3 + 0–1 claw, 1–4; subcapitulum with 2 pairs of rostral setae and 1–2 pairs of subcapitular setae. Propodosoma commonly with 2 series of setae and dorsal hysterosoma with 5 series of setae; each series often with 2 pairs of setae; eyes and postocular bodies (*pob*) present or absent. Coxae II and III often separate; ventral opisthosoma with 1–5 pairs of aggenital setae; genital and anal openings longitudinal, genital folds present, genital valves with 1–3 pairs of setae and anal valves with 3 pairs of pseudanal setae (rarely with 1–2 pairs). Tarsal claws present, sometimes absent, rarely with tenent hairs; empodium with tenent hairs; counts of solenidia on genua I–III: 1, 0–1, 0; on tibiae I–III: 0–3, 0–2, 0–1; on tarsi I–III: 1–2, 1–2, 0–1; counts of setae on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 1–2 + *1elcp*, 0–2, 1–2, 1–2; trochanters 0–1, 0–1, 0–2, 0–1; femora 2–6, 1–6, 1–4, 1–4; genua 1–5, 0–5, 0–4, 0–4; tibiae 3–9, 2–8, 2–8, 2–7; tarsi 7–23, 6–21, 5–13, 1–13.

**Adult male.** Similar to adult female but: first and second pseudanal setae often reduced; genital and anal openings fused; having an aedeagus; solenidia  $\omega$  or  $\omega_1$  on legs often enlarged.

**Tritonymph.** Only known in Raphignathidae. Similar to adult but without genital folds in female or aedeagus in male.

**Deutonymph.** Similar to adult but without genital folds and setae in both sexes.

**Protonymph.** With 1 pair of subcapitular setae; ventral setae *4a* and genital setae absent; with fewer setae in aggenital area and on segments of legs.

**Larva.** Subcapitular setae, ventral setae *4a*, genital and aggenital setae absent; without leg IV; with fewer setae on segments of palps and legs.

### Key to families of Raphignathoidea

- 1 Leg tarsal claws (if present) nude; palptibial claw (if present) without a ventral tooth (Fig. 2 B–K) ..... 2
- Leg tarsal claws with tenent hairs; palptibial claw with a ventral tooth (Fig. 2 A) ..... **Barbutiidae** Robaux
- 2 Peritremes present on chelicerae (Fig. 1 B–C, I–K) or between chelicerae and prodorsum (Fig. 1 D); both female and male with same number of solenidia on tarsi I–II; leg empodial axis directly producing 2 rows of tenent hairs (Fig. 12 G) ..... 3
- Peritremes absent (Fig. 1 E–H); males with an additional solenidion on tarsi I and II (Fig. 22 A–B); leg empodial axis bearing 1–3 shafts, each of them producing 1 pair of tenent hairs (Fig. 30 E), sometimes empodial axis reduced and directly bearing 2 bunches of long tenent hairs ..... 8
- 3 Dorsum with at least 14 pairs of setae in adult ( $d_2$  and  $f_2$  present) (Fig. 4 I–K); tarsi I without setal complex (similar to duplex setae in Tetranychidae) in larva .. 4
- Dorsum with 11–12 pairs of setae in adult ( $d_2$  and  $f_2$  absent) (Fig. 4 B–D); tarsi I with setal complex in larva ..... 6
- 4 Legs not stilt-like; tibiae and genua subequal; most dorsal idiosomal setae in marginal area whip-like; genital valves with 3 pairs of genital setae (Fig. 5 I–J); palptarsus with 3–4 setae (excluding solenidion and eupathidia) (Fig. 2 I–J) ..... 5
- Legs stilt-like; tibiae at least 3 times length of genua (Fig. 7 A–D); dorsal idiosomal setae in marginal area not whip-like (Fig. 6 A); genital valves with 1 pair of genital setae (Fig. 5 K); palptarsus with 1–2 setae (Fig. 2 K) ..... (p. 22)... **Camerobiidae** Southcott
- 5 Prodorsal and dorsal hysterosomal shields separate; palptibial claw present (Fig. 2 J); palptarsi mound-like, clearly shorter than palptibiae ..... **Dasythyreidae** Walter & Gerson
- Prodorsal and dorsal hysterosomal shields fused; palptibial claw absent (Fig. 2 I); palptarsi subequal to palptibiae ..... **Xenocaligonellidae** Gonzalez
- 6 Gnathosoma not retractable (Fig. 1 B, D); chelicerae fused to the level of bases of stylets (Fig. 1 B, D); neither dorsal nor ventral idiosoma covered by a single shield; prodorsum without a hood-like projection (Fig. 33 A) ..... 7
- Gnathosoma retractable (Fig. 1 C); only the bottom of chelicerae fused (Fig. 1 C); dorsal and ventral idiosoma each covered by a single shield; prodorsum forming a hood-like projection (Fig. 13 A–B) ..... (p. 25)... **Cryptognathidae** Oudemans
- 7 Peritremes situated on chelicerae (Fig. 1 B); coxae II and III separate (Fig. 5 B) ..... **Caligonellidae** Grandjean
- Peritremes situated between chelicerae and prodorsum (Fig. 1 D); coxae II and III contiguous (Fig. 5 D) ..... (p. 33)... **Raphignathidae** Kramer
- 8 Cheliceral bases completely fused (Fig. 1 G–H); palps prominently elongate, palptibial claw small or vestigial, no more than 1/3 length of palptarsus (Fig. 2 G–H) . ..... 10

- Cheliceral bases separate (Fig. 1 E), rarely fused or conjunct (Fig. 1 F); palps not elongate, palptibial claw developed, at least 1/3 length of palptarsus (Fig. 2 E–F) ..... 9
- 9** Prodorsum with a transversal groove leading internally to 1 pair of sacs (female) or tubes (male); suranal and aggenital shields fused ..... **Homocaligidae** Wood\*
- Prodorsum without transversal groove, sacs or tubes; suranal and aggenital shields separate (Fig. 43 A–B) . ..... (p. 38)... **Stigmaeidae** Oudemans
- 10** Palptarsi elongate, longer than palptibiae (Fig. 2 H); leg empodial axis minute, peg-like, bearing 2 bunches of long tenent hairs ..... **Eupalopsellidae** Willmann
- Palptarsi reduced, less than 1/4 length of palptibiae (Fig. 2 G); leg empodial axis prominent, bearing 3 shafts and each of them producing 1 pair of tenent hairs (Fig. 30 E) ... (p. 29)... **Mecognathidae** Gerson and Walter

\* Members of the Homocaligidae Wood, 1969 share characters with some genera of the Stigmaeidae, such as conjunct chelicerae and a similar chaetotaxy of the palps and legs to that in *Caligohomus* Habeeb, 1966, *Cheyllostigmaeus* Willmann, 1951a, *Postumius* Kuznetsov, 1977, and *Villersiella* Willmann, 1953. They are more similar to species of *Caligohomus* Habeeb in having a single dorsal shield anterior to the suranal shield. The differences between them are that the Homocaligidae have a transverse groove leading internally to 1 pair of sacs (female) or tubes (male) and fused suranal and aggenital shields. These differences are not so distinct compared to those between some genera among the family Stigmaeidae. The systematic position of Homocaligidae is doubtful and further studies on comparing different life stages are needed.

### Family Camerobiidae Southcott

Camerobiidae Southcott, 1957: 311. Type genus: *Camerobia* Southcott, 1957, by original designation.

**Diagnosis. Female.** Idiosoma nearly round in dorsoventral view. Gnathosoma often covered by prodorsum; chelicerae fused to form a stylophore, stumpy; with 1–4 pairs of simple or complex peritremes situated on central or marginal area of stylophore; palps stout, not elongate, tibial claw sword-like, longer than palptarsus; palptarsus with 1 solenidion and 1–2 independent eupathidia, counts of setae (excluding solenidia and eupathidia) from palpcoxa to palptarsus: 1 *elcp*, 0, 2, 1, 3 + 1 claw, 1–2; subcapitulum not elongate, with 1 pair of subcapitular setae. Prodorsum with 2 pairs, rarely 3 pairs (neotrichy) of vertical setae;

with 2 pairs of scapular setae; *pdx* (neotrichy) usually present; eyes present; *pob* present. Dorsal hysterosoma with 5 series of setae: *c*, *d*, *e*, *f*, and *h* (not including pseudanal setae which are associated with anal opening); *c*-series with 2 pairs of setae; *d*-series with 2 pairs of setae, rarely 3 pairs (neotrichy); *e*-series with 2 pairs, rarely 3 pairs of setae (neotrichy); *f*-series with 2 pairs of setae; *h*-series with 2 pairs of setae. Coxae II and III narrowly separate; ventral setae *4a* present; ventral opisthosoma with 1 pair of aggenital setae; genital and anal valves contiguous, with 1 pair of genital setae and 3 pairs, rarely 2 pairs, of pseudanal setae. Leg tarsal claws present, nude; empodial axis without shafts, directly producing 2 rows of tenent hairs; tarsal stalk prominent; counts of solenidia on genua I–IV: 1, 1, 0, 0; on tibiae I–IV: 1, 1, 1, 0–1; on tarsi I–IV: 1, 1, 0 (rarely 1), 0; counts of setae on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 *elcp*, 1, 2, 2; trochanters 0–1, 1, 1, 1; femora 3–5, 2–5, 1–4, 1–3; genua 1–2, 1–2, 1–2, 1–2; tibiae 6–9, 6–8, 6–8, 6–7; tarsi 7–10, 7–10, 5–8, 5–8.

**Male.** Hysterosoma somewhat tapered; genital and anal opening fused, with 4 pairs of setae; having an aedeagus; having same number of solenidia on tarsi I–IV as female, but enlarged.

**Deutonymph.** Similar to adults but setae on genua often longer and thinner; without aedeagus in male.

**Protonymph.** Ventral setae *4a*, aggenital and genital setae absent; with fewer setae on segments of legs than deutonymphs and adults.

**Larva.** Without subcapitular setae; ventral setae *4a*, genital and aggenital setae absent; without leg IV; with fewer setae on segments of legs than protonymphs; setal complex (similar to duplex setae in Tetranychidae) on leg I absent (Fig. 10 A).

Only one genus, *Neophyllobius* was known from New Zealand. Another genus, *Tycherobius*, is firstly recorded in New Zealand in this paper.

### Key to stages of Camerobiidae

- 1 With 4 pairs of legs; coxae II and III each with 1–2 setae; with 1 pair of subcapitular setae (Fig. 6 E) ... 2
- With 3 pairs of legs; coxae II and III without setae; without subcapitular setae (Fig. 9 E) ..... **larva**
- 2 Ventral setae *4a* present; having 1 pair of aggenital setae (Fig. 6 B, H); coxa IV with 2 setae (Fig. 6 B) . 3
- Ventral setae *4a* and aggenital setae absent (Fig. 8 B–C); coxa IV without setae (Fig. 8 B) ..... **protonymph**
- 3 Genital folds present; setae on genua often shorter and thicker; with an aedeagus in male ..... **(adult)** ... 4

- Genital folds absent; setae on genua often longer and thinner as in protonymph; without aedeagus in male ..... **deutonymph\***
- 4 Without aedeagus; solenidia on tarsi I–II small, tarsi III–IV without solenidia (Fig. 7 G–H) ..... **female**
- With an aedeagus; tarsi I–IV each with an enlarged solenidion ..... **male**

\*: So far no distinctive characters are known for separating deutonymphs from adult females.

### Key to genera of Camerobiidae (adults)

- 1 Solenidion ( $\omega$ ) on distal halves of tarsi I and II ..... 2
  - Solenidion ( $\omega$ ) on basal halves of tarsi I and II (Fig. 7 E–F) ..... 4
- 2 Trochanter I with a seta; tibiae I–IV with 8 + 1 $\phi$ , 7 + 1 $\phi$ , 7 + 1 $\phi$ , 7 + 1 $\phi$  ..... 3
  - Trochanter I without seta; tibiae I–IV with 6–7 + 1 $\phi$ , 6 + 1 $\phi$ , 6 + 1 $\phi$ , 6 + 1 $\phi$  ..... **Camerobia** Southcott
- 3 Stylophore with 4 pairs of peritremes; dorsum with 15 pairs of setae;  $vi$ ,  $c_p$ ,  $d_i$  and  $e_i$  long and serrated, others stalked and round to club-shaped distally; tarsi I–IV with 7 + 1 $\omega$ , 7 + 1 $\omega$ , 5, 5 .....
  - ..... **Bisetulobius** du Toit, Theron & Ueckermann
  - Stylophore with 2 pairs of peritremes; dorsum with 16 pairs of setae ( $vx$  present); dorsal idiosomal setae lanceolate or bud-like; tarsi I–IV with 8 + 1 $\omega$ , 8 + 1 $\omega$ , 6, 6 ..... **Decaphyllobius** Bolland
- 4 Tibiae I–IV with 9 + 1 $\omega$ , 8 + 1 $\omega$ , 7–8 + 1 $\omega$ , 7 + 1 $\omega$  5
  - Tibiae I–IV with 8 + 1 $\omega$ , 7 + 1 $\omega$ , 6 + 1 $\omega$ , 6 + 1 $\omega$  ..... **Tillandsobius** Bolland
- 5 Tibiae III with 7 + 1 $\omega$ ; 2 medio-ventral setae on tarsi I and II not in a longitudinal line (Fig. 12 E–F) .....
  - ..... (p. 25) ... **Tycherobius** Bolland
  - Tibiae III with 8 + 1 $\omega$ ; 2 medio-ventral setae on tarsi I and II in a longitudinal line (Fig. 7 E–F) .....
    - ..... (p. 23) ... **Neophyllobius** Berlese

### Genus *Neophyllobius* Berlese

*Neophyllobius* Berlese, 1886: 20. Type species: *Neophyllobius elegans* Berlese, 1886, by original designation.

**Diagnosis. Female.** Stylophore with 1 pair of peritremes. Counts of setae and solenidia from palptrochanter to palptarsus: 0, 2, 1, 3 + 1 claw, 2 setae + 1–2 eupathidia + 1 solenidion. Idiosoma with 14 or 15 (*pdx* present) pairs of lanceolate setae. Genital valves with 1 pair of setae, anal valves with 3 pairs of pseudanal setae. Solenidion  $\omega$

on basal halves of tarsi I and II. Tarsi I–II each with 2 medio-ventral setae in a longitudinal line and III–IV each with 1–2 medio-ventral setae. Counts of setae and solenidia of legs I–IV: coxae (excluding *1a*, *3a*, and *4a*) 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 3–4, 2–4, 1–3, 1–3; genua 1 + 1 $\kappa$ , 1 + 1 $\kappa$ , 1, 1; tibiae 9 + 1 $\phi$ , 8 + 1 $\phi$ , 8 + 1 $\phi$ , 7 + 1 $\phi$ ; tarsi 9–10 + 1 $\omega$ , 9–10 + 1 $\omega$ , 7–8 + 0–1 $\omega$ , 7–8.

**Male.** Aedeagus present; tibia I with an additional terminal solenidion; tarsi I–IV each with an enlarged solenidion. Only one species is known from New Zealand.

### *Neophyllobius sturmerwoodi* Bolland

Fig. 6–10

*Neophyllobius sturmerwoodi* Bolland, 1991: 157.

**Diagnosis. Female.** Palptarsus with 2 setae, 2 eupathidia, and 1 solenidion. Idiosoma with 15 pairs of setae (*pdx* present). Ratio *1b*: *1c* = 0.7. Counts of setae and solenidia on femora I–IV: 4, 3, 2, 2 and on tarsi I–IV: 10 + 1 $\omega$ , 10 + 1 $\omega$ , 8, 8.

**Description. Female** (Fig. 6–7, *n* = 2)

**Gnathosoma.** Stylophore stout, 73 (72–73), with 1 pair of peritremes; movable digits 33 (32–33), less than 1/2 length of stylophore. Palp 60 (60–63); palptarsus with 2 setae, 2 eupathidia, and 1 solenidion. Subcapitular setae *m* 36 (36–40), *m–m* = 27 (25–27).

**Idiosoma.** Nearly round in dorsoventral view, 356 (356–365) long, 267 (267–296) wide. Eyes 9 (9–10) in diameter; *pob* 11 (11–15) in diameter. Dorsal idiosomal setae lanceolate, with minute denticles, lengths: *vi* 69 (69–72), *ve* 58 (58–59), *sci* 68 (65–68), *see* 48 (48–64), *pdx* 65 (65–72), *c<sub>1</sub>* 70 (70–72), *c<sub>2</sub>* 70 (70–79), *d<sub>1</sub>* 69 (69–77), *d<sub>2</sub>* 48 (48–57), *e<sub>1</sub>* 65 (65–81), *e<sub>2</sub>* 55 (55–64), *f<sub>1</sub>* 60 (60–65), *f<sub>2</sub>* 46 (46–48), *h<sub>1</sub>* 36 (36–38), *h<sub>2</sub>* 36; distances: *vi–vi* 70 (69–70), *vi–ve* 25 (25–31), *vi–pdx* 54 (54–64), *ve–pdx* 52 (52–69), *pdx–pdx* 6 (6–8), *ve–sci* 11 (11–12), *c<sub>1</sub>–c<sub>1</sub>* 12 (12–14), *c<sub>1</sub>–d<sub>1</sub>* 62 (57–62), *d<sub>1</sub>–d<sub>1</sub>* 12 (12–15), *d<sub>1</sub>–e<sub>1</sub>* 48 (48–50), *e<sub>1</sub>–e<sub>1</sub>* 12 (11–12), *e<sub>1</sub>–f<sub>1</sub>* 60 (60–68), *f<sub>1</sub>–f<sub>1</sub>* 12, *f<sub>1</sub>–h<sub>1</sub>* 60 (60–68), *h<sub>1</sub>–h<sub>1</sub>* 15 (13–15), *h<sub>1</sub>–h<sub>2</sub>* 29 (29–30). Ventral setae *3a* longer than *1a* and *4a*, *1a* 40 (40–41), *3a* 53 (50–53), *4a* 43 (40–43). Setae on coxae I unequal, *1b* = 33 (33–36), *1c* = 47 (41–47); ratio *1b*: *1c* = 0.7. Aggenital setae *ag* = 22, genital setae *g* = 17; pseudanal setae subequal, *ps<sub>1</sub>* 18 (18–21), *ps<sub>2</sub>* 21, *ps<sub>3</sub>* 18 (18–20).

**Legs.** Length: leg I 429 (429–438), leg II 354 (354–378), leg III 385 (385–416), leg IV 433 (433–445). Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 4, 3, 2, 2; genua 1 + 1 $\kappa$ , 1 + 1 $\kappa$ , 1, 1; tibiae 9 + 1 $\phi$ , 8 + 1 $\phi$ , 8 + 1 $\phi$ , 7 + 1 $\phi$ ; tarsi 10 + 1 $\omega$ , 10 + 1 $\omega$ , 8, 8. Lengths of solenidia: I $\phi$  16 (16–20), II $\phi$  14, III $\phi$  13 (13–16), IV $\phi$  13

(13–16), I $\omega$  9, II $\omega$  6 (6–7); lengths of setae on genua I–IV: 75 (75–87), 68 (68–72), 77 (77–143), 185 (185–257).

#### Deutonymph female (n = 4)

**Gnathosoma.** Stylophore stout, 63 (63–74), with 1 pair of peritremes; movable digits 32 (31–34), about 1/2 length of stylophore. Palp 67 (62–67); palpfemur with 2 setae; palptarsus with 2 setae, 2 eupathidia, and 1 solenidion. Subcapitular setae *m* 45 (38–45), *m-m* = 26 (26–28).

**Idiosoma.** Nearly round, 428 (368–428) long, 344 (292–344) wide. Eyes 10 (9–10) in diameter; *pob* 13 (12–14) in diameter. Dorsal idiosomal setae lanceolate, with minute denticles, lengths: *vi* 72 (72–79), *ve* 65 (63–67), *sci* 72 (65–81), *sce* 65 (51–71), *pdx* 77 (60–77), *c*<sub>1</sub> 73 (67–81), *c*<sub>2</sub> 89 (75–89), *d*<sub>1</sub> 81 (62–81), *d*<sub>2</sub> 63 (49–70), *e*<sub>1</sub> 84 (77–89), *e*<sub>2</sub> 65 (60–69), *f*<sub>1</sub> 74 (55–77), *f*<sub>2</sub> 47 (46–62), *h*<sub>1</sub> 38 (38–50), *h*<sub>2</sub> 37 (37–45); distances: *vi-vi* 65 (65–74), *vi-ve* 28 (25–31), *ve-pdx* 72 (65–73), *ve-sci* 12 (12–14), *c*<sub>1-c</sub><sub>1</sub> 11 (11–14), *c*<sub>1-d</sub><sub>1</sub> 72 (60–74), *d*<sub>1-d</sub><sub>1</sub> 13 (13–19), *d*<sub>1-e</sub><sub>1</sub> 62 (53–62), *e*<sub>1-e</sub><sub>1</sub> 14 (12–14), *e*<sub>1-f</sub><sub>1</sub> 72 (55–72), *f*<sub>1-f</sub><sub>1</sub> 14 (12–14), *f*<sub>1-h</sub><sub>1</sub> 79 (56–79), *h*<sub>1-h</sub><sub>1</sub> 13 (12–14), *h*<sub>1-h</sub><sub>2</sub> 33 (26–33). Ventral setae *3a* longer than *1a* and *4a*, *1a* 44 (41–49), *3a* 53 (50–55), *4a* 40 (38–40). Setae on coxae I unequal, *1b* = 30 (30–38), *1c* = 46 (43–51); ratio *1b:1c* = 0.7. Aggenital setae = 22 (20–24), genital setae = 16 (15–18); pseudanal setae subequal, *ps*<sub>3</sub> 17 (16–21), *ps*<sub>2</sub> 17 (17–22), *ps*<sub>1</sub> 17 (17–22).

**Legs.** Length: leg I 460 (445–477), leg II 409 (397–419), leg III 437 (421–450), leg IV 480 (469–485). Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 4, 3, 2, 2; genua 1 + 1 $\kappa$ , 1 + 1 $\kappa$ , 1, 1; tibiae 9 + 1 $\phi$ , 8 + 1 $\phi$ , 8 + 1 $\phi$ , 7 +  $\phi$ ; tarsi 10 + 1 $\omega$ , 10 + 1 $\omega$ , 8, 8. Lengths of solenidia: I $\phi$  18 (16–20), II $\phi$  13 (13–15), III $\phi$  13 (13–14), IV $\phi$  13 (12–13), I $\omega$  9, II $\omega$  7 (7–8); lengths of setae on genua I–IV: 151 (151–192), 79 (79–215), 197 (197–240), 264 (231–273).

#### Protonymph (Fig. 8, n = 2)

**Gnathosoma.** Stylophore stout, 59, with 1 pair of peritremes; movable digits 27 (27–28), about 1/2 length of stylophore. Palp 45 (41–45); palpfemur with 2 setae; palptarsus with 2 setae, 2 eupathidia, and 1 solenidion. Subcapitular setae *m* 26 (25–26), *m-m* = 24 (24–25).

**Idiosoma.** Nearly round, 212 (212–277) long, 189 (189–231) wide. Eyes 7 (7–8) in diameter; *pob* 10 in diameter. Dorsal idiosomal setae lanceolate, with minute denticles, lengths: *vi* 36 (36–50), *ve* 48 (48–53), *sci* 58 (56–58), *sce* 57 (55–57), *pdx* 52 (47–52), *c*<sub>1</sub> 60 (60–63), *c*<sub>2</sub> 51 (51–53), *d*<sub>1</sub> 54 (54–60), *d*<sub>2</sub> 43 (37–43), *e*<sub>1</sub> 55, *e*<sub>2</sub> 42 (42–48), *f*<sub>1</sub> 47 (47–54), *f*<sub>2</sub> 35 (35–38), *h*<sub>1</sub> 28 (28–33), *h*<sub>2</sub> 24 (24–30); distances: *vi-vi* 48 (48–54), *vi-ve* 19 (19–20), *ve-pdx* 44 (44–48), *ve-sci* 10, *c*<sub>1-c</sub><sub>1</sub> 12, *c*<sub>1-d</sub><sub>1</sub> 47 (47–63), *d*<sub>1-d</sub><sub>1</sub> 15, *d*<sub>1-e</sub><sub>1</sub> 34 (34–37), *e*<sub>1-e</sub><sub>1</sub> 10 (10–11), *e*<sub>1-f</sub><sub>1</sub> 30 (30–55), *f*<sub>1-f</sub><sub>1</sub>

10 (10–11), *f*<sub>1-h</sub><sub>1</sub> 31 (31–42), *h*<sub>1-h</sub><sub>1</sub> 17 (15–17), *h*<sub>1-h</sub><sub>2</sub> 17 (17–19). Ventral setae *3a* longer than *1a* and *4a*, *1a* 32, *3a* 35 (35–50), *4a* 33 (32–33). Setae on coxae I unequal, *1b* = 17 (17–22/24), *1c* = 25 (25–32/28); ratio *1b:1c* = 0.7. Aggenital setae and genital setae absent; pseudanal setae subequal, *ps*<sub>3</sub> 12, *ps*<sub>2</sub> 13 (12–13), *ps*<sub>1</sub> 12.

**Legs.** Length: leg I 32 (325–342), leg II 261 (261–277), leg III 291 (291–301), leg IV 273 (273–289). Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a*, and *4a*) 2 + 1 *elcp*, 1, 2, 0; trochanters 1, 1, 1, 0; femora 3, 2, 1, 1; genua 1 + 1 $\kappa$ , 1 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$ , 5 + 1 $\phi$ , 4 + 1 $\phi$ , 3 +  $\phi$ ; tarsi 9 + 1 $\omega$ , 9 + 1 $\omega$ , 7, 5. Lengths of solenidia: I $\phi$  12 (12–14), II $\phi$  11, III $\phi$  10, IV $\phi$  10, I $\omega$  5, II $\omega$  4; lengths of setae on genua I–IV: 135 (135–155), 148 (130–148), 167 (150–167), 185 (185–225).

#### Larva (Fig. 9–10, n = 1)

**Gnathosoma.** Stylophore stout, 46, with 1 pair of peritremes; movable digits 21, about 1/2 length of stylophore. Palp 41 (31 in the other side); palpfemur with 1 seta; palptarsus with 1 seta, 2 eupathidia, and 1 solenidion. Subcapitular setae absent.

**Idiosoma.** Nearly round in shape, 222 long, 207 wide. Eyes 7 in diameter; *pob* 7 in diameter. Dorsal idiosomal setae lanceolate, with minute denticles; *pdx* absent; lengths: *vi* 37, *ve* 49, *sci* 65, *sce* 54, *c*<sub>1</sub> 57, *c*<sub>2</sub> 53, *d*<sub>1</sub> 50, *d*<sub>2</sub> 45, *e*<sub>1</sub> 57, *e*<sub>2</sub> 42, *f*<sub>1</sub> 51, *f*<sub>2</sub> 35, *h*<sub>1</sub> 28, *h*<sub>2</sub> 14; distances: *vi-vi* 36, *vi-ve* 13, *ve-sci* 16, *c*<sub>1-c</sub><sub>1</sub> 14, *c*<sub>1-d</sub><sub>1</sub> 57, *d*<sub>1-d</sub><sub>1</sub> 15, *d*<sub>1-e</sub><sub>1</sub> 30, *e*<sub>1-e</sub><sub>1</sub> 12, *e*<sub>1-f</sub><sub>1</sub> 39, *f*<sub>1-f</sub><sub>1</sub> 11, *f*<sub>1-h</sub><sub>1</sub> 30, *h*<sub>1-h</sub><sub>1</sub> 16. Ventral setae *4a* absent, *3a* longer than *1a*, *1a* 24, *3a* 30. Setae *1c* on coxae I absent, *1b* = 18. Aggenital and genital setae absent; pseudanal setae equal in length, *ps*<sub>3</sub> = *ps*<sub>2</sub> = *ps*<sub>1</sub> = 10.

**Legs.** Length: leg I 275, leg II 237, leg III 254. Counts of setae and solenidia on legs I–III: coxae (excluding *1a* and *3a*) 1 + 1 *elcp*, 0, 0; trochanters 0, 0, 0; femora 2, 2, 1; genua 1 + 1 $\kappa$ , 1 + 1 $\kappa$ , 1; tibiae 3 + 1 $\phi$ , 3 + 1 $\phi$ , 3 + 1 $\phi$ ; tarsi 7 + 1 $\omega$ , 7 + 1 $\omega$ , 5. Lengths of solenidia: I $\phi$  7, II $\phi$  6, III $\phi$  5, I $\omega$  4, II $\omega$  3; lengths of setae on genua I–III: 200, 219, 210.

**Distribution** (N.Z., Map p. 376). New Zealand (Bolland 1991), France (Bolland 1991).

– / MC.

**Material examined.** Holotype and 8 paratypes.

**Holotype** female: NEW ZEALAND: **MC:** Christchurch, Woolston, 9 June 1960, C. F. Thiele, “Red mites ex sturmer [apple] bark with scales”, NZAC: 1/1 female [+ 1 deutonymph female, 2 protonymphs]. [168]. **Paratypes:** on same slide with holotype, NZAC: 1/1 deutonymph female, 2 protonymphs. **MC:** Christchurch, Woolston, Davis Gelatine [Factory] Orchard, 1 Jul 1960, C.F. Thiele, sturmer [apple] wood with scales, [165]. NZAC: 1/1 female, 3 deutonymph females, 1 larva.

**Habitat.** Sturmer bark (apple) with scales.



### Genus *Tycherobius* Bolland

*Tycherobius* Bolland, 1986: 205. Type species: *Neophyllobius lombardini* Summers and Schlinger, 1955, by original designation.

**Diagnosis. Female.** Stylophore commonly with 2 pairs of peritremes. Counts of setae and solenidia from palptrochanter to palptarsus: 0, 2, 1, 3 + 1 claw, 1–2 setae + 1 eupathidium + 1 solenidion. Idiosoma with 14–15 pairs (a single or 1 pair of *pdx* present) of lanceolate, palmate, or peg-like setae. Genital valves with 1 pair of setae, anal valves with 3 pairs of pseudanal setae. Solenidia  $\omega$  on tarsi I–II situated on basal halves. Tarsi I–II each with 2 medio-ventral setae and III–IV each with 1 medio-ventral seta. Counts of setae and solenidia of legs I–IV: coxae (excluding *1a*, *3a*, and *4a*) 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 3–4, 3, 2–3, 2; genua 1 + 1  $\kappa$ , 1 + 1  $\kappa$ , 1, 1; tibiae 9 + 1  $\phi$ , 8 + 1  $\phi$ , 7 + 1  $\phi$ , 7 + 1  $\phi$ ; tarsi 10 + 1  $\omega$ , 8–10 + 1  $\omega$ , 7, 7.

**Male.** Aedeagus present; tibia I with an additional terminal solenidion; tarsi I–IV each with an enlarged solenidion. A new species is described in this paper.

### *Tycherobius aotearoa* sp. n.

Fig. 11–12

**Diagnosis. Female.** Palptarsus with 2 setae, 1 eupathidium, and 1 solenidion. Idiosoma with 15 pairs of setae (1 pair of *pdx* present); dorsal idiosomal setae club-like, *d<sub>1</sub>*, *e<sub>1</sub>*, and *f<sub>1</sub>* longer than others. Counts of setae and solenidia on femora I–IV: 4, 3, 3, 2 and on tarsi I–IV: 10 + 1  $\omega$ , 8 + 1  $\omega$ , 8, 8.

**Description. Female** (Fig. 11–12, n = 1)

**Gnathosoma.** Stylophore stout, 65, with 2 pairs of peritremes; movable digits 27, about 2/5 length of stylophore. Palp 50; palptarsus with 2 setae, 1 eupathidium, and 1 solenidion. Subcapitular setae *m* 20, *m*–*m* = 24.

**Idiosoma.** Nearly round in dorsoventral view, 322 long, 307 wide. Eyes 10 in diameter; *pob* 12 in diameter. Dorsal idiosomal setae club-like, with minute denticles, lengths: *vi* 49, *ve* 39, *sci* 38, *sce* 36, *pdx* 41, *c<sub>1</sub>* 45, *c<sub>2</sub>* 55, *d<sub>1</sub>* 65, *d<sub>2</sub>* 40, *e<sub>1</sub>* 65, *e<sub>2</sub>* 45, *f<sub>1</sub>* 58, *f<sub>2</sub>* 35, *h<sub>1</sub>* 38, *h<sub>2</sub>* 28; distances: *vi*–*vi* 52, *vi*–*ve* 30, *vi*–*pdx* 45, *ve*–*sci* 35, *sci*–*sce* 42, *c<sub>1</sub>*–*c<sub>2</sub>* 22, *c<sub>1</sub>*–*d<sub>1</sub>* 67, *d<sub>1</sub>*–*d<sub>2</sub>* 22, *d<sub>1</sub>*–*e<sub>1</sub>* 55, *e<sub>1</sub>*–*e<sub>2</sub>* 27, *e<sub>2</sub>*–*f<sub>1</sub>* 51, *f<sub>1</sub>*–*f<sub>2</sub>* 29, *f<sub>1</sub>*–*h<sub>1</sub>* 42, *h<sub>1</sub>*–*h<sub>2</sub>* 30, *h<sub>1</sub>*–*h<sub>2</sub>* 25. Ventral setae *3a* longer than *1a* and *4a*, *1a* 21, *3a* 25, *4a* 19. Setae on coxae I unequal, *1b* = 28, *1c* = 36, ratio *1b*: *1c* = 0.8. Aggenital setae *ag* = 18, genital setae *g* = 16; pseudanal setae subequal, *ps<sub>3</sub>* 15, *ps<sub>2</sub>* 16, *ps<sub>1</sub>* 15.

**Legs.** Length: leg I 583, leg II 481, leg III 562, leg IV 616. Counts of setae and solenidia on legs I–IV: coxae (exclud-

ing *1a*, *3a* and *4a*) 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 4, 3, 3, 2; genua 1 + 1  $\kappa$ , 1 + 1  $\kappa$ , 1, 1; tibiae 9 + 1  $\phi$ , 8 + 1  $\phi$ , 8 + 1  $\phi$ , 7 + 1  $\phi$ ; tarsi 10 + 1  $\omega$ , 8 + 1  $\omega$ , 7, 7. Lengths of solenidia: I  $\phi$  11, II  $\phi$  8, III  $\phi$  7, IV  $\phi$  7, I  $\omega$  5, II  $\omega$  5; setae on genua as in dorsum, lengths I–IV: 37, 30, 37, 41.

**Distribution** (Map p. 376). Known only from Nelson. – / NN.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: NN: Nelson, Boulder Bank, 23 March 1971, collector unknown, stone beneath *Muehlenbeckia* sp., NZAC: 1/1 female.

**Habitat.** Stone beneath *Muehlenbeckia* sp.

**Etymology.** The species name is derived from the Maori word *aotearoa*, meaning New Zealand, referring to the locality where the holotype was collected.

**Remarks.** The female of *T. aotearoa* sp. n. resembles that of *T. rhytis* Chaudhri, Akbar & Rasool, 1974 in having 1 pair of *pdx*, but it can be readily separated from the latter in that dorsal idiosomal setae are club-like and femur II bears 3 setae.

### Family Cryptognathidae Oudemans

Cryptognathidae Oudemans, 1902: 59. Type genus: *Cryptognathus* Kramer, 1879.

**Diagnosis. Female.** Idiosoma oval in dorsoventral view, strongly sclerotised; dorsal and ventral idiosoma each covered by a single shield. Gnathosoma retractable; bases of chelicerae fused, conical, or parallel extended; 1 pair of simple peritremes running along margins of chelicerae, each with 2 sections, terminal one small; palps slender, somewhat elongate, tibial claws reduced or vestigial, palptarsus with 4 independent eupathidia, counts of setae (excluding solenidia and eupathidia) from palptarsus: 1 *elcp*, 0, 3 (rarely 2), 2, 3 + 0–1 claw, 4; subcapitulum basally elongate, with 1 pair of subcapitular setae posteriorad of pharynx. Prodorsum forming a hood-like projection; with 2 pairs of vertical and 2 pairs of scapular setae; eyes present; *pob* present. Dorsal hysterosoma with 5 series of setae: *c*, *d*, *e*, *f* and *h*; *c*-series with 1 pair of setae (*c<sub>2</sub>* absent); *d*-series with 1 pair of setae; *e*-series with 2 pairs of setae; *f*-series with 1 pair of setae; *h*-series with 2 pairs of setae. Coxae II and III contiguous; ventral setae *4a* present; ventral opisthosoma with 3 pairs of aggenital setae; genital opening longitudinal, with 2–3 pairs of setae on genital valves; anal valves separated from genital valves, with 3 pairs of pseudanal setae. Leg tarsal claws present, nude; empodial axis without shafts, directly producing 2 rows of tenent hairs; tarsal stalk not prominent; counts of solenidia on genua

I–IV: 1, 0–1, 0, 0; on tibiae I–IV: 2–3, 1, 1, 0–1; on tarsi I–IV: 1–2, 1–2, 0–1, 0–1; counts of setae on legs I–IV: coxae (excluding *1a*, *3a*, and *4a*) 2 + 1*elcp*, 1, 2, 1; trochanters 1, 1–2, 1, 0–1; femora 3–4, 3, 2, 2; genua 5, 3–5, 2, 2–3; tibiae 4–5, 4–5, 3–4, 3; tarsi 15, 11–12, 9–10, 9.

**Male.** Setae  $h_2$  closer to  $f_1$  and  $h_1$ ; genital and anal openings fused; with an aedeagus; genital setae absent; having same number of tarsal solenidia as female; solenidia  $\omega$  on tarsi I–IV enlarged.

**Deutonymph.** Similar to adults but prodorsal projection small, not hood-like; without genital valves or setae; without aedeagus in male.

**Protonymph.** Ventral setae *4a* and genital setae absent; with 1 pair of aggenital setae; and with fewer setae on segments of legs than deutonymphs and adults.

**Larva.** Subcapitular setae, ventral setae *4a*, genital, and aggenital setae absent; without leg IV; with fewer setae on segments of legs than protonymphs; setal complex (similar to duplex setae in Tetranychidae) on tarsus I present.

Two genera are known from New Zealand.

#### Key to stages of Cryptognathidae

- 1 With 4 pairs of legs; coxae II and III each with 1–2 setae; with 1 pair of subcapitular setae (Fig. 15 E) . 2
  - With 3 pairs of legs; coxae II and III without setae; without subcapitular setae ..... **larva**
- 2 With 3 pairs of ventral setae and 2 pairs of aggenital setae ..... 3
  - With 2 pairs of ventral setae (*4a* absent) and 1 pair of aggenital setae ( $ag_2$  absent) ..... **protonymph**
- 3 Prodorsal projection extended, hood-like (Fig. 13 A–B); with 2–3 pairs of genital setae in female or with an aedeagus in male ..... (**adult**) 4
  - Prodorsal projection small, not hood-like; without aedeagus or genital setae ..... **deutonymph**
- 4 With genital valves and 2–3 pairs of genital setae (Fig. 13 B, 17 B); without aedeagus; solenidia on tarsi II–IV (if present) normal (Fig. 16 B–D) ..... **female**
  - Without genital valves or genital setae; with an aedeagus; solenidia on tarsi II–IV enlarged ..... **male**

#### Key to genera of Cryptognathidae (adults)

- 1 Prosternal apron crescentic (Fig. 13 B); with 3 pairs of genital setae in female (Fig. 13 B) ..... (p. 26)... **Cryptognathus** Kramer
  - Prosternal apron wedge-shaped, dimpled (Fig. 17 B); with 2 pairs of genital setae in female (Fig. 17 B) ..... (p. 28)... **Favognathus** Luxton

#### Genus *Cryptognathus* Kramer

*Cryptognathus* Kramer, 1879: 156. Type species: *Cryptognathus legena* Kramer, 1879, by original designation.

*Cryptognathus* (*Cryptognathus*) Luxton, 1973: 66. Type species: *Cryptognathus legena* Kramer, 1879, raised to genus by Luxton, 1987.

**Diagnosis. Female.** Palptibial claw minute, vestigial, or absent; counts of solenidia and setae from palptrochanter to palptarsus: 0, 3, 2, 3 + 0–1 claw, 4 + 1 $\omega$  + 4 terminal eupathidia. Prosternal apron crescentic. Genital valves with 3 pairs of setae. Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1*elcp*, 1, 2, 1; trochanters 1, 2, 1, 1; femora 3, 3, 2, 2; genua 5 + 1 $\kappa$ , 4 + 0–1 $\kappa$ , 2, 3; tibiae 4–5 + 2–3 $\phi$ , 5 + 1 $\phi$ , 3–4 + 1 $\phi$ , 3; tarsi 15 + 1 $\omega$  + 0–1 $\omega$ p, 12 + 1 $\omega$  + 0–1 $\omega$ p, 9 + 0–1 $\omega$ .

**Male.** Solenidia on tarsi II–IV enlarged.

Two species are known from New Zealand.

#### Key to species of *Cryptognathus* from New Zealand (females)

- 1 Ratio  $c_1-c_1; d_1-d_1; e_1-e_1; f_1-f_1 = 2.0: 3.0: 2.4: 1.0$ ; ventral hysterosoma without pores behind coxae IV (Fig. 13 B, Plate 1 A); tarsi III and IV without solenidium (Fig. 14 C–D) ..... (p. 26)... **C. striatus** Luxton
- Ratio  $c_1-c_1; d_1-d_1; e_1-e_1; f_1-f_1 = 1.7: 2.2: 2.0: 1.0$ ; ventral hysterosoma with pores behind coxae IV and extending to level of anterior rim of genital valves, and with a patch of pores between *3a* and *ag\_1* (Fig. 15 B, Plate 1 C); tarsi III and IV each with a solenidium (Fig. 16 C–D) ..... (p. 27)... **C. vulgaris** Luxton

#### *Cryptognathus striatus* Luxton

Fig. 13–14, Plate 1 A–B

*Cryptognathus striatus* Luxton, 1973: 71.

**Diagnosis. Female.** Palptibial claw present. Ratio  $c_1-c_1; d_1-d_1; e_1-e_1; f_1-f_1 = 2.0: 3.0: 2.4: 1.0$ . Ventral hysterosoma without pores or obvious reticulations behind *4a*. Tarsi III and IV without solenidium;  $\phi$  on tibiae IV absent; 1 $\phi''$  situated at same level of 1 $\phi'$ , about twice length of 1 $\phi'$ ; 2 $\phi$  on distal half of tibia II; 3 $\phi$  on distal half of tibia III. Counts of setae and solenidia on tibiae I–IV: 5 + 2 $\phi$ , 5 + 1 $\phi$ , 3 + 1 $\phi$ , 3, on tarsi I–IV: 15 + 1 $\omega$ , 12 + 1 $\omega$ , 9, 9.

**Description. Female** (Fig. 13–14, Plate 1 A–B, n = 3)

**Gnathosoma.** Chelicerae slender, 107 (98–107); movable digits 31 (28–31), less than 1/3 length of chelicerae. Palp 71 (71–80); palptibial claw present, small. Subcapitular setae *m* 33 (32–35), *m–m* = 21 (19–21).

**Idiosoma.** Oval in shape, 296 (296–307) long, 185 (132–185) wide. Dorsal shield finely punctate, pores extending laterally to level of *sci*; reticulations faint, confined to lateral margins, cells without pores; projection with 4–5 dimples in each longitudinal row, anterior rim smooth. Eyes 8 in diameter; *pob* 10 in diameter. Dorsal idiosomal setae smooth, ratio  $c_1-c_1:d_1-d_1:e_1-e_1:f_1-f_1=2.0:3.0:2.4:1.0$ ; lengths: *vi* 10 (10–11), *ve* 17 (17–18), *sci* 12 (12–17), *sce* 19, *c*<sub>1</sub> 17 (15–17), *d*<sub>1</sub> 19 (18–19), *e*<sub>1</sub> 20 (19–20), *e*<sub>2</sub> 22 (22–24), *f*<sub>1</sub> 24 (21–24), *h*<sub>1</sub> 23 (22–23), *h*<sub>2</sub> 22 (20–22); distances: *vi-vi* 25 (25–34), *vi-ve* 13 (12–13), *ve-ve* 29 (29–48), *ve-sci* 10 (10–12), *sci-sce* 31 (26–31), *c*<sub>1</sub>-*c*<sub>1</sub> 61 (59–61), *c*<sub>1</sub>-*d*<sub>1</sub> 41 (41–44), *d*<sub>1</sub>-*d*<sub>1</sub> 90 (89–92), *d*<sub>1</sub>-*e*<sub>1</sub> 47 (47–49), *e*<sub>1</sub>-*e*<sub>1</sub> 71 (70–71), *e*<sub>1</sub>-*e*<sub>2</sub> 19 (19–26), *e*<sub>1</sub>-*f*<sub>1</sub> 51 (51–55), *f*<sub>1</sub>-*f*<sub>1</sub> 30 (30–42), *h*<sub>1</sub>-*h*<sub>1</sub> 18 (16–18), *h*<sub>1</sub>-*h*<sub>2</sub> 25 (25–28). Coxisternal area with elongate pores at base of hood; ventral hysterosoma without pores or obvious reticulations. Ventral setae subequal, *1a* 21 (19–21), *3a* 21 (19–21), *4a* 19 (14–19). Aggenital setae *ag*<sub>1</sub> = 15, *ag*<sub>2</sub> = 15 (13–15), *ag*<sub>3</sub> = 14 (13–15). Genital setae subequal, *g*<sub>1</sub> 12 (12–13), *g*<sub>2</sub> 12 (12–14), *g*<sub>3</sub> 13 (12–13). Pseudanal setae *ps*<sub>3</sub> 12, *ps*<sub>2</sub> 12 (12–13), *ps*<sub>1</sub> 12 (11–12).

**Legs.** Length: leg I 197 (193–220), leg II 151 (145–151), leg III 150 (147–158), leg IV 171 (166–171). Segments of legs with striae and minute punctations. Tarsi III and IV without solenidion  $\omega$ ;  $\phi$  on tibiae IV absent;  $I\phi''$  situated at same level as  $I\phi'$ , about twice length of  $I\phi'$ ;  $II\phi$  on distal half of tibia II;  $III\phi$  on distal half of tibia III. Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 *elcp*, 1, 2, 1; trochanters 1, 1, 2, 1; femora 3, 3, 2, 2; genua 5 + 1  $\kappa$ , 4 + 1  $\kappa$ , 2, 3; tibiae 5 + 2  $\phi$ , 5 + 1  $\phi$ , 3 + 1  $\phi$ , 3; tarsi 15 + 1  $\omega$ , 12 + 1  $\omega$ , 9, 9. Lengths of solenidia:  $I\phi'$  9 (8–9),  $I\phi''$  16 (16–17),  $I\omega$  15 (14–15),  $II\omega$  10 (9–10).

**Distribution** (Map p. 376). New Zealand (Luxton 1973). ND / –.

**Material examined.** Holotype and 1 paratype. **Holotype** female: NEW ZEALAND: ND: Waitangi, 13 Nov 1964, G. S. Grandison, moss on logs in *Pinus* sp. plantation, NZAC: 1/1 female. **Paratype:** same collection data as holotype slide: NZAC: 1/1 female.

**Habitat.** Moss on logs in *Pinus* sp. plantation, moss on rocks.

### **Cryptognathus vulgaris** Luxton

Fig. 15–16, Plate 1 C–D

*Cryptognathus vulgaris* Luxton, 1973: 72.

**Diagnosis. Female.** Palptibial claw present. Ratio  $c_1-c_1:d_1-d_1:e_1-e_1:f_1-f_1=1.7:2.2:2.0:1.0$ . Ventral hysterosoma with pores behind coxae IV and extending to level of anterior rim of genital valves, and with a patch of pores between *3a* and *ag*<sub>1</sub>; without obvious reticulations.

Solenidion  $\omega$  on tarsi III and IV present;  $\phi$  on tibiae IV absent;  $I\phi''$  situated at same level as  $I\phi'$ , about 2.5 times length of  $\phi'$ ;  $II\phi$  on basal half of tibia II;  $III\phi$  on basal half of tibia III. Counts of setae and solenidia on tibiae I–IV: 5 + 2  $\phi$ , 5 + 1  $\phi$ , 3 + 1  $\phi$ , 3, on tarsi I–IV: 15 + 1  $\omega$ , 12 + 1  $\omega$ , 9 + 1  $\omega$ , 9 + 1  $\omega$ .

**Description. Female** (Fig. 15–16, Plate 1 C–D, n = 2)

**Gnathosoma.** Chelicerae slender, 110 (110–111); movable digits 29, less than 1/3 length of chelicerae. Palp 84 (84–85); palptibial claw present, small. Subcapitular setae *m* 31 (30–31), *m-m* = 12.

**Idiosoma.** Oval in shape, 281 (272–281) long, 167 (166–167) wide. Dorsal shield smooth, without pores; reticulations moderate, clearly displayed laterally, without pores in cells; projection with 5–6 dimples in each longitudinal row, anterior rim smooth. Eyes 8 in diameter; *pob* 10 in diameter. Dorsal idiosomal setae smooth, ratio  $c_1-c_1:d_1-d_1:e_1-e_1:f_1-f_1=1.7:2.2:2.0:1.0$ ; lengths: *vi* 10, *ve* 16, *sci* 16 (13–16), *sce* 20 (20–22), *c*<sub>1</sub> 18 (15–18), *d*<sub>1</sub> 20 (15–20), *e*<sub>1</sub> 20, *e*<sub>2</sub> 22 (21–22), *f*<sub>1</sub> 24 (21–24), *h*<sub>1</sub> 20, *h*<sub>2</sub> 20; distances: *vi-vi* 26 (26–28), *vi-ve* 15 (15–19), *ve-ve* 28 (27–43), *ve-sci* 12 (9–13), *sci-sce* 26 (23–28), *c*<sub>1</sub>-*c*<sub>1</sub> 55 (55–57), *c*<sub>1</sub>-*d*<sub>1</sub> 42 (42–45), *d*<sub>1</sub>-*d*<sub>1</sub> 72 (72–74), *d*<sub>1</sub>-*e*<sub>1</sub> 42 (39–42), *e*<sub>1</sub>-*e*<sub>1</sub> 65 (65–67), *e*<sub>1</sub>-*e*<sub>2</sub> 21 (21–25), *e*<sub>1</sub>-*f*<sub>1</sub> 52 (52–57), *f*<sub>1</sub>-*f*<sub>1</sub> 33, *h*<sub>1</sub>-*h*<sub>1</sub> 18 (18–20), *h*<sub>1</sub>-*h*<sub>2</sub> 24 (20–24). Coxisternal area with elongate pores at base of hood and around coxae II; ventral hysterosoma with pores behind coxae IV and extending to level of anterior rim of genital valves, and with a patch of pores between *3a* and *ag*<sub>1</sub>; without obvious reticulations. Ventral setae subequal, *1a* 15, *3a* 16, *4a* 15. Aggenital setae *ag*<sub>1</sub> = 14 (12–14), *ag*<sub>2</sub> = 14 (12–14), *ag*<sub>3</sub> = 14. Genital setae *g*<sub>1</sub> = 12 (11–12), *g*<sub>2</sub> = 12, *g*<sub>3</sub> = 12. Pseudanal setae *ps*<sub>3</sub> 12, *ps*<sub>2</sub> 12 (12–15), *ps*<sub>1</sub> 12.

**Legs.** Length: leg I 181 (173–181), leg II 135 (127–135), leg III 146 (132–146), leg IV 167 (161–167). Segments of legs with striae and minute punctations. Solenidion  $\omega$  on tarsi III and IV present;  $\phi$  on tibiae IV absent;  $I\phi''$  at same level as  $I\phi'$ , about 2.5 length of  $\phi'$ ;  $II\phi$  on basal half of tibia II;  $III\phi$  on basal half of tibia III. Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a*, and *4a*) 2 + 1 *elcp*, 1, 2, 1; trochanters 1, 1, 2, 1; femora 3, 3, 2, 2; genua 5 + 1  $\kappa$ , 4 + 1  $\kappa$ , 2, 3; tibiae 5 + 2  $\phi$ , 5 + 1  $\phi$ , 3 + 1  $\phi$ , 3; tarsi 15 + 1  $\omega$ , 12 + 1  $\omega$ , 9 + 1  $\omega$ , 9 + 1  $\omega$ . Lengths of solenidia:  $I\phi'$  5 (5–6),  $I\phi''$  13 (12–13),  $I\omega$  14,  $II\omega$  9 (9–10),  $III\omega$  3 (3–4),  $IV\omega$  4.

**Distribution** (Map p. 376). New Zealand (Luxton 1973). ND / NN.

**Material examined.** Holotype, 4 paratypes, and 1 non-type specimen. **Holotype** female: NEW ZEALAND: NN: Nelson, Boulder Bank, 30 June 1966, E. Collyer,

*Muehlenbeckia* sp., NZAC: 1/1 female. **Paratypes:** ND: Whangarei, nr Maungataroto, 12 Nov 1964, G. S. Grandison, moss on roadside cutting, NZAC: 1/1 female. **NN:** Kaiteriteri, 11 Feb 1968, M. Luxton, lichen on rocks, NZAC: 3/3 females. **Other material:** NN: Nelson, Boulder Bank, 30 Nov 1966, E. Collyer, *Hymenanthera* sp., 1/1 female [+ *Eryngiopus bifidus* 7 females].

**Habitat.** Lichen (*Xanthoria parietina*) on coastal rocks, dry moss on granite rocks, dry moss on roadside, *Hymenanthera* sp. moss on bark of willow trees, *Muehlenbeckia* sp., *Nothofagus*; moss on marble (protorendzina soil).

### Genus *Favognathus* Luxton

*Favognathus* Luxton, 1987: 113. Type species: *Cryptognathus cucurbita* Berlese, 1916, by original designation.

*Cryptognathus (Favognathus)* Luxton, 1973: 62. Type species: *Cryptognathus cucurbita* Berlese, 1916, raised to genus by Luxton, 1987.

**Diagnosis. Female.** Palptibial claw minute, vestigial, or absent; counts of solenidia and setae from palptrochanter to palptarsus: 0, 2–3, 2, 3 or 3 + 1 claw, 4 + 1 $\omega$  + 4 terminal eupathidia. Prosternal apron wedge-shaped, dimpled. Genital valves with 2 pairs of setae. Counts of setae and solenidia on legs I–IV: coxae (excluding 1*a*, 3*a*, and 4*a*) 2 + 1*elcp*, 1, 2, 1; trochanters 1, 1–2, 1, 0–1; femora 3–4, 3, 2, 2; genua 5 + 1 $\kappa$ , 3–5 + 0–1 $\kappa$ , 2, 2–3; tibiae 4–5 + 2–3 $\phi$ , 4–5 + 0–1 $\phi$ , 4 + 0–1 $\phi$ , 3; tarsi 15 + 1 $\omega$  + 0–1 $\omega$ p, 11–12 + 1 $\omega$  + 0–1 $\omega$ p, 9–10 + 0–1 $\omega$ , 9 + 1 $\omega$ .

**Male.** Tarsi II–IV each with an enlarged solenidion.

Only one species is known from New Zealand.

### *Favognathus leopardus* Luxton

Fig. 17–18, Plate 2 A–B

*Favognathus leopardus* Luxton, 1973: 65; Koç and Ayyildiz, 1999: 628.

**Diagnosis. Female.** Palptibial claw vestigial. Dorsal shield medially with pits, each with 3–5 pores; reticulations not obvious. Ratio  $c_i-c_j: d_i-d_j: e_i-e_j: f_i-f_j = 1.2: 1.9: 1.4: 1.0$ . Prosternal apron with 15–17 dimples, anterior edge plain; ventral hysterosoma with thinly scattered coarse pores, without reticulations. Femora I, II and genu I ornamented with pits. Solenidion  $\omega$  on tarsi III and IV present;  $\phi$  on tibiae IV absent;  $I\phi'$  on distal half of tibia I and posteriorad of  $I\phi'$ , less than twice length of  $\phi'$ ;  $II\phi$  on basal half of tibia II;  $III\phi$  on basal half of tibia III. Counts of setae and solenidia on femora I–IV: 3, 3, 2, 2; genua I–IV: 5 + 1 $\kappa$ , 4 + 1 $\kappa$ , 2, 2; tibiae I–IV: 5 + 2 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ , 3; tarsi I–IV: 15 + 1 $\omega$  + 1 $\omega$ p, 12 + 1 $\omega$  + 1 $\omega$ p, 9 + 1 $\omega$ , 9 + 1 $\omega$ .

**Description. Female** (Fig. 17–18, Plate 2 A–B, n = 3)

**Gnathosoma.** Chelicerae slender, 104 (104–112); movable digits 26, less than 1/3 length of chelicerae. Palp 84; palptibial claw vestigial. Subcapitular setae *m* 27 (27–28), *m-m* = 14 (14–15).

**Idiosoma.** Oval in shape, 337 (287–337) long, 193 (183–193) wide. Dorsal shield medially with pits, each with 3–5 pores; reticulations not obvious; projection with 6–7 dimples in each longitudinal row, anterior rim smooth. Eyes 7 in diameter; *pob* 9 in diameter. Dorsal idiosomal setae smooth, ratio  $c_i-c_j: d_i-d_j: e_i-e_j: f_i-f_j = 1.2: 1.9: 1.4: 1.0$ ; lengths: *vi* 18 (17–18), *ve* 26 (24–26), *sci* 27 (23–27), *sce* 30 (30–33), *c\_i* 28 (27–28), *d\_i* 28 (27–28), *e\_i* 31 (30–31), *e\_j* 30 (30–32), *f\_i* 27 (27–35), *h\_i* 30 (29–30), *h\_2* 25 (25–28); distances: *vi-vi* 41 (29–41), *vi-ve* 15 (9–15), *ve-ve* 28 (27–33), *ve-sci* 11 (10–11), *sci-sce* 25 (23–26), *c\_i-c\_j* 86 (65–86), *c\_i-d\_i* 64 (52–64), *d\_i-d\_j* 138 (112–138), *d\_i-e\_i* 62 (46–62), *e\_i-e\_j* 100 (91–100), *e\_i-e\_2* 35 (21–35), *e\_i-f\_i* 69 (55–69), *f\_i-f\_j* 73 (54–73), *h\_i-h\_j* 26 (24–26), *h\_i-h\_2* 36 (23–36). Prosternal apron with 15–17 dimples, anterior edge plain; coxisternal area with round or slightly elongate pores between coxae and with densely scattered pores around coxae; ventral hysterosoma with thinly scattered coarse pores, without reticulations. Ventral setae subequal, 1*a* 12 (12–19), 3*a* 12 (12–16), 4*a* 11 (11–15). Aggenital setae *ag\_1* = 12, *ag\_2* = 12, *ag\_3* = 11 (11–12). Genital setae *g\_1* = *g\_2* = 10 (10–11). Pseudanal setae *ps\_3* 10 (10–11), *ps\_2* 11, *ps\_1* 13 (12–13).

**Legs.** Length: leg I 193 (192–193), leg II 137 (137–145), leg III 144 (124–144), leg IV 171 (162–171). Segments with striae, femora I, II and genu I ornamented with pits. Solenidion  $\omega$  on tarsi III and IV present;  $\phi$  on tibiae IV absent;  $I\phi'$  on distal half of tibia I and posteriorad of  $I\phi'$ , less than twice length of  $\phi'$ ;  $II\phi$  on basal half of tibia II;  $III\phi$  on basal half of tibia III. Counts of setae and solenidia on legs I–IV: coxae (excluding 1*a*, 3*a* and 4*a*) 2 + 1*elcp*, 1, 2, 1; trochanters 1, 1, 2, 1; femora 3, 3, 2, 2; genua 5 + 1 $\kappa$ , 4 + 1 $\kappa$ , 2, 2; tibiae 5 + 2 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ , 3; tarsi 15 + 1 $\omega$  + 1 $\omega$ p, 12 + 1 $\omega$  + 1 $\omega$ p, 9 + 1 $\omega$ , 9 + 1 $\omega$ . Lengths of solenidia:  $I\phi'$  8 (6–8),  $I\phi''$  15 (15–16),  $I\omega$  15 (15–17),  $I\omega p$  8 (8–9),  $II\omega$  12 (12–13),  $II\omega p$  5,  $III\omega$  6,  $IV\omega$  6 (5–6).

**Distribution** (Map p. 376). New Zealand (Luxton 1973). AK / NN.

**Material examined.** Holotype and 4 non-type specimens. **Holotype** female: NEW ZEALAND: NN: nr Mt Arthur, Balloon Hill, 31 May 1964, G. W. Ramsay, moss, NZAC: 1/1 female. **Other material:** AK: Auckland: Aug 1972, J. Johannesson, debris in burrow of *Hexathele hochstetteri*, 1/3 females. ??: no collection data: 1/1 female.

**Habitat.** Debris in burrow of *Hexathele hochstetteri*, litter, moss, bark of *Nothofagus*.

### Family Mecognathidae Gerson and Walter

Mecognathidae Gerson and Walter, 1998: 145. Type genus: *Mecognatha* Wood, 1967, by original designation.

**Diagnosis. Female.** Idiosoma oval in dorsoventral view. Gnathosoma projecting anterior to prodorsum; chelicerae fused, conical and elongate; peritremes absent; palps slender, palpfemora and palptibiae elongate, tibial claw reduced or vestigial, palptarsi small, each with 4 eupathidia, 3 of them ( $ul^{\prime}\zeta$ ,  $ul^{\prime\prime}\zeta$ , and  $sul\zeta$ ) mostly fused, counts of setae (excluding solenidia and eupathidia) from palpcoxa to palptarsus:  $1elcp$ , 0, 3, 2, 3 + 1 claw, 4; subcapitulum terminally extended, with 2 pairs of subcapitular setae. Prodorsum with 2 pairs of vertical setae and 1–2 pairs of scapular setae; eyes present; *pob* present or absent. Dorsal hysterosoma with 5 series of setae: *c*, *d*, *e*, *f*, and *h*; *c*-series with 1–2 pairs of setae; *d*-series with 2 pairs of setae; *e*-series with 2 pairs of setae; *f*-series with 1 pair of setae; *h*-series with 2 pairs of setae. Coxae II and III widely separate; ventral setae *4a* present; ventral opisthosoma with 2–3 pairs of aggenital setae; genital and anal valves fused, with 1 pair of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws present, nude; empodial axis with 3 shafts, each of them producing 1 pair of tenent hairs; tarsal stalk not prominent; counts of solenidia on genua I–IV: 1, 0, 0, 0; on tibiae I–IV: 1, 1, 1, 0–1; on tarsi I–IV: 1, 1, 0–1, 0–1; counts of setae on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 +  $1elcp$ , 1, 2, 1–2; trochanters 0–1, 0–1, 0–1, 0–1; femora 4–5, 4, 2–3, 1–2; genua 1, 1, 0–1, 0–1; tibiae 5, 3–5, 3–5, 3–5; tarsi 11–12, 8–9, 6–7, 6–7.

**Male.** Hysterosoma somewhat tapered; setae  $ps_1$  and  $ps_2$  reduced, peg-like; genital and anal openings fused; genital setae absent; having an aedeagus; additional solenidion ( $\omega_2$ ) at least present on tarsi I–II.

**Deutonymph.** Similar to adults but without genital folds and setae in both sexes and aedeagus in male.

**Protonymph.** With 1 pair of subcapitular setae; ventral setae *4a* and genital setae absent; with fewer setae in aggenital area and on segments of legs than deutonymphs and adults.

**Larva.** Subcapitular setae, ventral setae *4a*, genital and aggenital setae absent; without leg IV; with fewer setae on segments of legs than protonymphs; setal complex (similar to duplex setae in Tetranychidae) on leg I present.

Only one genus is known from New Zealand.

### Key to stages of Mecognathidae

- 1 With 4 pairs of legs; coxae II and III each with 1–2 setae; with 1–2 pairs of subcapitular setae (Fig. 19 B, 25 B) ..... 2
  - With 3 pairs of legs; coxae II and III without setae; without subcapitular setae ..... **larva**
- 2 With 2 pairs of subcapitular setae (Fig. 19 B) ..... 3
  - With 1 pair of subcapitular setae (Fig. 25 B) ..... **protonymph**
- 3 Genital folds and setae absent (Fig. 23 B, F); males without aedeagus; trochanter IV nude (Fig. 24 D) ..... **deutonymph**
  - Genital folds and setae present in female (Fig. 19 B, F); males with an aedeagus (Fig. 21 D); trochanter IV often with a seta (Fig. 20, 22) ..... **(adult) 4**
- 4 Without aedeagus; tarsi I–II each with 1 solenidion (Fig. 20 A–B) ..... **female**
  - With an aedeagus (Fig. 21 D); tarsi I–II each with 2 solenidia (Fig. 22 A–B) ..... **male**

### Key to genera of Mecognathidae (adults)

- 1 Prodorsal shield with 3 pairs of setae (*sce* absent); *pob* present;  $c_2$  present;  $d_1$  and  $e_1$  situated on different shields (Fig. 19 A) ... (p. 29)... ***Mecognatha*** Wood
  - Prodorsal shield with 4 pairs of setae (*sce* present); *pob* absent;  $c_2$  absent;  $d_1$  and  $e_1$  situated on same shield ..... ***Paraeupalopsellus*** Smiley & Moser

### Genus *Mecognatha* Wood

*Mecognatha* Wood, 1967: 115. Type species: *Mecognatha hirsuta* Wood, 1967, by original designation.

*Acaciacarus* Gerson, Frost & Swift, 1997: 185. Type species: *Acaciacarus paradoxus* Gerson, Frost & Swift, 1997. Synonymy by Gerson & Walter, 1998: 146.

**Diagnosis. Female.** Palptibial accessory claw vestigial; terminal eupathidia on palptarsus mostly fused and split into 3 vestigial prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 +  $1\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (mostly fused). Subcapitular setae *m* anterolaterad of pharynx. Prodorsum with a triangular shield, bearing 3 pairs of setae (*sce* absent); eyes present, *pob* present, stalked. Dorsal hysterosoma with 3 transversal shields (excluding suranal shield); setae  $c_2$  present;  $d_1$  and  $e_1$  on different shields. Ventral opisthosoma with 2–3 pairs of aggenital setae; genitoanal valves with 1 pair of genital setae and 3 pairs of pseudanal setae. Empodial shafts short, branching into tenent hairs before

reaching tips of claws. Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a*, and *4a*) 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 1 + 1  $\kappa$ , 1, 1, 1; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ .

**Male.** Additional solenidia present at least on tarsi I–II. Only one species was described previously from New Zealand. Two new species are added in this paper.

### Key to species of *Mecognatha* from New Zealand (females)

- 1 With 3 pairs of aggenital setae (Fig. 31 B, F); *vi* and *ve* less than 1/2 length of leg I; *ve* and *sci* subequal (Fig. 31 A); *h<sub>1</sub>* as long as or shorter than dorsalmost seta on femur I (*dFI*) ..... 2
- With 2 pairs of aggenital setae (Fig. 19 B, F); *vi* and *ve* as long as or longer than leg I; *ve* nearly twice length of *sci* (Fig. 19A); *h<sub>1</sub>* nearly twice length of *dFI* ..... (p. 30)... *M. hirsuta* Wood
- 2 Setae *vi* and *ve* about twice length of tibia I; *sci* about 1.8 times length of tibia I ... (p. 31)... *M. parilis* sp. n.
- Setae *vi* and *ve* slightly longer than tibia I; *sci* about as long as tibia I ..... (p. 32)... *M. rara* sp. n.

### *Mecognatha hirsuta* Wood

Fig. 19–26

*Mecognatha hirsuta* Wood, 1967: 117 (in part); Wood, 1970: 682; Wood, 1971b: 60.

**Diagnosis. Female.** Setae *vi* and *ve* as long as or longer than leg I; *ve* about twice length of *sci*; *h<sub>1</sub>* about twice length of *dFI*; with 2 pairs of aggenital setae.

**Male.** Setae *vi* and *ve* as long as or slightly shorter than leg I; *h<sub>1</sub>* about twice length of *dFI*; tarsi I–IV with 12 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ .

**Description. Female** (Fig. 19–20, n = 4)

**Gnathosoma.** Chelicerae slender and long, 193 (193–246); movable digits 3/5–2/3 length of chelicerae, 115 (115–163). Palp elongate, 182 (182–231); accessory claw minute. Subcapitular setae *n* 1.7 times length of *m*; *m* = 63 (63–71), *n* = 119 (99–123), *m*–*m* = 11 (11–15), *n*–*n* = 23 (21–23), *m*–*n* = 52 (48–55).

**Idiosoma.** Oval in shape, 387 (387–494) long, 303 (303–375) wide. Dorsal shields faintly punctate; dorsal idiosomal setae serrated, whip-like; *vi* and *ve* as long as or longer than leg I. Prodorsal shield with 3–4 pairs of faint dimples; eyes 15 (14–15) in diameter; *pob* 13 (13–14) in diameter; ratio *ve*:*sci* = 2.2; lengths of setae: *vi* 402 (375–403), *ve* 399 (384–406), *sci* 181 (181–253); distances:

*vi*–*vi* 33 (32–51), *vi*–*ve* 34 (34–63), *ve*–*sci* 46 (35–59). Shield CD with 3–5 pairs of dimples; ratio *c<sub>1</sub>*:*c<sub>1</sub>*–*c<sub>1</sub>* = 6.0; lengths of setae: *c<sub>1</sub>* 364 (325–404), *c<sub>2</sub>* 157 (157–202), *d<sub>1</sub>* 273 (258–276), *d<sub>2</sub>* 224 (224–264), *e<sub>1</sub>* 187 (187–247), *e<sub>2</sub>* 183 (183–201), *f<sub>1</sub>* 143 (125–205); distances: *c<sub>1</sub>*–*c<sub>1</sub>* 61 (61–72), *c<sub>1</sub>*–*d<sub>1</sub>* 93 (93–137), *d<sub>1</sub>*–*d<sub>1</sub>* 46 (46–125), *d<sub>1</sub>*–*d<sub>2</sub>* 67 (62–100), *d<sub>1</sub>*–*e<sub>1</sub>* 70 (25–100), *e<sub>1</sub>*–*e<sub>1</sub>* 65 (65–119), *e<sub>1</sub>*–*e<sub>2</sub>* 31 (13–71), *e<sub>1</sub>*–*f<sub>1</sub>* 29 (20–73), *f<sub>1</sub>*–*f<sub>1</sub>* 71 (71–113). Suranal setae *h<sub>1</sub>* more than twice length of *dFI*, *h<sub>1</sub>* 77 (75–124), *h<sub>2</sub>* 50 (50–77). Ventral setae *1a*: *3a*: *4a* = 1.1: 1.1: 1.0; lengths: *1a* 109 (109–121), *3a* 103 (103–122) and *4a* 98 (98–114). Aggenital area with 2 pairs of setae, *ag<sub>1</sub>* 27 (27–35), *ag<sub>2</sub>* 23 (23–28); genitoanal valves with 1 pair of genital setae and 3 pairs of pseudanal setae, lengths: *g<sub>1</sub>* 20 (20–23), *ps<sub>3</sub>* 18 (18–22), *ps<sub>2</sub>* 18 (18–26), *ps<sub>1</sub>* 15 (15–21).

**Legs.** Length: leg I 305 (305–340), leg II 266 (266–289), leg III 251 (251–291), leg IV 247 (247–308). Setae *dFI* (43 (43–67)) and *dGI* (57 (57–78)) barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 1 + 1  $\kappa$ , 1, 1, 1; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  31 (30–38), II $\omega$  27 (26–30), III $\omega$  9 (6–10), IV $\omega$  6 (6–7).

**Male** (Fig. 21–22, n = 1)

**Gnathosoma.** Chelicerae slender and long, 193; movable digits nearly 2/3 length of chelicerae, 118. Palp elongate, 197; accessory claw minute. Subcapitular setae *n* 1.6 times length of *m*; *m* = 57, *n* = 88, *m*–*m* = 15, *n*–*n* = 24, *m*–*n* = 41.

**Idiosoma.** Oval in shape, 313 long, 224 wide. Dorsal shields faintly punctate; dorsal idiosomal setae serrated, whip-like; *vi* and *ve* as long as or slightly shorter than leg I. Prodorsal shield with 3–4 pairs of dimples; eyes 19 in diameter; *pob* 10 in diameter; ratio *ve*:*sci* = 1.8; lengths of setae: *vi* 313, *ve* 331, *sci* 182; distances: *vi*–*vi* 29, *vi*–*ve* 49, *ve*–*sci* 33. Shield CD with 3 pairs of dimples; ratio *c<sub>1</sub>*:*c<sub>1</sub>*–*c<sub>1</sub>* = 5.3; lengths of setae: *c<sub>1</sub>* 265, *c<sub>2</sub>* 144, *d<sub>1</sub>* 217, *d<sub>2</sub>* 192, *e<sub>1</sub>* 190, *e<sub>2</sub>* 151, *f<sub>1</sub>* 137; distances: *c<sub>1</sub>*–*c<sub>1</sub>* 50, *c<sub>1</sub>*–*d<sub>1</sub>* 86, *d<sub>1</sub>*–*d<sub>1</sub>* 86, *d<sub>1</sub>*–*d<sub>2</sub>* 53, *d<sub>1</sub>*–*e<sub>1</sub>* 33, *e<sub>1</sub>*–*e<sub>1</sub>* 101, *e<sub>1</sub>*–*e<sub>2</sub>* 15, *e<sub>1</sub>*–*f<sub>1</sub>* 21, *f<sub>1</sub>*–*f<sub>1</sub>* 84. Suranal setae *h<sub>1</sub>* about twice lengths of *h<sub>2</sub>* and more than twice lengths of *dFI*, *h<sub>1</sub>* 91, *h<sub>2</sub>* 43. Ventral setae *1a*: *3a*: *4a* = 1.1: 1.1: 1.0; lengths: *1a* 99, *3a* 101 and *4a* 91. Aggenital area with 2 pairs of setae, *ag<sub>1</sub>* 31, *ag<sub>2</sub>* 26; genitoanal valves with only 3 pairs of pseudanal setae, lengths: *ps<sub>3</sub>* 12, *ps<sub>2</sub>* 12, *ps<sub>1</sub>* 10.

**Legs.** Length: leg I 330, leg II 269, leg III 260, leg IV 260. Setae *dFI* (42) and *dGI* (55) barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 1 + 1  $\kappa$ , 1, 1, 1; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 12 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega$  50, I $\omega$  70, II $\omega$  46, II $\omega$  63, III $\omega$  7, III $\omega$  61, IV $\omega$  6, IV $\omega$  60.

**Deutonymph female** (Fig. 23–24, n = 1)

**Gnathosoma.** Chelicerae slender, 167; movable digits about 3/5 length of chelicerae, 90. Palp elongate, 185. Subcapitular setae *n* longer than *m*; *m* = 50, *n* = 72, *m*–*m* = 12, *n*–*n* = 20, *m*–*n* = 42.

**Idiosoma.** Oval in shape, 265 long, 201 wide. Dorsal idiosomal setae serrated, whip-like; *vi* and *ve* longer than leg I. Eyes 14 in diameter; *pob* 11 in diameter; ratio *ve*: *sci* = 1.8; lengths of setae: *vi* 297, *ve* 287, *sci* 165; distances: *vi*–*vi* 30, *vi*–*ve* 45, *ve*–*sci* 45. Ratio *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 5.6; *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.0: 1.6: 1.6: 1.6; lengths of setae: *c*<sub>1</sub> 252, *c*<sub>2</sub> 135, *d*<sub>1</sub> 197, *d*<sub>2</sub> 177, *e*<sub>1</sub> 162, *e*<sub>2</sub> 152, *f*<sub>1</sub> 102; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 45, *c*<sub>1</sub>–*c*<sub>2</sub> 67, *c*<sub>1</sub>–*d*<sub>1</sub> 77, *d*<sub>1</sub>–*d*<sub>1</sub> 72, *d*<sub>1</sub>–*d*<sub>2</sub> 50, *d*<sub>1</sub>–*e*<sub>1</sub> 37, *e*<sub>1</sub>–*e*<sub>1</sub> 70, *e*<sub>1</sub>–*e*<sub>2</sub> 37, *e*<sub>1</sub>–*f*<sub>1</sub> 8, *f*<sub>1</sub>–*f*<sub>1</sub> 72, *h*<sub>1</sub>–*h*<sub>1</sub> 30, *h*<sub>1</sub>–*h*<sub>2</sub> 12. Suranal setae *h*<sub>1</sub> 77, *h*<sub>2</sub> 40. Ventral setae *1a*: *3a*: *4a* = 1.9: 1.5: 1.0; lengths: *1a* 92, *3a* 70 and *4a* 47. Aggenital area with 2 pairs of setae, *ag*<sub>1</sub> 17, *ag*<sub>2</sub> 16; genitoanal valves with 3 pairs of pseudanal setae (*g* absent), *ps*<sub>3</sub> 12, *ps*<sub>2</sub> 12, *ps*<sub>1</sub> 13.

**Legs.** Length: leg I 250, leg II 215, leg III 212, leg IV 215. Setae *dFI* (55) and *dGI* (60) barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 2, 2; genua 1 + 1 *κ*, 1, 1, 0; tibiae 5 + 1 *φp*, 5 + 1 *φp*, 5 + 1 *φp*, 5 + 1 *φp*; tarsi 12 + 1 *ω*, 9 + 1 *ω*, 7 + 1 *ω*, 7 + 1 *ω*. Lengths of solenidia: I *ω* 25, II *ω* 16, III *ω* 7, IV *ω* 4.

**Protonymph** (Fig. 25–26, n = 1)

**Gnathosoma.** Chelicerae slender, 90; movable digits about 2/3 length of chelicerae, 63. Palp elongate, 115. Subcapitulum with 1 pair of setae, *m* 37, *m*–*m* = 8.

**Idiosoma.** Oval in shape, 157 long, 137 wide. Dorsal idiosomal setae serrated; *vi* and *ve* longer than leg I. Eyes 8 in diameter; *pob* 7 in diameter; ratio *ve*: *sci* = 2.1; lengths of setae: *vi* 163, *ve* 175, *sci* 83; distances: *vi*–*vi* 18, *vi*–*ve* 25, *ve*–*sci* 26. Ratio *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 5.6; *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.1: 1.0: 1.1: 1.3; lengths of setae: *c*<sub>1</sub> 136, *c*<sub>2</sub> 66, *d*<sub>1</sub> 125, *d*<sub>2</sub> 103, *e*<sub>1</sub> 86, *e*<sub>2</sub> 83, *f*<sub>1</sub> 53; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 32, *c*<sub>1</sub>–*c*<sub>2</sub> 26, *c*<sub>1</sub>–*d*<sub>1</sub> 33, *d*<sub>1</sub>–*d*<sub>1</sub> 29, *d*<sub>1</sub>–*d*<sub>2</sub> 31, *d*<sub>1</sub>–*e*<sub>1</sub> 35, *e*<sub>1</sub>–*e*<sub>1</sub> 32, *e*<sub>1</sub>–*e*<sub>2</sub> 29, *e*<sub>1</sub>–*f*<sub>1</sub> 12, *f*<sub>1</sub>–*f*<sub>1</sub> 38, *h*<sub>1</sub>–*h*<sub>1</sub> 17, *h*<sub>1</sub>–*h*<sub>2</sub> 10. Suranal setae *h*<sub>1</sub> 38, *h*<sub>2</sub> 23. Ventral setae *4a* absent, *1a* 49, *3a* 52. Aggenital area with 1 pair of setae, *ag*<sub>1</sub> 13; anal valves with 3 pairs of pseudanal setae, *ps*<sub>3</sub> 12, *ps*<sub>2</sub> 11, *ps*<sub>1</sub> 10.

**Legs.** Length: leg I 143, leg II 111, leg III 109, leg IV 108. Setae *dFI* (27) barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 0; trochanters 1, 0, 0, 0; femora 4, 4, 2, 1; genua 1 *κ*, 0, 0, 0; tibiae 5 + 1 *φp*, 5 + 1 *φp*, 5 + 1 *φp*, 5 + 1 *φp*; tarsi 12 + 1 *ω*, 9 + 1 *ω*, 7 + 1 *ω*, 6 + 1 *ω*. Lengths of solenidia: I *ω* 13, II *ω* 11, III *ω* 5, IV *ω* 3.

**Distribution** (Map p. 376). New Zealand (Wood 1967, 1971*b*), Campbell Island (Wood 1970), Australia (Wood 1971*b*).

AK, BP / BR, NN / CA

**Material examined.** Holotype, 3 paratypes, and 7 non-type specimens. **Holotype** female: NEW ZEALAND: **AK**: Mt Albert Research Centre [as D.S.I.R. campus], 2 Aug 1960, E. Collyer, *Albizzia* sp., NZAC: 1/1 female. **Paratypes**: **NN**: Appleby, 19 Nov 1963, T. G. Wood, bark of willow *Salix* sp., NZAC: 3/2 females, 1 male. **Other material**: **AK**: Mt Albert Research Centre, 5 Apr 2002, Q.-H. Fan & Z.-Q. Zhang, bark of *Pinus* sp., NZAC: 1/1 deutonymph female. Mt Albert, 1975, Dr P. Dale, *Sophora microphylla* [as kowhai], NZAC: 1/1 female [+ *Agistemus collyerae* 1 female]. Pt Chevalier, 26 Mar 2003, Q.-H. Fan & Z.-Q. Zhang, tree bark, NZAC: 1/1 male. **BP**: Katikati, Jan 1989, D. Steven, *Actinidia deliciosa* surface, 1/1 protonymph. **NN**: Nelson, Fairfield Park, 17 Dec 1964, E. Collyer, *Podocarpus* sp., 1/1 female. Mapua, 15 May 1964, T. G. Wood, bark of unsprayed apple, 1/1 deutonymph female. **BR**: Near Charleston, 11 Apr 1966, E. Collyer, *Leptospermum scoparium*, 1/1 deutonymph female [+ *Eustigmaeus corticolus* 2 females; *Primagistemus loadmani* 2 deutonymph females; *Zetzellia maori* 1 female, 2 deutonymph females].

**Habitat.** *Actinidia deliciosa* leaf petioles; *Albizzia* sp.; bark of apple trees, *Salix* sp., *Pinus* sp.; *Leptospermum scoparium*; *Podocarpus* sp.; *Sophora microphylla*.

**Remarks.** The original description of *M. hirsuta* Wood was a complex of two species, *M. hirsuta* and *M. parilis* sp. n., which can be readily separated by the number of aggenital setae.

**Mecognatha parilis** sp. n.

Fig. 27–30

*Mecognatha hirsuta* Wood, 1967: 117 (in part).

**Diagnosis. Female.** Setae *vi* and *ve* less than 1/2 length of leg I and about twice length of tibia I; *ve* nearly as long as *sci*; *h*<sub>1</sub> slightly longer than *dFI*; with 3 pairs of aggenital setae.

**Male.** Setae *vi* and *ve* less than 1/2 length of leg I; *h*<sub>1</sub> about as long as *dFI*; with 2 pairs of aggenital setae; tarsi I–IV with 12 + 2 *ω*, 9 + 2 *ω*, 7 + 2 *ω*, 7 + 2 *ω*.

**Description. Female** (Fig. 27–28, n = 4)

**Gnathosoma.** Chelicerae slender and long, 211 (202–244); movable digits more than 2/3 length of chelicerae, 144 (137–150). Palp elongate, 217 (211–232); accessory claw minute. Subcapitular setae *n* about twice lengths of *m*; *m* = 70 (57–70), *n* = 139 (133–146), *m*–*m* = 13 (13–15), *n*–*n* = 25 (24–27), *m*–*n* = 43 (39–44).

**Idiosoma.** Oval in shape, 382 (382–424) long, 299 (299–362) wide. Dorsal shields faintly punctate; dorsal idiosomal setae serrated; *vi* and *ve* less than half length of leg I and

about twice length of tibia I. Prodorsal shield with 4 pairs of dimples; eyes 16 (15–16) in diameter; *pob* 14 (13–15) in diameter; ratio *ve*: *sci* = 1.0; lengths of setae: *vi* 159 (155–162), *ve* 145 (134–152), *sci* 152 (151–161); distances: *vi*–*vi* 55 (47–58), *vi*–*ve* 43 (43–63), *ve*–*sci* 55 (55–58). Shield CD with 3–5 pairs of faint dimples; ratio  $c_i : c_i - c_i = 1.8$ ; lengths of setae:  $c_1$  121 (109–127),  $c_2$  132 (125–137),  $d_1$  120 (118–126),  $d_2$  173 (147–173),  $e_1$  137 (137–141),  $e_2$  156 (149–157),  $f_1$  111 (98–103); distances:  $c_i - c_i$  66 (66–112),  $c_i - d_1$  93 (93–127),  $d_1 - d_1$  58 (50–59),  $d_1 - d_2$  95 (95–101),  $d_1 - e_1$  96 (96–102),  $e_1 - e_1$  69 (69–75),  $e_1 - e_2$  64 (64–75),  $e_1 - f_1$  27 (25–31),  $f_1 - f_1$  89 (89–99). Suranal setae  $h_1$  more than 1.5 times length of  $h_2$ ,  $h_1$  60 (60–67),  $h_2$  38 (38–51). Ventral setae *1a*: *3a*: *4a* = 1.3: 1.2: 1.1; lengths: *1a* 137 (128–137), *3a* 133 (123–136) and *4a* 108 (102–123). Aggenital area with 3 pairs of setae on membrane,  $ag_1$  25 (23–27),  $ag_2$  25 (24–25),  $ag_3$  25 (23–25); genitoanal valves with 1 pair of genital setae and 3 pairs of pseudanal setae, lengths:  $g_1$  19 (17–19),  $ps_3$  18 (17–18),  $ps_2$  20 (17–20),  $ps_1$  17.

**Legs.** Length: leg I 339 (327–366), leg II 289 (223–321), leg III 296 (233–296), leg IV 313 (243–313). Setae *dFI* (59 (51–59)) and *dGI* (67 (65–68)) barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 1 + 1 $\kappa$ , 1, 1, 1; tibiae 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 12 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  47 (41–47), II $\omega$  41 (38–41), III $\omega$  8 (7–8), IV $\omega$  6 (5–8).

**Male** (Fig. 29–30, n = 1)

**Gnathosoma.** Chelicerae slender and long, 146; movable digits more than 2/3 length of chelicerae, 107. Palp elongate, 179; accessory claw minute. Subcapitular setae *n* 1.9 times length of *m*; *m* = 63, *n* = 121, *m*–*m* = 17, *n*–*n* = 22, *m*–*n* = 43.

**Idiosoma.** Oval in shape, 286 long, 227 wide. Dorsal shields faintly punctate; dorsal idiosomal setae serrated; *vi* and *ve* less than 1/2 length of leg I. Prodorsal shield with 4 pairs of dimples; eyes 14 in diameter; *pob* 12 in diameter; ratio *ve*: *sci* = 1.0; lengths of setae: *vi* 136, *ve* 121, *sci* 126; distances: *vi*–*vi* 47, *vi*–*ve* 51, *ve*–*sci* 37. Shield CD with 5 pairs of dimples; lengths of setae:  $c_1 > 71$ ,  $c_2$  111,  $d_1$  113,  $d_2$  137,  $e_1$  116,  $e_2$  137,  $f_1$  83; distances:  $c_i - c_i$  75,  $c_i - d_1$  77,  $d_1 - d_1$  64,  $d_1 - d_2$  63,  $d_1 - e_1$  35,  $e_1 - e_1$  66,  $e_1 - e_2$  41,  $e_1 - f_1$  42,  $f_1 - f_1$  61. Suranal setae  $h_1$  subequal to  $h_2$ ,  $h_1$  33,  $h_2$  31. Ventral setae *1a*: *3a*: *4a* = 1.2: 1.1: 1.0; lengths: *1a* 133, *3a* 129 and *4a* 115. Aggenital area with 2 pairs of setae on membrane,  $ag_1$  24,  $ag_2$  24; genitoanal valves with only 3 pairs of pseudanal setae, lengths:  $ps_3$  20,  $ps_2$  19,  $ps_1$  2.

**Legs.** Length: leg I 297, leg II 245, leg III 244, leg IV 239. Setae *dFI* (48) and *dGI* (59) barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters

1, 1, 1, 1; femora 5, 4, 2, 2; genua 1 + 1 $\kappa$ , 1, 1, 1; tibiae 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 12 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega_1$  56, I $\omega_2$  60, II $\omega_1$  44, II $\omega_2$  54, III $\omega_1$  14, III $\omega_2$  50, IV $\omega_1$  14, IV $\omega_2$  51.

**Distribution** (Map p. 376). New Zealand (this paper).

AK / NN, KA, MC, CO.

**Material examined.** Holotype and 5 paratypes. **Holotype** female: NEW ZEALAND: CO: Wanaka, 7 May 1964, T. G. Wood, bark of unsprayed apple, NZAC: 1/1 female. **Paratypes**: AK: Auckland: Aug 1972, J. Johannesson, *Hexathele hochstetteri* burrow debris, NZAC: 1/1 male. NN: Ruby Bay, 12 Oct 1965, E. Collyer, *Rhipogonum scandens* forest, 1/1 female. KA: Puhipuhi Valley, Kaikoura, under stones, etc., 31 Aug 1971, G. W. Ramsay, 1/1 female. MC: Christchurch, Reid, July 1980, A. M. Ferguson, *Actinidia deliciosa*, 1/1 female. CO: same data as holotype, 1/1 female.

**Habitat.** *Actinidia deliciosa*, bark of unsprayed apple, debris in burrow of *Hexathele hochstetteri*, *Rhipogonum scandens* forest, under stones.

**Etymology.** The species name is derived from the Latin word *parilis*, meaning similar, referring to the similarity to *M. hirsuta* Wood.

**Remarks.** Some of the specimens employed by Wood (1967) to describe *M. hirsuta* are used to define *M. parilis* sp. n. Females of *M. parilis* sp. n. resemble those of *M. hirsuta* Wood in having a similar pattern of dorsal shields and the same number of setae and solenidia on legs, but can be separated from the latter by having shorter dorsal idiosomal setae, *vi* and *ve* less than half length of leg I, *ve* nearly as long as *sci*, and with 3 pairs of aggenital setae. Male of the new species can be separated from those of *M. hirsuta* by having setae *vi* and *ve* less than half length of leg I.

#### *Mecognatha rara* sp. n.

Fig. 31–32

**Diagnosis. Female.** Setae stout and serrated; *vi* and *ve* less than 1/4 length of leg I and slightly longer than tibia I; *ve* about 1.2 times length of *sci*; *sci* about as long as tibia I;  $h_1$  nearly twice length of *dFI*; with 3 pairs of aggenital setae.

**Description. Female** (Fig. 31–32, n = 1)

**Gnathosoma.** Chelicerae slender and long, 215; movable digits nearly 2/3 length of chelicerae, 137. Palp elongate, 231; accessory claw minute. Subcapitular setae *n* 1.5 times length of *m*; *m* = 62, *n* = 96, *m*–*m* = 10, *n*–*n* = 21, *m*–*n* = 37.



**Idiosoma.** Oval in shape, 372 long, 307 wide. Dorsal shields faintly punctate; dorsal idiosomal setae stout and strongly serrated; *vi* and *ve* less than 1/4 length of leg I. Prodorsal shield with 2 pairs of dimples; eyes 15 in diameter; *pob* 14 in diameter; ratio *ve*: *sci* = 1.2; lengths of setae: *vi* 82, *ve* 86, *sci* 74; distances: *vi-vi* 55, *vi-ve* 55, *ve-sci* 55. Shield CD with 3 pairs of dimples; ratio *c*<sub>1</sub>: *c*<sub>1</sub>-*c*<sub>1</sub> = 1.1; lengths of setae: *c*<sub>1</sub> 75, *c*<sub>2</sub> 75, *d*<sub>1</sub> 73, *d*<sub>2</sub> 72, *e*<sub>1</sub> 72, *e*<sub>2</sub> 72, *f*<sub>1</sub> 72; distances: *c*<sub>1</sub>-*c*<sub>1</sub> 71, *c*<sub>1</sub>-*d*<sub>1</sub> 86, *d*<sub>1</sub>-*d*<sub>1</sub> 51, *d*<sub>1</sub>-*d*<sub>2</sub> 79, *d*<sub>1</sub>-*e*<sub>1</sub> 87, *e*<sub>1</sub>-*e*<sub>1</sub> 76, *e*<sub>1</sub>-*e*<sub>2</sub> 56, *e*<sub>1</sub>-*f*<sub>1</sub> 45, *f*<sub>1</sub>-*f*<sub>1</sub> 75. Suranal setae *h*<sub>1</sub> slightly longer than *h*<sub>2</sub>, *h*<sub>1</sub> 37, *h*<sub>2</sub> 34. Ventral setae *la*: *3a*: *4a* = 1.2: 1.1: 1.0; lengths: *la* 101, *3a* 93 and *4a* 87. Aggenital area with 3 pairs of setae on membrane, *ag*<sub>1</sub> 23, *ag*<sub>2</sub> 22, *ag*<sub>3</sub> 19; genitoanal valves with 1 pair of genital setae and 3 pairs of pseudanal setae, lengths: *g*<sub>1</sub> 13, *ps*<sub>1</sub> 13, *ps*<sub>2</sub> 18, *ps*<sub>3</sub> 17.

**Legs.** Length: leg I 351, leg II 287, leg III 275, leg IV 277. Setae *dFI* (69) and *dGI* (45) barbed. Counts of setae and solenidia on legs I-IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 1 + 1κ, 1, 1, 1; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 12 + 1ω, 9 + 1ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: Iω 39, IIω 33, IIIω 7, IVω 4.

**Distribution** (Map p. 376). New Zealand (this paper). AK / -.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: AK: Kumeu, May/June 1989, P. Dentener, ex *Persimmon* fruit, NZAC: 1/1 female.

**Habitat.** *Persimmon* fruit.

**Etymology.** The species name is derived from the Latin word *rarus*, meaning rare or uncommon.

**Remarks.** The female of *M. rara* sp. n. is similar to those of *M. parilis* sp. n. in having 3 pairs of aggenital setae, but it can be separated from the latter by having short and stout dorsal idiosomal setae, setae *vi* and *ve* less than 1/4 length of leg I and slightly longer than tibiae I, *sci* about as long as tibia I, and *h*<sub>1</sub> nearly twice length of *dFI*.

## Family Raphignathidae Kramer

Raphignathidae Kramer, 1877: 215. Type genus: *Raphignathus* Dugés, 1833.

**Diagnosis. Female.** Idiosoma oval in dorsoventral view. Gnathosoma projecting anterior to prodorsum; chelicerae basally fused and subterminally separate, conical; 1 pair of simple peritremes arising from basal midline of chelicerae and extending to anterior rim of prodorsum; palps stout, not elongate, tibial claws reduced or vestigial, palptarsus with 4 independent eupathidia, counts of setae (excluding solenidia and eupathidia) from palpcoxa to

palptarsus: 1*elcp*, 0, 2-3, 2 (rarely 1), 3 + 1 claw, 4; subcapitulum rarely elongate, with 2 pairs of subcapitular setae. Prodorsum with 2 pairs of vertical setae and 2 pairs of scapular setae; *pdx* absent; eyes present; *pob* present or absent. Dorsal hysterosoma with 5 series of setae: *c*, *d*, *e*, *f* and *h* (not including pseudanal setae which are associated with anal valve); *c*-series with 2 pairs of setae; *d*-series with 1 pair of setae; *e*-series with 1 pair of setae; *f*-series with 1 pair of setae; *h*-series with 3 pairs of setae. Coxae II and III contiguous; ventral setae *4a* present; ventral opisthosoma with 2 pairs of aggenital setae; genital and anal valves separate, genital valves with 3 pairs of setae, anal valves with 3 pairs of pseudanal setae. Leg tarsal claws present, nude; empodial axis without shafts, directly producing 2 rows of tenent hairs; tarsal stalk not prominent; counts of solenidia on genua I-IV: 1, 1, 0, 0; on tibiae I-IV: 1-2, 1, 1, 1; on tarsi I-IV: 2, 1, 0-1, 0-1; counts of setae on legs I-IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1*elcp*, 1-2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4-6, 3-4, 2-4; genua 5, 5, 4, 4; tibiae 5, 5, 5, 3-4; tarsi 19, 15-17, 13, 12-13.

**Male.** Dorsal shield somewhat fused; genital and anal openings fused; with a large complex aedeagus; having same number of tarsal solenidia as female; solenidia ω on tarsi I-IV enlarged.

**Tritonymph.** Similar to adults but without genital valves, with only 1 pair of genital setae in female.

**Deutonymph.** Similar to tritonymphs but setae *h*<sub>2</sub> absent, without genital setae in both sexes and aedeagus in male.

**Protonymph.** With 1 pair of subcapitular setae; ventral setae *4a* and genital setae absent; with 1 pair of aggenital setae; and with fewer setae on segments of legs than deutonymphs and adults.

**Larva.** Subcapitular setae, ventral setae *4a*, genital and aggenital setae absent; without leg IV; with fewer setae on segments of legs than protonymphs; setal complex (similar to duplex setae in Tetranychidae) on tarsus I present.

Only one genus is known from New Zealand.

## Key to stages of Raphignathidae

- 1 With 4 pairs of legs; coxae II and III each with 1-2 setae; with 1-2 pairs of subcapitular setae (Fig. 33 D) ..... 2
- With 3 pairs of legs; coxae II and III without setae; without subcapitular setae ..... **larva**
- 2 With 2 pairs of subcapitular setae (Fig. 33 D) ..... 3
- With 1 pair of subcapitular setae ..... **protonymph**

- 3 Setae  $h_3$  present (Fig. 33 A) ..... 4  
 — Setae  $h_3$  absent ..... **deutonymph**
- 4 Genital folds absent; with 1 pair of genital setae in female (Fig. 33 G) ..... (**tritonymph**) 5  
 — Genital folds present; with 3 pairs of genital setae in female (Fig. 33 F) ..... (**adult**) 6
- 5 With 1 pair of genital setae and 2 pairs of aggenital setae (Fig. 33 G) ..... **tritonymph female**  
 — Without genital setae, with 1 pair of aggenital setae ..... **tritonymph male**
- 6 With 3 pairs of genital setae (Fig. 37 B, G); without aedeagus; solenidia on tarsi normal (Fig. 38 A–B) ..... **adult female**  
 — Without genital setae; with an aedeagus (Fig. 39 B, F); solenidia on tarsi enlarged (Fig. 40 E–F) ..... **adult male**

#### Key to genera of Raphignathidae (adults)

- 1 Dorsum with a median podosomal shield, 1 pair of lateral podosomal shields and 1 hysterosomal shield (Fig. 33 A), these shields somewhat fused in males (Fig. 39 A) ..... (p. 34)... **Raphignathus** Dugés  
 — Dorsum without shields ..... **Neoraphignathus** Smiley & Moser

#### Genus *Raphignathus* Dugés

*Raphignathus* Dugés, 1833: 206. Type species: *Raphignathus ruberrimus* Dugés, 1834, by original designation.

*Acheles* Oudemans, 1903: 101. Type species: *Acheles mirabilis* Oudemans, 1903, by original designation; synonymy by Atyeo, 1963.

*Syncaligus* Berlese, 1910: 202. Type species: *Caligonus petrobis* Canestrini, 1889, by original designation; synonymy by Oudemans, 1923a: 138.

**Diagnosis. Female.** Counts of solenidia and setae from palptrochanter to palptarsus: 0, 2–3, 1–2, 3 + 1 claw, 4 + 1 $\omega$  + 4 terminal eupathidia. Dorsum with a median podosomal shield, 1 pair of lateral podosomal shields and 1 hysterosomal shield, with 0–5 pairs of setae on membrane between shields. Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 $elcp$ , 1–2, 2, 1; trochanters 1, 1, 2, 1; femora 6, 4–6, 3–4, 2–4; genua 5 + 1 $\kappa$ , 5 + 1 $\kappa$ , 4, 4; tibiae 5 + 1–2 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ , 3–4 + 1 $\phi$ ; tarsi 19 + 1 $\omega$  + 1 $\omega$ , 15–17 + 1 $\omega$ , 13 + 0–1 $\omega$ , 12–13 + 0–1 $\omega$ .

**Male.** Dorsal shield somewhat fused; solenidia  $\omega$  on tarsi enlarged.

This genus was previously recorded by Wood (1964a) from New Zealand. Here we describe two new species and record for the first time the presence of two described species.

#### Key to species of *Raphignathus* from New Zealand (adults)

- 1 Tibia I with 5 + 1 $\phi$  (Fig. 34 A); femur IV with 3 setae (Fig. 34 D) ..... 2  
 — Tibia I with 5 + 2 $\phi$  (Fig. 38 A); femur IV with 4 setae (Fig. 38 D) ..... 3
- 2 Palpfemur with 3 setae (Fig. 33 B);  $f_1-f_1$  about twice distance of  $e_1-e_1$  in female (Fig. 33 A) ..... (p. 34)... **R. atomatus** sp. n.  
 — Palpfemur with 2 setae (Fig. 41 D);  $f_1-f_1$  less than distance of  $e_1-e_1$  in female (Fig. 41 A) ..... (p. 37)... **R. gracilis** (Rack)
- 3 Femur III with 4 setae (Fig. 36 C);  $d_1$  situated on membrane between dorsal shields (Fig. 35 A); tarsus III with a solenidion in female (Fig. 36 C) ..... (p. 35)... **R. collegiatus** Atyeo, Baker & Crossley  
 — Femur III with 3 setae (Fig. 38 C);  $d_1$  situated on anterior margin of dorsal hysterosomal shield (Fig. 37 A); tarsus III without solenidion in female (Fig. 38 C) ..... (p. 36)... **R. crustus** sp. n.

#### *Raphignathus atomatus* sp. n.

Fig. 33–34

**Diagnosis. Female.** Palpfemur with 3 setae; dorsal idiosomal setae smooth and pointed; setae  $c_2$  situated on lateral podosomal shields; ratio  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1$  = 1.0: 4.0: 2.4: 4.5; counts of setae and solenidia on femora I–IV: 6, 5, 3, 3; on tibiae I–IV: 5 + 1 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ , 4 + 1 $\phi$ ; on tarsi I–IV: 19 + 1 $\omega$  + 1 $\omega$ , 15 + 1 $\omega$ , 13 + 1 $\omega$ , 13.

**Description. Female** (Fig. 33 A–F, 34, n = 1)

**Gnathosoma.** Stylophore 94; movable digits nearly 1/2 length of stylophore, 43. Palp 97; palpfemur with 3 setae; palptibial claw small, about 1/4 length of palptarsus; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 3 + 1 claw, 4 + 1 $\omega$  + 4 eupathidia. Subcapitular setae  $m = n = 45$ ;  $m-m = 19$ ,  $n-n = 37$ ,  $m-n = 10$ .

**Idiosoma.** Oval in shape, 289 long, 194 wide. Dorsal shield finely punctate; platelets behind  $c_1$  not observed; setae  $c_2$  situated on lateral podosomal shields. Eyes 8 in diameter; *pob* not observed. Dorsal idiosomal setae simple, smooth; ratio  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1$  = 1.0: 4.0: 2.4: 4.5; lengths: *vi* 31, *ve* 33, *sci* 32, *sce* 31,  $c_1$  31,  $c_2$  30,  $d_1$  31,

$e_1$  31,  $f_1$  30,  $h_1$  31,  $h_2$  32,  $h_3$  32; distances:  $vi-vi$  24,  $vi-ve$  33,  $ve-ve$  36,  $ve-sci$  26,  $sci-sce$  32,  $c_1-c_1$  21,  $c_1-d_1$  48,  $d_1-d_1$  84,  $d_1-e_1$  20,  $e_1-e_1$  50,  $e_1-f_1$  36,  $f_1-f_1$  95,  $h_1-h_1$  24,  $h_2-h_2$  50,  $h_2-h_3$  23. Endopodal shields not observed. Ventral setae  $1a$  longer than other 2 pairs,  $1a$  36,  $3a$  28,  $4a$  27. Aggenital setae  $ag_1 = 28$ ,  $ag_2 = 20$ . Genital setae  $g_1 = 24$ ,  $g_2 = 23$ ,  $g_3 = 23$ . Pseudanal setae  $ps_3$  21,  $ps_2$  23,  $ps_1$  21. **Legs.** Length: leg I 204, leg II 171, leg III 174, leg IV 231. Counts of setae and solenidia on legs I–IV: coxae (excluding  $1a$ ,  $3a$  and  $4a$ ) 2 + 1  $elcp$ , 2, 2, 1; trochanters 1, 1, 2, 1; femora 6, 5, 3, 3; genua 5 + 1  $\kappa$ , 5 + 1  $\kappa$ , 4, 4; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 4 + 1  $\phi$ ; tarsi 19 + 1  $\omega$  + 1  $\omega$ , 15 + 1  $\omega$ , 13 + 1  $\omega$ , 13. Lengths of solenidia: I  $\omega$  12, I  $\omega$  11, II  $\omega$  12, III  $\omega$  15, I  $\phi$  17.

**Tritonymph female** (Fig. 33 G,  $n = 1$ )

**Gnathosoma.** Stylophore 89; movable digits nearly 1/2 length of stylophore, 41. Palp 84; palptibial claw small, about 1/4 length of palptarsus. Counts of setae and solenidia on palp as in adult female except femur with 2 setae. Subcapitular setae  $m = n = 36$ ;  $m-m = 17$ ,  $n-n = 31$ ,  $m-n = 8$ .

**Idiosoma.** Oval in shape, 262 long, 187 wide. Dorsal shield finely punctate; platelets behind  $c_1$  not observed; setae  $c_2$  situated on lateral podosomal shields. Eyes 8 in diameter;  $pob$  not observed. Dorsal idiosomal setae simple; ratio  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.0$ : 3.2: 2.2: 3.6; lengths:  $vi$  26,  $sci$  27,  $ve$  26,  $sce$  28,  $c_1$  27,  $c_2$  26,  $d_1$  26,  $e_1$  26,  $f_1$  26,  $h_1$  28,  $h_2$  18,  $h_3$  19; distances:  $vi-vi$  19,  $vi-ve$  20,  $ve-ve$  30,  $ve-sci$  28,  $sci-sce$  22,  $c_1-c_1$  19,  $c_1-d_1$  46,  $d_1-d_1$  60,  $d_1-e_1$  24,  $e_1-e_1$  41,  $e_1-f_1$  33,  $f_1-f_1$  69,  $h_1-h_1$  18,  $h_2-h_2$  36,  $h_2-h_3$  13. Endopodal shields not observed. Ventral setae  $1a$  longer than other 2 pairs,  $1a$  28,  $3a$  20,  $4a$  21. Aggenital setae  $ag_1 = ag_2 = 19$ . Genital setae  $g_1 = 19$ ,  $g_2$  and  $g_3$  absent. Pseudanal setae  $ps_3$  18,  $ps_2$  20,  $ps_1$  18.

**Legs.** Length: leg I 185, leg II 149, leg III 148, leg IV 187. Counts of setae and solenidia on legs I–IV: coxae (excluding  $1a$ ,  $3a$  and  $4a$ ) 2 + 1  $elcp$ , 1, 2, 0; trochanters 1, 1, 2, 1; femora 5, 5, 3, 3; genua 5 + 1  $\kappa$ , 5 + 1  $\kappa$ , 4, 4; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 4 + 1  $\phi$ ; tarsi 15 + 1  $\omega$  + 1  $\omega$ , 11 + 1  $\omega$ , 9 + 1  $\omega$ , 9. Lengths of solenidia: I  $\omega$  11, I  $\omega$  9, II  $\omega$  7, III  $\omega$  4.

**Protonymph** ( $n = 1$ )

**Gnathosoma.** Stylophore 79; movable digits nearly 1/2 length of stylophore, 38. Palp 79; palptibial claw small, about 1/4 length of palptarsus. Counts of setae and solenidia on palp as in adult female except femur with 2 setae. Subcapitular setae  $m$  36,  $n$  absent;  $m-m = 21$ .

**Idiosoma.** Oval in shape, 216 long, 159 wide. Dorsal shield finely punctate; platelets behind  $c_1$  not observed; setae  $c_2$  situated on lateral podosomal shields. Eyes 7 in diameter;  $pob$  not observed. Dorsal idiosomal setae simple, smooth; ratio  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.0$ : 3.6: 1.8:

3.1. lengths:  $vi$  21,  $sci$  22,  $ve$  23,  $sce$  22,  $c_1$  22,  $c_2$  22,  $d_1$  18,  $e_1$  21,  $f_1$  23,  $h_1$  25,  $h_2$  26,  $h_3$  absent; distances:  $vi-vi$  20,  $vi-ve$  27,  $ve-ve$  32,  $ve-sci$  24,  $sci-sce$  22,  $c_1-c_1$  18,  $c_1-d_1$  37,  $d_1-d_1$  65,  $d_1-e_1$  47,  $e_1-e_1$  32,  $e_1-f_1$  22,  $f_1-f_1$  56,  $h_1-h_1$  19,  $h_2-h_2$  10. Ventral setae  $4a$  absent,  $1a$  29,  $3a$  20. Aggenital setae  $ag_1 = 20$ ,  $ag_2$  absent. Genital setae absent. Pseudanal setae  $ps_3 = ps_2 = ps_1$  17.

**Legs.** Length: leg I 159, leg II 127, leg III 132, leg IV 147. Counts of setae and solenidia on legs I–IV: coxae (excluding  $1a$ ,  $3a$  and  $4a$ ) 2 + 1  $elcp$ , 1, 0, 0; trochanters 1, 1, 2, 0; femora 3, 3, 2, 0; genua 5 + 1  $\kappa$ , 5 + 1  $\kappa$ , 4, 1; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 3 + 1  $\phi$ ; tarsi 15 + 1  $\omega$  + 1  $\omega$ , 10 + 1  $\omega$ , 9 + 1  $\omega$ , 8. Lengths of solenidia: I  $\omega$  12, I  $\omega$  11, II  $\omega$  12, III  $\omega$  15, I  $\phi$  17. Lengths of solenidia: I  $\omega$  9, I  $\omega$  7, II  $\omega$  8, III  $\omega$  3.

**Distribution** (Map p. 377). Three Kings Islands only (this paper).

TH / - / -.

**Material examined.** Holotype and 2 paratypes. **Holotype** female: NEW ZEALAND: TH: Three Kings Is, Great I, Nov 1970, G. W. Ramsay, litter, NZAC: 1/1 female. **Paratypes:** same collection data as holotype slide: 2/1 tritonymph female, 1 protonymph.

**Habitat.** Litter.

**Etymology.** The species name is derived from the Latin word *atomos*, meaning primary.

**Remarks.** Females of *R. atomatus* sp. n. resemble those of *R. aciculatus* Fan (Fan & Yin 2000) in having 3 setae on the palpfemur, the same number of setae on femora I–IV, and similar patterns of dorsal shields, but it can be separated from the latter by tibia III with 5 + 1  $\phi$ , tarsus II with 15 + 1  $\omega$  and setal ratio  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.0$ : 4.0: 2.4: 4.5.

### *Raphignathus collegiatus* Atyeo, Baker & Crossley

Fig. 35–36

*Raphignathus collegiatus* Atyeo, Baker & Crossley, 1961: 17; Vainstein & Kuznetsov, 1978a: 150; Kuznetsov & Petrov, 1984: 100; Meyer & Ueckermann, 1989: 42; Fan & Yin, 2000: 91; Dogan & Ayyildiz, 2003: 146.

*Raphignathus guianensis* Hu, Jing & Liang, 1995: 21. Synonymy by Fan & Yin, 2000: 91.

**Diagnosis. Female.** Palpfemur with 3 setae; palpgenu with 2 setae; setae  $c_2$  situated on lateral podosomal shields; membrane between dorsal shields bearing 1 pair of setae;  $f_1$  situated on anterior margin of hysterosomal shield. Ratios  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.0$ : 3.7: 4.5–5.0: 3.0–4.1. Coxae III and IV with endopodal shields. Counts of setae and solenidia on: femora I–IV: 6, 6, 4, 4; on tibiae I–IV: 5 + 2  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 4 + 1  $\phi$ ; on tarsi I–IV: 19 + 1  $\omega$  + 1  $\omega$ , 15 + 1  $\omega$ , 13 + 1  $\omega$ , 13.

**Description. Female** (Fig. 35–36, n = 2)

**Gnathosoma.** Stylophore 132; movable digits nearly 1/2 length of stylophore, 98. Palp 145; palpfemur with 3 setae; palptibial claw small, about 1/4 length of palptarsus; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 3 + 1 claw, 4 + 1 $\omega$  + 4 eupathidia. Subcapitular setae *m* anteriorad of *n*, 39, *n* 40; *m*–*m* = 23, *n*–*n* = 40, *m*–*n* = 20.

**Idiosoma.** Oval in shape, 402 long, 257 wide. Dorsal shield punctate; platelets behind *c*<sub>1</sub> present; setae *c*<sub>2</sub> situated on lateral podosomal shields; setae *d*<sub>1</sub> situated on membrane between shields; *e*<sub>1</sub> situated on dorsal hysterosomal shield. Eyes 13 in diameter, *pob* 15 in diameter. Dorsal idiosomal setae thin and pointed; ratio *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.0: 3.7: 5.0: 4.1; lengths: *vi* 25, *ve* 28, *sci* 28, *sce* 30, *c*<sub>1</sub> 25, *c*<sub>2</sub> 28, *d*<sub>1</sub> 25, *e*<sub>1</sub> 28, *f*<sub>1</sub> 28, *h*<sub>1</sub> 28, *h*<sub>2</sub> 25, *h*<sub>3</sub> 28; distances: *vi*–*vi* 30, *vi*–*ve* 42, *ve*–*ve* 63, *ve*–*sci* 44, *sci*–*sce* 30, *c*<sub>1</sub>–*c*<sub>1</sub> 15, *c*<sub>1</sub>–*d*<sub>1</sub> 32, *d*<sub>1</sub>–*d*<sub>1</sub> 55, *d*<sub>1</sub>–*e*<sub>1</sub> 40, *e*<sub>1</sub>–*e*<sub>1</sub> 75, *e*<sub>1</sub>–*f*<sub>1</sub> 60, *f*<sub>1</sub>–*f*<sub>1</sub> 62, *h*<sub>1</sub>–*h*<sub>1</sub> 27, *h*<sub>1</sub>–*h*<sub>2</sub> 32. Endopodal shields of coxae I–II and III–IV present. Ventral setae *1a* 30, *3a* 28, *4a* 28. Aggenital setae *ag*<sub>1</sub> = 25, *ag*<sub>2</sub> = 24. Genital setae *g*<sub>1</sub> = *g*<sub>2</sub> = *g*<sub>3</sub> = 24. Pseudanal setae *ps*<sub>3</sub> 28, *ps*<sub>2</sub> 26, *ps*<sub>1</sub> 25.

**Legs.** Length: leg I 308, leg II 258, leg III 381, leg IV 315. Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 *elcp*, 2, 2, 1; trochanters 1, 1, 2, 1; femora 6, 5, 4, 4; genua 5 + 1 $\kappa$ , 5 + 1 $\kappa$ , 4, 4; tibiae 5 + 2 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ , 4 + 1 $\phi$ ; tarsi 19 + 1 $\omega$  + 1 $\omega$ , 15 + 1 $\omega$ , 13 + 1 $\omega$ , 13. Lengths of solenidia: I $\omega$  5, I $\omega$  $\phi$  7, II $\omega$  5, III $\omega$  4, I $\phi$ ' 4, I $\phi$ " 18.

**Distribution** (N.Z., Map xx). New Zealand (this paper), China (Hu *et al.* 1995, Fan & Yin 2000), Egypt (Zaher & Gomaa 1979), Turkey (Dogan & Ayyildiz 2003), U.S.A. (Atyeo, Baker & Crossley 1961), former U.S.S.R. (Kuznetsov 1976, Vainstein & Kuznetsov 1978a, Kuznetsov & Petrov 1984).

– / NN.

**Location of holotype.** ZMH.

**Material examined.** 1 non-type specimen. NEW ZEALAND: NN: Nelson, Cawthron, laboratory, 25 Dec 1944, P. L. R., NZAC: 1/1 female.

**Habitat.** Bark of *Bischofia javanica*, under bark of horse chestnut tree, house, moss, palm tree, soil under *Crataegus* sp.

### **Raphignathus crustus sp. n.**

Fig. 37–40

**Diagnosis. Female.** Palpfemur with 3 setae; palpgenu with 2 setae; dorsal idiosomal setae smooth and thick; setae *c*<sub>2</sub> situated on lateral podosomal shields; *d*<sub>1</sub> situated on anterior margin of hysterosomal shield; ratio *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–

*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.0: 2.9–4.1: 8.8–11.3: 8.1–10.8; endopodal shields prominent, embracing coxae I–IV; counts of setae and solenidia on femora I–IV: 6, 6, 3, 4; tibiae I–IV: 5 + 2 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ , 4 + 1 $\phi$ ; tarsi I–IV: 19 + 1 $\omega$  + 1 $\omega$ , 17 + 1 $\omega$ , 13, 13.

**Male.** Ratio *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.0: 4.1: 7.9: 9.1; counts of setae and solenidia on tarsi I–IV: 19 + 1 $\omega$  + 1 $\omega$ , 17 + 1 $\omega$ , 13 + 1 $\omega$ , 13 + 1 $\omega$ ; solenidia on tarsi I–IV extraordinarily long.

**Description. Female** (Fig. 37–38, n = 2)

**Gnathosoma.** Stylophore 135 (135–142); movable digits about 1/2 length of stylophore, 75. Palp 137; palpfemur with 3 setae; palptibial claw small, about 1/5 length of palptarsus; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 3 + 1 claw, 4 + 1 $\omega$  + 4 eupathidia. Subcapitular setae *m* 57, *n* 53 (53–55); *m*–*m* = 27 (22–27), *n*–*n* = 53 (45–53), *m*–*n* = 12 (12–14).

**Idiosoma.** Oval in shape, 381 (337–381) long, 267 (255–267) wide. Dorsal shields punctate and faintly reticulate; platelets behind *c*<sub>1</sub> minute; setae *c*<sub>2</sub> situated on lateral podosomal shields; setae *d*<sub>1</sub> situated on anterior margin of hysterosomal shield. Eyes 12 in diameter, *pob* 25 in diameter. Dorsal idiosomal setae thick and smooth; ratio *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.0: 2.9–4.1: 8.8–11.3: 8.1–10.8; lengths: *vi* 45 (44–45), *sci* 50, *ve* 52 (50–52), *sce* 45, *c*<sub>1</sub> 40 (38–40), *c*<sub>2</sub> 50, *d*<sub>1</sub> 37, *e*<sub>1</sub> 46 (45–46), *f*<sub>1</sub> 45 (45–48), *h*<sub>1</sub> 50 (48–50), *h*<sub>2</sub> 45, *h*<sub>3</sub> 35 (35–43); distances: *vi*–*vi* 20 (15–20), *vi*–*ve* 19 (17–19), *ve*–*ve* 42 (32–42), *ve*–*sci* 55 (55–63), *sci*–*sce* 37 (30–37), *c*<sub>1</sub>–*c*<sub>1</sub> 12 (12–16), *c*<sub>1</sub>–*d*<sub>1</sub> 45 (30–45), *d*<sub>1</sub>–*d*<sub>1</sub> 50 (47–50), *d*<sub>1</sub>–*e*<sub>1</sub> 52 (47–52), *e*<sub>1</sub>–*e*<sub>1</sub> 135 (135–140), *e*<sub>1</sub>–*f*<sub>1</sub> 52, *f*<sub>1</sub>–*f*<sub>1</sub> 130, *h*<sub>1</sub>–*h*<sub>1</sub> 42, *h*<sub>1</sub>–*h*<sub>2</sub> 62 (55–62), *h*<sub>2</sub>–*h*<sub>3</sub> 30 (30–42). Endopodal shields prominent, embracing coxae I–IV. Ventral setae *1a* longer than other two pairs, *1a* 40 (40–42), *3a* 32 (32–35), *4a* 33 (33–36). Aggenital setae *ag*<sub>1</sub> = 35 (35–36), *ag*<sub>2</sub> = 22 (22–26). Genital setae *g*<sub>1</sub> = 22 (22–23), *g*<sub>2</sub> = 22 (22–23), *g*<sub>3</sub> = 22 (22–23). Pseudanal setae *ps*<sub>3</sub> 22 (22–23), *ps*<sub>2</sub> 20 (20–22), *ps*<sub>1</sub> 22 (22–23).

**Legs.** Leg IV longest; length: leg I 285 (285–286), leg II 241 (238–241), leg III 262 (262–275), leg IV 335 (335–340). Counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 *elcp*, 2, 2, 1; trochanters 1, 1, 2, 1; femora 6, 6, 3, 4; genua 5 + 1 $\kappa$ , 5 + 1 $\kappa$ , 4, 4; tibiae 5 + 2 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ , 4 + 1 $\phi$ ; tarsi 19 + 1 $\omega$  + 1 $\omega$ , 17 + 1 $\omega$ , 13, 13. Lengths of solenidia: I $\omega$  20, I $\omega$  $\phi$  11, II $\omega$  15, I $\phi$ ' 7 (7–8), I $\phi$ " 19 (18–19).

**Male** (Fig. 39–40, n = 1)

**Gnathosoma.** Stylophore 97; movable digits about 1/2 length of stylophore, 52. Palp 110; palptibial claw small, about 1/5 length of palptarsus. Counts of setae and solenidia on palps as in female. Subcapitular setae *m* = *n* = 45; *m*–*m* = 20, *n*–*n* = 38, *m*–*n* = 12.

**Idiosoma.** Oval in shape, 295 long, 205 wide. Dorsal shields fused and finely punctate; Eyes 10 in diameter, *pob* 21 in diameter. Dorsal idiosomal setae simple, smooth; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.0: 4.1: 7.9: 9.1$ ; lengths: *vi* 33, *sci* 33, *ve* 35, *sce* 35,  $c_1$  13,  $c_2$  14,  $d_1$  12,  $e_1$  25,  $f_1$  31,  $h_1$  18,  $h_2$  35,  $h_3$  30; distances: *vi-vi* 19, *vi-ve* 13, *ve-ve* 32, *ve-sci* 45, *sci-sce* 32,  $c_1-c_1$  11,  $c_1-c_2$  50,  $c_1-d_1$  32,  $d_1-d_1$  45,  $d_1-e_1$  25,  $e_1-e_1$  87,  $e_1-f_1$  30,  $f_1-f_1$  100,  $h_1-h_1$  20,  $h_1-h_2$  50,  $h_2-h_3$  25. Endopodal shields as in female. Ventral setae *1a* longer than other 2 pairs, *1a* 35, *3a* 30, *4a* 30. Aedeagus prominent as illustrated. Aggenital setae  $ag_1 = 30$ ,  $ag_2$  absent. Genital setae absent. Pseudanal setae  $ps_3$  22,  $ps_2$  20,  $ps_1$  22.

**Legs.** Length: leg I 265, leg II 220, leg III 232, leg IV 282. Counts of setae and solenidia as in female. Solenidia on tarsi extraordinarily long, lengths: I $\omega$  53, I $\omega$ p 11, II $\omega$  60, III $\omega$  60, IV $\omega$  65, I $\omega$ ' 7, I $\omega$ " 18.

**Distribution** (Map p. 377). New Zealand (this paper). AK / -.

**Material examined.** Holotype and 9 paratypes. **Holotype** female: NEW ZEALAND: AK: Mount Albert, 26 Mar 2003, Q.-H. Fan and Z.-Q. Zhang, bark of *Pinus* sp., NZAC: 1/1 female. **Paratypes:** same collection data as holotype slide: 1/1 male. **AK:** Aug 1972, J. Johannesson, burrow debris of *Hexathele hochstetteri*, NZAC: 1/8 females.

**Habitat.** Bark of *Pinus* sp., burrow debris of *Hexathele hochstetteri*.

**Etymology.** The species name is derived from the Latin word *crusta*, meaning shell, referring to the idiosomal shields.

**Remarks.** Females of *R. crustus* sp. n. resemble those of *R. bathursti* Meyer & Ryke, 1960 in having 3 setae on the palpfemur, a large hysterosomal shield, and 2 solenidia on tibia I, but it can be readily separated from the latter by having femora III with 3 setae, tarsus II with 17 + 1 $\omega$ , and tarsi III-IV lacking solenidia.

### **Raphignathus gracilis (Rack)**

Fig. 41-42

*Acheles gracilis* Rack, 1962: 281.

*Raphignathus gracilis*. — Atyeo, 1963: 181; Gerson, 1968: 434; Vainstein & Kuznetsov, 1978a: 150; Zaher & Gomaa, 1979: 198; Ehara, 1980: 248; Kuznetsov & Petrov, 1984: 99; Meyer & Ueckermann, 1989: 39; Koç & Ayyildiz, 1996: 210; Fan & Yin, 2000: 90.

**Diagnosis. Female.** Palpfemur with 2 setae; palpgenu with 2 setae; setae  $c_2$  situated on lateral podosomal shields; membrane between dorsal shields bearing 2 pairs of setae,  $f_1$  situated on anterior margin of hysterosomal shield. Ra-

tios  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.0: 3.7: 4.5: 3.0$ . Coxae III and IV with a small endopodal shields. Counts of setae and solenidia on: femora I-IV: 6, 5, 3, 3; on tibiae I-IV: 5 + 1 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ p, 4 + 1 $\phi$ p; on tarsi I-IV: 19 + 1 $\omega$  + 1 $\omega$ p, 15 + 1 $\omega$ , 13 + 1 $\omega$ , 13.

**Description. Female** (Fig. 41-42, n = 2)

**Gnathosoma.** Stylophore 77 (75-77); movable digits nearly 1/2 length of stylophore, 37 (35-37). Palp 107 (102-107); palpfemur with 2 setae; palptibial claw small, about 1/4 length of palptarsus; counts of setae and solenidia from palptrochanter to palptarsus: 0, 2, 2, 3 + 1 claw, 4 + 1 $\omega$  + 4 eupathidia. Subcapitular setae *m* 34 (29-34), *n* 33 (30-33); *m-m* = 20 (20-21), *n-n* = 42 (40-42), *m-n* = 11 (10-11).

**Idiosoma.** Oval in shape, 302 (302-342) long, 177 (177-185) wide. Dorsal shield faintly punctate; platelets behind  $c_1$  prominent; setae  $c_2$  situated on lateral podosomal shields; setae  $d_1$  and  $e_1$  situated on membrane between shields;  $f_1$  situated on anterior margin of hysterosomal shield. Eyes 12 (11-12) in diameter, *pob* not observed. Dorsal idiosomal setae thin and smooth; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.0: 3.7: 4.5: 3.0$ ; lengths: *vi* 32 (32-33), *sci* 32 (32-33), *ve* 32 (32-33), *sce* 31 (31-32),  $c_1$  22 (22-23),  $c_2$  30 (29-30),  $d_1$  25 (24-25),  $e_1$  25 (24-25),  $f_1$  25 (24-25),  $h_1$  26 (24-26),  $h_2$  26 (25-26),  $h_3$  23 (23-24); distances: *vi-vi* 30 (20-30), *vi-ve* 29 (29-31), *ve-ve* 50 (41-50), *ve-sci* 27 (25-27), *sci-sce* 32 (22-32),  $c_1-c_1$  15 (12-15),  $c_1-d_1$  42 (40-42),  $d_1-d_1$  55 (50-55),  $d_1-e_1$  37 (35-37),  $e_1-e_1$  67,  $e_1-f_1$  25 (25-30),  $f_1-f_1$  45 (40-45),  $h_1-h_1$  22 (17-22),  $h_1-h_2$  27,  $h_2-h_3$  20 (12-20). Endopodal shields of coxae III-IV present. Ventral setae *1a* 30, *3a* 30 (30-31), *4a* 27 (25-27). Aggenital setae  $ag_1 = 25$  (23-25),  $ag_2 = 22$  (20-22). Genital setae  $g_1 = g_2 = g_3 = 17$ . Pseudanal setae  $ps_3$  21,  $ps_2 = ps_1$  17.

**Legs.** Length: leg I 272 (272-287), leg II 240 (240-245), leg III 235 (235-275), leg IV 282 (282-320). Counts of setae and solenidia on legs I-IV: coxae (excluding *1a*, *3a*, and *4a*) 2 + 1 $elcp$ , 2, 2, 1; trochanters 1, 1, 2, 1; femora 6, 5, 3, 3; genua 5 + 1 $\kappa$ , 5 + 1 $\kappa$ , 4, 4; tibiae 5 + 1 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ p, 4 + 1 $\phi$ p; tarsi 19 + 1 $\omega$  + 1 $\omega$ p, 15 + 1 $\omega$ , 13 + 1 $\omega$ , 13. Lengths of solenidia: I $\omega$  12, I $\omega$ p 10, II $\omega$  9, III $\omega$  6, I $\phi$  16.

**Distribution** (N.Z., Map p. 377). New Zealand (this paper), Algeria (Meyer & Ueckermann 1989), China (Li *et al.* 1992, Hu *et al.* 1995, Fan & Yin 2000), Egypt (Zaher & Gomaa 1979), former U.S.S.R. (Vainstein & Kuznetsov 1978a, Kuznetsov & Petrov 1984), Germany (Rack 1962), Israel (Gerson 1968), Japan (Ehara 1980), U.S.A. (Atyeyo 1963, Charlet & McMurtry 1977), Turkey (Koç & Ayyildiz 1996).

- / NN.

**Location of holotype.** ZMH.

**Material examined.** 2 non-type specimens. NEW ZEALAND: NN: Nelson, Cable Bay Road, 1<sup>st</sup> farm on left, 30 Nov 1971, P. G. Fenemore, pasture, NZAC: 1/1 female. ??: 22 June 1973, pipe 2, 1/1 female.

**Habitat.** Dried *Auricularia auricula-judae*; bark of *Cinnamomum* sp., *Citrus* sp., *Cupressus* sp., *Cynodon dactylon*, *Grevillea robusta*, *Eucalyptus tereticornis*, *Eucalyptus* sp., *Platanus orientalis*, *Psidium guayava*; leaves of pteridophyte; bulb of garlic; forest falls; house; litter of *Quercus* sp., pine, straw, *Tamarix* sp.; moss; pasture; peanut; *Pinus coulteri*; pigeons' nests; *Serissa japonica*; soil, soil under *Dimocarpus longan*, soil taken from the root zone of *Dactylis glomerata*; *Tamarix* sp.; *Tremella* sp.

**Remarks.** We agree with Robaux (1976) and Meyer & Ueckermann (1989) in that Atyeo's (1963) redescription of *R. gracilis* was different from the original description (Rack 1962). They are not conspecific and can be separated by the presence/absence of solenidion on tarsi III and the comparative distances of setae  $c_1-c_1$ ,  $d_1-d_1$ ,  $e_1-e_1$ , and  $f_1-f_1$ .

### Family Stigmaeidae Oudemans

Stigmaeidae Oudemans, 1931: 252. Type genus: *Stigmaeus* Koch, 1836a.

**Diagnosis. Female.** Idiosoma oval, round, or elongate in dorsoventral view. Gnathosoma projecting anterior to prodorsum; chelicerae separate or basally conjunct, conical; peritreme absent; palps stout, palptarsi rarely elongate, tibial claw prominent, rarely less than 1/2 length of palptarsus, palptarsus with 4 eupathidia, 3 of them (ul'ζ, ul"ζ, and sulζ) often basally fused, counts of setae (excluding solenidia and eupathidia) from palpcoxa to palptarsus: 1elcp, 0, 1-3, 1-2, 3 + 1 claw, 4; subcapitulum not elongate, with 2 pairs (rarely 1 pair) of subcapitular setae. Prodorsum with 2 pairs of vertical setae, 1-2 pairs of scapular setae; eyes present or absent; pob present or absent. Dorsal hysterosomal setae: c-series with 2 pairs of setae, rarely 1 pair; d-series with 2 pairs of setae, rarely 1 pair; e-series with 2 pairs of setae; f-series with 1 pair of setae; h-series with 2 pairs, rarely 3 pairs of setae. Coxae II and III obviously separated; ventral setae 4a rarely absent; ventral opisthosoma with 1-5 pairs of aggenital setae; genital and anal valves fused or contiguous, genital valves with 0-3 pairs of setae and anal valves with 3 pairs of pseudanal setae. Leg tarsal claws present, nude, rarely absent; empodial axis bearing 3 shafts, rarely 2, each shaft producing 1 pair of tenent hairs; tarsi not stalked; counts of solenidia on genua I-IV: 1, 0-1, 0, 0; on tibiae I-IV: 1-2, 1, 1, 0-1; on tarsi I-IV: 1, 1, 1, 0-1; counts of setae on legs I-IV: coxae (excluding 1a, 3a and 4a) 1-2 + 1elcp, 1-

2, 1-2, 0-2; trochanters 1, 1, 1-2, 0-1; femora 4-6, 4-6, 2-3, 1-3; genua 1-5, 0-4, 0-3, 0-3; tibiae 5, 5, 5, 4-5; tarsi 9-14, 8-9, 6-7, 6-8.

**Male.** Hysterosoma somewhat tapered; setae  $ps_1$  and  $ps_2$  reduced, peg-like; genital and anal openings fused; genital setae absent; having an aedeagus; additional solenidia ( $\omega_2$ ) at least present on tarsi I-II.

**Deutonymph.** Similar to adults but without genital folds and setae in both sexes and aedeagus in male.

**Protonymph.** With 1 pair of subcapitular setae; ventral setae 4a and genital setae absent; with fewer setae in aggenital area and on segments of legs than deutonymphs and adults.

**Larva.** Subcapitular setae, ventral setae 4a, genital, and aggenital setae absent; without leg IV; with fewer setae on segments of legs than protonymphs; setal complex (similar to duplex setae in Tetranychidae) on leg I present.

Thirteen genera were known from New Zealand. A new genus is proposed here.

### Key to stages of Stigmaeidae

- 1 With 4 pairs of legs; coxae II and III each with 1-2 setae; with 1-2 pairs of subcapitular setae (Fig. 45 B, 121 E) ..... 2
- With 3 pairs of legs; coxae II and III without setae; without subcapitular setae (Fig. 123 B) ..... **larva**
- 2 With 2 pairs of subcapitular setae (Fig. 45 B) (except *Mediolata*, palptarsi elongate); ventral setae 4a rarely absent ..... 3
- With 1 pair of subcapitular setae; ventral setae 4a absent ..... **protonymph**
- 3 Genital folds and setae absent in female; males without aedeagus; trochanter IV nude ..... **deutonymph**
- Genital folds present; genital setae present in female (Fig. 45 B, F) (*Agistemus*, *Eryngiopus*, *Mediolata*, *Neilstigmaeus*, *Parastigmaeus*, *Pilonychiopus*, *Primagistemus*, *Prostigmaeus*, *Pseudostigmaeus*, *Scutastigmaeus*, *Stigmaeus*, *Storchia*, *Summersiella*, *Zetzellia*) or absent (Fig. 71 B, F) (*Caligohomus*, *Cheyllostigmaeus*, *Eustigmaeus*, *Ledermuelleriopsis*, *Makilingeria*, *Mendanaia*, *Mullederia*, *Mullederiopsis*, *Paravillersia*, *Postumius*, *Villersia*, *Villersiella*) in female; males with an aedeagus (Fig. 59 B, F); trochanter IV often with 1 seta (Fig. 60 D) ..... **(adult) 4**
- 4 Without aedeagus; tarsi I-II each with one solenidion (Fig. 58 A-B) ..... **female**
- With an aedeagus; tarsi I-II each with 2 solenidia (Fig. 60 A-B) ..... **male**

## Key to genera of Stigmaeidae (adults)\*

- 1 Palptibial claw prominent, subequal to palptarsus (Fig. 45 C); with 2 pairs of subcapitular setae (Fig. 45 D) ..... 2  
 — Palptibial claw small, no more than 1/2 length of elongate palptarsus (Fig. 139 D); with 1 pair of subcapitular setae (Fig. 139 E) ... (p. 68)... *Mediolata* Canestrini
- 2 Setae  $e_1$  and  $f_1$  situated on different shields or platelets in female (Fig. 45 A); with at least 1 pair of genital setae in female (Fig. 45 F) ..... 3  
 — Setae  $e_1$  and  $f_1$  situated on same shield in female (except *Villersiella*) (Fig. 71 A); without genital setae (Fig. 71 F) ..... 15
- 3 Coxa II with 1 seta (Fig. 45 B); palpgenu with 1 seta (Fig. 45 D) ..... 4  
 — Coxa II with 2 setae (Fig. 189 B); palpgenu with 2 setae (Fig. 189 D) ..... 10
- 4 Leg tarsi each terminated in a pair of claws, a membranous arolium sometimes present at bases of claws but not extending to midway of them (Fig. 48 A–E) ..... 5  
 — Leg tarsi each terminated in a membranous arolium from which axis of tenent hairs arise; leg claws absent or vestigial ..... 9
- 5 Setae  $e_1$  and  $e_2$  situated on same shield (Fig. 45 A, 231 A) ..... 6  
 — Setae  $e_1$  and  $e_2$  situated on different shields or platelets (Fig. 65 A, 165 A) ..... 7
- 6 Setae  $d_1$  and  $d_2$  situated on same shield (Fig. 45 A);  $e_1$  and  $f_1$  situated on same shield in male (Fig. 47 A) ..... (p. 40)... *Agistemus* Summers  
 — Setae  $d_1$  and  $d_2$  situated on different shields or platelets (Fig. 223 A, 231 A), rarely on same;  $e_1$  and  $f_1$  situated on same shield (Fig. 225 A) or different shields or platelets in male (Fig. 233 A) ..... (p. 103)... *Zetzellia* Oudemans
- 7 Dorsal hysterosomal setae  $c_p$ ,  $d_p$  and  $e_1$  situated on different platelets (Fig. 65 A) ..... 8  
 — Dorsal hysterosomal setae  $c_p$ ,  $d_p$  and  $e_1$  situated on same shield (Fig. 165 A) ..... (p. 81)... *Primagistemus* Fan & Zhang
- 8 Postocular bodies present; endopodal shields I–II and III–IV absent; leg tarsi with membranous arolium surrounding bases of leg claws ..... *Parastigmaeus* Kuznetsov  
 — Postocular bodies absent (Fig. 65 A); endopodal shields I–II and III–IV present (Fig. 65 B); leg tarsi without membranous arolium (Fig. 66 A–D) ..... (p. 48)... *Eryngiopus* Summers
- 9 Prodorsal shield with 3 pairs of setae;  $c_p$ ,  $d_p$ ,  $e_p$  and  $e_2$  situated on same shield ..... *Neilstigmaeus* Gerson & Meyer  
 — Prodorsal shield with 2 pairs of setae;  $c_p$ ,  $d_p$ ,  $e_p$  and  $e_2$  situated on different platelets ..... *Pilonychiopus* Meyer
- 10 Terminal eupathidia on palptarsi basally fused, trident (Fig. 207 D) ..... 12  
 — Terminal eupathidia on palptarsi separate (Fig. 217 D) ..... 11
- 11 Prodorsal shield with 3 pairs of setae;  $c_1$  and  $d_1$  situated on same shield; endopodal shields I–II and III–IV present ..... *Prostigmaeus* Kuznetsov  
 — Prodorsal shield with 2 pairs of setae;  $c_1$  and  $d_1$  situated on platelets (Fig. 217 A); endopodal shields I–II and III–IV absent ..... (p. 100)... *Storchia* Oudemans
- 12 Palptarsi not angled, *bp* seta-like (Fig. 207 D); endopodal shields I–II and III–IV present (Fig. 207 B); without a membranous arolium at bases of leg claws (Fig. 208 A–D) ..... 13  
 — Palptarsi basally angled, *bp* spine-like (Fig. 221 D); endopodal shields I–II and III–IV absent (Fig. 221 B); with a membranous arolium at base of leg claws (Fig. 222 A–E) ..... (p. 101)... *Summersiella* González-R
- 13 Palpal terminal eupathidia mostly fused, terminal prongs minute or vestigial (Fig. 167 C) ..... 14  
 — Palpal terminal eupathidia basally fused, clearly separated into 3 long prongs (Fig. 207 D) ..... (p. 91)... *Stigmaeus* Koch
- 14 Central hysterosomal shield absent (Fig. 167 A) ..... (p. 82)... *Pseudostigmaeus* Wood  
 — Central hysterosomal shield present (Fig. 183 A) ..... (p. 88)... *Scutastigmaeus* gen. n.
- 15 Chelicerae separate (Fig. 71 C) ..... 16  
 — Chelicerae basally conjunct (Fig. 57 B) ..... 20
- 16 Prodorsal and dorsal hysterosomal shields separate (Fig. 71 A) ..... 17  
 — Prodorsal and dorsal hysterosomal shields fused (Fig. 157 A) ..... 23
- 17 Setae *sce* situated on main prodorsal shield (Fig. 71 A) ..... 18  
 — Setae *sce* situated on platelets ..... 19
- 18 Setae  $d_1$  and  $e_1$  situated on same shield (Fig. 71 A) ..... (p. 53)... *Eustigmaeus* Berlese  
 — Setae  $d_1$  and  $e_1$  situated on different shields (Fig. 117 A) ..... (p. 66)... *Ledermuelleriopsis* Willmann

- 19 Setae  $d_1$  and  $d_2$  situated on same shield .....  
 ..... *Paravillersia* Kuznetsov  
 — Setae  $d_1$  and  $d_2$  situated on different shields or platelets  
 ..... *Villersia* Oudemans
- 20 Dorsal hysterosoma with a large shield anterior to  
 suranal shield; setae  $d_1$ ,  $d_2$ ,  $e_p$  and  $e_2$  situated on same  
 shield (Fig. 57 A) ..... 21  
 — Dorsal hysterosoma with 3 large transversal shields  
 anterior to suranal shield; setae  $d_1$  and  $d_2$ ,  $d_1$  and  $e_p$ ,  $e_1$   
 and  $e_2$  situated on different shields or platelets .....  
 ..... *Villersiella* Willmann
- 21 Prodorsal and dorsal hysterosomal shields separate (Fig.  
 57 A) ..... 22  
 — Prodorsal and dorsal hysterosomal shields fused .....  
 ..... *Caligohomus* Habeeb
- 22 Humeral shields enlarged, close to or fused with  
 endopodal shields III–IV;  $c_2$  situated on membrane ..  
 ..... *Postumius* Kuznetsov  
 — Humeral shields small, far apart from endopodal shields  
 III–IV (Fig. 57 A);  $c_2$  situated on humeral shields (Fig.  
 57 A) ..... (p. 47)... *Cheyllostigmaeus* Willmann
- 23 Setae  $d_1$  present; *pob* absent; without a membranous  
 arolium at bases of leg claws ..... 24  
 — Setae  $d_1$  absent (Fig. 157 A); *pob* present; a membranous  
 arolium present at bases of leg claws (Fig. 158 A–D)  
 ..... (p. 79)... *Mullederia* Wood
- 24 Palpal seta *bp* seta-like; coxa III with 2 setae ..... 25  
 — Palpal seta *bp* spine-like; coxa III with 1 seta .....  
 ..... *Makilingeria* Rimando & Corpuz-Raros
- 25 Setae  $c_2$  situated on platelets ..... *Mendanaia* Wood  
 — Setae  $c_2$  situated on main dorsal shield .....  
 ..... *Mullederiopsis* Rimando & Corpuz-Raros

\*Note to key: The monotypic genera *Macrostigmaeus* Berlese, 1910 and *Zetzelliopsis* Willmann, 1956 are not included in this key. The type species, *M. serpentinus* Berlese has fine longitudinal striae on the dorsum as in some weakly sclerotised species of *Stigmaeus*, which suggests that the originally described prodorsal and dorsal hysterosomal shields may be not present but result from the impression of the wrinkles in the specimen. However, the problem cannot be resolved until the type slide is examined. The characters of the type species, *Zetzelliopsis paxi* Willmann fall well among those of the genus *Eustigmaeus* as mentioned by Summers (1966b) but the same problem remains until the re-examination of the type slide. The concept of *Eustigmaeus* by Rimando & Corpuz-Raros (1997) is not accepted here because the distinguishing characters they used are not consistent; therefore, the names *Chaudhria* and *Wooderia* are not accepted for use in this revision.

### Genus *Agistemus* Summers

*Agistemus* Summers, 1960b: 234. Type species: *Caligonus terminalis* Quayle, 1912, by original designation.  
*Zetzellia* Oudemans. — Wood, 1967: 125 (in part). Type species: *Zetzellia methlagli* Oudemans, 1927. Synonymy by Meyer, 1969: 256.

**Diagnosis. Female.** Idiosoma broadly oval in dorsoventral view, generally red, orange, or yellow in life. Chelicerae separate. Palptibial claw slightly shorter than palptarsus; accessory claw slender or robust, spine-like; terminal eupathidia on palptarsus basally fused and split into 3 short prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 1, 2 + 1 claw + 1 accessory claw, 4 + 1 $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (mostly fused). Subcapitulum with 2 pairs of subcapitular setae, *m* posterolaterad of pharynx, *n* posteromedial of *m*. Prodorsum with a large shield bearing 3 pairs of setae (*vi*, *ve*, and *sci*), *sce* absent; eyes present, *pob* present. Dorsal hysterosomal area C–F medially covered with a hexagonal shield (sometimes divided along midline or reduced to 2 pairs of small shields), usually with 5 pairs of setae ( $c_1$ ,  $d_1$ ,  $d_2$ ,  $e_p$ , and  $e_2$ ); setae  $d_1$  and  $d_2$  situated on same shield; humeral shields small or vestigial, dorsolateral, with setae  $c_2$ ; intercalary shields (F) obvious, divided along midline, with 1 pair of setae ( $f_1$ ). Suranal shield (H) entire, with 2 pairs of setae ( $h_1$  and  $h_2$ ),  $h_3$  absent. Endopodal shields I–II minute or vestigial, not fused along midline, III–IV absent. Ventral opisthosoma with 1–2 pairs of aggenital setae; genitoanal valves with 1 pair of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws robust, basal 1/5–1/4 enclosed with membranous arolium; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1*elcp*, 1, 2, 1–2; trochanters 1, 1, 1, 1; femora 4–5, 4, 2, 1–2; genua 2–3 + 1*k*, 0–1, 0, 0; tibiae 5 + 1*pp*, 5 + 1*pp*, 5 + 1*pp*, 4–5 + 0–1*pp*; tarsi 11–12 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 6–7 + 0–1 $\omega$ .

**Male.** Setae  $f_1$  situated on central shield; solenidia on tarsi I–IV: 2, 2, 1, 1.

Four species previously were known from New Zealand. A new species is added in this paper.

### Key to species of *Agistemus* from New Zealand (adults)

- 1 Coxa IV with 2 setae (Fig. 45 B); femur I with 5 setae (Fig. 46 A); genua II with 1 seta (Fig. 46 B); solenidion  $\phi\phi$  on tibia IV present (Fig. 46 D) ..... 2  
 — Coxa IV with 1 seta (Fig. 43 B); femur I with 4 setae (Fig. 44 A); genua II without seta (Fig. 44 B); solenidion  $\phi\phi$  on tibia IV absent (Fig. 44 D) ..... 4



- 2 Dorsal shields plain, ratio  $c_i: c_i-c_i > 2$  (Fig. 45 A). 3  
— Dorsal shields reticulated, ratio  $c_i: c_i-c_i = 0.8$  (Fig. 53 A) ... (p. 45)... *A. novazelandicus* González-Rodríguez
- 3 Setae *sci* no more than 3 times diameter of *pob*, ratio  $ve: ve-sci < 2$  (Fig. 45 A);  $h_i$  equal to or slightly longer than dorsalmost seta on femur I (*dFI*) in female .....  
..... (p. 42)... *A. longisetus* González-Rodríguez
- Setae *sci* more than 3.5 times diameter of *pob*, ratio  $ve: ve-sci > 2.5$  (Fig. 49 A);  $h_i$  much shorter than *dFI* in female .....  
..... (p. 44)... *A. mecotrichus* sp. n.
- 4 Tibia IV with 4 setae, tarsus IV with 7 setae (Fig. 44 D) .....  
..... (p. 41)... *A. collyerae* González-Rodríguez
- Tibia IV with 5 setae, tarsus IV with 6 setae (Fig. 56 D) .....  
..... (p. 46)... *A. subreticulatus* (Wood)

### *Agistemus collyerae* González-Rodríguez

Fig. 43–44, Plate 2 C

*Agistemus collyerae* González-Rodríguez, 1963: 349;

González-Rodríguez, 1965: 34; Meyer, 1969: 256.

*Zetzellia collyerae*. — Wood, 1967: 131.

**Diagnosis. Female.** Dorsal shields reticulated; each cell with 13–24 vacuoles; *pob* about 1.6 times as large as eye; dorsal idiosomal setae *sci* 2.8 times diameter of *pob*;  $ve: ve-sci = 1.3$ ;  $c_i: c_i-c_i = 0.8$ ; setae *dFI* obviously shorter than  $h_i$ ; coxa IV with 1 seta; femur I with 4 setae; genu I with 2 + 1κ; tibia IV with 4 setae; tarsus I with 11 + 1ω; tarsus IV with 7 setae; tibia IV without φp; tarsus IV without ω.

**Description. Female** (Fig. 43–44, Plate 2 C, n = 10)

**Gnathosoma.** Chelicerae 87 (86–94), movable digits 36 (36–39), about 0.4 times length of chelicerae. Palp 75 (75–82). Subcapitular setae *m* 23 (22–23), 0.9 times length of *n*,  $n = 27$  (27–29);  $m-m = 31$  (26–31),  $n-n = 25$  (23–25),  $m-n = 7$  (7–8).

**Idiosoma.** Oval, 289 (289–353) long, 212 (212–269) wide. Dorsal shields ornamented with polygonal reticulations, each cell with 13–24 vacuoles; dorsal idiosomal setae barbed. Postocular body 1.6 (1.3–1.7) times as large as eye; *sci* 2.8 (2.5–2.8) times diameter of *pob*; ratios  $vi: vi-vi = 0.7$  (0.6–0.7),  $ve: ve-sci = 1.3$  (1.2–1.5); eyes 9 (9–10) in diameter; *pob* 14 (12–17) in diameter; setae *vi* 28 (20–28), *ve* 44 (34–48), *sci* 39 (31–43); distances:  $vi-vi$  40 (31–40),  $vi-ve$  20 (20–25),  $ve-sci$  33 (28–33). Central hysterosomal shield entire, bearing 5 pairs of setae,  $c_1$  35 (29–40),  $d_1$  34 (27–43),  $d_2$  42 (29–43),  $e_1$  50 (36–50),  $e_2$  50 (36–50); intercalary setae  $f_1$  44 (37–44); ratios  $c_i: c_i-c_i = 0.8$  (0.7–0.9),  $e_i: e_i-e_i$  1.3 (1.1–1.3),  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.1: 1.9: 1.0: 2.0$ ; distances:  $c_i-c_i$  42 (39–45),  $c_i-d_i$  55 (45–55),  $d_i-d_i$  76 (65–76),  $d_i-d_2$  33 (33–35),  $d_i-e_i$  57

(50–57),  $e_i-e_i$  40 (33–40),  $e_i-e_2$  37 (31–37),  $e_i-f_i$  26 (31–36),  $f_i-f_i$  78 (73–82); humeral setae  $c_2$  41 (31–47), 1.2 (1.1–1.2) times length of  $c_i$ , Suranal setae  $h_1$  44 (39–44),  $h_2$  40 (36–40), ratio  $h_1: h_2 = 1.1$  (1.0–1.1). Ventral setae subequal,  $1a$  15 (15–19),  $3a$  16 (16–19),  $4a$  18 (18–20). Aggenital shield entire, horseshoe-shaped; 2 pairs of aggenital setae on membrane,  $ag_2$  1.8 times length of  $ag_1$ ,  $ag_1$  16 (16–18),  $ag_2$  29 (29–31); genital setae  $g_1$  30 (30–33), 1.7 times length of  $ps_3$ ; pseudanal setae  $ps_3$  17 (17–18),  $ps_2$  18 (18–20),  $ps_1$  20 (17–20).

**Legs.** Length: leg I 169 (161–169), leg II 157 (142–157), leg III 150 (143–155), leg IV 168 (156–168); femur I 45 (43–46), genu I 20 (18–20), tibia I 33 (32–33), tarsus I 48 (43–49). Dorsalmost seta on femur I (*dFI*) barbed, 30 (29–31), 0.7 times length of  $h_i$ ; dorsalmost seta on genu I (*dGI*) 24 (20–25). Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 1; trochanters 1, 1, 1, 1; femora 4, 4, 2, 2; genua 2 + 1κ, 0, 0, 0; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp, 4; tarsi 11 + 1ω, 9 + 1ω, 7 + 1ω, 7. Lengths of solenidia: Iω 16 (14–16), IIω 14 (13–14), IIIω 10 (9–10).

**Distribution** (N.Z., Map p. 377). New Zealand (González-Rodríguez 1963, Wood 1967); Australia (Halliday 1998); Italy (Castagnoli *et al.* 1984, Castagnoli & Liguori 1986).

AK, CL, WN / SD, NN, BR.

**Location of holotype.** USNM.

**Material examined.** 7 paratypes and 119 non-type specimens. **Paratypes:** **AK:** Auckland: Mt Albert Research Centre [as Plant Diseases Div.], 21 Jan 1960, E. Collyer, dwarf trees, NZAC: 2/2 females. “Baor, N.Z.”, 3 Feb 1960, E. Collyer, apple leaf, NZAC: 1/1 female. Auckland: 21 Apr 1961, E. Collyer, *Rubus fruticosus*, NZAC: 1/1 female. Little Huia, 23 Apr 1962, E. Collyer, *Rubus* sp., NZAC: 2/2 females. Huia, 23 Apr 1961, E. Collyer, *Vicia sativa* [as vetch], on *Tetranychus lambi*, NZAC: 1/1 female. **Other material:** **AK:** Otara, 27 Jan 1960, E. Collyer, apple, 1/1 female [+ *Agistemus longisetus* 1 female; *Zetzellia gonzalezi* 2 females]. Waitakere Ra, Mill Bay, 4 Sep 1964, E. Collyer, *Sophora* sp., 1/8 females, [+ *Agistemus longisetus* 1/1 female]. Auckland: Mt Albert Research Centre, 30 Sep 1982, U. Gerson, *Citrus* sp., leaves, 1/1 female. Mt Albert, 1975, Dr P. Dale, *Sophora microphylla* [as kowhai], NZAC: 1/1 female [+ *Mecognatha hirsuta* 1 female]. **CL:** Kauaeranga Valley, 4 Sep 1964, E. Collyer, leaf, 1/1 female. Kauaeranga Valley, 4 Sep 1964, E. Collyer, *Knightia excelsa*, 1/1 deutonymph female. Kauaeranga Valley, 4 Sep 1964, E. Collyer, *Elaeocarpus dentatus*, 2/5 females, 1 deutonymph female. **WN:** Wellington Botanic Gardens, 26 Apr 1965, E. Collyer, *Elaeocarpus dentatus*, in domatia, 1/4 females, 1 protonymph [+ *Zetzellia gonzalezi* 1 female]. **SD:**

Kenepuru Sound: Portage, 29 Jan 1966, E. Collyer, *Elaeocarpus dentatus*, 1/2 females [+ *Zetzellia antipoda*]. NN: Appleby, contour block, 22 Dec 1964, E. Collyer, 1/1 female. Whangamoia Saddle, 21 Mar 1965, E. Collyer, *Aristotelia serrata*, 1/11 females, 2 deutonymph females. Grampians, 6 Feb 1966, E. Collyer, *Parsonsia* sp., 1/1 female. Nelson, Boulder Bank, 30 July 1966, E. Collyer, *Coprosma* sp., 1/1 female [+ *Eryngopus nelsonensis* 2 females, 4 males; *Zetzellia maori* 1 male]. Nelson, Boulder Bank, 30 July 1966, E. Collyer, *Coprosma* sp., 1/1 female [+ *Zetzellia maori*]. Onamalutu Domain [=Scenic Reserve], 3 Sep 1966, E. Collyer, *Lygodium* sp., 1/1 female. Motueka, Kina Peninsula, 3 Sep 1966, E. Collyer, *Nothofagus solandri*, 1/2 females [+ *Zetzellia maori* 5 females, 3 males, 6 deutonymph females, 3 protonymphs, 1 larva]. Abel Tasman N.P., Astrolabe, 22 Jan 1967, E. Collyer, *Metrosideros perforata*, 1/2 females. Perry Neudorf, 26 Jan 1967, E. Collyer, apple, 1/5 females [+ *Agistemus longisetus* 2 females; *Eryngiopus bifidus* 1 female; *Zetzellia maori* 1 female]. Eves Bush, 27 Mar 1967, E. Collyer, *Coprosma* sp., 1/2 females. Delaware Bay, coast, 14 July 1968, E. Collyer, *Coprosma* sp., in cavities, 1/1 female. Totaranui, Mutton Cove, 27 Apr 1969, E. Collyer, *Elaeocarpus dentatus*, 1/16 females. Takaka Hill, Mar 1971, G. W. Ramsay, *Brachyglottis hectori* [as *Senecio*], 1/11 females, 2 deutonymph females. BR: Lake Rotoroa, 18 Aug 1964, E. Collyer, *Rubus* sp., [small narrow-leaved], with mealybugs, 1/3 females. Road to Lake Rotoroa, 10 Oct 1964, E. Collyer, *Rubus australis*, 1/1 female. Road to Lake Rotoroa, 10 Oct 1964, E. Collyer, *Sophora* sp., 1/3 females. Lake Rotoroa, 10 Oct 1964, E. Collyer, *Sophora* sp., 1/14 females. Lake Rotoroa, 2 Jan 1965, E. Collyer, *Rubus schmidelioides*, 1/1 female, 1 deutonymph female. Lake Rotoroa, 11 Jan 1965, E. Collyer, *Sophora* sp., 1/2 females [+ Bdellidae; Tydeidae]. Lake Rotoroa, 27 June 1965, E. Collyer, *Rubus* sp., 1/3 females [+ *Agistemus longisetus* 1 male, 1 deutonymph]. Lake Rotoroa, 28 June 1966, E. Collyer, *Carpodetus serratus*, 1/3 females, 1 deutonymph female. Lake Rotoroa, 28 June 1966, E. Collyer, *Parsonsia* sp., 1/2 females.

**Habitat.** Apple leaf, *Alectryon excelsum*, *Aristotelia serrata*, *Brachyglottis hectori* [as *Senecio*], *Carpodetus serratus*, *Citrus* sp., *Coprosma* sp., dwarf trees, *Elaeocarpus dentatus*, eriophyid leaf galls on *Luculia* sp., *Lygodium* sp., *Knightia excelsa*, *Metrosideros perforata*, *Nothofagus solandri*, *Nothopanax* sp., *Parsonsia* sp., *Rubus australis*, *Rubus fruticosus*, *Rubus schmidelioides*, *Rubus* sp., *Sophora microphylla*, *Sophora* sp., *Vicia angustifolia*, *Vicia sativa*, *Vitex lucens*.

**Feeding habit.** Prey on the mites, *Aculus cornutus* and *Tetranychus lambi*.

### *Agistemus longisetus* González-Rodríguez

Fig. 45–48, Plate 2 D

*Agistemus longisetus* González-Rodríguez, 1963: 346; González-Rodríguez, 1965: 36; Meyer, 1969: 256. *Zetzellia longiseta*. — Wood, 1967:132; Tseng, 1982: 8.

**Diagnosis. Female.** Dorsal shields plain; *pob* about 4.1 times as large as eye; dorsal idiosomal setae relatively long, *sci* 2.2 times diameter of *pob*; *ve*: *ve-sci* = 2.0;  $c_i$ :  $c_i - c_i = 2.5$ ; setae *dFI* equal or slightly shorter than  $h_i$ . Coxa IV with 2 setae; femur I with 5 setae; genu I with 3 + 1  $\kappa$ ; tibia IV with 5 + 1  $\phi$ ; tarsus I with 12 + 1  $\omega$ ; tarsus IV with 7 setae.

**Male.** Postocular body 3.5 times as large as eye; *sci* 2.5 times diameter of *pob*; *ve*: *ve-sci* = 1.6;  $c_i$ :  $c_i - c_i = 1.9$ . Dorsal shields and counts of setae and solenidia as in female except tarsi I–IV with 12 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ .

**Description. Female** (Fig. 45–46, Plate 2 D,  $n = 11$ )

**Gnathosoma.** Chelicerae 121 (113–124), movable digits 45 (40–45), about 0.4 times length of chelicerae. Palp 112 (112–122). Subcapitular setae *m* 33 (31–36), 0.5 times length of *n*,  $n = 63$  (61–70); *m-m* = 50 (46–51),  $n-n = 40$  (36–41),  $m-n = 10$  (10–11).

**Idiosoma.** Oval, 421 (306–450) long, 325 (261–349) wide. Dorsal shields plain; dorsal idiosomal setae barbed. Postocular body 4.1 (3.8–4.1) times as large as eye; *sci* 2.2 (2.1–2.2) times diameter of *pob*; ratios *vi*:  $vi-vi = 2.3$  (2.3–3.0), *ve*: *ve-sci* = 2.0 (2.0–2.1); eyes 11 (10–12) in diameter; *pob* 45 (38–47) in diameter; setae *vi* 70 (63–78), *ve* 117 (104–123), *sci* 98 (80–100); distances:  $vi-vi = 30$  (21–30),  $vi-ve = 28$  (26–29), *ve-sci* 60 (51–60). Central hysterosomal shield entire, bearing 5 pairs of setae,  $c_1$  94 (83–99),  $d_1$  97 (84–100),  $d_2$  101 (83–101),  $e_1$  105 (96–111),  $e_2$  105 (90–114); intercalary setae  $f_1$  85 (80–90); ratios  $c_i$ :  $c_i - c_i = 2.5$  (2.5–2.7),  $e_i$ :  $e_i - e_i = 2.8$  (2.5–3.0),  $c_i - c_i$ :  $d_i - d_i$ :  $e_i - e_i$ :  $f_i - f_i = 1.0$ : 2.7: 1.0: 2.1; distances:  $c_i - c_i = 38$  (31–39),  $c_i - d_i = 67$  (67–70),  $d_i - d_i = 102$  (96–106),  $d_i - d_2 = 36$  (31–38),  $d_i - e_i = 72$  (71–74),  $e_i - e_i = 38$  (32–44),  $e_i - e_2 = 60$  (50–60),  $e_i - f_i = 61$  (37–64),  $f_i - f_i = 80$  (67–85); humeral setae  $c_2$  66 (55–69), 0.7 (0.7–0.8) times length of  $c_1$ . Suranal setae  $h_1$  54 (48–56),  $h_2$  41 (32–43), ratio  $h_1$ :  $h_2 = 1.3$  (1.3–1.5). Ventral setae subequal, *1a* 41 (36–43), *3a* 39 (36–40) and *4a* 39 (30–40). Aggenital shield entire, horseshoe-shaped, bearing 2 pairs of setae,  $ag_2$  subequal to  $ag_1$ ,  $ag_1$  20 (18–20),  $ag_2$  22 (18–24); genital setae *g*, 23 (21–25), slightly longer than *ps*; pseudanal setae  $ps_3$  20 (18–20),  $ps_2$  23 (21–26),  $ps_1$  17 (17–20).

**Legs.** Length: leg I 335 (308–337), leg II 302 (275–302), leg III 292 (271–292), leg IV 319 (299–322); femur I 105 (95–105), genu I 30 (29–30), tibia I 73 (63–73), tarsus I 93 (82–93). Setae *dFI* barbed, 54 (50–54), subequal to  $h_i$ ;

*dGI* 48 (42–48). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7. Lengths of solenidia: I $\omega$  32 (28–36), II $\omega$  31 (28–33), III $\omega$  21 (19–22).

**Male** (Fig. 47–48,  $n = 4$ )

**Gnathosoma.** Chelicerae 127 (111–127), movable digits 42 (41–44), 0.3 times length of chelicerae. Palp 119 (97–109). Subcapitular setae *m* 30 (30–33), nearly 0.5 times length of *n*,  $n = 56$  (56–59);  $m-m = 53$ ,  $n-n = 41$  (41–47),  $m-n = 11$ .

**Idiosoma.** Oval, 277 (261–315) long, 236 (230–236) wide. Dorsal shields and setae as in female. Postocular body 3.5 (2.4–3.7) times as large as eye; *sci* 2.5 (2.5–2.8) times diameter of *pob*; ratios *vi*:  $vi-vi = 2.5$  (2.0–2.5), *ve*:  $ve-sci = 1.6$  (1.6–1.8); eyes 10 in diameter; *pob* 35 (24–37) in diameter; setae *vi* 65 (58–65), *ve* 87 (79–96), *sci* 89 (68–89); distances:  $vi-vi = 26$  (26–33),  $vi-ve = 24$  (23–24),  $ve-sci = 53$  (49–53). Central hysterosomal shield entire, bearing 6 pairs of setae,  $c_1$  78 (67–78),  $d_1$  62 (58–62),  $d_2$  84 (61–84),  $e_1$  36 (29–36),  $e_2$  86 (68–86),  $f_1$  77 (69–77); ratios  $c_i$ :  $c_i-c_i = 1.9$  (1.7–1.9),  $e_i$ :  $e_i-e_i = 1.0$  (0.9–1.0),  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i = 1.1$ : 2.4: 1.0: 1.4; distances:  $c_i-c_i = 41$  (40–43),  $c_i-d_i = 60$  (58–60),  $d_i-d_i = 86$  (86–90),  $d_i-d_i = 31$  (28–31),  $d_i-e_i = 48$  (48–50),  $e_i-e_i = 36$  (31–36),  $e_i-e_i = 38$  (38–40),  $e_i-f_i = 21$  (21–29),  $f_i-f_i = 50$  (44–50); humeral setae  $c_2$  64 (51–67), 0.8 (0.7–0.8) times length of  $c_1$ . Suranal setae  $h_1$  21 (16–21),  $h_2$  25 (20–25), ratio  $h_1$ :  $h_2 = 0.8$  (0.7–0.8). Ventral setae subequal, *1a* 36 (36–40), *3a* 35 (35–40) and *4a* 30 (30–40). Aggenital shield entire, belt-shaped, bearing 2 pairs of setae,  $ag_2$  subequal to  $ag_1$ ,  $ag_1$  23 (19–23),  $ag_2$  23 (17–23); pseudanal setae  $ps_1$  14 (14–15),  $ps_2$  12 (12–14),  $ps_1$  5 (5–7).

**Legs.** Length: leg I 342 (312–342), leg II 288 (272–288), leg III 289 (273–289), leg IV 301 (233–301); femur I 99 (99–112), genu I 27 (27–30), tibia I 61 (61–71), tarsus I 80 (80–92). Setae *dFI* barbed, 56 (56–59), 2.5 times length of  $h_1$ ; *dGI* 42 (42–43). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 12 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega_1$  33 (26–33), I $\omega_2$  48 (34–48), II $\omega_1$  39 (29–39), II $\omega_2$  45 (33–45), III $\omega$  19 (19–24), IV $\omega$  29 (20–29).

**Distribution** (N.Z., Map p. 377). New Zealand (González-Rodríguez 1963, Collyer 1964, Wood 1967), Australia (González-Rodríguez 1965, Halliday 1998), China (Taiwan) (Tseng 1982), Chile (González-Rodríguez 1963, González 1985), El Salvador (González-Rodríguez 1963), Honduras (González-Rodríguez 1963), Mexico

(González-Rodríguez 1963), Peru (González-Rodríguez 1963).

AK, BP, HB, WN / NN, BR, SL.

**Location of holotype.** USNM.

**Material examined.** 20 paratypes and 173 non-type specimens. **Paratypes AK:** Auckland: Mt Albert Research Centre, (P.D.D.), 21 Oct 1959, E. Collyer, 'Bush, Top L corner', 1/3 females, 1 male, 1 deutonymph male, 1 larva. Auckland: Borich, 2 Mar 1960, E. Collyer, unsprayed *Prunus persica*, NZAC: 1/1 female. Auckland: 23 Feb 1961, E. Collyer, on sprayed dwarf apples, NZAC: 1/1 deutonymph female. **HB:** Havelock North Research Orchard, 27 July 1960, E. Collyer, *Rubus fruticosus*, NZAC: 2/2 females. Havelock North, 16 Dec 1960, E. Collyer, bramble hedge, NZAC: 1/9 females, 1 male. **Other material AK:** Waitakere Ra, 29 Nov 1959, E. Collyer, *Knightia excelsa*, 1/1 female [+ *Agistemus* sp. 1 male, *Mediolata* sp. 1 larva]. Otara, 27 Jan 1960, E. Collyer, apple, 1/1 female [+ *Agistemus collyerae* 1 female; *Zetzellia gonzalezi* 2 females]. Auckland: Mt Albert Research Centre [P.D.D.], 8 July 1960, E. Collyer, *Citrus* sp., 1/2 deutonymph females, 1 protonymph. Auckland: Mt Albert Research Centre [P.D.D.], 23 Mar 1961, E. Collyer, *Luculia* sp., feeding on *Brevipalpus* sp., 1/5 females [+ *Agistemus novazelandicus*]. Waitakere Ra, Mill Bay, 4 Sep 1964, E. Collyer, *Sophora* sp., 1/1 female, [+ *Agistemus collyerae* 1/8 females]. Auckland: Anahinau Reserve, 7 June 1979, R. Silvester, *Vitex lucens*, associated with eriophyid leaf erineae, 1/2 nymphs. Auckland: Oct 1981, D. Steven, *Hibiscus* sp., leaves, 2/6 females, 2 males. Auckland: Mt Albert Research Centre, 30 Sep 1982, U. Gerson, frond of *Cyathea medullaris*, 2/1 female, 1 male. Kumeu Research Orchard, May/June 1987, P. Dentener, *Diospyros kaki*, fruit, 1/3 females. Kumeu Research Orchard, May 1989, P. Dentener, *Diospyros kaki*, calyx, 1/1 female. Auckland: Glen Eden, Apr 1991, N. A. Martin, *Feijoa sellowiana*, distorted buds and new growth, 1/1 female. Auckland: Glen Eden, 5 May 1991, N. A. Martin, *Thunbergia* sp., leaves, 2/9 females, 1 male [+ *Tetranychus ludeni*]. **BP:** Te Puke, D.S.I.R. Research Orchard, 5 Apr 1983, U. Gerson, *Citrus limon*, leaf, 3/3 females. **HB:** Havelock North, Goddards Lane, 12 Dec 1959, E. Collyer, *Feijoa sellowiana*, 1/1 female, 2 males. Havelock North, 14 Sep 1960, E. Collyer, *Eriobotrya japonica* [loquat], 1/1 female. Havelock North Research orchard, 7 Apr 1965, E. Collyer, unsprayed apple, 1/31 females, 4 males, 3 deutonymph females. Hastings, St Andrews Rd, Dixon's orchard, Mar 1971, B. Rough, [no host], 1/1 male. Cape Kidnappers, Kairahau Bush, 31 May 1981, P. Watts, *Brachyglottis* sp., leaves, 1/1 protonymph. **WN:** Wellington Botanic Gardens, 26 Apr

1965, E. Collyer, *Elaeocarpus dentatus*, in domatia, 1/3 females, 10 males, 3 deutonymph females. **NN**: Lower Moutere, 3 Mar 1958, Dept. Agriculture, apple leaf, 1/1 male. Appleby, Mar 1960, E. Collyer, unsprayed apple, 1/8 females, 2 males, 2 deutonymph females. Nelson, Boulder Bank, 30 Nov 1960, *Dichondra* sp., 1/1 female. The Glen beach, 26 July 1965, E. Collyer, *Alectryon excelsus*, 1/4 females, 5 males, 3 deutonymph females. Nelson, Given's garden, 17 Feb 1966. E. Collyer, *Tibouchina* sp., 1/9 female, 3 deutonymph females. Perry Neudorf, 12 Dec 1966, E. Collyer, apple, 1/1 female [+ *Eryngiopus bifidus* 1 female, *Mediolata robusta* 1 female]. Perry Neudorf, 26 Jan 1967, E. Collyer, apple, 1/2 females [+ *Agistemus collyerae* 5 females; *Eryngiopus bifidus* 1 female; *Zetzellia maori* 1 female]. Appleby Research Orchard, Mar 1968, E. Collyer, *Corylus avellana*, 1/14 females. Totaranui beach, 1 Sep 1968, E. Collyer, *Coprosma* sp., leaf, 3/2 females, 2 males, 1 deutonymph female. **BR**: Lake Rotoroa, 27 June 1965, E. Collyer, *Rubus* sp., 1/1 female [+ *Agistemus collyerae*]. Lake Rotoiti track, 12 Feb 1966, E. Collyer, *Elaeocarpus hookerianus*, 1/2 females, 1 male [+ *Zetzellia antipoda*; *Zetzellia maori*]. Buller River, roadside, 10 Apr 1966, E. Collyer, apple, 1/2 females [+ *Zetzellia maori* 1 female, 1 deutonymph female]. **SL**: Near Te Anau, Waiiau R, 16 Mar 1966, E. Collyer, *Nothofagus solandri*, 1/6 females.

**Habitat.** *Alectryon excelsus*, *Albizzia* sp., *Alectryon excelsus*, *Annona reticulata*, *Annona* sp., apple foliage, avocado, bramble hedge, *Brachyglottis repanda*, *Brachyglottis* sp., *Citrus limon*, *Citrus* sp., *Coprosma* sp., *Coprosma tenuicaulis*, *Corylus avellana*, *Cyathea medullaris*, *Dichondra* sp., *Diospyros kaki*, *Elaeocarpus dentatus*, *Elaeocarpus hookerianus*, *Eriobotrya japonica* [loquat], *Euphoria longana*, *Feijoa sellowiana*, *Feijoa sellowiana*, *Forsythia* sp., *Gerbera* sp., *Hibiscus* sp., *Knightia excelsa*, *Luculia* sp., *Nothofagus solandri*, *Nothofagus* sp., peach, *Passiflora* sp., *Persea gigantea*, *Prunus persica*, *Prunus* sp., *Rosa* sp., *Rubus fruticosus*, *Rubus* sp., *Rubus ulmifolius*, *Sophora* sp., *Tetrapathaea tetranda*, *Thunbergia* sp., *Tibouchina* sp., *Viburnum opulus*, *Vitex lucens*.

**Feeding habit.** Prey on mites *Brevipalpus* sp., *Bryobia rubrioculus*, Eriophyidae, *Panonychus citri*, *P. ulmi*.

#### ***Agistemus mecotrichus* sp. n.**

Fig. 49–52

*Agistemus longisetus* González-Rodríguez, 1965: 346 (in part).

**Diagnosis. Female.** Dorsal shields smooth; *pob* about 3.5 times as large as eye; dorsal idiosomal setae relatively

long, *sci* about 4 times diameter of *pob*; *ve*: *ve-sci* = 2.8;  $c_i$ :  $c_i-c_i$  = 3.0; setae *dFI* 1.4 times length of  $h_i$ . Coxa IV with 2 setae; femur I with 5 setae; genu I with 3 + 1  $\kappa$ ; tibia IV with 5 + 1  $\phi\phi$ ; tarsus I with 12 + 1  $\omega$ ; tarsus IV with 7 setae.

**Male.** Postocular body 2.3 times as large as eye; *sci* 4.3 times diameter of *pob*; *ve*: *ve-sci* = 2.1;  $c_i$ :  $c_i-c_i$  = 3.3. Dorsal shields and counts of setae and solenidia as in female except tarsi I–IV with 12 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ .

#### **Description. Female** (Fig. 49–50, n = 6)

*Gnathosoma*. Chelicerae 138 (120–149), movable digits 56 (56–60), 0.4 times length of chelicerae. Palp 132 (129–148). Subcapitular setae *m* 41 (41–50), 0.7 times length of *n*, *n* = 63 (63–80); *m-m* = 60 (60–61), *n-n* = 45 (45–49), *m-n* = 9 (9–10).

**Idiosoma.** Oval, 404 (404–537) long, 315 (315–462) wide. Dorsal shields plain; dorsal idiosomal setae barbed. Postocular body 3.5 (3.0–3.5) times as large as eye; *sci* 4.0 (3.6–4.0) times diameter of *pob*; ratios *vi*: *vi-vi* = 2.3 (2.3–3.1), *ve*: *ve-sci* = 2.8 (2.5–3.3); eyes 10 (10–12) in diameter; *pob* 35 (31–37) in diameter; setae *vi* 101 (90–101), *ve* 145 (140–147), *sci* 139 (113–139); distances: *vi-vi* 43 (29–43), *vi-ve* 35 (29–36), *ve-sci* 51 (43–58). Central hysterosomal shield entire, bearing 5 pairs of setae,  $c_i$  115 (109–122),  $d_i$  112 (112–119),  $d_2$  134 (117–135),  $e_i$  120 (115–134),  $e_2$  139 (133–145); intercalary setae  $f_i$  94 (91–96); ratios  $c_i$ :  $c_i-c_i$  = 3.0 (2.9–3.0),  $e_i$ :  $e_i-e_i$  2.8 (2.0–2.8),  $c_i-c_i$ :  $d_i-d_i$ ;  $e_i-e_i$ :  $f_i-f_i$  = 1.0: 2.8: 1.1: 2.3; distances:  $c_i-c_i$  38 (38–43),  $c_i-d_i$  75 (75–87),  $d_i-d_i$  108 (108–123),  $d_i-d_2$  47 (45–49),  $d_i-e_i$  86 (84–93),  $e_i-e_i$  43 (43–64),  $e_i-e_2$  67 (64–84),  $e_i-f_i$  67 (67–95),  $f_i-f_i$  87 (87–102); humeral setae  $c_2$  91 (87–97), 0.8 (0.7–0.8) times length of  $c_i$ . Suranal setae  $h_1$  56 (56–61),  $h_2$  36 (36–42), ratio  $h_1$ :  $h_2$  = 1.6 (1.5–1.6). Ventral setae subequal, *1a* 43 (40–43), *3a* 43 (40–43) and *4a* 40 (40–43). Aggenital shield entire, horseshoe-shaped, with 2 pairs of setae, *ag*<sub>2</sub> subequal to *ag*<sub>1</sub>, *ag*<sub>1</sub> 27 (27–28), *ag*<sub>2</sub> 26 (25–27); genital setae *g*<sub>1</sub> 25 (24–25), slightly longer than *ps*<sub>3</sub>; pseudanal setae *ps*<sub>3</sub> 21 (20–21), *ps*<sub>2</sub> 23 (21–23), *ps*<sub>1</sub> 21 (20–21).

**Legs.** Length: leg I 424 (401–426), leg II 361 (336–362), leg III 361 (313–363), leg IV 361 (353–367); femur I 135 (125–135), genu I 36 (34–36), tibia I 100 (89–100), tarsus I 118 (105–118). Setae *dFI* barbed, 83 (80–87), 1.4 times length of  $h_i$ ; *dGI* 67 (60–72). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7. Lengths of solenidia: I  $\omega$  43 (41–48), II  $\omega$  43 (40–43), III  $\omega$  27 (27–30).

**Male** (Fig. 51–52,  $n = 3$ )

**Gnathosoma.** Chelicerae 140 (137–140), movable digits 49 (49–52), 0.4 times length of chelicerae. Palp 135 (135–136). Subcapitular setae  $m$  45 (45–50), 0.7 times length of  $n$ ,  $n = 66$  (66–73);  $m-m = 60$ ,  $n-n = 43$  (43–50),  $m-n = 12$  (12–14).

**Idiosoma.** Oval, 316 (316–330) long, 255 (255–261) wide. Dorsal shields plain; dorsal idiosomal setae barbed. Postocular body 2.3 (2.3–2.5) times as large as eye;  $sci$  4.3 (3.7–4.3) times diameter of  $pob$ ; ratios  $vi$ :  $vi-vi = 2.0$  (2.0–2.1),  $ve$ :  $ve-sci = 2.1$  (1.9–2.0); eyes 11 (11–13) in diameter;  $pob$  25 (25–32) in diameter; setae  $vi$  78 (78–96),  $ve$  104 (102–107),  $sci$  108 (108–117); distances:  $vi-vi$  39 (39–45),  $vi-ve$  29 (29–30),  $ve-sci$  50 (50–57). Central hysterosomal shield entire, bearing 6 pairs of setae,  $c_1$  111 (93–111),  $d_1$  67 (57–67),  $d_2$  103 (103–107),  $e_1$  36 (35–42),  $e_2$  103 (101–103),  $f_1$  72 (72–86); ratios  $c_i$ :  $c_i-c_i = 3.3$  (2.7–3.3),  $e_i$ :  $e_i-e_i$  1.1 (1.1–1.2),  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i = 1.1$ : 2.5: 1.0: 1.5; distances:  $c_i-c_i$  34 (34–36),  $c_i-d_i$  60 (60–67),  $d_i-d_i$  80 (80–87),  $d_i-d_i$  32 (28–32),  $d_i-e_i$  55 (55–58),  $e_i-e_i$  32 (32–35),  $e_i-e_i$  45 (40–45),  $e_i-f_i$  26 (26–27),  $f_i-f_i$  47 (45–47); humeral setae  $c_2$  77 (76–87), 0.7 (0.7–0.8) times length of  $c_1$ . Suranal setae  $h_1$  17 (17–22),  $h_2$  27 (26–27), ratio  $h_1$ :  $h_2 = 0.6$  (0.6–0.8). Ventral setae subequal,  $1a$  38 (38–40),  $3a$  36 (36–40) and  $4a$  35 (35–41). Aggenital shield entire, belt-shaped, with 2 pairs of setae,  $ag_2$  subequal to  $ag_1$ ,  $ag_1$  24 (22–24),  $ag_2$  22; pseudanal setae  $ps_3$  17 (14–17),  $ps_2$  16 (15–16),  $ps_1$  7.

**Legs.** Length: leg I 426 (426–457), leg II 335 (335–349), leg III 334 (334–342), leg IV 347 (347–366); femur I 162 (156–167), genu I 43 (40–45), tibia I 107 (107–111), tarsus I 113 (108–113). Setae  $dFI$  barbed, 103, 5 times length of  $h_1$ ;  $dGI$  75. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 12 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega_1$  45 (40–45), I  $\omega_2$  56 (49–56), II  $\omega_1$  43 (37–43), II  $\omega_2$  47 (47–48), III  $\omega$  28 (25–28), IV  $\omega$  31 (31–32).

**Distribution** (Map p. 377). New Zealand (González-Rodríguez 1963, Wood 1967).

ND, AK / –.

**Material examined.** Holotype and 11 paratypes.

**Holotype** female: NEW ZEALAND: ND: Whangarei, Jan 1960, E. Collyer, *Metrosideros excelsa* [as ‘pohutakawa’], Remounted June 1962 by R. H. González-Rodríguez, NZAC: 1/1 female. **Paratypes**: same collection data as holotype slide: NZAC: 4/5 females, 3 males. **AK**: Kawakawa Bay, 11 Jan 1960, E. Collyer, *Metrosideros excelsa*, NZAC: 1/2 females, 1 male.

**Habitat.** *Metrosideros excelsa* [as ‘pohutakawa’].

**Etymology.** The species name is from the Greek words *meco*, meaning long and *trichus* meaning hair, referring to the long dorsal idiosomal setae.

**Remarks.** Adults of *A. mecotrichus* sp. n. resemble those of *A. longisetus* González-Rodríguez in having long dorsal idiosomal setae and having the same number of setae and solenidia on legs, but they can be distinguished by the characters given in the table at the foot of this page.

#### *Agistemus novazelanicus* González-Rodríguez

Fig. 53–54, Plate 3 A

*Agistemus novazelanicus* González-Rodríguez, 1963: 344; González-Rodríguez, 1965: 34; Meyer, 1969: 256.

*Zetellia novazelanica*. — Wood, 1967: 132.

**Diagnosis. Female.** Dorsal shields reticulated, lacking vacuoles;  $pob$  3.6 times as large as eye;  $sci$  1.6 times diameter of  $pob$ ;  $ve$ :  $ve-sci = 2.2$ ;  $c_i$ :  $c_i-c_i = 0.8$ ; aggenital shield divided along midline; setae  $dFI$  1.3 times length of  $h_1$ ; coxa IV with 2 setae; femur I with 5 setae; genu I with 3 + 1  $\kappa$ ; tibia IV with 5 + 1  $\phi\phi$ ; tarsus I with 12 + 1  $\omega$ ; tarsus IV with 7 setae.

**Description. Female** (Fig. 53–54, Plate 3 A,  $n = 1$ )

**Gnathosoma.** Chelicerae 96, movable digits 36, 0.4 times length of chelicerae. Palp 86. Subcapitular setae  $m$  28, slightly longer than  $n$ ,  $n = 25$ ;  $m-m = 36$ ,  $n-n = 29$ ,  $m-n = 9$ .

**Idiosoma.** Oval, 289 long, 221 wide. Dorsal shields ornamented with polygonal reticulations, without vacuoles in cells; dorsal idiosomal setae barbed. Postocular body 3.6 times as large as eye;  $sci$  1.6 times diameter of  $pob$ ;

<b>Female</b>		pob:eye	ve:ve-sci	sci:pob	$c_i:c_i-c_i$	$h_1:h_2$	I $\omega$	II $\omega$	III $\omega$	dFI: $h_1$		
<i>A. mecotrichus</i>		3.5	2.8	4.0	3.0	1.6	43	43	27	1.4		
<i>A. longisetus</i>		4.1	2.0	2.2	2.5	1.3	32	31	21	1.0		
<b>Male</b>		pob:eye	ve:ve-sci	sci:pob	$c_i:c_i-c_i$	$h_1:h_2$	I $\omega_1$	I $\omega_2$	II $\omega_1$	II $\omega_2$	III $\omega$	dFI: $h_1$
<i>A. mecotrichus</i>		2.3	2.1	4.3	3.3	0.6	45	56	43	47	28	5.0
<i>A. longisetus</i>		3.5	1.6	2.5	1.9	0.8	33	48	39	45	19	2.5

ratios  $vi-vi=1.6$ ,  $ve-ve-sci=2.2$ ; eyes 10 in diameter;  $pob$  36 in diameter; setae  $vi$  46,  $ve$  77,  $sci$  57; distances:  $vi-vi$  29,  $vi-ve$  33,  $ve-sci$  35. Central hysterosomal shield entire, bearing 5 pairs of setae,  $c_1$  53,  $d_1$  60,  $d_2$  62,  $e_1$  60,  $e_2$  65; intercalary setae  $f_1$  61; ratios  $c_i$ ;  $c_i-c_i=0.8$ ,  $e_i$ ;  $e_i-e_i$  1.2,  $c_i-c_i$ ;  $d_i-d_i$ ;  $e_i-e_i$ ;  $f_i-f_i=1.3:2.0:1.0:1.1$ ; distances:  $c_i-c_i$  65,  $c_i-d_i$  67,  $d_i-d_i$  98,  $d_i-d_i$  36,  $d_i-e_i$  63,  $e_i-e_i$  50,  $e_i-e_2$  41,  $e_i-f_i$  24,  $f_i-f_i$  55; humeral setae  $c_2$  60, 1.1 times length of  $c_i$ . Suranal setae  $h_1$  40,  $h_2$  34, ratio  $h_1:h_2=1.2$ . Ventral setae subequal,  $1a$  19,  $3a$  19 and  $4a$  17. Aggenital shield divided along midline by a narrow striated area, each side with 2 setae,  $ag_2$  slightly longer than  $ag_1$ ,  $ag_1$  17,  $ag_2$  22; genital setae  $g_1$  21, slightly longer than  $ps_3$ ; pseudanal setae  $ps_3$  19,  $ps_2$  17,  $ps_1$  14.

**Legs.** Length: leg I 217, leg II 202, leg III 197, leg IV 233; femur I 68, genu I 21, tibia I 40, tarsus I 69. Setae  $dFI$  barbed, 48, 1.3 times length of  $h_i$ ;  $dGI$  26. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7. Lengths of solenidia: I $\omega$  31, II $\omega$  29, III $\omega$  17.

**Distribution** (N.Z., Map xx). New Zealand (González-Rodríguez 1963, Wood 1967), China (Taiwan) (Tseng 1982).

AK, WN / SD, NN.

**Location of holotype.** USNM.

**Material examined.** 5 paratypes and 15 non-type specimens. **Paratypes:** AK: Auckland: 21 Jan 1960, E. Collyer, dwarf trees, NZAC: 1/1 female. Auckland: Cossey's Creek, 21 May 1960, E. Collyer, 'bush', in colony of mealybugs, NZAC: 1/1 female. Auckland: Mt Albert Research Centre [Plant Diseases Division], July 1960, E. Collyer, ex *Brevipalpus* sp., NZAC: 2/2 females. Auckland: 3 May 1961, E. Collyer, *Luculia* sp., on *Brevipalpus* sp., NZAC: 1/1 female. **Other material:** AK: Auckland: Cossey's Creek, 21 May 1960, E. Collyer, 'bush', in colony of mealybugs, NZAC: 1/3 females, 1 male, 1 larva [+ *Agistemus longisetus* 1 female]. Mt Albert Research Centre [P.D.D.], 23 Mar 1961, E. Collyer, *Luculia* sp., feeding on *Brevipalpus* sp., 1/5 females [+ *Agistemus longisetus*]. Auckland: May 1967, ??, NZAC: 1/2 females. **WN:** Wellington Botanic Gardens, 26 Apr 1965, E. Collyer, among colonies of *Yezonychus cornus*, 1/1 male [+ *Zetzellia antipoda* holotype female (nearest holotype label), 1 paratype female]. **SD:** Pelorus, 13 June 1965, E. Collyer, *Carpodetus serratus*, NZAC: 1/1 female [+ *Summersiella coprosmae* 2 females]. **NN:** Abel Tasman N.P., 14 Jul 1966, E. Collyer, *Ripogonum scandens*, 1 female.

**Habitat.** *Alectryon excelsum*, *Ascarina lucida*, *Brevipalpus* sp., *Carpodetus serratus*, dwarf trees, ferns, galls on *Elaeo-*

*coppus dentatus*, grape, *Luculia* sp., mealybug colonies, *Nothopanax* sp., *Parsonsia* sp., *Phymatodes* sp., *Ripogonum scandens*, *Rubus* sp., *Sophora microphylla*.

**Feeding habits.** Feed on mites of *Brevipalpus* sp., among colonies of *Yezonychus cornus*.

### *Agistemus subreticulatus* (Wood)

Fig. 55–56, Plate 3 B

*Zetzellia subreticulata* Wood, 1967: 129.

*Agistemus subreticulatus*. — Meyer, 1969: 256.

**Diagnosis. Female.** Dorsal shields reticulated, each cell with 6–12 vacuoles;  $ve-ve-sci=1.0$ ;  $c_i$ ;  $c_i-c_i=0.4$ ; coxa IV with 1 seta, femur I with 4 setae; genu I with 2 + 1  $\kappa$ ; tibia IV with 5 setae; tarsus I with 11 + 1  $\omega$ ; tarsus IV with 6 setae; tibia IV without  $\phi\phi$ ; tarsus IV without  $\omega$ .

**Description. Female** (Fig. 55–56, Plate 3 B,  $n=1$ )

**Gnathosoma.** Chelicerae 82, movable digits 36, 0.4 times length of chelicerae. Palp 72. Subcapitular setae  $m$  equal to  $n$ ,  $m=n=19$ ;  $m-m=28$ ,  $n-n=24$ ,  $m-n=9$ .

**Idiosoma.** Oval, 229 long, 202 wide. Dorsal shields reticulated, each cell with 6–12 vacuoles; dorsal idiosomal setae subterminally barbed. Ratios  $vi-vi=0.7$ ,  $ve-ve-sci=1.0$ ; eyes 10 in diameter;  $pob$  ?; setae  $vi$  22,  $ve$  26,  $sci$  24; distances:  $vi-vi$  33,  $vi-ve$  26,  $ve-sci$  25. Central hysterosomal shield entire, bearing 5 pairs of setae,  $c_1$  24,  $d_1$  23,  $d_2$  27,  $e_1$  32,  $e_2$  30; intercalary setae  $f_1$  36; ratios  $c_i$ ;  $c_i-c_i=0.4$ ,  $e_i$ ;  $e_i-e_i$  1.0,  $c_i-c_i$ ;  $d_i-d_i$ ;  $e_i-e_i$ ;  $f_i-f_i=1.8:2.3:1.0:2.5$ ; distances:  $c_i-c_i$  55,  $c_i-d_i$  46,  $d_i-d_i$  70,  $d_i-d_i$  31,  $d_i-e_i$  51,  $e_i-e_i$  31,  $e_i-e_2$  41,  $e_i-f_i$  26,  $f_i-f_i$  79; humeral setae  $c_2$  26, 1.1 times length of  $c_i$ . Suranal setae  $h_1$  36,  $h_2$  38, ratio  $h_1:h_2=0.9$ . Ventral setae  $3a$  shorter than other two pairs,  $1a$  22,  $3a$  14 and  $4a$  20. Aggenital shield entire, horseshoe-shaped, with 2 pairs of setae marginally,  $ag_2$  1.6 times length of  $ag_1$ ,  $ag_1$  16,  $ag_2$  25; genital setae  $g_1$  39, 2.2 times length of  $ps_3$ ; pseudanal setae  $ps_3$  18,  $ps_2$  16,  $ps_1$  15.

**Legs.** Length: leg I 156, leg II 151, leg III 132, leg IV 145; femur I 42, genu I 18, tibia I 31, tarsus I 45. Setae  $dFI$  barbed, 26, 0.7 times length of  $h_i$ ;  $dGI$  22. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 1, 2, 1; trochanters 1, 1, 1, 1; femora 4, 4, 2, 2; genua 2 + 1  $\kappa$ , 0, 0, 0; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5; tarsi 11 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 6. Lengths of solenidia: I $\omega$  16, II $\omega$  14, III $\omega$  10.

**Distribution** (Map p. 377). New Zealand (Wood 1967).

– / SD.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: **SD:** Pelorus, 13 June 1965, E. Collyer, *Nothofagus menziesii*, NZAC: 1/1 female.

**Habitat.** *Nothofagus menziesii*.

**Genus *Cheyllostigmaeus* Willmann**

*Cheyllostigmaeus* Willmann, 1951a: 146. Type species: *Cheyllostigmaeus grandiceps* Willmann, 1951a, by original designation.

**Diagnosis. Female.** Idiosoma broadly oval in dorsoventral view, generally red or dark red in life. Chelicerae basally conjunct. Palptibial claw subequal to or slightly longer than palptarsus; accessory claw stout, tooth-like; terminal eupathidia on palptarsus basally fused and split halfway into 3 long prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1 $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (basally fused). Subcapitulum with 2 pairs of subcapitular setae, *m* anterolaterad of pharynx. Prodorsum with a large shield, which bears 4 pairs of setae (*vi*, *ve*, *sci*, and *sce*); eyes present, *pob* absent. Dorsal hysterosomal area C–F mainly covered with an inverted trapezoidal shield, which bears 6 pairs of setae (*c*<sub>1</sub>, *d*<sub>1</sub>, *d*<sub>2</sub>, *e*<sub>1</sub>, *e*<sub>2</sub>, and *f*<sub>1</sub>); humeral shields large, dorso- or ventro-lateral, with setae *c*<sub>2</sub>. Suranal shield (H) entire, with 2 pairs of setae (*h*<sub>1</sub> and *h*<sub>2</sub>), *h*<sub>3</sub> absent. Endopodal shields I–II and III–IV present, divided along midline. Ventral opisthosoma with 3 pairs of aggenital setae; genitoanal valves with 3 pairs of pseudanal setae, genital setae absent. Leg tarsal claws robust; empodial shaft branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ .

**Male.** Solenidia on tarsi I–IV: 2, 2, 2, 2. Heteromorphic males often with lateral lamellae or protuberances on rostrum. Homeomorphic males rarely discovered.

One species has been described from New Zealand.

***Cheyllostigmaeus luxtoni* Wood**

Fig. 57–60

*Cheyllostigmaeus luxtoni* Wood, 1968: 276; Wood, 1974: 53.

**Diagnosis. Female.** Ratios *vi*: *vi*–*vi* = 1.8, *ve*: *ve*–*sci* = 1.5, *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.9, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> 0.7, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.1: 1.6: 1.3: 1.0, *h*<sub>1</sub>: *h*<sub>2</sub> = 1.2.

**Heteromorphic male.** Lamellae of rostrum each with 2 long cusps, internal cusps slightly larger than external ones; *vi*: *vi*–*vi* = 0.7, *ve*: *ve*–*sci* = 1.9; *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.8, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> 0.7, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.1: 1.6: 1.3: 1.0; aedeagus without bulbs.

**Description. Female** (Fig. 57–58, *n* = 1)

**Gnathosoma.** Chelicerae 137, movable digits 84, 0.6 times length of chelicerae. Palp 173. Subcapitular setae *m* longer

than *n*, *m* = 46, *n* = 37; *m*–*m* 0.9 times distance of *n*–*n*; *m*–*m* = 36, *n*–*n* = 39, *m*–*n* = 37.

**Idiosoma.** Oval, 479 long, 378 wide. Dorsal shields with faint pits marginally; dorsal idiosomal setae with hyaline sheath on tips. Ratios *vi*: *vi*–*vi* = 1.8, *ve*: *ve*–*sci* = 1.5; eyes 15(15–20) in diameter; lengths: *vi* 65, *ve* 83, *sci* 70, *sce* 70; distances: *vi*–*vi* 37, *vi*–*ve* 70, *ve*–*sci* 54, *sci*–*sce* 54. Dorsal hysterosomal shield without obvious pits; ratios *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.9, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> 0.7, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.1: 1.6: 1.3: 1.0; lengths: *c*<sub>1</sub> 74, *d*<sub>1</sub> 80, *d*<sub>2</sub> 74, *e*<sub>1</sub> 80, *e*<sub>2</sub> 80, *f*<sub>1</sub> 97; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 87, *c*<sub>1</sub>–*d*<sub>1</sub> 80, *d*<sub>1</sub>–*d*<sub>1</sub> 128, *d*<sub>1</sub>–*d*<sub>2</sub> 80, *d*<sub>1</sub>–*e*<sub>1</sub> 81, *e*<sub>1</sub>–*e*<sub>1</sub> 107, *e*<sub>1</sub>–*e*<sub>2</sub> 61, *e*<sub>1</sub>–*f*<sub>1</sub> 63, *f*<sub>1</sub>–*f*<sub>1</sub> 81; humeral setae *c*<sub>2</sub> 73, about as long as *c*<sub>1</sub>. Suranal setae *h*<sub>1</sub>: *h*<sub>2</sub> = 1.2, *h*<sub>1</sub> 76, *h*<sub>2</sub> 61. Ventral setae subequal, *1a* 41, *3a* 40 and *4a* 39. Aggenital shield with 3 pairs of setae, ratios *ag*<sub>1</sub>: *ag*<sub>2</sub>: *ag*<sub>3</sub> = 1.1: 1.0: 1.0, *ag*<sub>1</sub>–*ag*<sub>2</sub>: *ag*<sub>2</sub>–*ag*<sub>3</sub> = 1.5: 1.0: 1.0; *ag*<sub>1</sub> 33, *ag*<sub>2</sub> 31, *ag*<sub>3</sub> 31; pseudanal setae *ps*<sub>3</sub> 27, *ps*<sub>2</sub> 35, *ps*<sub>1</sub> 42.

**Legs.** Length: leg I 390, leg II 281, leg III 271, leg IV 330; femur I 112, genu I 52, tibia I 73, tarsus I 107. Setae *dFI* faintly barbed, 63, 0.8 times length of *h*<sub>1</sub>; *dGI* 67. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  34, II $\omega$  28, III $\omega$  14, IV $\omega$  11.

**Heteromorphic male** (Fig. 59–60, *n* = 1)

**Gnathosoma.** Chelicerae 199, movable digits 87, 0.4 times length of chelicerae. Palp 197. Lamellae of rostrum each with 2 long cusps, internal cusps slightly larger than external ones. Subcapitular setae *m* longer than *n*, *m* = 39, *n* = 32; *m*–*m* 1.3 times distance of *n*–*n*, *m*–*m* = 54, *n*–*n* = 42, *m*–*n* = 66.

**Idiosoma.** Oval, 402 long, 307 wide. Dorsal shields with faint pits marginally; dorsal idiosomal setae with hyaline sheath on tips. Ratios *vi*: *vi*–*vi* = 0.7, *ve*: *ve*–*sci* = 1.9; eyes 14 in diameter; lengths: *vi* 51, *ve* 70, *sci* 50, *sce* 50; distances: *vi*–*vi* 71, *vi*–*ve* 50, *ve*–*sci* 37, *sci*–*sce* 37. Dorsal hysterosomal shield without pits; ratios *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.8, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> 0.7, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.1: 1.6: 1.3: 1.0; lengths: *c*<sub>1</sub> 54, *d*<sub>1</sub> 55, *d*<sub>2</sub> 56, *e*<sub>1</sub> 57, *e*<sub>2</sub> 58, *f*<sub>1</sub> 72; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 71, *c*<sub>1</sub>–*d*<sub>1</sub> 60, *d*<sub>1</sub>–*d*<sub>1</sub> 100, *d*<sub>1</sub>–*d*<sub>2</sub> 61, *d*<sub>1</sub>–*e*<sub>1</sub> 54, *e*<sub>1</sub>–*e*<sub>1</sub> 82, *e*<sub>1</sub>–*e*<sub>2</sub> 47, *e*<sub>1</sub>–*f*<sub>1</sub> 32, *f*<sub>1</sub>–*f*<sub>1</sub> 64; humeral setae *c*<sub>2</sub> 71, 1.3 times length of *c*<sub>1</sub>. Suranal setae *h*<sub>1</sub>: *h*<sub>2</sub> = 0.5, *h*<sub>1</sub> 28, *h*<sub>2</sub> 56. Ventral setae subequal, *1a* 31, *3a* 32 and *4a* 29. Aggenital shield with 3 pairs of setae, ratios *ag*<sub>1</sub>: *ag*<sub>2</sub>: *ag*<sub>3</sub> = 1.0: 1.0: 1.4, *ag*<sub>1</sub>–*ag*<sub>2</sub>: *ag*<sub>2</sub>–*ag*<sub>3</sub> = 1.0: 1.3: 1.3; *ag*<sub>1</sub> 30, *ag*<sub>2</sub> 29, *ag*<sub>3</sub> 29; pseudanal setae *ps*<sub>3</sub> 17, *ps*<sub>2</sub> 7, *ps*<sub>1</sub> 4. Aedeagus without bulb

**Legs.** Length: leg I 453, leg II 294, leg III 239, leg IV 271; femur I 120, genu I 65, tibia I 87, tarsus I 120. Setae *dFI* faintly barbed, 63, 2.3 times length of *h*<sub>1</sub>; *dGI* 52. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2;

trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1κ, 3 + 1κ, 1, 1; tibiae 5 + 1φ + 1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 13 + 2ω, 9 + 2ω, 7 + 2ω, 7 + 2ω. Lengths of solenidia: Iω, 35, Iω<sub>2</sub> 61, IIω<sub>1</sub> 32, IIω<sub>2</sub> 55, IIIω<sub>1</sub> 13, IIIω<sub>2</sub> 49, IVω<sub>1</sub> 9, IVω<sub>2</sub> 51.

**Distribution** (Map p. 378). New Zealand (Wood 1968). — / NN.

**Material examined.** Holotype, 1 paratype, and 1 non-type specimen. **Holotype** heteromorphic male: NEW ZEALAND: NN: Whangapeka R at confluence with Rolling R, 19 Mar 1966, M. Luxton, moss on pebbles, NZAC: 1/1 male. **Paratype:** same collection data as holotype slide: NZAC: 1/1 female [allotype]. **Other material:** NN: Whangapeka R at confluence with Rolling R, 19 Mar 1966, M. Luxton, moss on pebbles, 1/1 deutonymph female.

**Habitat.** Moss on pebbles, wet moss among grass.

### Genus *Eryngiopus* Summers

*Eryngiopus* Summers, 1964: 186. Type species: *Eryngiopus gracilis* Summers, 1964, by original designation.

**Diagnosis. Female.** Idiosoma narrowly to broadly oval in dorsoventral view, generally red or orange in life. Chelicerae separate. Palptibial claw subequal to palptarsus; accessory claw slender, seta-like or spine-like; terminal eupathidia on palptarsus mostly fused and split into 2–3 vestigial prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 1, 2 + 1 claw + 1 accessory claw, 4 + 1ω + 1 subterminal spine-like eupathidium + 3 eupathidia (mostly fused). Subcapitulum with 2 pairs of subcapitular setae, *m* posterolaterad of pharynx, *n* posteromedial of *m*. Prodorsum mainly striated, prodorsal shield reduced to 1 small shield or 1 pair of platelets, which bears 2–3 pairs of setae, *scē* present or absent; eyes present, *po*b absent. Dorsal hysterosomal area C–F mainly striated, with 1 pair of minute platelets anteromedial of *d*<sub>1</sub>; setae *d*<sub>1</sub> and *d*<sub>2</sub> situated on tiny platelets; humeral shields minute or vestigial, dorsolateral, with setae *c*<sub>2</sub>; intercalary shields (F) divided along midline, each side with one seta (*f*<sub>1</sub>). Suranal shield (H) divided or entire, with 2 pairs of setae (*h*<sub>1</sub> and *h*<sub>2</sub>), *h*<sub>3</sub> absent. Endopodal shields I–II and III–IV present, divided along midline. Ventral opisthosoma with 2–3 pairs of aggenital setae; genitoanal valves with 1 pair of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws robust; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 1–2 + 1*elcp*, 1, 2, 1–2; trochanters 1, 1, 1, 0–1; femora 4–6, 4, 2–3, 2; genua 3 + 1κ, 0–2, 0, 0; tibiae 5 +

1φp, 5 + 1φp, 5 + 1φp, 4–5 + 0–1φp; tarsi 12–13 + 1ω, 8–9 + 1ω, 6–7 + 1ω, 6–7 + 0–1ω.

**Male.** Solenidia on tarsi I–IV: 2, 2, 1, 1.

Four species have been described from New Zealand.

### Key to species of *Eryngiopus* from New Zealand (adults)

- 1 Prodorsum covered with 1 pair of small shields (Fig. 61 A); with 2 pairs of aggenital setae in female (Fig. 61 B); trochanter IV without seta (Fig. 62 D); femur I with 4 setae (Fig. 62 A); femur III with 2 setae (Fig. 62 C); tarsi II–IV with 9 + 1ω, 7 + 1ω, 7 + 1ω in female (Fig. 62 B–D) ..... 2
- Prodorsum covered with a shield (Fig. 65 A); with 3 pairs of aggenital setae in female (Fig. 65 G); trochanter IV with 1 seta (Fig. 66 D); femur I with 5 setae (Fig. 66 A); femur III with 3 setae (Fig. 66 C); tarsi II–IV with 8 + 1ω, 6 + 1ω, 6 + 1ω in female (Fig. 66 B–D) ..... (p. 51)... *E. nelsonensis* Wood
- 2 Ventral setae *1a* subequal to or shorter than *3a* and *4a* (Fig. 61 E); genu II with 1 seta (Fig. 62 B) ..... 3
- Ventral setae *1a* longer than *3a* and *4a*, *1a* : *3a* : *4a* = 1.7 : 1.0 : 1.4 (Fig. 63 E); genu II without seta (Fig. 64 B) ..... (p. 50)... *E. bifidus* Wood
- 3 Setae *f*<sub>1</sub> less than 0.7 times length of *h*<sub>1</sub> (Fig. 61 A); *1a* : *3a* : *4a* = 1.1 : 1.2 : 1.0 ... (p. 48)... *E. arboreus* Wood
- Setae *f*<sub>1</sub> about 0.9 times length of *h*<sub>1</sub> (Fig. 69 A); *1a* : *3a* : *4a* = 1.0 : 1.0 : 1.3 ..... (p. 52)... *E. similis* Wood

### *Eryngiopus arboreus* Wood

Fig. 61–62

*Eryngiopus arboreus* Wood, 1967: 112; Wood, 1971c: 413; Vacante & Gerson 1988: 397.

**Diagnosis. Female.** Prodorsum covered with 1 pair of small shields around eyes and *ve*; *c*<sub>1</sub>–*c*<sub>2</sub>; *d*<sub>1</sub>–*d*<sub>2</sub>; *e*<sub>1</sub>–*e*<sub>2</sub>; *f*<sub>1</sub>–*f*<sub>1</sub> = 1.4 : 1.7 : 1.0 : 1.3; *f*<sub>1</sub> less than 0.7 times length of *h*<sub>1</sub>; *1a* : *3a* : *4a* = 1.1 : 1.2 : 1.0; aggenital area with 2 pairs of setae; trochanter IV without seta; femur I with 4 setae, femur III with 2 setae, genu II with 1 seta, tarsi II–IV with 9 + 1ω, 7 + 1ω, 7 + 1ω.

**Description. Female** (Fig. 61 A–E, 62, *n* = 6)

**Gnathosoma.** Chelicerae slender, 63 (62–75), movable digits 35 (34–36), 0.6 (0.5–0.6) times length of chelicerae. Palp 63 (55–63), accessory claw seta-like. Subcapitular setae *m* 0.3 times length of *n*, *m* = 19 (18–20), *n* = 62 (58–62); *m*–*m* 1.1 times distance of *n*–*n*, *m*–*m* = 25 (25–28), *n*–*n* = 23 (22–26), *m*–*n* = 5 (5–7).



**Idiosoma.** Oval, 350 (301–385) long, 220 (152–220) wide. Dorsal idiosomal setae faintly barbed. Prodorsum covered with 1 pair of small shields around eyes and *ve*, setae *sce* present; eyes 9 (7–9) in diameter; lengths: *vi* 12 (12–16), *ve* 21 (21–27), *sci* 18 (17–20), *sce* 18 (17–20); distances: *vi-vi* 16 (11–16), *vi-ve* 13 (13–17), *ve-sci* 24 (15–24), *sci-sce* 24 (15–24). Ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.4: 1.7: 1.0: 1.3$ ; lengths:  $c_1$  19 (18–21),  $d_1$  18 (17–18),  $d_2$  25 (21–27),  $e_1$  15 (13–16),  $e_2$  16 (14–16),  $f_1$  15 (14–21); distances:  $c_1-c_1$  72 (43–72),  $c_1-d_1$  80 (68–80),  $d_1-d_1$  90 (64–90),  $d_1-d_2$  31 (31–51),  $d_1-e_1$  63 (50–65),  $e_1-e_1$  52 (31–53),  $e_1-e_2$  42 (28–42),  $e_1-f_1$  25 (23–30),  $f_1-f_1$  70 (42–70); humeral setae  $c_2$  27 (27–33). Suranal setae  $h_1: h_2 = 1.0$ ,  $h_1$  24 (23–27),  $h_2$  23 (23–29). Ventral setae *3a* slightly longer than other 2 pairs, ratio  $1a: 3a: 4a = 1.1: 1.2: 1.0$ ,  $1a$  36 (30–36),  $3a$  42 (38–43) and  $4a$  34 (32–45). Aggenital area with 2 pairs of setae, each on a platelet, ratio  $ag_1: ag_2 = 1.0: 1.3$ ,  $ag_1$  22 (19–22),  $ag_2$  28 (21–28); pseudanal setae  $ps_3$  12 (11–14),  $ps_2$  13 (13–14),  $ps_1$  15 (15–18).

**Legs.** Length: leg I 120 (115–128), leg II 100 (91–104), leg III 101 (89–110), leg IV 113 (99–119). Setae *dFI* and *dGI* faintly barbed, 20 and 25, respectively. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 1; trochanters 1, 1, 0; femora 4, 4, 2, 2; genua 3 + 1*κ*, 1, 0, 0; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 13 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 7 + 1*ω*. Lengths of solenidia: I*ω* 8 (8–9), II*ω* 7 (6–7), III*ω* 3 (3–5), IV*ω* 3 (3–4).

**Protonymph** (Fig. 61 F, n = 1)

**Gnathosoma.** Chelicerae slender, 55, movable digits 29, 0.8 times length of chelicerae. Palp 53, accessory claw seta-like. Subcapitular setae  $m = 12$ ,  $n$  absent;  $m-m = 22$ .

**Idiosoma.** Oval, 288 long, 161 wide. Dorsal idiosomal setae faintly barbed. Prodorsum covered with 1 pair of small shields; eyes 10 in diameter; lengths: *vi* 10, *ve* 15, *sci* 15, *sce* 15; distances: *vi-vi* 11, *vi-ve* 15, *ve-sci* 21, *sci-sce* 21. Ratios  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.8: 2.0: 1.0: 1.3$ ; lengths:  $c_1$  14,  $d_1$  12,  $d_2$  19,  $e_1$  11,  $e_2$  13,  $f_1$  17; distances:  $c_1-c_1$  57,  $c_1-d_1$  58,  $d_1-d_1$  65,  $d_1-d_2$  32,  $d_1-e_1$  51,  $e_1-e_1$  32,  $e_1-e_2$  30,  $e_1-f_1$  30,  $f_1-f_1$  43; humeral setae  $c_2$  23. Suranal setae  $h_1: h_2 = 1.0$ ,  $h_1$  17,  $h_2$  18. Ventral setae *4a* absent, *3a* slightly longer than *1a*, ratio  $1a: 3a = 1.0: 1.1$ ,  $1a$  23,  $3a$  25. Aggenital area with 1 pair of setae, each on a platelet,  $ag_1$  15; pseudanal setae  $ps_3$  10,  $ps_2$  10,  $ps_1$  10.

**Legs.** Length: leg I 104, leg II 79, leg III 87, leg IV 93. Setae *dFI* and *dGI* faintly barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 0; trochanters 1, 1, 0, 0; femora 4, 4, 2, 1; genua 3 + 1*κ*, 1, 0, 0; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 13 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 6 + 1*ω*. Lengths of solenidia: I*ω* 7, II*ω* 5, III*ω* 3, IV*ω* 2.

**Distribution** (Map p. 378). New Zealand (Wood 1967, 1971c).

AK / NN, BR, MB / SI / CH.

**Material examined.** Holotype, 1 paratype, and 61 non-type specimens. **Holotype** female: NEW ZEALAND: **BR:** Lake Rotoroa, 400 m, 2 Jan 1965, E. Collyer, kowhai (*Sophora microphylla*), NZAC: 1/1 female. **Paratype:** same collection data as holotype slide: NZAC: 1/1 female. **Other material:** **AK:** Waitakere Ra, Mill Bay, 4 Sep 1964, E. Collyer, 'tree fern', 1/1 male. ??Onamalutu?? Domain [=Scenic Reserve], 3 Sep 1966, E. Collyer, *Prumnopitys taxifolia*, 1/1 protonymph [+ *Mediolata robusta* 1 female]. Waitakere Ra, Bethell's, 25 July 1971, M. Foot, [no host], 1/1 female. Auckland: Mt Albert Research Centre, 26 Mar 2003, Q.-H. Fan, litter, 1/1 female. **MB:** Mt Riley, 760 m, 24 July 1966, G. W. Ramsay, *Dracophyllum* sp. 1/1 female, 1 protonymph. **NN:** Sandy Bay, nr Kaiteriteri, 12 Jan 1965, E. Collyer, *Melicycus ramiflorus*, 1/1 female [not very good]. Dovedale Hill, 20 Aug 1965, E. Collyer, *Ripogonum scandens*, 1/1 female. Cobb Lake, 12 Dec 1965, E. Collyer, *Dracophyllum filifolium* 1/1 female, 1 deutonymph female [+ *Mediolata brevisetis* 1 female]. Abel Tasman N.P., Astrolabe, 15 Jan 1966, E. Collyer, *Metrosideros perforata*, 1/2 females. Nelson, Grampians, 22 Jan 1966, E. Collyer, *Kunzea ericoides*, 1/1 female [+ *Zetzellia maori* 2 females]. Baton River, 2 Apr 1966, E. Collyer, *Nothofagus solandri*, 1/1 male, 1 protonymph [+ *Mediolata robusta* 2 females, 1 deutonymph female; *Mediolata zonaria* holotype female; *Pseudostigmaeus collyerae* 1 male]. Roding Valley, 1 May 1966, E. Collyer, *Kunzea ericoides*, 1/4 female [+ *Zetzellia maori* 1 male]. Abel Tasman N.P. entrance, 14 July 1966, E. Collyer, *Metrosideros perforata*, 1/1 female. Eves Bush, 7 Aug 1966, E. Collyer, *Podocarpus totara*, 1/1 female [+ *Eryngiopus bifidus* 5 females, 1 male]. Waimea Plain, Palmers Bush, 7 Aug 1966, E. Collyer, foliage of *Podocarpus totara*, 1/2 females [+ on holotype slide *Stigmaeus arboricola*; *Mediolata robusta* 2 females, 1 protonymph, 1 larva]. Eves Bush, 17 Aug 1966, E. Collyer, *Dacrycarpus dacrydioides*, 1/8 females [+ *Pseudostigmaeus schizopeltatus* 4 females]. Maitai R, Smiths Ford, 19 Aug 1966, E. Collyer, *Prumnopitys taxifolia*, 1/1 female. Maitai R, Smiths Ford, 19 Aug 1966, E. Collyer, *Podocarpus totara*, 1/1 female [+ *Zetzellia maori* 3 females, 1 deutonymph female]. Wainui Inlet, 20 Aug 1966, E. Collyer, *Kunzea ericoides*, 1/2 females [+ 3 Tydeidae]. Awanui Inlet, 20 Aug 1966, E. Collyer, *Dacrycarpus dacrydioides*, 1/1 male [+ *Mediolata favulosa*]. Abel Tasman N.P., Canaan, 25 Sep 1966, E. Collyer, *Dracophyllum* sp., 1/1 female [+ *Mediolata brevisetis* 1 female; *Primagistemus loadmani* 1 female, 2 deutonymph females]. Cobb Lake, 19 Jan 1967, E. Collyer, *Dracophyllum* sp., 1/1 male [+ holotype and paratype females, nymph, *Mediolata mollis*; *Pseudostigmaeus collyerae* male, female]. Kaihoka Lake, 14 Apr 1968, E.

Collyer, *Carmichaelia* sp., 1/2 females [+ *Mediolata robusta* 1/1 female, 2 males, 1 deutonymph female]. Cobb Lake, 12 Jan 1969, E. Collyer, *Dracophyllum* sp., 1/3 females. Eves Bush, Oct 1969, E. Collyer, *Coprosma* spp., 1/4 females [+ *Pseudostigmaeus schizopeltatus* 2 females]. Cobb Lake, 17 Jan 1970, E. Collyer, *Coprosma* sp., 1/3 females. Takaka Hill, Mar 1971, G. W. Ramsay, *Brachyglottis hectori* [as *Senecio*], 1/1 female. Eves Bush, 13 Sep 1976, E. Collyer, *Nothofagus solandri* var. *cliffortioides*, 1/2 females. **BR**: Buller Gorge, 10 Apr 1966, E. Collyer, *Metrosideros* sp., climbing, 1/2 females [+ *Pseudostigmaeus schizopeltatus* 2 females]. Buller R, roadside, 10 Apr 1966, E. Collyer, apple, 1/1 female [+ *Eryngiopus bifidus*; *Pseudostigmaeus collyerae*]. Maruia, Lake Daniells, 6 June 1966, E. Collyer, derelict apple [tree], 1/3 females [+ 2 *Cryptognathus* sp.; 1 *Cunaxidae*]. **SI**: Stewart I, Oban, 4 Feb 1968, E. Collyer, *Coprosma foetidissima*, 1/1 female [+ *Pseudostigmaeus collyerae* 1 female, 2 males]. **CH**: Chatham Is, East Sister I, SE Main Dome, 12 Feb 1974, A. Wright, fern on cliff face, [litter] 74/2, 1/1 female [+ *Tydeidae*].

**Habitat.** *Alectryon excelsus*, apple, *Carmichaelia* sp., *Coprosma foetidissima* *Coprosma* sp., *Dacrycarpus dacrydioides*, *Dracophyllum filifolium*, *Dracophyllum* sp., *Elaeocarpus hookerianus*, ferns, *Kunzea ericoides*, *Leptospermum ericoides*, *Melicytus ramiflorus*, *Metrosideros perforata*, *Metrosideros* sp., *Nothofagus menziesii*, *Nothofagus solandri*, *Nothofagus solandri* var. *cliffortioides*, *Phyllocladus* sp., *Podocarpus dacrydioides*, *Podocarpus spicatus*, *Podocarpus totara*, *Prumnopitys taxifolia*, *Rhipogonum scandens*, *Ripogonum scandens*, *Brachyglottis hectori*, *Sophora microphylla*, tree fern.

### *Eryngiopus bifidus* Wood

Fig. 63–64

*Eryngiopus bifidus* Wood, 1967: 114; Wood, 1971c: 412; Vacante & Gerson 1988: 393, 397.

**Diagnosis. Female.** Prodorsum covered with 1 pair of small shields around eyes and *ve*;  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.3: 2.0: 1.0: 1.7$ ;  $1a: 3a: 4a = 1.7: 1.0: 1.4$ ; aggenital area with 2 pairs of setae; trochanter IV without seta; femur I with 4 setae, femur III with 2 setae, genu II without seta, tarsus II–IV with  $9 + 1\omega$ ,  $7 + 1\omega$ ,  $7 + 1\omega$ .

**Description. Female** (Fig. 63–64,  $n = 3$ )

**Gnathosoma.** Chelicerae slender, 70 (66–74), movable digits 34 (34–35), 0.5 (0.4–0.5) times length of chelicerae. Palp 57 (56–57), accessory claw seta-like. Subcapitular setae  $m$  0.3 times length of  $n$ ,  $m = 19$  (17–19),  $n = 57$  (57–61);  $m-m$  1.3 (1.0–1.3) times distance of  $n-n$ ,  $m-m = 30$  (24–30),  $n-n = 23$  (23–25),  $m-n = 6$  (6–7).

**Idiosoma.** Oval, 321 (313–322) long, 155 (155–181) wide. Dorsal idiosomal setae faintly barbed. Prodorsum covered with 1 pair of small shields around eyes and *ve*, setae *sce* present; eyes 8 (8–9) in diameter; lengths: *vi* 16 (14–16), *ve* 29 (25–29), *sci* 20 (19–20), *sce* 20 (19–20); distances:  $vi-vi$  19 (13–19),  $vi-ve$  13 (13–20),  $ve-sci$  20 (20–25),  $sci-sce$  20 (20–25). Ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.3: 2.0: 1.0: 1.7$ ; lengths:  $c_1$  18 (17–19),  $d_1$  16 (15–16),  $d_2$  22 (22–23),  $e_1$  13 (12–13),  $e_2$  15 (13–15),  $f_1$  19 (17–19); distances:  $c_1-c_1$  47 (47–62),  $c_1-d_1$  75 (73–75),  $d_1-d_1$  70 (70–87),  $d_1-d_2$  29 (29–39),  $d_1-e_1$  60 (57–62),  $e_1-e_1$  35 (35–41),  $e_1-e_2$  30 (30–37),  $e_1-f_1$  26 (26–27),  $f_1-f_1$  60 (54–60); humeral setae  $c_2$  24 (24–28). Suranal setae  $h_1: h_2 = 1.0$ ,  $h_1$  24 (24–25),  $h_2$  25 (25–30). Ventral setae *1a* and *4a* longer than *3a*, ratio  $1a: 3a: 4a = 1.7: 1.0: 1.4$ , *1a* 67 (67–75), *3a* 39 (37–43) and *4a* 58 (58–60). Aggenital area with 2 pairs of setae, each on a platelet, ratio  $ag_1: ag_2 = 1.0: 1.8$ ,  $ag_1$  20 (20–21),  $ag_2$  35 (29–35); pseudanal setae  $ps_3$  17 (13–17),  $ps_2$  15 (12–15),  $ps_1$  16 (16–18).

**Legs.** Length: leg I 129 (121–129), leg II 98 (91–405), leg III 109 (102–109), leg IV 116 (116–119). Setae *dFI* and *dGI* faintly barbed, 25 and 21, respectively. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 1; trochanters 1, 1, 1, 0; femora 4, 4, 2, 2; genua 3 + 1*κ*, 0, 0, 0; tibiae 5 + 1*ω*, 5 + 1*ω*, 5 + 1*ω*, 5 + 1*ω*; tarsi 13 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 7 + 1*ω*. Lengths of solenidia: I*ω* 7, II*ω* 6 (5.5–6), III*ω* 5 (4–5), IV*ω* 3.

**Protonymph** ( $n = 1$ )

**Gnathosoma.** Chelicerae slender, 60, movable digits 26, 0.4 times length of chelicerae. Palp 52, accessory claw seta-like. Subcapitular setae  $m = 12$ ,  $n$  absent;  $m-m = 22$ .

**Idiosoma.** Oval, 265 long, 134 wide. Dorsal idiosomal setae faintly barbed. Prodorsum covered with 1 pair of small shields; eyes 8 in diameter; lengths: *vi* 11, *ve* 16, *sci* 15, *sce* 15; distances:  $vi-vi$  19,  $vi-ve$  12,  $ve-sci$  19,  $sci-sce$  19. Ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.0: 1.4: 1.0: 1.1$ ; lengths:  $c_1$  12,  $d_1$  12,  $d_2$  16,  $e_1$  10,  $e_2$  13,  $f_1$  16; distances:  $c_1-c_1$  41,  $c_1-d_1$  57,  $d_1-d_1$  59,  $d_1-d_2$  30,  $d_1-e_1$  45,  $e_1-e_1$  42,  $e_1-e_2$  22,  $e_1-f_1$  21,  $f_1-f_1$  45; humeral setae  $c_2$  18. Suranal setae  $h_1: h_2 = 1.0$ ,  $h_1$  17,  $h_2$  18. Ventral setae *4a* absent, *1a* about twice lengths of *3a*, ratio  $1a: 3a = 1.9: 1.0$ , *1a* 59, *3a* 31. Aggenital area with 1 pair of setae, each on a platelet,  $ag_1$  14; pseudanal setae  $ps_3$  10,  $ps_2$  11,  $ps_1$  10.

**Legs.** Length: leg I 121, leg II 87, leg III 81, leg IV 91. Setae *dFI* and *dGI* faintly barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 0; trochanters 1, 1, 0, 0; femora 4, 4, 2, 1; genua 3 + 1*κ*, 0, 0, 0; tibiae 5 + 1*ω*, 5 + 1*ω*, 5 + 1*ω*, 5 + 1*ω*; tarsi 13 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 6 + 1*ω*. Lengths of solenidia: I*ω* 5, II*ω* 3, III*ω* 2.5, IV*ω* 1.5.

**Distribution** (N.Z., Map p. 378). New Zealand (Wood 1967, 1971c), Italy (Vacante & Gerson 1988).

– / SD, NN, BR, WD.

**Material examined.** Holotype, 1 paratype, and 46 non-type specimens. **Holotype** female: NEW ZEALAND: NN: Dun Mt track, 27 June 1964, T. G. Wood, bark of *Leptospermum* sp., NZAC: 1/1 female. **Paratype: NN:** Sherry River, 25 Feb 1965, E. Collyer, apple trees, NZAC: 1/1 female. **Other material: SD:** Kenepuru Sound: Portage, 29 Jan 1966, E. Collyer, *Knightsia excelsa*, 1/1 female [+ *Mediolata robusta*; *Agistemus longisetus*]. **NN:** Nelson, Ngatitama St, 1 Oct 1964, E. Collyer, apple, 1/1 female [+ *Zetzellia maori* 1 female, 1 protonymph; Tydeidae 6]. Mapua, 16 Dec 1964, E. Collyer, bark of unsprayed apple, 1/2 females. Honeymoon Bay, 20 Sep 1965, E. Collyer, *Microsorium scandens* [as *Phymatodes*], 1/2 females [+ *Mediolata robusta* 1 female; *Pseudostigmaeus schizopeltatus* 1 female]. Nelson, Boulder Bank, 30 July 1966, E. Collyer, *Hymenanchera* sp., 1/3 females, 1 protonymph [+ *Eryngiopus nelsonensis* 4 females, 1 deutonymph female]. Eves Bush, 7 Aug 1966, E. Collyer, *Podocarpus totara*, 1/5 females, 1 male [+ *Eryngiopus arboreus* 1 female]. Maitai Valley, 19 Aug 1966, E. Collyer, *Phyllocladus trichomanoides*, 1/2 females. Eves Bush, 20 Oct 1966, E. Collyer, *Podocarpus totara*, 1/1 female. Nelson, Boulder Bank, 30 Nov 1966, E. Collyer, *Hymenanchera* sp., 1/7 females [+ 1 *Cryptognathus vulgaris* 1 female]. Perry Neudorf, 12 Dec 1966, E. Collyer, apple, 1/1 female [+ *Agistemus longisetus* 1 female; *Mediolata robusta* 1 female]. Perry Neudorf, 26 Jan 1967, E. Collyer, apple, 1/1 female [+ *Agistemus collyerae* 5 females; *Agistemus longisetus* 2 females; *Zetzellia maori* 1 female]. Farewell Spit, 31 Jan 1967, E. Collyer, *Coprosma* sp., 1/1 female. Eves Bush, 23 Feb 1967, E. Collyer, *Podocarpus totara*, 1/2 females. Moutere, Jacketts Island: 21 Sep 1967, E. Collyer, *Pyrus communis* twigs, 1/6 females [+ *Zetzellia maori* 2 females]. Mapua, orchard, 18 Sep 1968, E. Collyer, under dead San Jose scales [Diaspididae], 1/2 females. **BR:** Buller R, roadside, 10 Apr 1966, E. Collyer, apple, 1/1 female, 1 male [+ *Eryngiopus arboreus*, *Pseudostigmaeus collyerae*]. Lewis Pass, 17 Feb 1970, E. Collyer, *Discaria toumatou*, 1/4 females. **WD:** West Coast, 12 Oct 1966, E. Collyer, *Dacrycarpus dacrydioides*, 1/1 female [+ *Pseudostigmaeus collyerae* 1 deutonymph female].

**Habitat.** Apple; bark of *Leptospermum* sp., bark of unsprayed apple, citrus; *Coprosma acerosa*, *Coprosma* sp., *Dacrycarpus dacrydioides*, *Discaria toumatou*, *Hymenanchera* sp., *Knightsia excelsa*, lichen, litter, moss, *Microsorium scandens* [as *Phymatodes*], *Muehlenbeckia* sp., *Phyllocladus trichomanoides*, *Phymatodes* sp., *Podocarpus dacrydioides*, *Podocarpus totara*, *Pyrus communis* twigs, twigs of pear and apple tree, under dead San Jose scale insects [Diaspididae].

**Feeding habit.** In association with arrowhead scale (*Unaspis yanonensis*).

### *Eryngiopus nelsonensis* Wood

Fig. 65–68

*Eryngiopus nelsonensis* Wood, 1971c: 413; Vacante & Gerson 1988: 399.

**Diagnosis. Female.** Prodorsum covered with a shield, which with 1 pair of eyes and 2–3 pairs of setae;  $c_1-c_1$ ;  $d_1-d_1$ ;  $e_1-e_1$ ;  $f_1-f_1 = 1.3: 1.2: 1.0: 1.2$ ;  $1a: 3a: 4a = 1.0: 2.2: 1.0$ ; aggenital area with 3 pairs of setae; trochanter IV with 1 seta; femur I with 5 setae, femur III with 3 setae, genu II with 2 setae, tarsi II–IV with 8 + 1 $\omega$ , 6 + 1 $\omega$ , 6 + 1 $\omega$ .

**Male.** As in female but:  $c_1-c_1$ ;  $d_1-d_1$ ;  $e_1-e_1$ ;  $f_1-f_1 = 1.6: 1.1: 1.0: 1.3$ ;  $1a: 3a: 4a = 1.0: 2.2: 1.1$ ; tarsi I–II with 13 + 2 $\omega$ , 8 + 2 $\omega$ .

**Description. Female** (Fig. 65–66, n = 6)

**Gnathosoma.** Chelicerae slender, 90 (84–92), movable digits 40 (38–43), 0.4 (0.4–0.5) times length of chelicerae. Palp 70 (68–73), accessory claw seta-like. Subcapitular setae  $m$  0.3 times length of  $n$ ,  $m = 22$  (22–27),  $n = 75$  (70–78);  $m-m$  0.9 times distance of  $n-n$ ,  $m-m = 30$ ,  $n-n = 35$  (34–35),  $m-n = 9$  (8–9).

**Idiosoma.** Oval, 375 (334–375) long, 209 (208–214) wide. Dorsal idiosomal setae faintly barbed. Prodorsum covered with a shield, which with 1 pair of eyes and 2–3 pairs of setae, setae *sce* present; eyes 9 in diameter; lengths:  $vi$  16 (14–16),  $ve$  29 (28–30),  $sci$  14 (14–15),  $sce$  14 (14–15); distances:  $vi-vi$  27 (25–27),  $vi-ve$  11 (10–11),  $ve-sci$  33 (32–35),  $sci-sce$  33 (32–35). Ratio  $c_1-c_1$ ;  $d_1-d_1$ ;  $e_1-e_1$ ;  $f_1-f_1 = 1.3: 1.2: 1.0: 1.2$ ; lengths:  $c_1$  15 (14–15),  $d_1$  15 (14–15),  $d_2$  16 (16–18),  $e_1$  14 (13–14),  $e_2$  14 (14–15),  $f_1$  17 (17–21); distances:  $c_1-c_1$  63 (59–63),  $c_1-d_1$  72 (70–73),  $d_1-d_1$  56 (41–56),  $d_1-d_2$  64 (41–64),  $d_1-e_1$  68 (63–78),  $e_1-e_1$  48 (38–48),  $e_1-e_2$  50 (50–58),  $e_1-f_1$  21 (21–25),  $f_1-f_1$  58 (53–58); humeral setae  $c_2$  24 (22–24). Suranal setae  $h_1$ ;  $h_2 = 0.8$ ,  $h_1$  18 (18–25),  $h_2$  23 (23–31). Ventral setae  $3a$  about twice lengths of other two pairs, ratio  $1a: 3a: 4a = 1.0: 2.2: 1.0$ ,  $1a$  21 (21–22),  $3a$  46 (41–46) and  $4a$  22 (22–26). Aggenital area with 3 pairs of setae, first pair each on a platelet, second and third pairs jointly on a small shield on each side, ratio  $ag_1: ag_2: ag_3 = 1.0: 1.5: 2.7$ ,  $ag_1$  14 (14–23),  $ag_2$  21 (20–24),  $ag_3$  35 (35–46); pseudanal setae  $ps_3$  18 (18–21),  $ps_2$  23 (23–25),  $ps_1$  20 (20–27).

**Legs.** Length: leg I 141 (130–141), leg II 109 (101–110), leg III 111 (104–111), leg IV 125 (117–126). Setae *dFI* and *dGI* faintly barbed, 25 and 21, respectively. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 $lecp$ , 1, 2, 1; trochanters 1, 1, 1, 1; femora 5, 4, 3, 2; genua 3 + 1 $\kappa$ , 2, 0, 0; tibiae 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 1 $\omega$ , 8 + 1 $\omega$ , 6 + 1 $\omega$ , 6 + 1 $\omega$ . Lengths of solenidia: I $\omega$  7 (7–10), II $\omega$  6 (6–8), III $\omega$  3 (3–4), IV $\omega$  3.

**Male** (Fig. 67–68,  $n = 1$ )

**Gnathosoma.** Chelicerae slender, 78, movable digits 36, 0.5 times length of chelicerae. Palp 64, accessory claw seta-like. Subcapitular setae  $m$  0.3 times length of  $n$ ,  $m = 18$ ,  $n = 55$ ;  $m-m$  0.9 times distance of  $n-n$ ,  $m-m = 29$ ,  $n-n = 32$ ,  $m-n = 7$ .

**Idiosoma.** Oval, 369 long, 149 wide. Dorsal idiosomal setae faintly barbed. Prodorsum covered with a shield, which with 1 pair of eyes and 2–3 pairs of setae, setae *sce* present; eyes 9 (9–10) in diameter; lengths:  $vi$  9,  $ve$  18,  $sci$  11,  $sce$  11; distances:  $vi-vi$  23,  $vi-ve$  9,  $ve-sci$  31,  $sci-sce$  31. Dorsal hysterosoma mostly striated; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.6: 1.1: 1.0: 1.3$ ; lengths:  $c_1$  12,  $d_1$  11,  $d_2$  15,  $e_1$  10,  $e_2$  10,  $f_1$  19; distances:  $c_1-c_1$  51,  $c_1-d_1$  53,  $d_1-d_1$  34,  $d_1-d_2$  49,  $d_1-e_1$  58,  $e_1-e_1$  31,  $e_1-e_2$  38,  $e_1-f_1$  19,  $f_1-f_1$  40; humeral setae  $c_2$  18. Suranal setae  $h_1: h_2 = 0.5$ ,  $h_1$  12,  $h_2$  22. Ventral setae  $3a$  about twice lengths of other two pairs, ratio  $1a: 3a: 4a = 1.0: 2.2: 1.1$ ,  $1a$  17,  $3a$  38 and  $4a$  19. Aggenital area with 3 pairs of setae on a large rectangular shield, ratio  $ag_1: ag_2: ag_3 = 1.1: 1.3: 1.0$ ,  $ag_1$  17,  $ag_2$  20,  $ag_3$  16; pseudanal setae  $ps_3$  13,  $ps_2$  6.5,  $ps_1$  3.5.

**Legs.** Length: leg I 123, leg II 100, leg III 96, leg IV 108. Setae *dFI* and *dGI* faintly barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 1; trochanters 1, 1, 1, 1; femora 5, 4, 3, 2; genua 3 + 1  $\kappa$ , 2, 0, 0; tibiae 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 2  $\omega$ , 8 + 2  $\omega$ , 6 + 1  $\omega$ , 6 + 1  $\omega$ . Lengths of solenidia: I  $\omega_1$  8, I  $\omega_2$  9, II  $\omega_1$  5, II  $\omega_2$  10, III  $\omega_3$ , IV  $\omega_3$ .

**Deutonymph female** ( $n = 1$ )

**Gnathosoma.** Chelicerae slender, 63, movable digits 33, 0.5 times length of chelicerae. Palp 55, accessory claw seta-like. Subcapitular setae  $m$  0.4 times length of  $n$ ,  $m = 17$ ,  $n = 40$ ;  $m-m$  0.9 times distance of  $n-n$ ,  $m-m = 21$ ,  $n-n = 24$ ,  $m-n = 7$ .

**Idiosoma.** Oval, 367 long, 113 wide. Dorsal idiosomal setae faintly barbed. Prodorsum covered with a shield, setae *sce* present; eyes 8 in diameter; lengths:  $vi$  13,  $ve$  20,  $sci$  10,  $sce$  10; distances:  $vi-vi$  20,  $vi-ve$  7,  $ve-sci$  30,  $sci-sce$  30. Ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.2: 1.0: 1.0: 1.5$ ; lengths:  $c_1$  12,  $d_1$  11,  $d_2$  16,  $e_1$  10,  $e_2$  12,  $f_1$  17; distances:  $c_1-c_1$  31,  $c_1-d_1$  52,  $d_1-d_1$  27,  $d_1-d_2$  43,  $d_1-e_1$  51,  $e_1-e_1$  26,  $e_1-e_2$  31,  $e_1-f_1$  19,  $f_1-f_1$  39; humeral setae  $c_2$  18. Suranal setae  $h_1: h_2 = 0.8$ ,  $h_1$  15,  $h_2$  18. Ventral setae  $3a$  longer than twice length of other two pairs, ratio  $1a: 3a: 4a = 1.0: 2.3: 1.0$ ,  $1a$  12,  $3a$  27 and  $4a$  12. Aggenital area with 3 pairs of setae, first pair each on a platelet, second and third pairs jointly on a small shield on each side, ratio  $ag_1: ag_2: ag_3 = 1.0: 1.5: 2.8$ ,  $ag_1$  8,  $ag_2$  12,  $ag_3$  22; pseudanal setae  $ps_3$  13,  $ps_2$  13,  $ps_1$  14.

**Legs.** Length: leg I 99, leg II 82, leg III 85, leg IV 93. Setae *dFI* and *dGI* faintly barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 1; trochanters 1, 1, 1, 0;

femora 5, 4, 3, 2; genua 3 + 1  $\kappa$ , 2, 0, 0; tibiae 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 8 + 1  $\omega$ , 6 + 1  $\omega$ , 6 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  6, II  $\omega$  4, III  $\omega$  3, IV  $\omega$  2.

**Distribution** (Map p. 378). New Zealand (Wood 1971c). – / NN.

**Material examined.** Holotype, 3 paratypes, and 17 non-type specimens. **Holotype** female: NEW ZEALAND: NN: Nelson, Boulder Bank, 30 Jul 1966, E. Collyer, *Muehlenbeckia* sp., NZAC: 1/1 female “(dorsal)” + paratype female “(ventral)”. **Paratypes:** same collection data as holotype slide: NZAC: 1/1 female on holotype slide; 1/1 allotype male, 1 female. **Other material:** NN: Nelson, Boulder Bank, 30 Jul 1966, E. Collyer, *Coprosma* sp., 1/2 females, 4 males [+ *Agistemus collyerae* 1 female, *Zetzellia maori* 1 male]. Nelson, Boulder Bank, 30 Jul 1966, E. Collyer, *Hymenathera* sp., 1/4 females, 1 deutonymph female [+ *Eryngiopus bifidus* 3 females, 1 protonymph]. Nelson, Milton Street, 26 Mar 1968, E. Collyer, San Jose scale, dead tree, in and under scales, 1/2 females [+ *Eryngiopus nelsonensis* 1 female]. Nelson, Monaco, June 1972, R. J. B. Power, *Halcyon sancta vagans*, 1/1 female. Clyde Pollock (grower), N.Z., 2 Sep 1999, ex mussel shell scale on apple, K. Colhoum. 1/3 females.

**Habitat.** *Coprosma* sp., *Discaria toumatou*, *Halcyon sancta vagans*, *Hymenathera* sp., *Muehlenbeckia* sp., mussel shell scale on apple, San Jose scale.

### *Eryngiopus similis* Wood

Fig. 69–70

*Eryngiopus similis* Wood, 1967: 114; Wood, 1971c: 412; Vacante & Gerson 1988: 397.

**Diagnosis. Female.** Prodorsum covered with 1 pair of small shields around eyes and *ve*;  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.3: 2.0: 1.0: 1.7$ ;  $f_1$  about 0.9 times length of  $h_1$ ;  $1a: 3a: 4a = 1.0: 1.0: 1.3$ ; aggenital area with 2 pairs of setae; trochanter IV without seta; femur I with 4 setae, femur III with 2 setae, genu II with 1 seta, tarsus II–IV with 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ .

**Description.** Female (Fig. 69–70,  $n = 1$ )

**Gnathosoma.** Chelicerae slender, 59, movable digits 35, 0.6 times length of chelicerae. Palp 63, accessory claw seta-like. Subcapitular setae  $m$  0.4 times length of  $n$ ,  $m = 20$ ,  $n = 52$ ;  $m-m$  1.2 times distance of  $n-n$ ,  $m-m = 29$ ,  $n-n = 24$ ,  $m-n = 4$ .

**Idiosoma.** Oval, 322 long, 195 wide. Dorsal idiosomal setae faintly barbed. Prodorsum covered with 1 pair of small shields around eyes and *ve*, setae *sce* present; eyes 8 in diameter; lengths:  $vi$  15,  $ve$  27,  $sci$  20,  $sce$  20; distances:  $vi-vi$  16,  $vi-ve$  19,  $ve-sci$  26,  $sci-sce$  26. Ratio  $c_1-$

$c_1: d_1-d_2: e_1-e_2: f_1-f_2 = 1.3: 2.0: 1.0: 1.7$ ; lengths:  $c_1$  23,  $d_1$  20,  $d_2$  29,  $e_1$  20,  $e_2$  20,  $f_1$  26; distances:  $c_1-c_2$  52,  $c_1-d_1$  71,  $d_1-d_2$  77,  $d_1-d_2$  43,  $d_1-e_1$  60,  $e_1-e_2$  39,  $e_1-e_2$  42,  $e_1-f_1$  35,  $f_1-f_2$  65; humeral setae  $c_2$  33. Suranal setae  $h_1: h_2 = 1.0$ ,  $h_1$  29,  $h_2$  30. Ventral setae  $4a$  longer than other 2 pairs, ratio  $1a: 3a: 4a = 1.0: 1.0: 1.3$ ,  $1a$  24,  $3a$  24 and  $4a$  30. Aggenital area with 2 pairs of setae, each on a platelet, ratio  $ag_1: ag_2 = 1.0: 1.7$ ,  $ag_1$  20,  $ag_2$  33; pseudanal setae  $ps_1$  15,  $ps_2$  16,  $ps_3$  18.

**Legs.** Length: leg I 128, leg II 100, leg III 97, leg IV 115. Setae  $dFI$  and  $dGI$  faintly barbed, 20 and 26, respectively. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 1, 2, 1; trochanters 1, 1, 1, 0; femora 4, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  7, II  $\omega$  6, III  $\omega$  4, IV  $\omega$  5.

**Distribution** (Map p. 378). New Zealand (Wood 1967, 1971c).

– / NN, BR.

**Material examined.** Holotype and 1 non-type specimen. **Holotype** female: NEW ZEALAND: BR: 1 mile N of Punakaiki, nr Greymouth, 16 Feb 1965, T. G. Wood, moss on roadside cutting, NZAC: 1/1 female. **Other material:** NN: Marahau, Sandy Bay, 28 Aug 1966, E. Collyer, *Leptospermum scoparium*, 1/1 female.

**Habitat.** Foliage of *Leptospermum scoparium*; moss on boulders, cutting, rocks.

### Genus *Eustigmaeus* (Berlese)

*Stigmaeus* (*Eustigmaeus*) Berlese, 1910: 206. Type species: *Stigmaeus kermesinus* Koch, 1841, by original designation. Raised to genus by Oudemans, 1923a: 143.

*Ledermuelleria* Oudemans, 1923b: 150. Type species: *Ledermuelleria segnis* Koch, 1836b. Synonymy by Wood, 1973: 182.

**Diagnosis. Female.** Idiosoma broadly oval in dorsoventral view, generally red or dark red in life. Chelicerae separate. Palptibial claw subequal to palptarsus; accessory claw stout, conical; terminal eupathidia on palptarsus basally fused and split halfway into 3 long prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1  $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (basally fused). Subcapitulum with 2 pairs of subcapitular setae,  $m$  anterolaterad of pharynx,  $n$  posteriad of  $m$ . Prodorsum covered with a large shield, bearing 4 pairs of setae ( $vi$ ,  $ve$ ,  $sci$  and  $sce$ ); eyes often present,  $pob$  absent. Dorsal hysterosomal area C–F covered with a large shield, with 6 pairs of setae ( $c_1$ ,  $d_1$ ,  $d_2$ ,  $e_1$ ,  $e_2$  and  $f_1$ ); humeral shields large, ventrolateral, with setae  $c_2$ . Suranal shield entire, ventroterminal, with 2 pairs of setae ( $h_1$  and  $h_2$ ),  $h_3$  ab-

sent. Endopodal shields I–II and III–IV present, divided or fused along midline. Ventral opisthosoma with 1–3 pairs of aggenital setae; genitoanal valves with 3 pairs of pseudanal setae, genital setae absent. Leg tarsal claws robust; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding  $1a$ ,  $3a$  and  $4a$ ) 2 + 1  $elcp$ , 2, 2, 2; trochanters 1, 1, 1–2, 0–1; femora 6, 4–5, 3, 2–3; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 1  $\omega$ , 8–9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 0–1  $\omega$ .

**Male.** Solenidia on tarsi I–IV: 2, 2, 2, 2.

**Remarks.** This genus was split by Rimando & Corpuz-Raros (1997) into 4 genera: *Eustigmaeus* (s. str.), *Ledermuelleria* (s. str.), *Wooderia*, and *Chaudhria* according to characters including: the condition of endopodal shields, number of aggenital setae, and shape of dorsal idiosomal setae. These characters are often variable among species within the genus, so we maintain Wood's (1973) concept of the genus until more consistent characters are discovered.

Nine species were previously described from New Zealand. Three new species are added in this paper.

### Key to species of *Eustigmaeus* from New Zealand (adults)

- 1 Dorsal idiosomal setae falciform or plumiform (Fig. 89 F); with 1 pair of aggenital setae in female (Fig. 89 G); solenidium  $\kappa$  on genu II absent (Fig. 90 B) ..... 2
- Dorsal idiosomal setae acicular (Fig. 81 C), claviform (Fig. 73 D), or bushy (Fig. 85 F); with 2–3 pairs of aggenital setae in female (Fig. 71 F, 85 B); solenidium  $\kappa$  on genu II present (Fig. 72 B) ..... 6
- 2 Femur II with 4 setae (Fig. 90 B); vacuoles in pits present (Fig. 89 A, Plate 4 D) ..... 3
- Femur II with 5 setae (Fig. 106 B); vacuoles in pits present (Fig. 105 A) or absent (Fig. 113 A) ..... 5
- 3 Vacuoles present in pits and on reticulated margins (Fig. 89 A, Plate 4 D); endopodal shields between I–II fused along midline (Fig. 89 B) ..... 4
- Vacuoles only present in pits (Fig. 77A, Plate 4 A); endopodal shields between I–II separated along midline (Fig. 77 B) ... (p. 56) ... *Eustigmaeus corticolus* (Wood)
- 4 Dorsal idiosomal setae smooth or with minute spinules (Fig. 89 F); endopodal shield between III–IV totally fused along midline (Fig. 89 B); tarsus II with 9 + 1  $\omega$  in female (Fig. 90 B) ..... (p. 59) ... *Eustigmaeus eburneus* sp. n.

- Dorsal idiosomal setae with long spinules (Fig. 109 E); endopodal shield between III–IV partially fused along midline and with a minute platelet (Fig. 109 B); tarsus II with  $8 + 1\omega$  in female (Fig. 110 B) ..... (p. 64)... *Eustigmaeus pilosetus* sp. n.
- 5 Dorsal idiosomal setae with long spinules (Fig. 105 E); vacuoles in pits present (Fig. 105 A); endopodal shields between I–II and III–IV separated along midline (Fig. 105 B);  $c_i-c_i$  closer than  $d_i-d_i$  (Fig. 105 A) ..... (p. 63)... *Eustigmaeus mixtus* (Wood)
- Dorsal idiosomal setae with small spinules (Fig. 113 C); vacuoles in pits absent (Fig. 113 A); endopodal shields between I–II and III–IV fused along midline (Fig. 113 B);  $c_i-c_i$  further apart than  $d_i-d_i$  (Fig. 113 A) ..... (p. 65)... *Eustigmaeus simplex* (Wood)
- 6 Endopodal shields I–II and III–IV separated along midline (Fig. 71 B); with 2 pairs of aggenital setae in female; solenidion  $\omega$  on tarsi IV present in female (Fig. 72 D); dorsal idiosomal setae clavate, rod-shaped or acicular ..... 7
- Endopodal shields I–II and III–IV fused along midline (Fig. 85 B); with 3 pairs of aggenital setae in female; solenidion  $\omega$  on tarsi IV absent in female (Fig. 86 D); dorsal idiosomal setae bushy (Fig. 85 F) ..... (p. 58)... *Eustigmaeus dumosus* (Wood)
- 7 Setae *sci* prominently reduced, about 1/4 length of *ve* (Fig. 71 A) ..... 8
- Setae *sci* at least 1/2 length of *ve* (Fig. 101 A) ..... 9
- 8 Prodorsum without lateral platelets (callosities); dorsal shields with uniform pits in polygonal reticula (Plate 3 C); dorsal idiosomal setae very short, slightly clavate, with hyaline sheath;  $c_i-c_i$ ,  $d_i-d_i$ ,  $e_i-e_i$  and  $f_i-f_i$  subequal in female (Fig. 71 A) ..... (p. 54)... *Eustigmaeus brevisetosus* (Wood)
- Prodorsum with 1 pair of lateral platelets; dorsal shields with small pits, reticula very faint (Plate 5 B); dorsal idiosomal setae prominent, rod-shaped, with minute spinules on distal halves, hyaline sheath absent;  $e_i-e_i$  further apart than  $c_i-c_i$ ,  $d_i-d_i$  and  $f_i-f_i$  in female (Fig. 97 A) ... (p. 61)... *Eustigmaeus granulosus* (Wood)
- 9 Dorsal shields reticulate (Fig. 93 A, Plate 4 B); dorsal idiosomal setae rod-shaped (Fig. 93 D) or clavate (Fig. 73 D) ..... 10
- Dorsal shields with pits, not reticulate (Fig. 101 A, Plate 5 C); dorsal idiosomal setae acicular (Fig. 101 E) ... (p. 62)... *Eustigmaeus manapouriensis* (Wood)
- 10 Dorsal idiosomal setae rod-shaped, smooth, with hyaline sheath (Fig. 93 D) ..... 11
- Dorsal idiosomal setae clavate, with spinules tufted on tips, without hyaline sheath (Fig. 73 D) ..... (p. 55)... *Eustigmaeus clavigerus* (Wood)

- 11 Setae *sci* about 1/2 length of *ve*;  $c_i$  about 1/2 distance of  $c_i-c_i$  and more than 2/3 distance of  $c_i-d_i$  in female (Fig. 81 A) ... (p. 57)... *Eustigmaeus distinctus* (Wood)
- Setae *sci* nearly 4/5 length of *ve*;  $c_i$  about 1/3 distance of  $c_i-c_i$  and less than 1/2 distance of  $c_i-d_i$  in female (Fig. 93 A) ... (p. 60)... *Eustigmaeus edentatus* sp. n.

### *Eustigmaeus brevisetosus* (Wood)

Fig. 71–72, Plate 3 C

*Ledermuelleria brevisetososa* Wood, 1966: 100.

**Diagnosis. Female.** Dorsal shields with uniform pits restricted to thin polygonal reticula; vacuoles absent; dorsal idiosomal setae very short, slightly clavate, axial core acicular, with hyaline sheath; *sci* about 1/4 length of *ve*;  $c_i$  about 1/3 distance of  $c_i-c_i$ ; ratio  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i$  = 1.0: 1.2: 1.1: 1.0; endopodal shields between I–II and III–IV separated along midline, a minute platelet present between endopodal shields III–IV; aggenital shield with 2 pairs of setae; femur II with 5 setae;  $\kappa$  on genua II present; tarsus II with  $9 + 1\omega$ ; tarsus IV with  $7 + 1\omega$ .

**Description. Female** (Fig. 71–72, Plate 3 C,  $n = 2$ )

**Gnathosoma.** Chelicerae 70, movable digits 45 (45–48), about 3/5 length of chelicerae. Palp 70 (70–80), accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*,  $m = 20$  (15–20),  $n = 15$  (13–15);  $m-m$  subequal to  $n-n$ ,  $m-m = 24$  (24–25),  $n-n = 24$  (24–27),  $m-n = 14$ .

**Idiosoma.** Oval, 312 (306–312) long, 265 (231–265) wide. Dorsal shields moderately sclerotised, with uniform pits restricted to thin polygonal reticula; dorsal idiosomal setae very short, slightly clavate, axial core acicular, with hyaline sheath; setal tubercles absent. Eyes 13 in diameter. Prodorsal setae *sci* about 1/4 length of *ve* and 1/3 length of *sce*; lengths: *vi* 27, *ve* 42, *sci* 10, *sce* 31 (28–31); distances: *vi-vi* 27 (27–30), *vi-ve* 63 (62–63), *ve-sci* 37 (37–39), *sci-sce* 34 (26–34). Dorsal hysterosomal setae  $c_i$  about 1/3 distance of  $c_i-c_i$  and shorter than 1/3 distance of  $c_i-d_i$ ; ratio  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i$  = 1.0: 1.2: 1.1: 1.0; lengths:  $c_i$  25 (24–25),  $d_i$  23 (20–23),  $d_2$  22 (19–22),  $e_i$  27 (16–27),  $e_2$  22 (15–22),  $f_i$  30 (24–30); distances:  $c_i-c_i$  72 (72–76),  $c_i-d_i$  80 (66–80),  $d_i-d_i$  89 (65–89),  $d_i-d_2$  80 (67–80),  $d_i-e_i$  76 (60–76),  $e_i-e_i$  82 (65–82),  $e_i-e_2$  52 (39–52),  $e_i-f_i$  54 (54–56),  $f_i-f_i$  73 (65–73); humeral setae  $c_2$  32 (15–32). Suranal setae  $h_1$  19,  $h_2$  9. Endopodal shields between I–II and III–IV separated along midline, a minute platelet present between endopodal shields III–IV; ventral setae subequal in length,  $1a = 17$  (16–17),  $3a = 16$  (14–16),  $4a = 15$  (14–15). Aggenital shield with 2 pairs of setae,  $ag_1 = ag_2 = 14$ ; pseudanal setae  $ps_3$  14,  $ps_2$  14,  $ps_1$  15.

**Legs.** Length: leg I 175 (153–175), leg II 140 (135–140), leg III 125 (125–128), leg IV 175 (130–175). Counts of

setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  15 (15–16), II $\omega$  11 (11–14), III $\omega$  6 (6–8), IV $\omega$  5.

**Distribution** (Map p. 378). New Zealand (Wood 1966). ND, WI / –.

**Material examined.** Holotype, 1 paratype, and 2 non-type specimens. **Holotype** female: NEW ZEALAND: **WI**: Wanganui, nr Maxwell, 16 Nov 1964, G. S. Grandison, ex. moss on grassy roadside verge / *Ledermuelleria brevisetososa* Wood, 1966, NZAC: 1/1 female. **Paratype**: **ND**: Mangamuka, 13 Nov 1964, G. S. Grandison, ex moss on rocks and base of trees, bush, NZAC: 1/1 female. **Other material**: same collection data as for paratype: 1/1 female, 1 male (damaged).

**Habitat.** Moss on grassy roadside verge, beech (*Nothofagus*) forest, rocks.

### *Eustigmaeus clavigerus* (Wood)

Fig. 73–76, Plate 3 D

*Ledermuelleria clavigera* Wood, 1966: 99.

**Diagnosis. Female.** Dorsal shields with uniform pits restricted to thick polygonal reticula; vacuoles absent; dorsal idiosomal setae clavate, with spinules tufted on tips; *sci* about 2/3 length of *ve*;  $c_1$  about 1/3 distance of  $c_1 - c_1$ ; ratio  $c_1 - c_1$ :  $d_1 - d_1$ :  $e_1 - e_1$ :  $f_1 - f_1$  = 1.2: 1.0: 1.1: 1.1; endopodal shields between I–II and III–IV separated along midline; aggenital shield with 2 pairs of setae; femur II with 5 setae;  $\kappa$  on genua II present; tarsi I–IV with 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ .

**Male.** As in female but: ratio  $c_1 - c_1$ :  $d_1 - d_1$ :  $e_1 - e_1$ :  $f_1 - f_1$  = 1.3: 1.3: 1.1: 1.0; tarsi I–IV with 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 2  $\omega$ .

**Description. Female** (Fig. 73–74, Plate 3 D, n = 3)

**Gnathosoma.** Chelicerae 73 (73–76), movable digits 30 (30–32), about 2/5 length of chelicerae. Palp 58 (58–65), accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*,  $m = 18$  (18–19),  $n = 16$  (16–18);  $m - m$  less than distance of  $n - n$ ,  $m - m = 21$  (21–25),  $n - n = 25$  (25–27),  $m - n = 15$  (13–15).

**Idiosoma.** Oval, 312 (298–315) long, 251 (231–251) wide. Dorsal shields well sclerotised, with uniform pits restricted to thick polygonal reticula; dorsal idiosomal setae clavate, with spinules tufted on tips; setal tubercles small. Eyes 15 (15–16) in diameter. Prodorsal setae *sci* about 2/3 length of *ve* and subequal to *sce*; lengths: *vi* 37 (37–40), *ve* 45 (45–51), *sci* 30 (30–42), *sce* 31 (31–39); distances: *vi - vi* 28 (28–32), *vi - ve* 56 (55–56), *ve - sci* 39 (39–40), *sci -*

*sce* 33 (33–39). Dorsal hysterosomal setae  $c_1$  about 1/3 distance of  $c_1 - c_1$  and nearly 1/2 distance of  $c_1 - d_1$ ; ratio  $c_1 - c_1$ :  $d_1 - d_1$ :  $e_1 - e_1$ :  $f_1 - f_1$  = 1.2: 1.0: 1.1: 1.1; lengths:  $c_1$  32 (32–45),  $d_1$  33 (33–45),  $d_2$  35 (35–38),  $e_1$  45 (45–46),  $e_2$  36 (36–42),  $f_1$  45 (45–50); distances:  $c_1 - c_1$  94 (90–94),  $c_1 - d_1$  70 (70–80),  $d_1 - d_1$  80 (80–83),  $d_1 - d_2$  68 (66–68),  $d_1 - e_1$  75 (65–75),  $e_1 - e_1$  88 (70–88),  $e_1 - e_2$  40 (40–47),  $e_1 - f_1$  40 (33–40),  $f_1 - f_1$  91 (73–91); humeral setae  $c_2$  30 (30–31). Suranal setae  $h_1$  40 (32–40),  $h_2$  46 (37–46). Endopodal shields between I–II and III–IV separate along midline; ventral setae subequal in length,  $1a = 17$  (17–20),  $3a = 18$  (18–19),  $4a = 19$  (18–19). Aggenital shield with 2 pairs of subequal setae,  $ag_1 = 18$  (12–18),  $ag_2 = 18$  (13–18); pseudanal setae  $ps_3$  18 (10–18),  $ps_2$  19 (11–19),  $ps_1$  20 (12–20).

**Legs.** Length: leg I 156 (156–161), leg II 132 (103–132), leg III 139 (118–139), leg IV 165 (130–165). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  17 (17–20), II $\omega$  12 (12–15), III $\omega$  5 (5–8), IV $\omega$  4 (4–5).

**Male** (Fig. 75–76, n = 1)

**Gnathosoma.** Chelicerae movable digits 25. Palp 53, accessory claw spine-like. Subcapitular setae *m* subequal to *n*,  $m = 12$ ,  $n = 13$ ;  $m - m$  subequal to  $n - n$ ,  $m - m = 20$ ,  $n - n = 21$ ,  $m - n = 10$ .

**Idiosoma.** Oval, 233 long, 167 wide. Dorsal shields and setae as in female. Eyes 9 in diameter. Prodorsal setae *sci* about 2/3 length of *ve* and slightly longer than 4/5 length of *sce*; lengths: *vi* 30, *ve* 31, *sci* 22, *sce* 26; distances: *vi - vi* 26, *vi - ve* 38, *ve - sci* 25, *sci - sce* 32. Dorsal hysterosomal setae  $c_1$  about 1/3 distance of  $c_1 - c_1$  and nearly 1/2 distance of  $c_1 - d_1$ ; ratio  $c_1 - c_1$ :  $d_1 - d_1$ :  $e_1 - e_1$ :  $f_1 - f_1$  = 1.3: 1.3: 1.1: 1.0; lengths:  $c_1$  25,  $d_1$  23,  $d_2$  28,  $e_1$  10,  $e_2$  32,  $f_1$  40; distances:  $c_1 - c_1$  73,  $c_1 - d_1$  53,  $d_1 - d_1$  73,  $d_1 - d_2$  42,  $d_1 - e_1$  40,  $e_1 - e_1$  61,  $e_1 - e_2$  23,  $e_1 - f_1$  20,  $f_1 - f_1$  56; humeral setae  $c_2$  25. Suranal setae  $h_1$  8,  $h_2$  31. Endopodal shields between I–II and III–IV separate along midline; ventral setae subequal in length,  $1a = 13$ ,  $3a = 12$ ,  $4a = 15$ . Aggenital shield with 2 pairs of setae,  $ag_1 = ag_2 = 12$ ; pseudanal setae  $ps_3$  8,  $ps_2$  6,  $ps_1$  4. **Legs.** Length: leg I 135, leg II 105, leg III 109, leg IV 111. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 2  $\omega$ . Lengths of solenidia: I $\omega_1$  13, I $\omega_2$  18, II $\omega_1$  9, II $\omega_2$  15, III $\omega_1$  4, III $\omega_2$  17, IV $\omega_1$  4, IV $\omega_2$  12.

**Distribution** (Map p. 378). New Zealand (Wood 1966). BP / NN, OL.

**Material examined.** Holotype, 4 paratypes, and 4 non-type specimens. **Holotype** female: NEW ZEALAND:

**OL:** Queenstown, Skippers road, 27 Feb 1965, T. G. Wood, ex. moss on rocks, roadside / *Ledermuelleria clavigera* Wood, 1966, NZAC: 1/1 female. **Paratypes:** same collection data as holotype slide: NZAC: 1/1 allotype male. **BP:** L Rotorua, 11 Nov 1964, G. S. Grandison, ex moss on logs and stones, NZAC: 2/3 females. **Other material:** **BP:** L Rotorua, 11 Nov 1964, G. S. Grandison, ex moss on logs and stones, 3/3 females. **NN:** Cobb Reservoir, nr Takaka, 3400 ft (1036 m), 18 Sep 1964, T. G. Wood, 1/1 female.

**Habitat.** Moss on beech (*Nothofagus*) forest litter, stones, and logs.

### *Eustigmaeus corticolus* (Wood)

Fig. 77–80, Plate 4 A

*Ledermuelleria corticola* Wood, 1966: 91.

**Diagnosis. Female.** Dorsal shields well sclerotised, with uniform pits restricted to thick polygonal reticula; each pit with 9–15 vacuoles; dorsal idiosomal setae slender, recurved, falciform, with minute spinules; *sci* nearly 4/5 length of *ve*;  $c_i$  about 1/3 distance of  $c_i-c_j$ ; ratio  $c_i-c_j$ :  $d_i-d_j$ :  $e_i-e_j$ :  $f_i-f_j$  = 1.2: 1.3: 1.9: 1.0; endopodal shields between I–II and III–IV separated along midline, a minute platelet present between endopodal shields III–IV; aggenital shield with 1 pair of setae; femur II with 4 setae;  $\kappa$  on genua II absent; tarsi I–IV with 13 + 1 $\omega$ , 8 + 1 $\omega$ , 7 + 1 $\omega$ , 7.

**Male.** As in female but:  $c_i$  about 1/5 length of  $c_i-c_j$ ; ratio  $c_i-c_j$ :  $d_i-d_j$ :  $e_i-e_j$ :  $f_i-f_j$  = 1.6: 1.4: 1.6: 1.0; tarsi I–IV with 13 + 2 $\omega$ , 8 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 1 $\omega$ .

**Description. Female** (Fig. 77–78, Plate 4 A, n = 6)

**Gnathosoma.** Chelicerae 76 (73–77), movable digits 38 (37–40), about 1/2 length of chelicerae. Palp 77 (69–80), accessory claw spine-like. Subcapitular setae *m* subequal to *n*,  $m = 17$  (17–18),  $n = 18$  (17–18);  $m-m$  subequal to  $n-n$ ,  $m-m = 20$  (17–20),  $n-n = 18$  (18–25),  $m-n = 10$  (7–10).

**Idiosoma.** Oval, 296 (289–306) long, 222 (222–241) wide. Dorsal shields well sclerotised, with uniform pits restricted to thick polygonal reticula; dorsal idiosomal setae slender, recurved, falciform, with minute spinules; setal tubercles small. Eyes 14 (13–14) in diameter. Prodorsal setae *sci* nearly 4/5 length of *ve* and subequal to *sce*; lengths: *vi* 51 (50–51), *ve* 49 (49–54), *sci* 38 (37–38), *sce* 38 (34–38); distances: *vi-vi* 22 (22–30), *vi-ve* 42 (39–42), *ve-sci* 26 (25–26), *sci-sce* 36 (36–43). Dorsal hysterosomal setae  $c_i$  about 1/3 distance of  $c_i-c_j$  and 1/2 distance of  $c_i-d_j$ ; ratio  $c_i-c_j$ :  $d_i-d_j$ :  $e_i-e_j$ :  $f_i-f_j$  = 1.2: 1.3: 1.9: 1.0; lengths:  $c_i$  29 (29–32),  $d_i$  29 (28–29),  $d_2$  31 (31–33),  $e_i$  32 (32–39),  $e_2$  31 (30–31),  $f_i$  39 (39–41); distances:  $c_i-c_j$  79 (79–

87),  $c_i-d_j$  55 (46–55),  $d_i-d_j$  90 (76–90),  $d_i-d_2$  57 (57–63),  $d_i-e_j$  70 (70–72),  $e_i-e_j$  128 (110–128),  $e_i-e_2$  42 (42–46),  $e_i-f_j$  45 (39–45),  $f_i-f_j$  67 (67–73); humeral setae  $c_2$  36 (36–38). Suranal setae  $h_1$  30 (26–30),  $h_2$  27 (25–27). Endopodal shields between I–II and III–IV separated along midline, a minute platelet present between endopodal shields III–IV; ventral setae subequal in length,  $1a = 20$  (17–20),  $3a = 21$  (18–21),  $4a = 20$  (17–20). Aggenital shield with 1 pair of setae,  $ag_i = 16$  (13–16); pseudanal setae  $ps_3$  15 (13–15),  $ps_2$  16 (16–18),  $ps_1$  18 (18–19). **Legs.** Length: leg I 137 (137–149), leg II 126 (120–126), leg III 126 (122–127), leg IV 139 (139–142). Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1 $\kappa$ , 3, 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 1 $\omega$ , 8 + 1 $\omega$ , 7 + 1 $\omega$ , 7. Lengths of solenidia: I $\omega$  12 (11–12), II $\omega$  11 (11–12), III $\omega$  4 (4–5).

**Male** (Fig. 79–80, n = 1)

**Gnathosoma.** Chelicerae 62, movable digits 41, about 2/3 length of chelicerae. Palp 60, accessory claw spine-like. Subcapitular setae *m* equal to *n*,  $m = n = 14$ ;  $m-m$  slightly wider than  $n-n$ ,  $m-m = 20$ ,  $n-n = 15$ ,  $m-n = 6$ .

**Idiosoma.** Oval, 200 long, 163 wide. Dorsal shields and setae as in female. Eyes 13 in diameter. Prodorsal setae *sci* nearly 4/5 length of *ve* and slightly longer than *sce*; lengths: *vi* 29, *ve* 31, *sci* 24, *sce* 22; distances: *vi-vi* 18, *vi-ve* 25, *ve-sci* 23, *sci-sce* 32. Dorsal hysterosomal setae  $c_i$  about 1/5 distance of  $c_i-c_j$  and less than 1/2 distance of  $c_i-d_j$ ; ratio  $c_i-c_j$ :  $d_i-d_j$ :  $e_i-e_j$ :  $f_i-f_j$  = 1.6: 1.4: 1.6: 1.0; lengths:  $c_i$  16,  $d_i$  17,  $d_2$  17,  $e_i$  16,  $e_2$  16,  $f_i$  31; distances:  $c_i-c_j$  75,  $c_i-d_j$  36,  $d_i-d_j$  63,  $d_i-d_2$  42,  $d_i-e_j$  44,  $e_i-e_j$  73,  $e_i-e_2$  27,  $e_i-f_j$  20,  $f_i-f_j$  46; humeral setae  $c_2$  20. Suranal setae  $h_1$  20,  $h_2$  20. Endopodal shields between I–II and III–IV separated along midline, a minute platelet present between endopodal shields III–IV; ventral setae subequal in length,  $1a = 14$ ,  $3a = 15$ ,  $4a = 14$ . Aggenital shield with 1 pair of setae,  $ag_i = 14$ ; pseudanal setae  $ps_3$  8,  $ps_2$  5,  $ps_1$  3.5.

**Legs.** Length: leg I 115, leg II 103, leg III 97, leg IV 111. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1 $\kappa$ , 3, 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 2 $\omega$ , 8 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  13, I $\omega_2$  14, II $\omega$  11, II $\omega_2$  14, III $\omega$  5, III $\omega_2$  13, IV $\omega$  12.

**Protonymph** (n = 1)

**Gnathosoma.** Chelicerae 70, movable digits 32, nearly 1/2 length of chelicerae. Palp 58, accessory claw spine-like. Subcapitular setae *n* absent;  $m = 11$ ,  $m-m = 11$ .

**Idiosoma.** Oval, 248 long, 168 wide. Dorsal shields faintly sclerotised, with uniform pits restricted to faint polygonal reticula; dorsal idiosomal setae as in female. Eyes 12



in diameter. Prodorsal setae *sci* slightly longer than 4/5 length of *ve* and slightly longer than *sce*; lengths: *vi* 29, *ve* 33, *sci* 29, *sce* 25; distances: *vi-vi* 25, *vi-ve* 31, *ve-sci* 21, *sci-sce* 32. Dorsal hysterosomal setae  $c_i$  nearly 1/3 distance of  $c_i-c_i$  and less than 1/2 distance of  $c_i-d_i$ ; ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.3: 1.1: 1.4: 1.0$ ; lengths:  $c_i$  19,  $d_i$  18,  $d_2$  23,  $e_i$  31,  $e_2$  22,  $f_i$  40; distances:  $c_i-c_i$  65,  $c_i-d_i$  45,  $d_i-d_i$  60,  $d_i-d_2$  50,  $d_i-e_i$  50,  $e_i-e_i$  71,  $e_i-e_2$  30,  $e_i-f_i$  18,  $f_i-f_i$  52; humeral setae  $c_2$  25. Suranal setae  $h_1$  24,  $h_2$  22. Endopodal shields between I-II and III-IV separated along midline; ventral setae subequal in length,  $1a = 11$ ,  $3a = 11$ ,  $4a = 10$ . Aggenital shield with 1 pair of setae,  $ag_1 = 9$ ; pseudanal setae  $ps_3$  10,  $ps_2$  11,  $ps_1$  13.

**Legs.** Length: leg I 105, leg II 89, leg III 98, leg IV 102. Counts of setae and solenidia on legs I-IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 0; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 2, 0, 0; tibiae 5 + 1  $\phi$  + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 1  $\omega$ , 8 + 1  $\omega$ , 7 + 1  $\omega$ , 7. Lengths of solenidia: I  $\omega$  11, II  $\omega$  10, III  $\omega$  5.

**Distribution** (Map p. 378). New Zealand (Wood 1966). TO / NN, BR, FD-OL.

**Material examined.** Holotype, 4 paratypes, and 9 non-type specimens. **Holotype** female: NEW ZEALAND: NN: Dun Mt track, 27 June 1964, T. G. Wood, manuka (*Leptospermum scoparium*) bark, / *Ledermuelleria corticola* Wood, 1966, NZAC: 1/1 female. **Paratypes**: **TO**: L Taupo, 10 miles W. of Tokaanu, 21 Apr 1965, N. A. Walker, podocarp litter and moss, NZAC: 1/1 allotype male, 1 female. **NN**: Mt Gomorrah, 1524 m, 7 June 1965, T. G. Wood, moss among rocks and grasses, NZAC: 1/1 male. **FD/OL**: 56 miles N of Te Anau, 17 Feb 1965, N. A. Walker, moss and fern litter, beech forest, NZAC: 1/1 female. **Other material**: **NN**: Kohatu bank, 20 Aug 1968, E. Collyer, *Olearia* sp., 1/3 females [+ *Eryngiopus* sp. 1 protonymph; *Zetzellia maori* 5 females, 2 deutonymph females]. Awaroa, Dec 1970, J. Crawford, ex recently deserted nest of chaffinch *Fringilla coelebs*, 1/1 female, 1 protonymph. Mangarakau, 12 Mar 1971, G. W. Ramsay, *Brachyglottis hectori* [as *Senecio*], 1/1 female. **BR**: near Charleston, 11 Apr 1966, E. Collyer, *Leptospermum scoparium*, 1/2 females [+ *Zetziella maori* 1 female, 2 deutonymph females; *Primagistemus loadmani* 2 deutonymph females; *Mecognatha hirsuta* 1 deutonymph female]. Rahu Saddle, 6 June 1966, E. Collyer, *Olearia lacunosa*, 1/1 female.

**Habitat.** Bark of gum (*Eucalyptus*), manuka (*Leptospermum scoparium*), willow (*Salix*); podocarp litter and moss, *Podocarpus ferrugineus*; mixture of living and dead ferns in beech (*Nothofagus*) forest; moss on rocks, *Olearia lacunosa*, nest of chaffinch *Fringilla coelebs*, *Brachyglottis hectori* [as *Senecio*].

### *Eustigmaeus distinctus* (Wood)

Fig. 81-84, Plate 4 B

*Ledermuelleria distincta* Wood, 1966: 101.

**Diagnosis. Female.** Dorsal shields covered with polygonal cells, each cell with a shallow pit; vacuoles absent; dorsal idiosomal setae slender, rod-shaped, axial core acicular, with hyaline sheath; *sci* slightly longer than 1/2 length of *ve*;  $c_i$  about 1/2 distance of  $c_i-c_i$ ; ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.3: 1.3: 1.0: 1.2$ ; endopodal shields between I-II and III-IV clearly separated along midline; aggenital shield with 2 pairs of setae; femur II with 5 setae;  $\kappa$  on genua II present; tarsi I-IV with 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$

**Male.** As in female but: ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.4: 1.4: 1.0: 1.0$ ; tarsi I-IV with 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 2  $\omega$ .

**Description. Female** (Fig. 81-82, Plate 4 B,  $n = 3$ )

**Gnathosoma.** Chelicerae 102 (91-108), movable digits 61 (55-61), about 3/5 length of chelicerae. Palp 102 (99-102), accessory claw spine-like. Subcapitular setae  $m$  longer than  $n$ ,  $m = 33$  (33-34),  $n = 24$  (20-25);  $m-m$  subequal to  $n-n$ ,  $m-m = 23$  (23-25),  $n-n = 24$  (24-28),  $m-n = 20$  (19-20).

**Idiosoma.** Oval, 345 (320-368) long, 246 (235-255) wide. Dorsal shields covered with polygonal cells, each cell with a shallow pit; dorsal idiosomal setae slender, rod-shaped, axial core acicular, with hyaline sheath; setal tubercles absent. Eyes 12 (11-12) in diameter. Prodorsal setae *sci* slightly longer than 1/2 length of *ve* and slightly shorter than *sce*; lengths: *vi* 51 (49-51), *ve* 79 (77-79), *sci* 45 (41-48), *sce* 51 (48-51); distances: *vi-vi* 25 (24-25), *vi-ve* 44 (44-48), *ve-sci* 41 (38-43), *sci-sce* 34 (34-36). Dorsal hysterosomal setae  $c_i$  about 1/2 distance of  $c_i-c_i$  and less than 4/5 distance of  $c_i-d_i$ ; ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.3: 1.3: 1.0: 1.2$ ; lengths:  $c_i$  50 (48-52),  $d_i$  52 (52-54),  $d_2$  50 (47-50),  $e_i$  53 (49-53),  $e_2$  51 (47-51),  $f_i$  62 (58-62); distances:  $c_i-c_i$  100 (100-105),  $c_i-d_i$  65 (64-77),  $d_i-d_i$  106,  $d_i-d_2$  58 (54-58),  $d_i-e_i$  60 (58-64),  $e_i-e_i$  80 (77-80),  $e_i-e_2$  45 (45-48),  $e_i-f_i$  57 (57-66),  $f_i-f_i$  94 (81-94); humeral setae  $c_2$  47 (46-47). Suranal setae  $h_1$  50 (44-50),  $h_2$  48 (44-48). Endopodal shields between I-II and III-IV clearly separated along midline; ventral setae subequal in length,  $1a = 22$  (20-22),  $3a = 23$  (20-23),  $4a = 21$  (20-21). Aggenital shield with 2 pairs of subequal setae,  $ag_1 = 19$  (19-20),  $ag_2 = 19$  (19-19); pseudanal setae  $ps_3$  19 (19-20),  $ps_2$  21 (21-23),  $ps_1$  23 (23-24).

**Legs.** Length: leg I 197 (189-197), leg II 153 (149-159), leg III 157 (150-168), leg IV 193 (170-193). Counts of setae and solenidia on legs I-IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ;

tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  23 (21–24), II $\omega$  23, III $\omega$  9 (9–10), IV $\omega$  8 (8–10).

**Male** (Fig. 83–84, n = 1)

**Gnathosoma.** Chelicerae 94, movable digits 44, about 1/2 length of chelicerae. Palp 82, accessory claw spine-like. Subcapitular setae *m* longer than *n*, *m* = 27, *n* = 20; *m*–*m* subequal to *n*–*n*, *m*–*m* = 20, *n*–*n* = 19, *m*–*n* = 15.

**Idiosoma.** Oval, 241 long, 178 wide. Dorsal shields and setae as in female. Eyes 11 in diameter. Prodorsal setae *sci* about 1/2 length of *ve* and slightly shorter than *sce*; lengths: *vi* 48, *ve* 60, *sci* 31, *sce* 36; distances: *vi*–*vi* 18, *vi*–*ve* 43, *ve*–*sci* 25, *sci*–*sce* 31. Dorsal hysterosomal setae *c*<sub>1</sub> about 1/2 distance of *c*<sub>1</sub>–*c*<sub>1</sub> and 2/3 distance of *c*<sub>1</sub>–*d*<sub>1</sub>; ratio *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> = 1.4: 1.4: 1.0; lengths: *c*<sub>1</sub> 36, *d*<sub>1</sub> 36, *d*<sub>2</sub> 34, *e*<sub>1</sub> 35, *e*<sub>2</sub> 36, *f*<sub>1</sub> 37; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 67, *c*<sub>1</sub>–*d*<sub>1</sub> 53, *d*<sub>1</sub>–*d*<sub>1</sub> 67, *d*<sub>1</sub>–*d*<sub>2</sub> 40, *d*<sub>1</sub>–*e*<sub>1</sub> 27, *e*<sub>1</sub>–*e*<sub>1</sub> 48, *e*<sub>1</sub>–*e*<sub>2</sub> 24, *e*<sub>1</sub>–*f*<sub>1</sub> 14, *f*<sub>1</sub>–*f*<sub>1</sub>?; humeral setae *c*<sub>2</sub> 33. Suranal setae *h*<sub>1</sub> 8, *h*<sub>2</sub> 35. Endopodal shields between I–II and III–IV clearly separated along midline; ventral setae subequal in length, *1a* = 20, *3a* = 22, *4a* = 19. Aggenital shield with 2 pairs of subequal setae, *ag*<sub>1</sub> = 19, *ag*<sub>2</sub> = 20; pseudanal setae *ps*<sub>3</sub> 5, *ps*<sub>2</sub> 10, *ps*<sub>1</sub> 13.

**Legs.** Length: leg I 172, leg II 132, leg III 130, leg IV 156. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega$ <sub>1</sub> 19, I $\omega$ <sub>2</sub> 47, II $\omega$ <sub>1</sub> 20, II $\omega$ <sub>2</sub> 37, III $\omega$ <sub>1</sub> 7, III $\omega$ <sub>2</sub> 37, IV $\omega$ <sub>1</sub> 7, IV $\omega$ <sub>2</sub> 35.

**Distribution** (Map p. 378). New Zealand (Wood 1966). AK, BP, TO / –.

**Material examined.** Holotype, 1 paratype, and 2 non-type specimens. **Holotype** female: NEW ZEALAND: TO: Lake Taupo, 10 miles W. of Tokaanu, 21 Apr 1965, N. A. Walker, podocarp litter and moss, / *Ledermuelleria distincta* Wood, 1966, NZAC: 1/1 female. **Paratype: BP:** L Okataina, Rotorua, 347 m, 10 Apr 1965, N. A. Walker, podocarp litter, NZAC: 1/1 allotype male. **Other material: AK:** Waitakere Ra, 19 Apr 1965, N. A. Walker, ex litter, moss and lichen, kauri forest, 1/1 female. **HB:** Puketitiri, Little Bush, 9 Jan 1982, T. H. & J. M. Davies, on 8th sternite of chironomid, 1/1 female.

**Habitat.** Moss, litter, and lichen under kauri (*Agathis australis*) trees; podocarp (*Podocarpus ferrugineus*) litter and moss, on sternite of a chironomid fly.

### *Eustigmaeus dumosus* (Wood)

Fig. 85–88, Plate 4 C

*Ledermuelleria dumosa* Wood, 1966: 94.

**Diagnosis. Female.** Dorsal shields with irregular pits restricted to polygonal reticula; vacuoles present along

reticulated margins; dorsal idiosomal setae bushy, spinules delicate; *sci* longer than 4/5 length of *ve*; *c*<sub>1</sub> subequal to distance of *c*<sub>1</sub>–*c*<sub>1</sub>; ratio *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.0: 1.0: 1.6: 1.2; endopodal shields between I–II and III–IV fused along midline; aggenital shield with 3 pairs of setae; femur II with 5 setae;  $\kappa$  on genua II present; tarsi I–IV with 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7.

**Male.** As in female but: ratio *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.2: 1.0: 1.4: 1.1; tarsi I–IV with 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 1 $\omega$ .

**Description. Female** (Fig. 85–86, Plate 4 C, n = 4)

**Gnathosoma.** Chelicerae 72 (68–72), movable digits 36 (32–36), about 1/2 length of chelicerae. Palp 77 (76–79), accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*, *m* = 15 (13–15), *n* = 11 (11–12); *m*–*m* narrower than *n*–*n*, *m*–*m* = 14, *n*–*n* = 19 (18–19), *m*–*n* = 14 (14–15).

**Idiosoma.** Oval, 266 (266–287) long, 204 (204–222) wide. Dorsal shields with irregular pits restricted to polygonal reticula; vacuoles present along reticulated margins; dorsal idiosomal setae bushy, spinules delicate; setal tubercles absent. Eyes 10 in diameter. Prodorsal setae *sci* longer than 4/5 length of *ve* and subequal to *sce*; lengths: *vi* 28 (27–28), *ve* 31 (31–34), *sci* 27 (25–27), *sce* 28 (28–29); distances: *vi*–*vi* 31 (31–36), *vi*–*ve* 33 (33–36), *ve*–*sci* 29 (29–36), *sci*–*sce* 30 (30–31). Dorsal hysterosomal setae *c*<sub>1</sub> subequal to *c*<sub>1</sub>–*c*<sub>1</sub> and less than 4/5 distance of *c*<sub>1</sub>–*d*<sub>1</sub>; ratio *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.0: 1.0: 1.6: 1.2; lengths: *c*<sub>1</sub> 33 (30–33), *d*<sub>1</sub> 35 (35–36), *d*<sub>2</sub> 34 (32–35), *e*<sub>1</sub> 37 (35–37), *e*<sub>2</sub> 35 (35–36), *f*<sub>1</sub> 51 (49–51); distances: *c*<sub>1</sub>–*c*<sub>1</sub> 45 (45–62), *c*<sub>1</sub>–*d*<sub>1</sub> 42 (40–42), *d*<sub>1</sub>–*d*<sub>1</sub> 43 (43–48), *d*<sub>1</sub>–*d*<sub>2</sub> 59 (59–63), *d*<sub>1</sub>–*e*<sub>1</sub> 57 (57–61), *e*<sub>1</sub>–*e*<sub>1</sub> 70 (70–75), *e*<sub>1</sub>–*e*<sub>2</sub> 40 (40–42), *e*<sub>1</sub>–*f*<sub>1</sub> 31 (31–38), *f*<sub>1</sub>–*f*<sub>1</sub> 51 (51–55); humeral setae *c*<sub>2</sub> 34 (33–34). Suranal setae *h*<sub>1</sub> 37 (35–37), *h*<sub>2</sub> 35. Endopodal shields between I–II and III–IV fused along midline; ventral setae subequal in length, *1a* = 13 (13–14), *3a* = 14, *4a* = 14. Aggenital shield with 3 pairs of subequal setae, *ag*<sub>1</sub> = 10 (9–10), *ag*<sub>2</sub> = 11 (10–11), *ag*<sub>3</sub> = 12 (11–12); pseudanal setae *ps*<sub>3</sub> 11 (11–12), *ps*<sub>2</sub> 12 (11–12), *ps*<sub>1</sub> 12.

**Legs.** Length: leg I 132 (132–141), leg II 115 (111–127), leg III 115 (110–120), leg IV 133 (133–139). Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7. Lengths of solenidia: I $\omega$  15 (15–16), II $\omega$  12, III $\omega$  4 (4–5).

**Male** (Fig. 87–88, n = 1)

**Gnathosoma.** Chelicerae 51, movable digits 26, about 1/2 length of chelicerae. Palp 61, accessory claw spine-like. Subcapitular setae subequal, *m* = 12, *n* = 10; *m*–*m* narrower than *n*–*n*, *m*–*m* = 12, *n*–*n* = 17, *m*–*n* = 11.

**Idiosoma.** Oval, 163 long, 134 wide. Dorsal shields and setae as in female. Eyes 9 in diameter. Prodorsal setae *sci* nearly 4/5 length of *ve* and slightly longer than 1/3 length of *sce*; lengths: *vi* 19, *ve* 26, *sci* 19, *sce* 27; distances: *vi-vi* 23, *vi-ve* 23, *ve-sci* 27, *sci-sce* 17. Dorsal hysterosomal setae  $c_1$  about 1/2 distance of  $c_1-c_1$  and 4/5 distance of  $c_1-d_1$ ; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.2: 1.0: 1.4: 1.1$ ; lengths:  $c_1$  23,  $d_1$  23,  $e_1$  21,  $e_2$  23,  $f_1$  47; distances:  $c_1-c_1$  45,  $c_1-d_1$  28,  $d_1-d_1$  36,  $d_1-e_1$  37,  $d_1-e_1$  36,  $e_1-e_1$  51,  $e_1-e_2$  22,  $e_1-f_1$  22,  $f_1-f_1$  41; humeral setae  $c_2$  25. Suranal setae  $h_1$  22,  $h_2$  24. Endopodal shields between I–II and III–IV fused along midline; ventral setae subequal in length,  $1a = 11$ ,  $3a = 12$ ,  $4a = 11$ . Aggenital shield with 3 pairs of subequal setae,  $ag_1 = 11$ ,  $ag_2 = 12$ ,  $ag_3 = 11$ ; pseudanal setae  $ps_3$  11,  $ps_2$  7,  $ps_1$  4.

**Legs.** Length: leg I 115, leg II 95, leg III 93, leg IV 110. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega_1$  17, I $\omega_2$  38, II $\omega_1$  15, II $\omega_2$  31, III $\omega_1$  5, III $\omega_2$  31, IV $\omega$  35.

**Distribution** (Map p. 379). New Zealand (Wood 1966). ND / NN.

**Material examined.** Holotype, 3 paratypes, and 12 non-type specimens. **Holotype** female: NEW ZEALAND: ND: Whangarei, Maungataroto, 12 Nov 1964, G. S. Grandison, moss on roadside cutting / *Ledermuelleria dumosa* Wood, 1966, NZAC: 1/1 female. **Paratypes:** same collection data as holotype slide: NZAC: 2/allotype male, 2 females. **Other material:** ND: Maungataroto, 12 Nov 1964, G. S. Grandison, roadside cutting, 1/1 deutonymph male. NN: The Glen, Dickson's Farm, 30 Nov 1971, N. A. Martin, Site 2, samples 35 and 39, 7/10 females, 1 larva.

**Habitat.** Moss on roadside cutting, rocks in manuka (*Leptospermum*).

### ***Eustigmaeus eburneus* sp. n.**

Fig. 89–92, Plate 4 D

**Diagnosis. Female.** Dorsal shields with uniform pits restricted to thick polygonal reticula; vacuoles present in pits and along reticulated margins; dorsal idiosomal setae slender, falciform, smooth or with minute spinules; *sci* nearly 4/5 length of *ve*;  $c_1$  subequal to distance of  $c_1-c_1$ ; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.5: 2.0: 2.5: 1.0$ ; endopodal shields between I–II and III–IV fused along midline; aggenital shield with 1 pair of setae; femur II with 4 setae;  $\kappa$  on genua II absent; tarsi I–IV with 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7.

**Male.** As in female but: ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.3: 1.4: 1.6: 1.0$ ; tarsi I–IV with 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 1 $\omega$ .

**Description. Female** (Fig. 89–90, Plate 4 D, n = 2)

**Gnathosoma.** Chelicerae 84 (82–84), movable digits 36 (31–36), about 2/5 length of chelicerae. Palp 98 (88–98), accessory claw spine-like. Subcapitular setae *m* and *n* subequal,  $m = 18$  (18–19),  $n = 18$  (18–20);  $m-m$  subequal to  $n-n$ ,  $m-m = 22$  (20–22),  $n-n = 23$ ,  $m-n = 13$  (11–13).

**Idiosoma.** Oval, 342 (302–342) long, 274 (265–274) wide. Dorsal shields well sclerotised, with uniform pits restricted to thick polygonal reticula; vacuoles present in pits and along reticulated margins; dorsal idiosomal setae slender, falciform, with few minute spinules; setal tubercles small. Eyes 12 in diameter. Prodorsal setae *sci* nearly 4/5 length of *ve* and slightly shorter than *sce*; lengths: *vi* 82 (82–85), *ve* 81 (81–83), *sci* 60 (60–63), *sce* 67 (67–70); distances: *vi-vi* 16 (16–18), *vi-ve* 54, *ve-sci* 19 (19–22), *sci-sce* 45 (45–51). Dorsal hysterosomal setae  $c_1$  subequal to  $c_1-c_1$  and 1.2 times distance of  $c_1-d_1$ ; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.5: 2.0: 2.5: 1.0$ ; lengths:  $c_1$  62 (62–63),  $d_1$  77 (76–77),  $d_2$  68 (66–68),  $e_1$  74 (73–74),  $e_2$  66 (64–66),  $f_1$  73 (71–73); distances:  $c_1-c_1$  65 (65–70),  $c_1-d_1$  51 (51–55),  $d_1-d_1$  87 (76–87),  $d_1-d_2$  61 (61–67),  $d_1-e_1$  79 (77–79),  $e_1-e_1$  110 (107–110),  $e_1-e_2$  55 (45–55),  $e_1-f_1$  33 (33–36),  $f_1-f_1$  44 (44–50); humeral setae  $c_2$  66 (65–66). Suranal setae  $h_1$  48,  $h_2$  46 (45–46). Endopodal shields between I–II and III–IV fused along midline; ventral setae subequal in length,  $1a = 15$  (15–19),  $3a = 18$  (18–19),  $4a = 15$  (15–19). Aggenital shield with 1 pair of setae,  $ag_1 = 11$  (11–12); pseudanal setae  $ps_3$  16,  $ps_2$  14 (14–16),  $ps_1$  15 (15–16).

**Legs.** Length: leg I 164 (156–164), leg II 142 (134–142), leg III 144 (135–144), leg IV 163 (149–163). Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1 $\kappa$ , 3, 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7. Lengths of solenidia: I $\omega$  22, II $\omega$  16, III $\omega$  7.

**Male** (Fig. 91–92, n = 2)

**Gnathosoma.** Chelicerae 67 (62–67), movable digits 27, less than 1/2 length of chelicerae. Palp 67 (67–70), accessory claw spine-like. Subcapitular setae  $m = n = 20$ ;  $m-m$  narrower than  $n-n$ ,  $m-m = 16$ ,  $n-n = 19$ ,  $m-n = 12$ .

**Idiosoma.** Oval, 207 (207–220) long, 145 (145–157) wide. Dorsal shields and setae as in female. Eyes 11 (10–11) in diameter. Prodorsal setae *sci* less than 4/5 length of *ve* and slightly shorter than *sce*; lengths: *vi* 47 (47–65), *ve* (52–55), *sci* 37 (37–40), *sce* 42 (42–50); distances: *vi-vi* 16 (15–16), *vi-ve* 47 (35–47), *ve-sci* 15 (15–20), *sci-sce* 31 (31–35). Dorsal hysterosomal setae  $c_1$  about 2/3 distance of  $c_1-c_1$  and less than  $c_1-d_1$ ; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1$

= 1.3 (1.3–1.4): 1.4 (1.4–1.6): 1.6 (1.6–1.8): 1.0; lengths:  $c_1$  35 (35–40),  $d_1$  39 (39–47),  $d_2$  40 (40–45),  $e_1$  27 (27–31),  $e_2$  35,  $f_1$  55 (55–64); distances:  $c_1-c_1$  52 (52–60),  $c_1-d_1$  30 (30–35),  $d_1-d_1$  55 (55–67),  $d_1-d_2$  40 (40–42),  $d_1-e_1$  45 (45–50),  $e_1-e_1$  65 (65–77),  $e_1-e_2$  32 (31–32),  $e_1-f_1$  16 (16–20),  $f_1-f_1$  41 (41–42); humeral setae  $c_2$  40 (40–47). Suranal setae  $h_1$  20 (20–22),  $h_2$  30 (30–32). Endopodal shields between I–II and III–IV fused along midline; ventral setae equal in length,  $1a = 3a = 4a = 11$ . Aggenital shield with 1 pair of setae,  $ag_1 = 11$ ; pseudanal setae  $ps_3$  7 (7–8),  $ps_2$  4,  $ps_1$  2.

**Legs.** Length: leg I 132 (132–147), leg II 112 (112–125), leg III 120 (120–125), leg IV 130 (130–147). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega_1$  20, I $\omega_2$  32 (32–35), II $\omega_1$  14 (14–15), II $\omega_2$  27, III $\omega_1$  5 (5–7), III $\omega_2$  27, IV $\omega$  27.

**Distribution** (Map p. 379). New Zealand (this paper). AK, HB / –.

**Material examined.** Holotype and 7 paratypes.

**Holotype** female: NEW ZEALAND: AK: Auckland, 26 Mar 2003, Q.-H. Fan and Z.-Q. Zhang, from litter, NZAC: 1/1 female, 1 male, 1 deutonymph female. **Paratypes:** same data as holotype, 2/2 females, 3 males, 1 deutonymph female. **HB:** Hawkes Bay: Haumoana, 7 Oct 1970, mounted 10 Oct 1970, T. H. Davies, taken from litter at base of banana tree, NZAC: 1/1 female. Hastings, Haumoana, Jan 1981, T. H. Davies, 1/1 female.

**Habitat.** Litter at base of a banana tree.

**Etymology.** The species name is derived from the Latin word *eburneus*, meaning white as ivory, referring to the colour of dorsal idiosomal setae.

**Remarks.** Females of *E. eburneus* sp. n. resemble those of *E. corticolus* (Wood) in having 4 setae on femur IV and having vacuoles in pits but can be distinguished from the latter by the fusion of endopodal shields between I–II and III–IV along midline and the ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.5: 2.0: 2.5: 1.0$ .

#### *Eustigmaeus edentatus* sp. n.

Fig. 93–96, Plate 5 A

**Diagnosis. Female.** Dorsal shields covered with polygonal cells, each cell with a shallow pit; vacuoles absent; dorsal idiosomal setae rod-shaped, axial core acicular, with hyaline sheath; *sci* nearly 4/5 length of *ve*;  $c_1$  about 1/3 distance of  $c_1-c_1$ ; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.4: 1.4: 1.0: 1.2$ ; endopodal shields between I–II and III–IV clearly separated along midline; aggenital shield with 2 pairs of

setae; femur II with 5 setae;  $\kappa$  on genua II present; tarsi I–IV with 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ .

**Male.** As in female but: ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.4: 1.5: 1.0: 1.1$ ; tarsi I–IV with 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 2  $\omega$ .

**Description. Female** (Fig. 93–94, Plate 5 A, n = 5)

**Gnathosoma.** Chelicerae 142 (120–142), movable digits 53 (53–57), about 2/5 length of chelicerae. Palp 108 (100–108), accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*,  $m = 22$  (21–22),  $n = 19$  (18–20);  $m-m$  narrower than  $n-n$ ,  $m-m = 23$  (22–24),  $n-n = 28$  (26–28),  $m-n = 24$  (20–24).

**Idiosoma.** Oval, 409 (366–409) long, 262 (241–294) wide. Dorsal shields covered with polygonal cells, each cell with a shallow pit; vacuoles absent; dorsal idiosomal setae rod-shaped, axial core acicular, with hyaline sheath; setal tubercles absent. Eyes 13 (11–13) in diameter. Prodorsal setae *sci* nearly 4/5 length of *ve* and slightly shorter than *sce*; lengths: *vi* 43 (36–43), *ve* 46 (41–46), *sci* 36 (33–36), *sce* 39 (38–39); distances: *vi-vi* 26 (25–26), *vi-ve* 57 (52–57), *ve-sci* 41 (38–41), *sci-sce* 48 (46–51). Dorsal hysterosomal setae  $c_1$  about 1/3 distance of  $c_1-c_1$  and nearly 1/2 distance of  $c_1-d_1$ ; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.4: 1.4: 1.0: 1.2$ ; lengths:  $c_1$  37 (30–38),  $d_1$  36 (35–36),  $d_2$  37 (35–37),  $e_1$  36 (35–36),  $e_2$  37 (36–37),  $f_1$  49 (44–49); distances:  $c_1-c_1$  106 (86–106),  $c_1-d_1$  79 (76–83),  $d_1-d_1$  108 (99–118),  $d_1-d_2$  64 (61–69),  $d_1-e_1$  66 (59–66),  $e_1-e_1$  77 (75–127),  $e_1-e_2$  50 (50–60),  $e_1-f_1$  62 (50–62),  $f_1-f_1$  96 (83–96); humeral setae  $c_2$  36 (35–38). Suranal setae  $h_1$  43 (41–46),  $h_2$  41 (40–42). Endopodal shields between I–II and III–IV clearly separated along midline; ventral setae subequal in length,  $1a = 20$  (20–21),  $3a = 20$  (19–20),  $4a = 20$  (19–20). Aggenital shield with 2 pairs of subequal setae,  $ag_1 = 20$  (18–20),  $ag_2 = 20$ ; pseudanal setae  $ps_3$  17 (17–18),  $ps_2$  17 (17–19),  $ps_1$  20 (20–21).

**Legs.** Length: leg I 199 (199–224), leg II 155 (149–155), leg III 154 (149–155), leg IV 180 (176–191). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  15 (15–16), II $\omega$  15 (15–16), III $\omega$  69, IV $\omega$  6.

**Male** (Fig. 95–96, n = 2)

**Gnathosoma.** Chelicerae 99 (93–99), movable digits 48 (45–48), about 1/2 length of chelicerae. Palp 72 (70–72), accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*,  $m = 21$  (20–21),  $n = 18$ ;  $m-m$  slightly narrower than  $n-n$ ,  $m-m = 21$ ,  $n-n = 24$ ,  $m-n = 20$  (19–20).

**Idiosoma.** Oval, 318 (291–318) long, 187 (169–187) wide. Dorsal shields and setae as in female. Eyes 14 (11–14) in diameter. Prodorsal setae *sci* nearly 4/5 length of *ve* and slightly longer than 4/5 lengths of *sce*; lengths: *vi* 36 (35–36), *ve* 36, *sci* 28 (27–28), *sce* 33; distances: *vi-vi* 21, *vi-ve* 46 (45–46), *ve-sci* 36 (35–36), *sci-sce* 33. Dorsal hysterosomal setae *c*<sub>1</sub> nearly 2/5 distance of *c*<sub>1</sub>-*c*<sub>1</sub> and less than 1/2 distance of *c*<sub>1</sub>-*d*<sub>1</sub>; ratio *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.4: 1.5: 1.0: 1.1; lengths: *c*<sub>1</sub> 30 (29–30), *d*<sub>1</sub> 30 (30–31), *d*<sub>2</sub> 30 (30–31), *e*<sub>1</sub> 24, *e*<sub>2</sub> 30, *f*<sub>1</sub> 37; distances: *c*<sub>1</sub>-*c*<sub>1</sub> 78 (74–78), *c*<sub>1</sub>-*d*<sub>1</sub> 67 (67–68), *d*<sub>1</sub>-*d*<sub>2</sub> 85 (85–89), *d*<sub>1</sub>-*d*<sub>2</sub> 48 (43–48), *d*<sub>1</sub>-*e*<sub>1</sub> 48 (48–49), *e*<sub>1</sub>-*e*<sub>2</sub> 57, *e*<sub>1</sub>-*e*<sub>2</sub> 26 (26–30), *e*<sub>1</sub>-*f*<sub>1</sub> 36 (36–39), *f*<sub>1</sub>-*f*<sub>1</sub> 60; humeral setae *c*<sub>2</sub> 32. Suranal setae *h*<sub>1</sub> 8, *h*<sub>2</sub> 39. Endopodal shields between I–II and III–IV clearly separated along midline; ventral setae subequal in length, *1a* = 21 (20–21), *3a* = 19, *4a* = 18. Aggenital shield with 2 pairs of subequal setae, *ag*<sub>1</sub> = 18, *ag*<sub>2</sub> = 20; pseudanal setae *ps*<sub>3</sub> 9, *ps*<sub>2</sub> 5, *ps*<sub>1</sub> 5 (4–5).

**Legs.** Length: leg I 178 (178–181), leg II 132 (132–133), leg III 134 (133–134), leg IV 169 (169–171). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega$ <sub>1</sub> 15 (15–16), I $\omega$ <sub>2</sub> 43, II $\omega$ <sub>1</sub> 15, II $\omega$ <sub>2</sub> 38, III $\omega$ <sub>1</sub> 6, III $\omega$ <sub>2</sub> 40, IV $\omega$ <sub>1</sub> 6 (5–6), IV $\omega$ <sub>2</sub> 40.

**Distribution** (Map p. 379). New Zealand (this paper).  
– / NN.

**Material examined.** Holotype and 13 paratypes. **Holotype** female: NEW ZEALAND: NN: incomplete taxonomy sample, 70/26 [E. Collyer, no other collection data], NZAC: 1/1 female, [also allotype male, 12 females, 1 *Eustigmaeus mixtus* Wood female]. **Paratypes:** as above, NZAC: allotype male on same slide as holotype female and other 12 females.

**Habitat.** Unknown.

**Etymology.** The species name is derived from the Latin word *edentata*, meaning toothless, referring to the smooth dorsal idiosomal setae.

**Remarks.** Females of *E. edentatus* sp. n. resemble those of *E. distinctus* (Wood) in having rod-shaped dorsal idiosomal setae with acicular axial core and hyaline sheath, but can be separated from the latter by having *sci* nearly 4/5 length of *ve* and *c*<sub>1</sub> about 1/3 distance of *c*<sub>1</sub>-*c*<sub>1</sub> and less than 1/2 distance of *c*<sub>1</sub>-*d*<sub>1</sub>.

### *Eustigmaeus granulosus* (Wood)

Fig. 97–100, Plate 5 B

*Ledermuelleria granulosa* Wood, 1966: 95.

**Diagnosis. Female.** Dorsal shields with small pits; reticula very faint; vacuoles absent; 1 pair of platelets present laterad of prodorsal shield; dorsal idiosomal setae rod-shaped, with minute spinules on distal halves; hyaline sheath absent; *sci* about 1/4 length of *ve*; *c*<sub>1</sub> about 1/2 distance of *c*<sub>1</sub>-*c*<sub>1</sub>; ratio *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.2: 1.0: 1.7: 1.2; endopodal shields between I–II and III–IV clearly separated along midline; aggenital shield with 2 pairs of setae; femur II with 5 setae;  $\kappa$  on genua II present; tarsi I–IV with 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ .

**Male.** As in female but: ratio *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.3: 1.0: 1.7: 1.4; tarsi I–IV with 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ .

**Description. Female** (Fig. 97–98, Plate 5 B, n = 2)

**Gnathosoma.** Chelicerae 112 (108–112), movable digits 33 (29–33), less than 1/3 length of chelicerae. Palp 81 (79–81), accessory claw spine-like. Subcapitular setae *m* subequal to *n*, *m* = 24 (24–26), *n* = 26 (24–26); *m-m* slightly narrower than *n-n*, *m-m* = 30 (30–31), *n-n* = 33 (33–36), *m-n* = 17 (16–17).

**Idiosoma.** Oval, 382 (382–411) long, 317 (317–392) wide. Dorsal shields well sclerotised, with small pits (larger in marginal areas); reticula very faint; vacuoles absent; 1 pair of platelets (= callosities) present laterad of prodorsal shield; dorsal idiosomal setae rod-shaped, with minute spinules on distal halves; hyaline sheath absent; setal tubercles absent. Eyes 13 in diameter. Prodorsal setae *sci* about 1/4 length of *ve* and *sce*; lengths: *vi* 47 (47–48), *ve* 63 (60–63), *sci* 16 (15–16), *sce* 61; distances: *vi-vi* 50 (50–51), *vi-ve* 68, *ve-sci* 43, *sci-sce* 44. Dorsal hysterosomal setae *c*<sub>1</sub> about 1/2 distance of *c*<sub>1</sub>-*c*<sub>1</sub> and less than 4/5 distance of *c*<sub>1</sub>-*d*<sub>1</sub>; ratio *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.2: 1.0: 1.7: 1.2; lengths: *c*<sub>1</sub> 52 (48–52), *d*<sub>1</sub> 60 (60–68), *d*<sub>2</sub> 51 (51–60), *e*<sub>1</sub> 86 (86–88), *e*<sub>2</sub> 76 (76–79), *f*<sub>1</sub> 62 (62–67); distances: *c*<sub>1</sub>-*c*<sub>1</sub> 93 (93–96), *c*<sub>1</sub>-*d*<sub>1</sub> 73 (73–79), *d*<sub>1</sub>-*d*<sub>2</sub> 78 (77–78), *d*<sub>1</sub>-*d*<sub>2</sub> 105 (100–105), *d*<sub>1</sub>-*e*<sub>1</sub> 121 (121–125), *e*<sub>1</sub>-*e*<sub>2</sub> 136 (136–144), *e*<sub>1</sub>-*e*<sub>2</sub> 58 (58–62), *e*<sub>1</sub>-*f*<sub>1</sub> 48 (48–50), *f*<sub>1</sub>-*f*<sub>1</sub> 91 (91–93); humeral setae *c*<sub>2</sub> 40 (40–44). Suranal setae *h*<sub>1</sub> 51 (51–54), *h*<sub>2</sub> 47 (47–49). Endopodal shields between I–II and III–IV clearly separated along midline; ventral setae subequal in length, *1a* = 32 (30–33), *3a* = 34 (30–34), *4a* = 34. Aggenital shield with 2 pairs of subequal setae, *ag*<sub>1</sub> = 31 (26–31), *ag*<sub>2</sub> = 32 (31–32); pseudanal setae *ps*<sub>3</sub> 32 (28–32), *ps*<sub>2</sub> 32 (28–32), *ps*<sub>1</sub> 31 (26–31).

**Legs.** Length: leg I 250 (243–250), leg II 210 (200–210), leg III 213 (205–213), leg IV 232 (232–239). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  31 (31–34), II $\omega$  21, III $\omega$  6 (6–7), IV $\omega$  5 (5–6).

**Male** (Fig. 99–100,  $n = 1$ )

**Gnathosoma.** Chelicerae 90, movable digits 29, less than 1/3 length of chelicerae. Palp 78, accessory claw spine-like. Subcapitular setae  $m$  subequal to  $n$ ,  $m = 22$ ,  $n = 21$ ;  $m-m$  slightly narrower than  $n-n$ ,  $m-m = 27$ ,  $n-n = 32$ ,  $m-n = 13$ .

**Idiosoma.** Oval, 299 long, 220 wide. Dorsal shields and setae as in female. Eyes 11 in diameter. Prodorsal setae  $sci$  about 1/4 length of  $ve$  and 1/5 length of  $sce$ ; lengths:  $vi$  43,  $ve$  45,  $sci$  12,  $sce$  56; distances:  $vi-vi$  30,  $vi-ve$  51,  $ve-sci$  31,  $sci-sce$  25. Dorsal hysterosomal setae  $c_i$  about 1/2 distance of  $c_i-c_i$  and 1/3 distance of  $c_i-d_i$ ; ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.3: 1.0: 1.7: 1.4$ ; lengths:  $c_i$  36,  $d_i$  33,  $d_2$  53,  $e_i$  13,  $e_2$  65,  $f_i$  63; distances:  $c_i-c_i$  70,  $c_i-d_i$  52,  $d_i-d_i$  52,  $d_i-d_2$  57,  $d_i-e_i$  50,  $e_i-e_i$  90,  $e_i-e_2$  16,  $e_i-f_i$  19,  $f_i-f_i$  74; humeral setae  $c_2$  48. Suranal setae  $h_1$  26,  $h_2$  46. Endopodal shields between I–II and III–IV clearly separated along midline; ventral setae  $4a$  longer than other 2 pairs,  $1a = 29$ ,  $3a = 29$ ,  $4a = 34$ . Aggenital shield with 2 pairs of subequal setae,  $ag_1 = 28$ ,  $ag_2 = 29$ ; pseudanal setae  $ps_3$  22,  $ps_2$  11,  $ps_1$  7.

**Legs.** Length: leg I 211, leg II 175, leg III 176, leg IV 205. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ ; tarsi 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 2  $\omega$ . Lengths of solenidia: I $\omega$  27, I $\omega_2$  42, II $\omega_1$  19, II $\omega_2$  39, III $\omega_1$  7, III $\omega_2$  38, IV $\omega_1$  6, IV $\omega_2$  31.

**Distribution** (Map p. 79). New Zealand (Wood 1966). –/SL.

**Material examined.** Holotype and 2 paratypes.

**Holotype** female: NEW ZEALAND: SL: Mossburn, Aparimu R, 8 May 1964, T. G. Wood, moss on logs/*Ledermuelleria granulosa* Wood, 1966, NZAC: 1/1 female. **Paratypes:** same collection data as holotype slide: 2/allotype male, 1 female.

**Habitat.** Moss on logs.

### *Eustigmaeus manapouriensis* (Wood)

Fig. 101–104, Plate 5 C

*Ledermuelleria manapouriensis* Wood, 1966: 97.

**Diagnosis. Female.** Dorsal shields well sclerotised, with small pits; reticula and vacuoles absent; dorsal idiosomal setae acicular, with minute spinules and hyaline sheath on distal halves;  $sci$  slightly longer than 2/3 length of  $ve$ ;  $c_i$  about 2/5 distance of  $c_i-c_i$ ; ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.8: 1.4: 1.5: 1.0$ ; endopodal shields between I–II and III–IV clearly separated along midline; aggenital shield with 2 pairs of setae; trochanter III with 1 seta; femur II with 5 setae;  $\kappa$  on genua II present; tarsi I–IV with 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ .

**Male.** As in female but: ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.6: 1.4: 1.3: 1.0$ ; tarsi I–IV with 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 2  $\omega$ .

**Description. Female** (Fig. 101–102, Plate 5 C,  $n = 2$ )

**Gnathosoma.** Chelicerae 155 (132–155), movable digits 80 (74–80), about 1/2 length of chelicerae. Palp 125 (125–127), accessory claw spine-like. Subcapitular setae  $m$  longer than  $n$ ,  $m = 40$  (31–40),  $n = 26$ ;  $m-m$  slightly wider than  $n-n$ ,  $m-m = 34$  (33–34),  $n-n = 25$  (25–30),  $m-n = 22$ .

**Idiosoma.** Oval, 415 (415–416) long, 303 (303–316) wide. Dorsal shields well sclerotised, with small pits (larger, marginally); reticula absent; dorsal idiosomal setae acicular, with minute spinules and hyaline sheath on distal halves; setal tubercles small. Eyes 14 (14–16) in diameter. Prodorsal setae  $sci$  slightly longer than 2/3 length of  $ve$  and longer than 4/5 length of  $sce$ ; lengths:  $vi$  64 (64–68),  $ve$  85 (85–94),  $sci$  59 (59–64),  $sce$  69 (69–76); distances:  $vi-vi$  25 (25–32),  $vi-ve$  67 (67–68),  $ve-sci$  46 (44–46),  $sci-sce$  50 (50–59). Dorsal hysterosomal setae  $c_i$  about 2/5 distance of  $c_i-c_i$  and less than 4/5 distance of  $c_i-d_i$ ; ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.8: 1.4: 1.5: 1.0$ ; lengths:  $c_i$  70 (70–77),  $d_i$  77 (77–86),  $d_2$  68 (68–72),  $e_i$  106 (106–110),  $e_2$  77 (77–84),  $f_i$  90 (90–101); distances:  $c_i-c_i$  165 (163–165),  $c_i-d_i$  91 (91–98),  $d_i-d_i$  132,  $d_i-d_2$  71 (71–79),  $d_i-e_i$  81 (78–81),  $e_i-e_i$  145 (142–145),  $e_i-e_2$  54 (54–60),  $e_i-f_i$  71 (67–71),  $f_i-f_i$  94 (94–98); humeral setae  $c_2$  59 (59–62). Suranal setae  $h_1$  51 (51–53),  $h_2$  32 (32–39). Endopodal shields between I–II and III–IV clearly separated along midline; ventral setae subequal in length,  $1a = 28$  (28–29),  $3a = 31$  (29–31),  $4a = 29$  (29–30). Aggenital shield with 2 pairs of subequal setae,  $ag_1 = 20$ ,  $ag_2 = 21$ ; pseudanal setae  $ps_3$  25 (21–25),  $ps_2$  21 (21–24),  $ps_1$  20 (20–26).

**Legs.** Length: leg I 237 (237–272), leg II 205, leg III 190 (190–191), leg IV 227 (227–233). Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 2, 2, 2; trochanters 1, 1, 1, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  21 (20–21), II $\omega$  20, III $\omega$  10, IV $\omega$  7 (6–7).

**Male** (Fig. 103–104,  $n = 2$ )

**Gnathosoma.** Chelicerae 103 (103–111), movable digits 60 (60–63), about 3/5 length of chelicerae. Palp 104 (104–108), accessory claw spine-like. Subcapitular setae  $m$  longer than  $n$ ,  $m = 28$  (28–30),  $n = 19$  (18–19);  $m-m$  slightly wider than  $n-n$ ,  $m-m = 25$  (25–28),  $n-n = 22$  (22–23),  $m-n = 18$  (18–20).

**Idiosoma.** Oval, 248 (248–260) long, 161 (161–187) wide. Dorsal shields and setae as in female. Eyes 13 in diameter. Prodorsal setae  $sci$  about 2/3 length of  $ve$  and 4/5 length of  $sce$ ; lengths:  $vi$  43 (43–45),  $ve$  58 (58–65),  $sci$  38 (38–42),  $sce$  47 (47–52); distances:  $vi-vi$  22 (22–23),  $vi-ve$  43 (42–43),  $ve-sci$  26 (26–30),  $sci-sce$  26 (26–30). Dorsal

hysterosomal setae  $c_i$  about 1/2 distance of  $c_i-c_i$  and slightly shorter than distance of  $c_i-d_i$ ; ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.6: 1.4: 1.3: 1.0$ ; lengths:  $c_i$  45 (45–50),  $d_i$  48 (48–55),  $e_i$  60 (60–65),  $e_2$  48 (48–54),  $f_i$  66 (65–66); distances:  $c_i-c_i$  91 (91–97),  $c_i-d_i$  50 (50–55),  $d_i-d_i$  84 (84–88),  $d_i-e_i$  39 (39–45),  $d_i-f_i$  55 (50–55),  $e_i-e_i$  73 (73–79),  $e_i-e_2$  39 (32–39),  $e_i-f_i$  22 (22–28),  $f_i-f_i$  58 (58–60); humeral setae  $c_2$  41 (41–48). Suranal setae  $h_1$  15,  $h_2$  33 (33–39). Endopodal shields between I–II and III–IV clearly separated along midline; ventral setae subequal in length,  $1a = 21$  (20–21),  $3a = 19$  (19–20),  $4a = 19$ –20. Aggenital shield with 2 pairs of setae,  $ag_1 = 19$  (19–20),  $ag_2 = 11$ ; pseudanal setae  $ps_3$  10 (10–11),  $ps_2$  4,  $ps_1$  4.

**Legs.** Length: leg I 219 (213–219), leg II 169 (161–169), leg III 151 (151–160), leg IV 197 (185–197). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 1, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega_1$  19 (19–20), I $\omega_2$  52 (52–55), II $\omega_1$  15 (15–19), II $\omega_2$  43 (43–45), III $\omega_1$  7 (7–8), III $\omega_2$  41 (41–42), IV $\omega_1$  5, IV $\omega_2$  45 (45–48).

**Distribution** (Map p. 379). New Zealand (Wood 1966). – / FD.

**Material examined.** Holotype and 13 paratypes. **Holotype** female: NEW ZEALAND: **FD**: W. arm of Lake Manapouri, mouth of Spey River, 22 Feb 1965, N. A. Walker, beech litter and moss, / *Ledermuelleria manapouriensis* Wood, 1966, NZAC: 1/1 female. **Paratypes**: same collection data as holotype slide: NZAC: 5/allotype male, 7 females, 4 males, 1 deutonymph female.

**Habitat.** Moss and litter on beech (*Nothofagus*).

### *Eustigmaeus mixtus* (Wood)

Fig. 105–108, Plate 5 D

*Ledermuelleria mixta* Wood, 1966: 87; Wood 1971a: 80.

**Diagnosis. Female.** Dorsal shields with uniform pits restricted to thick polygonal reticula; vacuoles present in pits and on reticulated margins; dorsal idiosomal setae recurved, plumiliform, with long spinules; setal tubercles distinct; *sci* slightly longer than 2/3 length of *ve*;  $c_i$  slightly shorter than distances of  $c_i-c_i$ ; ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.2: 1.5: 2.2: 1.0$ ; endopodal shields between I–II and III–IV separated along midline, a minute platelet present between endopodal shields III–IV; aggenital shield with 1 pair of setae; femur II with 5 setae;  $\kappa$  on genua II absent; tarsi I–IV with 13 + 1 $\omega$ , 8 + 1 $\omega$ , 7 + 1 $\omega$ , 7.

**Male.** As in female but: ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.2: 1.3: 1.7: 1.0$ ; tarsi I–IV with 13 + 2 $\omega$ , 8 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 1 $\omega$ .

**Description. Female** (Fig. 105–106, Plate 5 D, n = 4) **Gnathosoma.** Chelicerae 70 (70–76), movable digits 32 (32–36), about 1/2 length of chelicerae. Palp 63 (63–69), accessory claw spine-like. Subcapitular setae *m* subequal to *n*,  $m = 13$  (13–15),  $n = 13$  (12–13);  $m-m$  slightly narrower than  $n-n$ ,  $m-m = 17$  (17–20),  $n-n = 20$  (20–22),  $m-n = 10$  (6–10).

**Idiosoma.** Oval, 251 (222–296) long, 222 (171–222) wide. Dorsal shields well sclerotised, with uniform pits restricted to thick polygonal reticula; dorsal idiosomal setae recurved, plumiliform, with long spinules; setal tubercles distinct. Eyes 11 (11–12) in diameter. Prodorsal setae *sci* slightly longer than 2/3 length of *ve* and subequal to *sce*; lengths: *vi* 61 (60–66), *ve* 63 (56–63), *sci* 50 (44–72), *sce* 51 (48–51); distances: *vi-vi* 17 (13–17), *vi-ve* 40 (35–45), *ve-sci* 21 (20–27), *sci-sce* 33 (30–41). Dorsal hysterosomal setae  $c_i$  slightly shorter than  $c_i-c_i$  and  $c_i-d_i$ ; ratio  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.2: 1.5: 2.2: 1.0$ ; lengths:  $c_i$  43 (43–60),  $d_i$  55 (55–67),  $e_i$  63 (61–65),  $e_2$  56 (56–60),  $f_i$  58 (58–61); distances:  $c_i-c_i$  48 (48–61),  $c_i-d_i$  48 (41–48),  $d_i-d_i$  58 (58–70),  $d_i-e_i$  54 (63–61),  $d_i-f_i$  62 (60–75),  $e_i-e_i$  88 (83–103),  $e_i-e_2$  41 (41–48),  $e_i-f_i$  32 (25–36),  $f_i-f_i$  39 (34–40); humeral setae  $c_2$  47 (32–50). Suranal setae  $h_1$  33 (33–38),  $h_2$  31 (29–37). Endopodal shields between I–II and III–IV separated along midline, a minute platelet present between endopodal shields III–IV; ventral setae subequal in length,  $1a = 13$  (12–15),  $3a = 13$  (13–16),  $4a = 12$  (12–13). Aggenital shield with 1 pair of setae,  $ag_1 = 11$  (11–12); pseudanal setae  $ps_3$  12,  $ps_2$  12 (12–13),  $ps_1$  15 (13–16).

**Legs.** Length: leg I 124 (124–139), leg II 102 (102–121), leg III 109 (109–126), leg IV 112 (112–137). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1 $\omega$ , 8 + 1 $\omega$ , 7 + 1 $\omega$ , 7. Lengths of solenidia: I $\omega$  16 (16–22), II $\omega$  9 (9–11), III $\omega$  4 (4–6).

**Male** (Fig. 107–108, n = 3)

**Gnathosoma.** Chelicerae 59 (57–60), movable digits 29 (28–29), about 1/2 length of chelicerae. Palp 70 (70–72), accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*,  $m = 15$ ,  $n = 11$ ;  $m-m$  slightly narrower than  $n-n$ ,  $m-m = 15$ ,  $n-n = 19$  (19–20),  $m-n = 7$  (7–8).

**Idiosoma.** Oval, 233 (233–241) long, 171 (166–171) wide. Dorsal shields and setae as in female. Eyes 10 in diameter. Prodorsal setae *sci* about 4/5 length of *ve* and slightly shorter than *sce*; lengths: *vi* 60 (50–60), *ve* 54 (53–55), *sci* 43 (38–43), *sce* 49 (41–49); distances: *vi-vi* 13 (12–14),

*vi-ve* 33 (33–37), *ve-sci* 21 (21–24), *sci-sce* 31 (28–31). Dorsal hysterosomal setae  $c_1$  subequal to distance of  $c_1-c_1$  and 1.2 times distance of  $c_1-d_1$ ; ratio  $c_1-c_1:d_1-d_1:e_1-e_1:f_1-f_1 = 1.2:1.3:1.7:1.0$ ; lengths:  $c_1$  43 (38–43),  $d_1$  48 (42–53),  $d_2$  42 (41–46),  $e_1$  42 (31–44),  $e_2$  35 (33–40),  $f_1$  49 (49–55); distances:  $c_1-c_1$  43 (41–43),  $c_1-d_1$  36,  $d_1-d_1$  48,  $d_1-d_2$  46 (46–49),  $d_1-e_1$  52 (49–52),  $e_1-e_1$  62 (62–69),  $e_1-e_2$  32 (31–33),  $e_1-f_1$  14 (14–20),  $f_1-f_1$  36 (36–41); humeral setae  $c_2$  48 (36–48). Suranal setae  $h_1$  19,  $h_2$  37 (36–37). Endopodal shields between I–II and III–IV separated along midline, a minute platelet present between endopodal shields III–IV; ventral setae subequal in length,  $1a = 10$  (10–12),  $3a = 10$  (10–11),  $4a = 10$  (9–10). Aggenital shield with 1 pair of setae,  $ag_1 = 10$  (10–11); pseudanal setae  $ps_3$  4 (3–4),  $ps_2$  5,  $ps_1$  11.

**Legs.** Length: leg I 153 (146–159), leg II 110 (110–118), leg III 101 (101–113), leg IV 133 (129–133). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 13 + 2  $\omega$ , 8 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega_1$  19 (19–20), I  $\omega_2$  27 (27–29), II  $\omega_1$  10 (10–11), II  $\omega_2$  24 (23–25), III  $\omega_1$  5, III  $\omega_2$  23 (23–24), IV  $\omega$  22 (22–23).

**Distribution** (N.Z., Mapp. 379). New Zealand (Wood 1966), Australia (Halliday 1998), Malay Peninsula (Shiba 1976), Solomon Islands (Wood 1971a), South Pacific Islands (Wood 1966).

– / NN, BR, WD, NC, DN, FD.

**Material examined.** Holotype, 3 paratypes, and 26 non-type specimens. **Holotype** female: NEW ZEALAND: **NC:** side of Waimakariri R, nr Arthurs Pass, 21 Feb 1965, T. G. Wood, moss among gravel / *Ledermuelleria mixta* Wood, 1966, NZAC: 1/1 female. **Paratypes:** **BR:** Tauranga Bay, Westport, 3 Nov 1963, T. G. Wood, moss on rocks, NZAC: 2/allotype male, 1 male. **WD:** Fox Glacier village, 17 Feb 1965, T. G. Wood, epiphytic moss, dense bush, NZAC: 1/1 female. **Other material:** **NN:** Takaka Hill, 29 Nov 1963, T. G. Wood, moss on marble, 1/1 female. Abel Tasman N.P., Totaranui, 29 Nov 1963, T. G. Wood, moss on roadside cutting, 1/1 male. Takaka Hill, Canaan, 7 Mar 1964, G. W. Ramsay, moss, 1/3 females. Nelson, Boulder Bank, 19 Oct 1965, E. Collyer, moss sample, 1/10 females. Nelson, Boulder Bank, 16 Aug 1970, G. W. Ramsay, under stones, 1/1 female. Incomplete taxonomy sample, 70/26 [E. Collyer, no other collection data], 1/1 female [on same slide as holotype female *Eustigmaeus edentatus*]. **DN:** Waitati, 3 miles S. of, 4 May 1964, T. G. Wood, moss, roadside cutting, 1/1 male. Waipori Falls, 22 Feb 1965, T. G. Wood, moss, bark of *Nothofagus* sp., 1/3 females, 1 male. **FD:** Hunter Mts, Borland Saddle, 760 m, [no date], G. W. Ramsay, *Polytrichum* moss, 1/4 females [+ *Pseudostigmaeus striatus* 1 female].

**Habitat.** Bark of *Nothofagus* sp., beech litter; litter; moss on beech (*Nothofagus*), moss among gravel, moss on marble, moss on roadside cutting, moss on rocks, *Podocarpus* forest, fallen log, kauri (*Agathis australis*) trees, cutting, shingle; lichens, *Leptospermum* scrub, *Podocarpus totara*, rotten root of coconut palm, soil and droppings below hen house, termite nest, under stones.

### *Eustigmaeus ptilosetus* sp. n.

Fig. 109–112, Plate 6 A

**Diagnosis. Female.** Dorsal shields with uniform pits restricted to thick polygonal reticula; vacuoles present in pits and on reticulated margins; dorsal idiosomal setae recurved, plumiliform, with long dense spinules; *sci* nearly 4/5 length of *ve*;  $c_1$  subequal to distance of  $c_1-c_1$ ; ratio  $c_1-c_1:d_1-d_1:e_1-e_1:f_1-f_1 = 1.4:1.6:2.5:1.0$ ; endopodal shields between I–II fused along midline, between III–IV mostly fused, a minute platelet present; aggenital shield with 1 pair of setae; femur II with 4 setae;  $\kappa$  on genua II absent; tarsi I–IV with 13 + 1  $\omega$ , 8 + 1  $\omega$ , 7 + 1  $\omega$ , 7.

**Male.** As in female but: ratio  $c_1-c_1:d_1-d_1:e_1-e_1:f_1-f_1 = 1.1:1.1:1.6:1.0$ ; tarsi I–IV with 13 + 2  $\omega$ , 8 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 1  $\omega$ .

**Description. Female** (Fig. 109–110, Plate 6 A, n = 2)

**Gnathosoma.** Chelicerae 60 (60–64), movable digits 31, about 1/2 length of chelicerae. Palp 73 (70–73), accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*,  $m = 14$  (13–14),  $n = 10$ ;  $m-m$  subequal to  $n-n$ ,  $m-m = 18$  (17–18),  $n-n = 17$ ,  $m-n = 11$ .

**Idiosoma.** Oval, 236 (236–261) long, 195 wide. Dorsal shields well sclerotised, with uniform pits restricted to thick polygonal reticula; dorsal idiosomal setae recurved, plumiliform, with long dense spinules; setal tubercles distinct. Eyes 10 in diameter. Prodorsal setae *sci* nearly 4/5 length of *ve* and slightly shorter than *sce*; lengths: *vi* 60 (58–60), *ve* 69 (68–69), *sci* 51 (50–51), *sce* 54 (51–54); distances: *vi-vi* 12 (11–12), *vi-ve* 26 (25–26), *ve-sci* 22, *sci-sce* 34. Dorsal hysterosomal setae  $c_1$  subequal to  $c_1-c_1$  and 1.2 times distance of  $c_1-d_1$ ; ratio  $c_1-c_1:d_1-d_1:e_1-e_1:f_1-f_1 = 1.4:1.6:2.5:1.0$ ; lengths:  $c_1$  50,  $d_1$  62 (60–62),  $d_2$  54 (52–54),  $e_1$  63 (62–63),  $e_2$  53 (53–54),  $f_1$  60 (59–60); distances:  $c_1-c_1$  50,  $c_1-d_1$  43 (42–43),  $d_1-d_1$  57 (57–58),  $d_1-d_2$  53 (53–54),  $d_1-e_1$  67 (66–67),  $e_1-e_1$  87 (87–93),  $e_1-e_2$  43 (40–43),  $e_1-f_1$  28 (28–30),  $f_1-f_1$  35 (35–36); humeral setae  $c_2$  50. Suranal setae  $h_1$  43,  $h_2$  30. Endopodal shields between I–II fused along midline, between III–IV mostly fused, a minute platelet present; ventral setae subequal in length,  $1a = 13$ ,  $3a = 12$ ,  $4a = 12$ . Aggenital shield with 1 pair of setae,  $ag_1 = 10$ ; pseudanal setae  $ps_3$  10,  $ps_2$  11,  $ps_1$  14 (13–14).



**Legs.** Length: leg I 134 (134–135), leg II 115 (115–116), leg III 118 (110–118), leg IV 125 (124–125). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 8 + 1  $\omega$ , 7 + 1  $\omega$ , 7. Lengths of solenidia: I $\omega$  20 (20–21), II $\omega$  11 (11–12), III $\omega$  5 (5–6).

**Male** (Fig. 111–112,  $n = 2$ )

**Gnathosoma.** Chelicerae 60 (60–61), movable digits 25, about 2/5 length of chelicerae. Palp 62 (62–63), accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*,  $m = 13$ ,  $n = 11$  (10–11);  $m-m$  subequal to  $n-n$ ,  $m-m = 15$ ,  $n-n = 16$  (15–16),  $m-n = 10$ .

**Idiosoma.** Oval, 183 (183–187) long, 145 (145–151) wide. Dorsal shields and setae as in female. Eyes 9 in diameter. Prodorsal setae *sci* about 4/5 length of *ve* and slightly shorter than *sce*; lengths: *vi* 46 (45–46), *ve* 46 (45–46), *sci* 37 (37–38), *sce* 40 (39–40); distances:  $vi-vi$  10,  $vi-ve$  23,  $ve-sci$  16 (15–16), *sci-sce* 25 (24–25). Dorsal hysterosomal setae  $c_i$  about 4/5 distance of  $c_i-c_i$  and 1.2 times distance of  $c_i-d_i$ ; ratio  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i = 1.1$ : 1.1: 1.6: 1.0; lengths:  $c_i$  37 (37–38),  $d_i$  40 (39–40),  $d_2$  40 (40–59),  $e_i$  38 (37–38),  $e_2$  33 (33–35),  $f_i$  48 (48–49); distances:  $c_i-c_i$  43,  $c_i-d_i$  31 (30–31),  $d_i-d_i$  41 (40–41),  $d_i-d_2$  40 (40–44),  $d_i-e_i$  43 (40–43),  $e_i-e_i$  61 (59–61),  $e_i-e_2$  27 (27–28),  $e_i-f_i$  14 (14–15),  $f_i-f_i$  38 (35–38); humeral setae  $c_2$  38. Suranal setae  $h_1$  17,  $h_2$  31 (30–31). Endopodal shields between I–II fused along midline, between III–IV mostly fused, a minute platelet present; ventral setae subequal in length,  $1a = 8$ ,  $3a = 10$  (10–11),  $4a = 10$ . Aggenital shield with 1 pair of setae,  $ag_i = 10$ ; pseudanal setae  $ps_3$  9,  $ps_2$  5,  $ps_1$  4.

**Legs.** Length: leg I 122 (122–125), leg II 93 (93–98), leg III 99 (99–101), leg IV 112 (112–115). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 2 $\omega$ , 8 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  17 (17–18), I $\omega_2$  25, II $\omega_1$  11, II $\omega_2$  25, III $\omega_1$  5, III $\omega_2$  25, IV $\omega$  25 (24–25).

**Distribution** (Map p. 379). New Zealand (this paper).

TH / - / -.

**Material examined.** Holotype and 3 paratypes.

**Holotype** female: NEW ZEALAND: TH: Three Kings Is, Great I, Nov 1970, G. W. Ramsay, litter, NZAC: 1/1 female. **Paratypes:** same collection data as holotype slide: NZAC: 3/allotype male, 1 female, 1 male.

**Habitat.** Litter.

**Etymology.** The species name is a combination of the Latin words *ptilo* (feather) and *seta*, referring to the shape of dorsal idiosomal setae.

**Remarks.** Females of *E. ptilosetus* sp. n. are similar to those of *E. corticolus* (Wood) and *E. eburneus* sp. n. in having vacuoles in pits, but can be distinguished from *E. corticolus* by having vacuoles on margins of pits and endopodal shields between I–II fused, and from *E. eburneus* sp. n. by having plumiform dorsal idiosomal setae with long dense spinules and tarsus II with 8 setae.

### *Eustigmaeus simplex* (Wood)

Fig. 113–116, Plate 6 B

*Ledermuelleria simplex* Wood, 1966: 92.

**Diagnosis. Female.** Dorsal shields covered with polygonal cells, each cell with a shallow pit; vacuoles absent; dorsal idiosomal setae recurved, falciform, with few small spinules; *sci* longer than 4/5 length of *ve*;  $c_i$  slightly longer than 2/3 distance of  $c_i-c_i$ ; ratio  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i = 2.1$ : 1.3: 2.5: 1.0; endopodal shields between I–II and III–IV fused along midline; aggenital shield with 1 pair of setae; femur II with 5 setae;  $\kappa$  on genua II absent; tarsi I–IV with 13 + 1 $\omega$ , 8 + 1 $\omega$ , 7 + 1 $\omega$ , 7.

**Male.** As in female but: ratio  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i = 2.1$ : 1.4: 2.4: 1.0; tarsi I–IV with 13 + 2 $\omega$ , 8 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 1 $\omega$ .

**Description. Female** (Fig. 113–114, Plate 6 B,  $n = 2$ )

**Gnathosoma.** Chelicerae 73 (73–75), movable digits 38 (38–41), about 1/2 length of chelicerae. Palp 74 (74–80), accessory claw spine-like. Subcapitular setae *m* subequal to *n*,  $m = 14$ ,  $n = 14$  (12–14);  $m-m$  subequal to  $n-n$ ,  $m-m = 20$ ,  $n-n = 21$  (21–22),  $m-n = 11$  (10–11).

**Idiosoma.** Oval, 227 (227–260) long, 187 (173–187) wide. Dorsal shields covered with polygonal cells, each cell with 1 shallow pit; dorsal idiosomal setae recurved, falciform, with few small spinules; setal tubercles distinct. Eyes 9 (9–10) in diameter. Prodorsal setae *sci* longer than 4/5 length of *ve* and subequal to *sce*; lengths: *vi* 59 (59–62), *ve* 55, *sci* 47 (47–51), *sce* 48 (48–51); distances:  $vi-vi$  15,  $vi-ve$  43 (40–43),  $ve-sci$  15 (15–20), *sci-sce* 35 (35–43). Dorsal hysterosomal setae  $c_i$  slightly longer than 2/3 distance of  $c_i-c_i$  and nearly 1.2 times distance of  $c_i-d_i$ ; ratio  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i = 2.1$ : 1.3: 2.5: 1.0; lengths:  $c_i$  49,  $d_i$  49 (49–52),  $d_2$  49 (49–52),  $e_i$  49 (49–52),  $e_2$  54 (52–54),  $f_i$  57 (50–57); distances:  $c_i-c_i$  70 (70–76),  $c_i-d_i$  43 (43–47),  $d_i-d_i$  45 (45–54),  $d_i-d_2$  58 (57–58),  $d_i-e_i$  68 (75–68),  $e_i-e_i$  84 (84–90),  $e_i-e_2$  40 (40–42),  $e_i-f_i$  31 (30–31),  $f_i-f_i$  34 (34–41); humeral setae  $c_2$  43 (43–50). Suranal setae  $h_1$  31,  $h_2$  31. Endopodal shields between I–II and III–IV fused along midline; ventral setae subequal in length,  $1a = 13$  (11–13),  $3a = 15$  (12–15),  $4a = 15$  (12–15). Aggenital shield with 1 pair of setae,  $ag_i = 12$  (10–12); pseudanal setae  $ps_3$  12 (10–12),  $ps_2$  12 (11–12),  $ps_1$  13 (12–13).

**Legs.** Length: leg I 126 (126–136), leg II 112 (112–121), leg III 109 (109–111), leg IV 121 (121–135). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 13 + 1  $\omega$ , 8 + 1  $\omega$ , 7 + 1  $\omega$ , 7. Lengths of solenidia: I $\omega$  19 (19–20), II $\omega$  12, III $\omega$  5.

**Male** (Fig. 115–116, n = 2)

**Gnathosoma.** Chelicerae 67 (65–67), movable digits 30 (30–36), about 2/5 length of chelicerae. Palp 67, accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*, *m* = 11, *n* = 7; *m*–*m* subequal to *n*–*n*, *m*–*m* = 18, *n*–*n* = 19, *m*–*n* = 7 (7–8).

**Idiosoma.** Oval, 180 (180–183) long, 121 (121–127) wide. Dorsal shields and setae as in female. Eyes 9 in diameter. Prodorsal setae *sci* slightly longer than 4/5 length of *ve* and slightly shorter than *sce*; lengths: *vi* 46 (45–46), *ve* 40 (37–40), *sci* 33 (30–33), *sce* 39 (38–39); distances: *vi*–*vi* 11, *vi*–*ve* 27 (25–27), *ve*–*sci* 17 (16–17), *sci*–*sce* 27 (25–27). Dorsal hysterosomal setae *c*<sub>1</sub> slightly longer than 1/2 distance of *c*<sub>1</sub>–*c*<sub>1</sub> and about 4/5 distance of *c*<sub>1</sub>–*d*<sub>1</sub>; ratio *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 2.1: 1.4: 2.4: 1.0; lengths: *c*<sub>1</sub> 32 (31–32), *d*<sub>1</sub> 35, *e*<sub>1</sub> 36 (34–36), *e*<sub>1</sub> 35 (35–36), *e*<sub>2</sub> 37 (37–38), *f*<sub>1</sub> 44 (41–44); distances: *c*<sub>1</sub>–*c*<sub>1</sub> 56 (55–56), *c*<sub>1</sub>–*d*<sub>1</sub> 37 (34–37), *d*<sub>1</sub>–*d*<sub>1</sub> 39 (37–39), *d*<sub>1</sub>–*d*<sub>2</sub> 47, *d*<sub>1</sub>–*e*<sub>1</sub> 50 (48–50), *e*<sub>1</sub>–*e*<sub>1</sub> 64 (57–64), *e*<sub>1</sub>–*e*<sub>2</sub> 31 (29–31), *e*<sub>1</sub>–*f*<sub>1</sub> 20 (10–20), *f*<sub>1</sub>–*f*<sub>1</sub> 27 (25–27); humeral setae *c*<sub>2</sub> 32 (31–32). Suranal setae *h*<sub>1</sub> 23 (22–23), *h*<sub>2</sub> 42 (40–42). Endopodal shields between I–II and III–IV fused along midline; ventral setae subequal in length, *1a* = 9, *3a* = 10, *4a* = 10 (10–11). Aggenital shield with 1 pair of setae, *ag*<sub>1</sub> = 10; pseudanal setae *ps*<sub>3</sub> 11 (11–12), *ps*<sub>2</sub> 6, *ps*<sub>1</sub> 4.

**Legs.** Length: leg I 121, leg II 72, leg III 70 (70–73), leg IV 110 (106–110). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 13 + 2  $\omega$ , 8 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  22, I $\omega$ <sub>2</sub> 30 (30–31), II $\omega$  16, II $\omega$ <sub>2</sub> 28, III $\omega$  5 (5–6), III $\omega$ <sub>2</sub> 28, IV $\omega$  28 (27–28).

**Distribution** (Map p. 379). New Zealand (Wood 1966). ND, AK, CL / SD, NN.

**Material examined.** Holotype, 5 paratypes, and 11 non-type specimens. **Holotype** female: NEW ZEALAND: ND: Waipoua Forest, 13 Nov 1964, G. S. Grandison, moss around kauri trees / *Ledermuelleria simplex* Wood, 1966, NZAC: 1/1 female. **Paratypes:** CL: Kauaeranga R, nr Thames, 5 Sep 1964, E. Collyer, moss, forest litter, NZAC: 1/1 allotype male (centre), 2 females, 1 male. AK: Waitakere Ra, 13 Feb 1964, T. G. Wood, moss on rotten logs, bush, NZAC: 1/1 male. **Other material:** SD: Marlborough Sounds, Tennyson Inlet, 16 Feb 1964, G. W. Ramsay, moss, native bush, 4/5 females, 5 males. NN:

Wairoa Gorge, 19 Nov 1962, J.I. Townsend, moss, 1/1 female.

**Habitat.** Moss in *Podocarpus* litter, among kauri trees (*Agathis australis*), on logs in exotic pine, rotting logs, mixed *Podocarpus-Dacrydium*, cutting, beech (*Nothofagus*); litter; lichen.

### Genus *Ledermuelleriopsis* Willmann

*Ledermuelleriopsis* Willmann, 1953: 487. Type species: *Ledermuelleriopsis triscutata* Willmann, 1951b, by subsequent designation.

**Diagnosis. Female.** Idiosoma broadly oval, generally red or dark red in life. Chelicerae separated. Palptibial claw subequal to palptarsus; accessory claw slender or robust, seta-like or spine-like; terminal eupathidia on palptarsus basally fused but split halfway into 3 long prongs distally; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1  $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (basally fused). Subcapitulum with 2 pairs of subcapitular setae, *m* anterolaterad of pharynx, *n* posteriorad of *m*. Prodorsum covered with a large shield, which bears 4 pairs of setae (*vi*, *ve*, *sci* and *sce*); eyes present, *pob* absent. Dorsal hysterosomal area C–F mainly covered with 2 transversally divided rectangular shields (CD and EF), each with 3 pairs of setae (CD with *c*<sub>1</sub>, *d*<sub>1</sub> and *d*<sub>2</sub>, EF with *e*<sub>1</sub>, *e*<sub>2</sub> and *f*<sub>1</sub>); humeral shields large, ventrolateral, with setae *c*<sub>2</sub>. Suranal shield (H) entire, with 2 pairs of setae (*h*<sub>1</sub> and *h*<sub>2</sub>), *h*<sub>3</sub> absent. Endopodal shields I–II and III–IV divided or fused along midline. Ventral opisthosoma with 1–3 pairs of aggenital setae; genitoanal valves with 3 pairs of pseudanal setae, genital setae absent. Leg tarsal claws robust; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4–5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 0–1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 13 + 1  $\omega$ , 8–9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 0–1  $\omega$ .

**Male.** Solenidia on tarsi I–IV: 2, 2, 2, 2.

Two species are known from New Zealand.

### Key to species of *Ledermuelleriopsis* from New Zealand (females)

- 1 Dorsal idiosomal setae acute, with minute spinules (Fig. 117 A); prodorsum with incisions laterad of *sci* (Fig. 117 A); with 1 pair of aggenital setae, endopodal shields separated along midline (Fig. 117 B); femora II with 5 setae, tarsus II with 8 + 1  $\omega$  (Fig. 118 B) ..... (p. 67)... *L. incisa* Wood

— Dorsal idiosomal setae clavate, with numerous short spinules (Fig. 119 D); prodorsum without incisions (Fig. 119 A); with 3 pairs of aggenital setae (Fig. 119 E); endopodal shields fused along midline (Fig. 119 B); femora II with 4 setae; tarsus II with 9 + 1 $\omega$  (Fig. 120 B) .....(p. 67)... *L. spinosa* Wood

### *Ledermuelleriopsis incisa* Wood

Fig. 117–118, Plate 6 C

*Ledermuelleriopsis incisa* Wood, 1967: 135; Fan *et al.*, 2003: 558.

**Diagnosis. Female.** Dorsal shields with pits marginally, without vacuoles; dorsal idiosomal setae acute, with spinules; prodorsal shield with incisions laterad of *sci*; ratio  $c_1-c_2: d_1-d_2: e_1-e_2: f_1-f_2 = 1.4: 1.2: 1.6: 1.0$ ; endopodal shields between I–II and III–IV separated along midline; aggenital shield with 1 pair of setae; femora II with 5 setae; tarsus II with 8 + 1 $\omega$ .

**Description. Female** (Fig. 117–118, Plate 6 C,  $n = 3$ )

**Gnathosoma.** Chelicerae 77 (74–77), movable digits 38 (36–38), about 1/2 length of chelicerae. Palp 53, accessory claw spine-like. Subcapitular setae *m* slightly longer than *n*,  $m = 15$  (14–15),  $n = 13$  (12–13);  $m-m$  slightly narrower than  $n-n$ ,  $m-m = 18$ ,  $n-n = 22$  (20–22),  $m-n = 7$ . **Idiosoma.** Oval, 228 (225–233) long, 169 (163–169) wide. Dorsal shields faintly sclerotised, with pits marginally, vacuoles absent; dorsal idiosomal setae acute, with spinules. Prodorsal shield with incisions laterad of *sci*; eyes 8 in diameter; lengths: *vi* 18, *ve* 20 (20–21), *sci* 15 (15–18), *sce* 16 (16–18); distances: *vi-vi* 28 (28–29), *vi-ve* 22 (19–23), *ve-sci* 20 (19–20), *sci-sce* 29 (28–29). Dorsal hysterosomal shields CD entire, without incisions near *c*<sub>1</sub>; EF with incisions laterad of *e*<sub>1</sub>; ratio  $c_1-c_2: d_1-d_2: e_1-e_2: f_1-f_2 = 1.4: 1.2: 1.6: 1.0$ ; lengths: *c*<sub>1</sub> 16 (15–16), *d*<sub>1</sub> 16 (15–16), *d*<sub>2</sub> 16, *e*<sub>1</sub> 16, *e*<sub>2</sub> 16 (15–16), *f*<sub>1</sub> 25 (25–26); distances: *c*<sub>1-c</sub><sub>2</sub> 50 (48–50), *c*<sub>1-d</sub><sub>1</sub> 48 (48–49), *d*<sub>1-d</sub><sub>2</sub> 43 (40–45), *d*<sub>1-d</sub><sub>2</sub> 41 (41–42), *d*<sub>1-e</sub><sub>1</sub> 42 (42–43), *e*<sub>1-e</sub><sub>2</sub> 60 (60–62), *e*<sub>1-e</sub><sub>2</sub> 29 (27–30), *e*<sub>1-f</sub><sub>1</sub> 28 (25–30), *f*<sub>1-f</sub><sub>2</sub> 37 (34–39); humeral setae *c*<sub>2</sub> 18 (17–18). Suranal setae *h*<sub>1</sub> 23, *h*<sub>2</sub> 21 (21–22). Endopodal shields between I–II and III–IV separated along midline; ventral setae *4a* shorter than other 2 pairs, *1a* 15 (14–15), *3a* 15 (14–15) and *4a* 12 (11–12); aggenital shield with 1 pair of setae, *ag*<sub>1</sub> 12 (11–12); pseudanal setae *ps*<sub>3</sub> 12 (11–12), *ps*<sub>2</sub> 12 (11–12), *ps*<sub>1</sub> 15 (14–15).

**Legs.** Length: leg I 124 (121–129), leg II 102 (102–109), leg III 105 (103–105), leg IV 120 (120–124). A small solenidia may be present on tarsi IV. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3, 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 1 $\omega$ , 8

+ 1 $\omega$ , 7 + 1 $\omega$ , 7 + 0–1 $\omega$ . Lengths of solenidia: I $\omega$  15 (13–15), II $\omega$  11 (10–11), III $\omega$  4.5 (4.0–4.5).

**Distribution** (Map p. 380). New Zealand (Wood 1967). – / FD.

**Material examined.** Holotype and 2 paratypes. **Holotype** female: NEW ZEALAND: **FD**: 17 miles N. of Te Anau, 17 Feb 1965, N.A. Walker, litter, moss and lichen, NZAC: 1/1 female (lower edge of slide); [+ 2 paratypes females on same slide]. **PARATYPES**: on same slide with holotype, NZAC: 2 females.

**Habitat.** Litter, lichen and moss, moss on logs among *Nothofagus*, cuttings and rocks.

### *Ledermuelleriopsis spinosa* Wood

Fig. 119–120, Plate 6 D

*Ledermuelleriopsis spinosa* Wood, 1967: 133; Fan *et al.*, 2003: 557.

**Diagnosis. Female.** Dorsal shields with pits restricted to polygonal reticula, numerous vacuoles present in pits; dorsal idiosomal setae clavate, with numerous short spinules; prodorsal shield without incisions; shields CD and EF without incisions;  $c_1-c_2: d_1-d_2: e_1-e_2: f_1-f_2 = 1.1: 1.1: 1.4: 1.0$ ; endopodal shields between I–II and III–IV fused along midline; aggenital shield with 3 pairs of setae; femora II with 4 setae; tarsus II with 9 + 1 $\omega$ .

**Description. Female** (Fig. 119–120, Plate 6 D,  $n = 1$ )

**Gnathosoma.** Chelicerae 70, movable digits 31, about 2/5 length of chelicerae. Palp 79, accessory claw spine-like. Subcapitular setae subequal,  $m = 14$ ,  $n = 13$ ;  $m-m$  slightly narrower than  $n-n$ ,  $m-m = 19$ ,  $n-n = 22$ ,  $m-n = 9$ .

**Idiosoma.** Oval, 255 long, 188 wide. Dorsal shields moderately sclerotised, with pits restricted to polygonal reticula, numerous vacuoles present in pits; dorsal idiosomal setae clavate, with numerous short spinules. Prodorsal shield without incisions; eyes 9 in diameter; lengths: *vi* 17, *ve* 19, *sci* 15, *sce* 16; distances: *vi-vi* 17, *vi-ve* 24, *ve-sci* 30, *sci-sce* 32. Dorsal hysterosomal shields CD and EF entire, without incisions; ratio  $c_1-c_2: d_1-d_2: e_1-e_2: f_1-f_2 = 1.1: 1.1: 1.4: 1.0$ ; lengths: *c*<sub>1</sub> 16, *d*<sub>1</sub> 17, *d*<sub>2</sub> 18, *e*<sub>1</sub> 17, *e*<sub>2</sub> 17, *f*<sub>1</sub> 25; distances: *c*<sub>1-c</sub><sub>2</sub> 57, *c*<sub>1-d</sub><sub>1</sub> 51, *d*<sub>1-d</sub><sub>2</sub> 58, *d*<sub>1-d</sub><sub>2</sub> 57, *d*<sub>1-e</sub><sub>1</sub> 52, *e*<sub>1-e</sub><sub>2</sub> 73, *e*<sub>1-e</sub><sub>2</sub> 37, *e*<sub>1-f</sub><sub>1</sub> 25, *f*<sub>1-f</sub><sub>2</sub> 54; humeral setae *c*<sub>2</sub> 19. Suranal setae *h*<sub>1</sub> 22, *h*<sub>2</sub> 20. Endopodal shields between I–II and III–IV fused along midline; ventral setae subequal in length, *1a* 16, *3a* 17 and *4a* 16; aggenital shield with 3 pairs of setae, *ag*<sub>1</sub> 12, *ag*<sub>2</sub> 9, *ag*<sub>3</sub> 9; ratio  $ag_1-ag_2: ag_2-ag_3 = 1.3: 1.0$ ; pseudanal setae *ps*<sub>3</sub> 12, *ps*<sub>2</sub> 13, *ps*<sub>1</sub> 15.

**Legs.** Length: leg I 135, leg II 108, leg III 110, leg IV 127. absent. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1 $\kappa$ , 3, 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 1 $\omega$ , 8

1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7. Lengths of solenidia: I $\omega$  17, II $\omega$  15, III $\omega$  5.

**Distribution** (Map p. 380). New Zealand (Wood 1967). ND / -.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: **ND**: Taheke, 13 Nov 1964, G. S. Grandison, moss on roadside cutting, NZAC: 1/1 female.

**Habitat.** Moss on roadside cutting.

### Genus *Mediolata* Canestrini

*Mediolata* Canestrini, 1889: 524. Type species: *Stigmaeus longirostris* Berlese, 1887 (type lost), by original designation.

**Diagnosis. Female.** Idiosoma often broadly oval in dorsoventral view, generally red or dark red in life. Chelicerae basally fused, rarely separate. Palptibial claw reduced, less than 1/2 length of palptarsus; accessory claw slender, seta-like; terminal eupathidia on palptarsus basally fused and split into 3 minute prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 1-3, 1-2, 2 + 1 claw + 1 accessory claw, 4 + 1 $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (basally fused). Subcapitulum with 1 pair of subcapitular setae, posterolaterad of pharynx. Prodorsum covered with a large shield (sometimes reduced to a large shield and 1-2 pairs of platelets), which bears 4 pairs of setae (*vi*, *ve*, *sci* and *sce*, if shield reduced *sce* or *sci* and *sce* situated on platelets); eyes present, *pob* present. Dorsal hysterosomal area C-F commonly covered with 3 transversally divided shields (may be fused into 1 or 2 shields), with 6 pairs of setae (*c*<sub>1</sub>, *d*<sub>1</sub>, *d*<sub>2</sub>, *e*<sub>1</sub>, *e*<sub>2</sub>, and *f*<sub>1</sub>); setae *d*<sub>1</sub> and *d*<sub>2</sub> situated on same shield; humeral shields and setae *c*<sub>2</sub> absent. Suranal shield (H) entire, with 2 pairs of setae (*h*<sub>1</sub> and *h*<sub>2</sub>), *h*<sub>3</sub> absent. Endopodal shields I-II and III-IV absent. Ventral opisthosoma with 3 pairs of aggenital setae; genitoanal valves with 1 pair of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws robust; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs (reportedly sometimes with 2 pairs); counts of setae and solenidia on legs I-IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 *elcp*, 1, 2, 1-2; trochanters 1, 1, 1, 0-1; femora 4-6, 4-5, 2-3, 1-2; genua 1-3 + 1 $\kappa$ , 1-3, 1, 0-1; tibiae 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 4-5 + 1 $\phi\phi$ ; tarsi 9-11 + 1 $\omega$ , 8-9 + 1 $\omega$ , 6-7 + 1 $\omega$ , 6-7 + 1 $\omega$ .

**Male.** Setae *sce* sometimes on platelets; solenidia on tarsi I-IV: 2, 2, 1-2, 1.

Six species were described previously from New Zealand. Six new species are added in this paper.

### Key to species of *Mediolata* from New Zealand (adults)

- 1 Palpfemur with 2 setae (Fig. 121 D); femur I with 5 setae (Fig. 122 A) ..... 2
  - Palpfemur with 1 seta (Fig. 125 D); femur I with 4 setae (Fig. 126 A) ..... (p. 70)... *M. delicata* sp. n.
- 2 Femur III with 2 setae (Fig. 122 C); genu II with 1 seta (Fig. 122 B) ..... 3
  - Femur III with 3 setae (Fig. 150 C); genu II with 3 setae (Fig. 150 B) ..... 6
- 3 Trochanter IV without seta (Fig. 122 D); *sci*, *sce* and *pob* situated on prodorsal shield (Fig. 121 A) ..... 4
  - Trochanter IV with 1 seta (Fig. 156 D); *sci* and *sce* situated on platelets and *pob* surrounded by striae (Fig. 155 A) ..... (p. 78)... *M. zonaria* sp. n.
- 4 Genu I with 2 + 1 $\kappa$  (Fig. 148 A) or 1 + 1 $\kappa$  (Fig. 154 A) ..... 5
  - Genu I with 3 + 1 $\kappa$  (Fig. 122 A) ..... (p. 69)... *M. brevisetis* Wood
- 5 Genu I with 2 + 1 $\kappa$  (Fig. 148 A) ..... (p. 76)... *M. whenua* sp. n.
  - Genu I with 1 + 1 $\kappa$  (Fig. 154 A) ..... (p. 77)... *M. xerxes* sp. n.
- 6 Trochanter IV with 1 seta (Fig. 132 D) ..... 7
  - Trochanter IV without seta (Fig. 150 D) ..... 8
- 7 Dorsal idiosomal setae stout; ratios *vi*: *vi-vi* = 2.2; *ve*: *ve-sci* = 1.1; *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 0.8; *d*<sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub> = 1.5 (Fig. 129 A) ..... (p. 71)... *M. favulosa* Wood
  - Dorsal idiosomal setae slender; ratios *vi*: *vi-vi* = 1.1; *ve*: *ve-sci* = 0.5; *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 0.4; *d*<sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub> = 0.5 (Fig. 131 A) ..... (p. 71)... *M. mollis* Wood
- 8 Reticulations of dorsum simple, without obvious vacuoles within cells (Fig. 143 A, Plate 8 B) ..... 9
  - Reticulations of dorsum with vacuoles within cells (Fig. 139 A, Plate 8 A) ..... 10
- 9 Dorsal idiosomal setae slender (Plate 8 B); ratios *vi*: *vi-vi* = 1.9, *ve*: *ve-sci* = 1.0, *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 0.7, *d*<sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub> = 1.1 in female (Fig. 143 A) ..... (p. 75)... *M. simplex* Wood
  - Dorsal idiosomal setae stout (Plate 7 D); ratios *vi*: *vi-vi* = 2.6-3.3, *ve*: *ve-sci* = 1.4-1.5, *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 1.4, *d*<sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub> = 1.6 in female (Fig. 137 A) ..... (p. 73)... *M. polyocularis* sp. n.
- 10 Ratio *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> > 1.0; *c*<sub>1-c</sub><sub>1</sub> narrower than *f*<sub>1</sub>-*f*<sub>1</sub> (Fig. 139 A) ..... 11
  - Ratio *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> < 0.8; *c*<sub>1-c</sub><sub>1</sub> as wide as *f*<sub>1</sub>-*f*<sub>1</sub> (Fig. 133 A) ..... (p. 72)... *M. oleariae* Wood

- 11 Ratios  $vi:vi-vi = 3.1$ ,  $ve:ve-sci = 2.0-2.2$ ,  $c_i:c_i-c_i = 1.9-2.1$  in female (Fig. 139 A);  $vi:vi-vi = 2.7$ ,  $ve:ve-sci = 3.1$ ,  $c_i:c_i-c_i = 2.7$  in male (Fig. 141 A) .....  
.....(p. 73)... **M. robusta** González-Rodríguez
- Ratios  $vi:vi-vi = 2.2$ ,  $ve:ve-sci = 1.1$ ,  $c_i:c_i-c_i = 1.1-1.5$  in female (Fig. 149 A);  $vi:vi-vi = 1.6$ ,  $ve:ve-sci = 1.8$ ,  $c_i:c_i-c_i = 1.9$  in male (Fig. 151 A) .....  
.....(p. 76)... **M. woodi** sp. n.

### **Mediolata brevisetis** Wood

Fig. 121–124, Plate 7 A

*Mediolata brevisetis* Wood, 1967: 121; Wood, 1971b: 58.

**Diagnosis. Female.** Palpfemur with 2 setae; dorsal shields reticulated, each cell with 5–10 vacuoles; setae *sce* situated on prodorsal shield;  $vi:vi-vi = 1.3$ ;  $ve:sci = 0.8$ ;  $ve:ve-sci = 0.8$ ;  $e_2:e_1 = 0.9$ ;  $c_i:c_i-c_i = 0.4$ ;  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 1.6:1.2:1.0:1.6$ ;  $1a:3a:4a = 1.6:1.8:1.0$ ; coxa IV with 2 setae; trochanter IV without seta; femur I with 5 setae; femur III with 2 setae; genua I–II with 3 + 1 $\kappa$ , 1.

**Male.** As in female but:  $vi:vi-vi = 0.9$ ;  $ve:sci = 0.9$ ;  $ve:ve-sci = 1.0$ ;  $c_i:c_i-c_i = 0.5$ ;  $e_2:e_1 = 1.2$ ;  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 1.8:1.4:1.0:1.8$ .

**Description. Female** (Fig. 121–122, Plate 7 A, n = 5)

**Gnathosoma.** Chelicerae slender, 72 (69–78), movable digits about 1/2 length of chelicerae, 37 (37–41). Palp 91 (85–94); palpfemur with 2 setae. Subcapitular setae  $m = 25$  (20–25),  $m-m = 25$  (20–26).

**Idiosoma.** Oval, 282 (277–288) long, 201 (185–210) wide. Dorsal shields reticulated, each cell with 5–10 vacuoles; dorsal idiosomal setae weakly serrate. Suture behind prodorsal shield a narrow band of striae; setae *sce* situated on prodorsal shield; eyes 10 (10–11) in diameter; *pob* 20 (20–29) in diameter; ratios  $vi:vi-vi = 1.3$ ;  $ve:sci = 0.9$ ;  $ve:ve-sci = 0.8$ ; lengths:  $vi$  26 (24–28),  $ve$  28 (26–29),  $sci$  30 (20–30),  $sce$  38 (38–43); distances:  $vi-vi$  20 (20–25),  $vi-ve$  36 (30–38),  $ve-sci$  36 (36–43),  $sci-sce$  36 (36–40). Sutures behind shields CD and E simple; ratios  $c_i:c_i-c_i = 0.4$ ,  $e_2:e_1 = 0.9$ ,  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 1.6:1.2:1.0:1.6$ ; lengths:  $c_i$  27 (20–27),  $d_1$  24 (20–24),  $d_2$  28 (26–29),  $e_1$  35 (32–41),  $e_2$  33 (33–36),  $f_1$  45 (39–51); distances:  $c_i-c_i$  62 (61–65),  $c_i-d_1$  50 (50–58),  $d_1-d_1$  46 (46–53),  $d_1-d_2$  50 (42–50),  $d_1-e_1$  61 (61–65),  $e_1-e_1$  38 (38–43),  $e_1-e_2$  39 (36–39),  $e_1-f_1$  30 (30–32),  $f_1-f_1$  61 (61–66). Suranal setae  $h_1$  34 (34–40),  $h_2$  34 (34–39). Ventral setae  $1a:3a:4a = 1.6:1.8:1.0$ ; lengths:  $1a$  60 (37–60),  $3a$  65 (50–65) and  $4a$  37 (31–37). Aggenital area with 3 pairs of setae, each on a platelet,  $ag_1$  25 (20–25),  $ag_2$  30 (26–30),  $ag_3$  34 (31–34); genital setae slightly longer than pseudanal setae, 35 (27–36); pseudanal setae  $ps_3$  30 (27–30),  $ps_2$  30 (28–30),  $ps_1$  30 (26–30).

**Legs.** Length: leg I 171 (171–180), leg II 149 (149–155), leg III 152 (146–152), leg IV 153 (145–153). Setae *dFI* (21) and *dGI* (21) weakly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 2, 1; genua 3 + 1 $\kappa$ , 1, 1, 1; tibiae 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 11 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  10 (9–10), II $\omega$  10 (9–10), III $\omega$  7 (5–7), IV $\omega$  6 (5–6).

**Larva** (Fig. 123–124, n = 1)

**Gnathosoma.** Chelicerae slender, 45, movable digits 27. Palp 45; palpfemur with 1 seta.

**Idiosoma.** Oval, 155 long, 121 wide. Dorsal shields faintly reticulated; dorsal idiosomal setae weakly serrate. Suture behind prodorsal shield a narrow band of striae; setae *sce* situated on prodorsal shield; eyes 10 in diameter; *pob* 12 in diameter; ratios  $vi:vi-vi = 1.3$ ;  $ve:ve-sci = 1.0$ ; lengths:  $vi$  21,  $ve$  22,  $sci$  20,  $sce$  36; distances:  $vi-vi$  16,  $vi-ve$  25,  $ve-sci$  22,  $sci-sce$  24. Sutures behind shields CD and E simple; ratios  $c_i:c_i-c_i = 0.6$ ,  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 2.0:1.4:1.0:1.8$ ; lengths:  $c_i$  20,  $d_1$  22,  $d_2$  22,  $e_1$  27,  $e_2$  28,  $f_1$  31; distances:  $c_i-c_i$  36,  $c_i-d_1$  36,  $d_1-d_1$  25,  $d_1-d_2$  32,  $d_1-e_1$  34,  $e_1-e_1$  18,  $e_1-e_2$  25,  $e_1-f_1$  14,  $f_1-f_1$  33. Suranal setae  $h_1$  21,  $h_2$  absent. Ventral setae  $1a:3a = 1.0:1.1$ ,  $4a$  absent; lengths:  $1a$  20,  $3a$  22. Aggenital area with 1 pair of setae, each on a platelet,  $ag_1$  58; pseudanal setae not observed.

**Legs.** Length: leg I 99, leg II 89, leg III 90. Setae *dFI* and *dGI* weakly serrate. Counts of setae and solenidia on legs I–III: coxae 1 + 1*elcp*, 0, 0; trochanters 0, 0, 0; femora 4, 3, 2; genua 2 + 1 $\kappa$ , 0, 0; tibiae 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 11 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  4, II $\omega$  4, III $\omega$  3.

**Distribution** (Map p. 380). New Zealand (Wood 1967, 1971b).

– / NN.

**Material examined.** Holotype and 10 non-type specimens. **Holotype** female: NEW ZEALAND: NN: Whangamoa Saddle, 500 m, 21 Mar 1965, E. Collyer, *Coprosma australis*, NZAC: 1/1 female. **Other material:** NN: Cobb Lake, 12 Dec 1965, E. Collyer, *Dracophyllum filifolium* 1/1 female [+ *Eryngiopus arboreus* 1 female, 1 deutonymph female]. Pohara, coast by sea, 18 Aug 1966, E. Collyer, *Griselinia lucida*, 1/6 females, 2 larvae. Abel Tasman N.P., Canaan, 25 Sep 1966, E. Collyer, *Dracophyllum* sp., 1/1 female [+ *Eryngiopus arboreus* 1 female; *Primagistemus loadmani* 1 female, 2 deutonymph females].

**Habitat.** Apple, *Carmichaelia* sp., *Coprosma australis*, *Dracophyllum filifolium*, *Dracophyllum* sp., *Griselinia lucida*, *Nothofagus fusca*, *Nothofagus menziesii*.

**Remarks.** The originally described allotype collected from bark of *Eucalyptus* sp. is not *Mediolata brevisetis* but a new species, *Mediolata xerxes*.

**Mediolata delicata sp. n.**

Fig. 125–128

**Diagnosis. Female.** Palpfemur with 1 seta; dorsal shields without reticulations but with scattered vacuoles; setae *sce* situated on minute platelets; *vi*:  $vi-vi = 0.7$ ; *ve*: *sci* = 1.0; *ve*: *ve-sci* = 0.5;  $c_1$ :  $c_1-c_1 = 0.3$ ;  $e_2$ :  $e_1 = 1.3$ ;  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.5$ : 1.4: 1.0: 1.2; *la*: *3a*: *4a* = 2.7: 2.7: 1.0; coxa IV with 1 seta; trochanter IV without seta; femur I with 4 setae; femur III with 2 setae; genua I–II with 1 + 1 $\kappa$ , 1.

**Male.** As in female but: setae *sce* situated on prodorsal shield; *vi*:  $vi-vi = 0.6$ ; *ve*: *sci* = 1.0; *ve*: *ve-sci* = 0.5;  $e_2$ :  $e_1 = 1.3$ ;  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.3$ : 1.0: 1.1: 1.3; *la*: *3a*: *4a* = 2.2: 2.1: 1.0.

**Description. Female** (Fig. 125–126, n = 2)

**Gnathosoma.** Chelicerae slender, 64 (64–65), movable digits less than 1/2 length of chelicerae, 28 (27–28). Palp 75 (75–78); palpfemur with 1 seta. Subcapitular setae *m* = 20 (20–21), *m-m* = 23 (23–27).

**Idiosoma.** Oval, 265 (246–265) long, 171 (151–171) wide. Dorsal shields with scattered vacuoles, without reticulations; dorsal idiosomal setae weakly serrate. Suture behind prodorsal shield a broad band of striae; setae *sce* situated on minute platelets; eyes 10 (10–11) in diameter; *pob* 15 (15–16) in diameter; ratios *vi*:  $vi-vi = 0.7$ ; *ve*: *sci* = 1.0; *ve*: *ve-sci* = 0.5; lengths: *vi* 14 (14–16), *ve* 16 (16–18), *sci* 17 (17–18), *sce* 18 (18–20); distances: *vi-vi* 19 (19–22), *vi-ve* 26 (26–28), *ve-sci* 30, *sci-sce* 30 (26–30). Suture behind shield CD a narrow band of striae, behind shield E absent; ratios  $c_1$ :  $c_1-c_1 = 0.3$ ,  $e_2$ :  $e_1 = 1.3$ ,  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.5$ : 1.4: 1.0: 1.2; lengths:  $c_1$  15 (15–16),  $d_1$  17,  $d_2$  17 (17–18),  $e_1$  16 (15–16),  $e_2$  20 (20–21),  $f_1$  31 (30–31); distances:  $c_1-c_1$  46 (46–49),  $c_1-d_1$  46 (46–51),  $d_1-d_1$  42 (42–45),  $d_1-d_2$  31 (30–31),  $d_1-e_1$  52 (45–52),  $e_1-e_1$  30,  $e_1-e_2$  41 (28–41),  $e_1-f_1$  14 (14–24),  $f_1-f_1$  36. Suranal setae  $h_1$  28,  $h_2$  27. Ventral setae *la*: *3a*: *4a* = 2.7: 2.7: 1.0; lengths: *la* 30 (30–40), *3a* 30 (30–41) and *4a* 11 (11–18). Aggenital area with 3 pairs of setae, each on a platelet, *ag*<sub>1</sub> 15 (15–18), *ag*<sub>2</sub> 16 (16–19), *ag*<sub>3</sub> 25 (24–25); genital setae slightly shorter than pseudanal setae, 20; pseudanal setae *ps*<sub>1</sub> 23 (23–25), *ps*<sub>2</sub> 28 (25–28), *ps*<sub>3</sub> 32. **Legs.** Length: leg I 142 (142–147), leg II 134 (134–136), leg III 134 (132–134), leg IV 135 (134–135). Setae *dFI* (20) and *dGI* (17) weakly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 1; trochanters 1, 1, 1, 0; femora 4, 4, 2, 1; genua 1 + 1 $\kappa$ , 1, 1, 1; tibiae 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 11 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  9 (9–10), II $\omega$  7, III $\omega$  5 (5–6), IV $\omega$  5.

**Male** (Fig. 127–128, n = 2)

**Gnathosoma.** Chelicerae slender, 57 (55–57), movable digits less than 1/2 length of chelicerae, 24 (23–24). Palp 69 (67–69); palpfemur with 1 seta. Subcapitular setae *m* = 20 (19–20), *m-m* = 25 (24–25).

**Idiosoma.** Oval, 221 (202–221) long, 143 (132–143) wide. Dorsal shields as in female; dorsal idiosomal setae weakly serrate. Suture behind prodorsal shield present but not striated; setae *sce* situated on prodorsal shield; eyes 10 in diameter; *pob* 12 in diameter; ratios *vi*:  $vi-vi = 0.6$ ; *ve*: *sci* = 1.0; *ve*: *ve-sci* = 0.5; lengths: *vi* 13 (12–13), *ve* 15, *sci* 14 (14–15), *sce* 17; distances: *vi-vi* 23 (22–23), *vi-ve* 18 (17–18), *ve-sci* 30 (29–30), *sci-sce* 26 (25–26). Suture behind shield CD present, a simple line, behind shield E absent; ratios  $c_1$ :  $c_1-c_1 = 0.3$ ,  $e_2$ :  $e_1 = 1.3$ ,  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.3$ : 1.0: 1.1: 1.3; lengths:  $c_1$  13 (12–13),  $d_1$  14,  $d_2$  17 (15–17),  $e_1$  13 (12–13),  $e_2$  17 (15–17),  $f_1$  30 (28–30); distances:  $c_1-c_1$  45 (45–49),  $c_1-d_1$  40 (39–40),  $d_1-d_1$  36 (36–38),  $d_1-d_2$  23,  $d_1-e_1$  38 (37–38),  $e_1-e_1$  38 (38–40),  $e_1-e_2$  15,  $e_1-f_1$  18 (17–18),  $f_1-f_1$  46 (38–46). Suranal setae  $h_1$  21 (18–21),  $h_2$  25. Ventral setae *la*: *3a*: *4a* = 2.2: 2.1: 1.0; lengths: *la* 37, *3a* 36 (36–37) and *4a* 17. Aggenital area with 2 pairs of setae on a small shield, *ag*<sub>1</sub> 23 (20–23), *ag*<sub>2</sub> 20; pseudanal setae *ps*<sub>1</sub> 10 (9–10), *ps*<sub>2</sub> 9 (8–9), *ps*<sub>3</sub> 5.

**Legs.** Length: leg I 136 (129–136), leg II 125 (118–125), leg III 122 (112–122), leg IV 125 (112–125). Setae *dFI* (16) and *dGI* (14 (13–14)) weakly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 1; trochanters 1, 1, 1, 0; femora 4, 4, 2, 1; genua 1 + 1 $\kappa$ , 1, 1, 1; tibiae 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 11 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  11 (10–11), I $\omega_2$  10 (9–10), II $\omega_1$  9 (8–9), II $\omega_2$  9 (8–9), III $\omega$  14 (13–14), IV $\omega$  13.

**Distribution** (Map p. 380). New Zealand (this paper).  
– / MC.

**Material examined.** Holotype and 6 paratypes. **Holotype** female: NEW ZEALAND: MC: Banks Peninsula, road to Akaroa, 13 May 1967, E. Collyer, *Carmichaelia* sp., NZAC: 1/ female, marked as holotype on slide, [+ 4 paratype females, 1 allotype male, 1 paratype male, 1 Tydeidae]. **Paratypes:** on same slide with holotype: NZAC: 4 females, 1 allotype male, 1 male.

**Habitat.** *Carmichaelia* sp.

**Etymology.** The species name is derived from the Latin word *delicate*, referring to the ornamental pattern of dorsal shields.

**Remarks.** Females of *M. delicata* sp. n. can be readily separated from those of other species by the presence of 1 seta on the palpfemur. This new species resembles *M. acus* Summers 1960a in having setae *sce* on minute platelets but can be distinguished from the latter by having 1 + 1 $\kappa$  on genua I and 11 + 1 $\omega$ , 9 + 1,  $\omega_7$  + 1 $\omega$ , 7 + 1 $\omega$  on tarsi I–IV.

**Mediolata favulosa Wood**

Fig. 129–130, Plate 7 B

*Mediolata favulosa* Wood, 1967: 122; Wood, 1971b: 59.

**Diagnosis. Female.** Palpfemur with 2 setae; dorsal shields well reticulated, each cell with 6–17 vacuoles; setae *sce* situated on prodorsal shield; *vi*:  $vi-vi = 2.2$ ; *ve*: *sci* = 1.3; *ve*: *ve-sci* = 1.2;  $c_i: c_i-c_i = 0.8$ ;  $e_2: e_1 = 0.9$ ;  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.4: 1.2: 1.0: 2.0$ ; *1a*: *3a*: *4a* = 1.0: 1.5: 1.3; coxa IV with 2 setae; trochanter IV with 1 seta; femur I with 5 setae; femur III with 3 setae; genua I–II with 3 + 1κ, 3.

**Description. Female** (Fig. 129–130, Plate 7 B, n = 2)

**Gnathosoma.** Chelicerae slender, 66 (66–70), movable digits longer than 1/2 length of chelicerae, 38 (37–38). Palp 100 (89–100); palpfemur with 2 setae. Subcapitular setae *m* = 22 (22–24), *m-m* = 23 (22–23).

**Idiosoma.** Oval, 303 (303–330) long, 231 (212–231) wide. Dorsal shields well reticulated, each cell with 6–17 vacuoles; dorsal idiosomal setae strongly serrate. Suture behind prodorsal shield a band of striae; setae *sce* situated on prodorsal shield; eyes 12 (12–13) in diameter; *pob* 9 (9–10) in diameter; ratios *vi*:  $vi-vi = 2.2$ ; *ve*: *sci* = 1.3; *ve*: *ve-sci* = 1.2; lengths: *vi* 31, *ve* 50, *sci* 38 (38–39), *sce* 42 (40–42); distances: *vi-vi* 14 (14–15), *vi-ve* 29 (29–31), *ve-sci* 42 (42–46), *sci-sce* 45. Suture behind shield CD present but not striated, behind E present; ratios  $c_i: c_i-c_i = 0.8$ ,  $e_2: e_1 = 0.9$ ,  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.4: 1.2: 1.0: 2.0$ ; lengths:  $c_i$  31 (31–32),  $d_i$  51 (49–51),  $d_2$  36 (36–38),  $e_1$  55,  $e_2$  50 (46–50),  $f_1$  55 (54–55); distances:  $c_i-c_i$  39 (39–42),  $c_i-d_i$  62 (62–63),  $d_i-d_i$  33 (33–35),  $d_i-d_2$  50 (50–52),  $d_i-e_1$  59 (59–64),  $e_i-e_1$  28 (28–30),  $e_i-e_2$  39 (39–48),  $e_i-f_i$  39 (39–63),  $f_i-f_i$  56 (56–60). Suranal setae  $h_1$  46 (45–46),  $h_2$  40 (39–40). Ventral setae *1a*: *3a*: *4a* = 1.0: 1.5: 1.3; lengths: *1a* 36 (36–42), *3a* 53 (52–53) and *4a* 47 (42–47). Aggenital area with 3 pairs of setae, each on a platelet,  $ag_1$  25,  $ag_2$  22 (22–24),  $ag_3$  30 (30–31); genital setae subequal to pseudanal setae, 39 (39–41); pseudanal setae  $ps_3$  38 (33–38),  $ps_2$  33 (33–34),  $ps_1$  42 (42–43).

**Legs.** Length: leg I 168 (156–168), leg II 145 (142–145), leg III 147 (143–147), leg IV 154 (144–154). Setae *dFI* (21) and *dGI* (23) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 3, 1; genua 3 + 1κ, 3, 1, 1; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 11 + 1ω, 9 + 1ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: Iω 16 (16–17), IIω 15, IIIω 6 (6–8), IVω 6.

**Distribution** (Map p. 380). New Zealand (Wood 1967, 1971b).

- / NN.

**Material examined.** Holotype and 2 non-type specimens. **Holotype** female: NEW ZEALAND: NN: Tadmor,

15 Sep 1965, coll.??, bark of unsprayed apple trees, NZAC: 1/1 female. **Other material:** NN: Awanui Inlet, 20 Aug 1966, E. Collyer, *Dacrycarpus dacrydioides*, 1/2 females [+ *Eryngiopus arboreus* 1 damaged male].

**Habitat.** Bark of unsprayed apple trees, *Dacrydium bidwilli*, *Dacrycarpus dacrydioides*, *Nothofagus fusca*, *Nothofagus menziesii*, *Olearia colensoi*, *Podocarpus dacrydioides*.

**Mediolata mollis Wood**

Fig. 131–132

*Mediolata mollis* Wood, 1971b: 55.

**Diagnosis. Female.** Palpfemur with 2 setae; dorsal shields faintly reticulated, each cell with 10–20 vacuoles; setae *sce* situated on prodorsal shield; *vi*:  $vi-vi = 1.1$ ; *ve*: *sci* = 1.1; *ve*: *ve-sci* = 0.5;  $c_i: c_i-c_i = 0.4$ ;  $e_2: e_1 = 1.1$ ;  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.3: 1.1: 1.0: 1.4$ ; *1a*: *3a*: *4a* = 1.3: 1.9: 1.0; coxa IV with 2 seta; trochanter IV with 1 seta; femur I with 5 setae; femur III with 3 setae; genua I–II with 3 + 1κ, 3.

**Description. Female** (Fig. 131–132, n = 1)

**Gnathosoma.** Chelicerae slender, 79, movable digits longer than 1/2 length of chelicerae, 42. Palp 108; palpfemur with 2 setae. Subcapitular setae *m* = 24, *m-m* = 24.

**Idiosoma.** Oval, 303 long, 226 wide. Dorsal shields faintly reticulated, each cell with 10–20 vacuoles; dorsal idiosomal setae weakly serrate. Suture behind prodorsal shield a narrow band of striae; setae *sce* situated on prodorsal shield; eyes 13 in diameter; *pob* 22 in diameter; ratios *vi*:  $vi-vi = 1.1$ ; *ve*: *sci* = 1.1; *ve*: *ve-sci* = 0.5; lengths: *vi* 26, *ve* 24, *sci* 22, *sce* 20 (or 33 on the other side); distances: *vi-vi* 24, *vi-ve* 33, *ve-sci* 45, *sci-sce* 37. Sutures behind shields CD and E simple; ratios  $c_i: c_i-c_i = 0.4$ ,  $e_2: e_1 = 1.1$ ,  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.3: 1.1: 1.0: 1.4$ ; lengths:  $c_i$  21,  $d_1$  21,  $d_2$  20,  $e_1$  35,  $e_2$  37,  $f_1$  40; distances:  $c_i-c_i$  56,  $c_i-d_i$  65,  $d_i-d_1$  45,  $d_i-d_2$  45,  $d_i-e_1$  65,  $e_i-e_1$  42,  $e_i-e_2$  40,  $e_i-f_i$  37,  $f_i-f_i$  60. Suranal setae  $h_1$  40,  $h_2$  36. Ventral setae *1a*: *3a*: *4a* = 1.3: 1.9: 1.0; lengths: *1a* 47, *3a* 65 and *4a* 35. Aggenital area with 3 pairs of setae, each on a platelet,  $ag_1$  30,  $ag_2$  20,  $ag_3$  29; genital setae subequal to pseudanal setae, 37; pseudanal setae  $ps_3$  32,  $ps_2$  30,  $ps_1$  40.

**Legs.** Length: leg I 193, leg II 162, leg III 164, leg IV 169. Setae *dFI* and *dGI* weakly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 3, 1; genua 3 + 1κ, 3, 1, 1; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 11 + 1ω, 9 + 1ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: Iω 18, IIω 14, IIIω 9, IVω 6.

**Distribution** (Map p. 380). New Zealand (Wood 1971b).

- / NN.

**Material examined.** Holotype and 2 paratypes. **Holotype** female: NEW ZEALAND: NN: Cobb Lake, 19 Jan 1967, E. Collyer, *Dracophyllum* sp., NZAC: 1/1 female (ringed on slide); [+ paratype 1 female, 1 deutonymph female, *Eryngiopus arboreus* 2 females, 1 male, *Pseudostigmaeus collyerae* 1 male, 1 deutonymph female]. **Paratypes:** on same slide with holotype: NZAC: 1 female, 1 deutonymph female.

**Habitat.** *Dracophyllum* sp.

### *Mediolata oleariae* Wood

Fig. 133–136, Plate 7 C

*Mediolata oleariae* Wood, 1971b: 57.

**Diagnosis. Female.** Palpfemur with 2 setae; dorsal shields well reticulated, with vacuoles along margins; setae *sce* situated on prodorsal shield;  $vi: vi-vi = 1.6$ ;  $ve: sci = 1.1$ ;  $ve: ve-sci = 0.7$ ;  $c_1: c_1-c_1 = 0.5$ ;  $e_2: e_1 = 1.0$ ;  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.7: 1.3: 1.0: 1.8$ ;  $1a: 3a: 4a = 1.2: 1.4: 1.0$ ; coxa IV with 2 setae; trochanter IV without seta; femur I with 5 setae; femur III with 3 setae; genua I–II with 3 + 1κ, 3.

**Male.** As in female but:  $vi: vi-vi = 0.9$ ;  $ve: sci = 1.0$ ;  $ve: ve-sci = 0.9$ ;  $c_1: c_1-c_1 = 0.7$ ;  $e_2: e_1 = 1.1$ ;  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 2.0: 1.8: 1.0: 2.0$ ;  $1a: 3a: 4a = 1.2: 1.1: 1.0$ .

**Description. Female** (Fig. 133–134, Plate 7 C, n = 1)

**Gnathosoma.** Chelicerae slender, 80, movable digits about 1/2 length of chelicerae, 41. Palp 104; palpfemur with 2 setae. Subcapitular setae  $m = 23$ ,  $m-m = 25$ .

**Idiosoma.** Oval, 366 long, 253 wide. Dorsal shields well reticulated, with vacuoles within cells; dorsal idiosomal setae clearly serrate. Suture behind prodorsal shield not observed in remounted holotype slide; setae *sce* situated on prodorsal shield; eyes 17 in diameter; *pob?*; ratios  $vi: vi-vi = 1.6$ ;  $ve: sci = 1.1$ ;  $ve: ve-sci = 0.7$ ; lengths:  $vi$  35,  $ve$  38,  $sci$  36,  $sce$  42; distances:  $vi-vi$  22,  $vi-ve$  36,  $ve-sci$  56,  $sci-sce$  49. Sutures behind shields CD and E not observed; ratios  $c_1: c_1-c_1 = 0.5$ ,  $e_2: e_1 = 1.0$ ,  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.7: 1.3: 1.0: 1.8$ ; lengths:  $c_1$  34,  $d_1$  33,  $d_2$  36,  $e_1$  46,  $e_2$  46,  $f_1$  51; distances:  $c_1-c_1$  69,  $c_1-d_1$  74,  $d_1-d_1$  55,  $d_1-d_2$  60,  $d_1-e_1$  85,  $e_1-e_1$  41,  $e_1-e_2$  50,  $e_1-f_1$  46,  $f_1-f_1$  74. Suranal setae  $h_1$  46,  $h_2$  45. Ventral setae  $1a: 3a: 4a = 1.2: 1.4: 1.0$ ; lengths:  $1a$  56,  $3a$  65, and  $4a$  47. Aggenital area with 3 pairs of setae, each on a platelet,  $ag_1$  36,  $ag_2$  35,  $ag_3$  46; genital setae slightly longer than pseudanal setae, 45; pseudanal setae  $ps_3$  39,  $ps_2$  39,  $ps_1$  39.

**Legs.** Length: leg I 223, leg II 198, leg III 181, leg IV 180. Setae *dFI* (28) and *dGI* (25) clearly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1κ, 3, 1,

1; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 11 + 1ω, 9 + 1ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: Iω 17, IIω 15, IIIω 9, IVω 7.

**Male** (Fig. 135–136, n = 1)

**Gnathosoma.** Chelicerae slender, 70, movable digits about 1/2 length of chelicerae, 36. Palp 84; palpfemur with 2 setae. Subcapitular setae  $m = 19$ ,  $m-m = 20$ .

**Idiosoma.** Oval, 274 long, 188 wide. Dorsal shields as in female; dorsal idiosomal setae clearly serrate. Suture behind prodorsal shield a simple line; setae *sce* situated on prodorsal shield; eyes 12 in diameter; ratios  $vi: vi-vi = 0.9$ ;  $ve: sci = 1.0$ ;  $ve: ve-sci = 0.9$ ; lengths:  $vi$  33,  $ve$  34,  $sci$  33,  $sce$  43; distances:  $vi-vi$  36,  $vi-ve$  36,  $ve-sci$  38,  $sci-sce$  36. Suture behind shield CD a simple line; ratios  $c_1: c_1-c_1 = 0.7$ ,  $e_2: e_1 = 1.1$ ,  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 2.0: 1.8: 1.0: 2.0$ ; lengths:  $c_1$  31,  $d_1$  32,  $d_2$  36,  $e_1$  38,  $e_2$  41,  $f_1$  46; distances:  $c_1-c_1$  48,  $c_1-d_1$  55,  $d_1-d_1$  43,  $d_1-d_2$  42,  $d_1-e_1$  55,  $e_1-e_1$  24,  $e_1-e_2$  36,  $e_1-f_1$  29,  $f_1-f_1$  49. Suranal setae  $h_1$  26,  $h_2$  29. Ventral setae  $1a: 3a: 4a = 1.2: 1.1: 1.0$ ; lengths:  $1a$  35,  $3a$  33 and  $4a$  30. Aggenital area with 2 pairs of setae on a small shield,  $ag_1$  30,  $ag_2$  32; pseudanal setae  $ps_3$  13,  $ps_2$  9,  $ps_1$  7.

**Legs.** Length: leg I 175, leg II 160, leg III 166, leg IV 160. Setae *dFI* (24) and *dGI* (24) clearly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1κ, 3, 1, 1; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 11 + 2ω, 9 + 2ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: Iω<sub>1</sub> 14, Iω<sub>2</sub> 10, IIω<sub>1</sub> 13, IIω<sub>2</sub> 11, IIIω 14, IVω 14.

**Distribution** (Map p. 380). New Zealand (Wood 1971b). –/SI.

**Material examined.** Holotype and 1 paratype. **Holotype** female: NEW ZEALAND: SI: Stewart Island: Thomson Ridge, 23 Feb 1967, J. C. McIlroy, *Olearia colensoi*, NZAC: 1/1 female. **Paratype:** same collection data as holotype slide, NZAC: 1/1 allotype male.

**Habitat.** *Olearia colensoi*, *Podocarpus ferrugineus*.

### *Mediolata polyocularis* sp. n.

Fig. 137–138, Plate 7 D

**Diagnosis. Female.** Palpfemur with 2 setae; dorsal shields well reticulated, without obvious vacuoles within cells; setae *sce* situated on prodorsal shield;  $vi: vi-vi = 3.3$ ;  $ve: sci = 1.0$ ;  $ve: ve-sci = 1.4$ ;  $c_1: c_1-c_1 = 1.4$ ;  $e_2: e_1 = 1.3$ ;  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.0: 1.1: 1.0: 1.7$ ;  $1a: 3a: 4a = 1.1: 1.1: 1.0$ ; coxa IV with 2 setae; trochanter IV without seta; femur I with 5 setae; femur III with 3 setae; genua I–II with 3 + 1κ, 3.



**Description. Female** (Fig. 137–138, Plate 7 D, n = 1) **Gnathosoma**. Chelicerae slender, 108 (108–119), movable digits about 1/2 length of chelicerae, 55 (55–59). Palp 130 (124–130); palpfemur with 2 setae. Subcapitular setae  $m = 45$  (41–45),  $m-m = 33$  (33–39).

**Idiosoma**. Oval, 366 (366–391) long, 313 (313–318) wide. Dorsal shields well reticulated, without obvious vacuoles; dorsal idiosomal setae strongly serrate. Suture behind prodorsal shield a simple line; setae *sce* situated on prodorsal shield; eyes 13 (13–15) in diameter; *pob* 36 (27–36) in diameter; ratios  $vi:vi-vi = 3.3$ ;  $ve:sci = 1.0$ ;  $ve:ve-sci = 1.4$ ; lengths:  $vi$  62 (62–67),  $ve$  72 (70–72),  $sci$  71 (71–75),  $sce$  67 (67–74); distances:  $vi-vi$  19 (19–25),  $vi-ve$  28 (28–35),  $ve-sci$  50 (50–51),  $sci-sce$  62 (62–63). Suture behind shield CD simple, behind E absent; ratios  $c_i:c_i-c_i = 1.4$ ,  $e_2:e_1 = 1.3$ ,  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 1.0:1.1:1.0:1.7$ ; lengths:  $c_i$  57 (55–57),  $d_i$  65 (65–67),  $d_2$  70 (68–70),  $e_1$  71 (71–75),  $e_2$  89 (87–89),  $f_i$  70 (71–71); distances:  $c_i-c_i$  40 (36–40),  $c_i-d_i$  73 (71–73),  $d_i-d_i$  41 (36–41),  $d_i-d_2$  70 (70–77),  $d_i-e_1$  77 (77–85),  $e_i-e_1$  39 (39–40),  $e_i-e_2$  50 (50–60),  $e_i-f_i$  55 (46–55),  $f_i-f_i$  68 (66–68). Suranal setae  $h_1$  59 (59–62),  $h_2$  55 (55–58). Ventral setae  $1a:3a:4a = 1.1:1.1:1.0$ ; lengths:  $1a$  91 (88–91),  $3a$  93 (90–93) and  $4a$  86 (86–89). Aggenital area with 3 pairs of setae, each on a platelet,  $ag_1$  40 (38–40),  $ag_2$  38 (38–39),  $ag_3$  38 (37–38); genital setae obviously longer than pseudanal setae, 53 (53–55); pseudanal setae  $ps_3$  45 (43–45),  $ps_2$  40 (39–40),  $ps_1$  41 (41–43).

**Legs**. Length: leg I 262 (256–262), leg II 231 (226–231), leg III 228 (228–232), leg IV 239 (234–239). Setae *dFI* and *dGI* strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1*κ*, 3, 1, 1; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 11 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 7 + 1*ω*. Lengths of solenidia: I*ω* 27 (26–27), II*ω* 26 (24–26), III*ω* 13 (13–15), IV*ω* 8 (7–8).

**Distribution** (Map p. 380). New Zealand (this paper). TK, WI / –.

**Material examined**. Holotype and 1 paratype. **Holotype** female: NEW ZEALAND: WI: Palmerston North, Massey University, 26 Sep 1964, P. G. Fenemore, ground foliage, NZAC: 1/ female. **Paratype**: TK: New Plymouth, Pukekura Park, 28 Dec 1964, E. Collyer, *Knightia excelsa*, 1/1 female.

**Habitat**. *Dracophyllum* sp., ground foliage.

**Etymology**. The species name is a combination of the Latin words *poly* and *loculus*, referring to the ornamental pattern of dorsal shield.

**Remarks**. Female of *M. polylocularis* sp. n. is similar to that of *M. simplex* Wood in having simple reticulations

(without vacuoles within cells), but can be separated by having  $c_i-c_i$  subequal to  $e_i-e_i$ , ratios  $vi:vi-vi = 3.3$ ,  $ve:ve-sci = 1.4$  and  $c_i:c_i-c_i = 1.4$ .

### **Mediolata robusta** González-Rodríguez

Fig. 139–142, Plate 8 A

*Mediolata robusta* González-Rodríguez, 1965: 15; Wood, 1971b: 59.

**Diagnosis. Female**. Palpfemur with 2 setae; dorsal shields well reticulated, with vacuoles; setae *sce* situated on prodorsal shield;  $vi:vi-vi = 3.1$ ;  $ve:sci = 1.3$ ;  $ve:ve-sci = 2.0$ ;  $c_i:c_i-c_i = 2.1$ ;  $e_2:e_1 = 1.3$ ;  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 1.0:1.1:1.1:1.6$ ;  $1a:3a:4a = 1.4:1.3:1.0$ ; coxa IV with 2 setae; trochanter IV without seta; femur I with 5 setae; femur III with 3 setae; genua I–II with 3 + 1*κ*, 3.

**Male**. As in female but:  $vi:vi-vi = 2.7$ ;  $ve:sci = 1.3$ ;  $ve:ve-sci = 3.1$ ;  $c_i:c_i-c_i = 2.7$ ;  $e_2:e_1 = 1.9$ ;  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 1.0:1.0:1.0:1.4$ ;  $1a:3a:4a = 1.1:1.1:1.0$ .

**Description. Female** (Fig. 139 A–G, 140, Plate 8 A, n = 3)

**Gnathosoma**. Chelicerae slender, 115 (93–115), movable digits about 1/2 length of chelicerae, 53 (48–53). Palp 125 (120–125); palpfemur with 2 setae. Subcapitular setae  $m = 40$  (39–58),  $m-m = 30$ .

**Idiosoma**. Oval, 349 (349–397) long, 267 (238–267) wide. Dorsal shields well reticulated, with vacuoles within cells; dorsal idiosomal setae strongly serrate. Suture behind prodorsal shield present, not striated; setae *sce* situated on prodorsal shield; eyes 13 in diameter; *pob* 20 (20–23) in diameter; ratios  $vi:vi-vi = 3.1$ ;  $ve:sci = 1.3$ ;  $ve:ve-sci = 2.0$ ; lengths:  $vi$  64 (60–64),  $ve$  96 (93–96),  $sci$  75 (75–79),  $sce$  57 (57–79); distances:  $vi-vi$  21 (21–22),  $vi-ve$  36 (36–38),  $ve-sci$  48 (40–48),  $sci-sce$  55 (50–55). Sutures behind shields CD and E simple; ratios  $c_i:c_i-c_i = 2.1$ ,  $e_2:e_1 = 1.3$ ,  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 1.0:1.1:1.1:1.6$ ; lengths:  $c_i$  73 (67–73),  $d_i$  81 (73–81),  $d_2$  79 (78–79),  $e_1$  81 (79–91),  $e_2$  101 (98–101),  $f_i$  81 (79–81); distances:  $c_i-c_i$  35 (35–36),  $c_i-d_i$  69 (64–69),  $d_i-d_i$  41 (34–41),  $d_i-d_2$  67 (64–67),  $d_i-e_1$  84 (70–84),  $e_i-e_1$  41 (30–41),  $e_i-e_2$  48 (42–48),  $e_i-f_i$  55 (54–57),  $f_i-f_i$  56 (50–56). Suranal setae  $h_1$  62 (60–62),  $h_2$  50 (49–52). Ventral setae  $1a:3a:4a = 1.4:1.3:1.0$ ; lengths:  $1a$  65 (65–79),  $3a$  60 (60–78) and  $4a$  45 (45–70). Aggenital area with 3 pairs of setae, each on a platelet,  $ag_1$  28 (28–32),  $ag_2$  30,  $ag_3$  36 (34–36); genital setae slightly longer than pseudanal setae, 49 (49–54); pseudanal setae  $ps_3$  40 (40–41),  $ps_2$  41 (40–41),  $ps_1$  48 (48–50).

**Legs**. Length: leg I 253 (228–253), leg II 228 (212–228), leg III 229 (213–229), leg IV 250 (217–250). Setae *dFI* (34 (30–34)) and *dGI* (35 (30–35)) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 +

*1elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1 $\kappa$ , 3, 1, 1; tibiae 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 11 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  23, II $\omega$  23 (19–23), III $\omega$  14 (10–14), IV $\omega$  7 (6–7).

**Male** (Fig. 141–142, n = 2)

**Gnathosoma.** Chelicerae slender, 86 (85–87), movable digits 1/2 length of chelicerae, 43 (43–45). Palp 113 (113–115); palpfemur with 2 setae. Subcapitular setae  $m = 34$ ,  $m-m = 26$ .

**Idiosoma.** Oval, 298 (298–303) long, 190 (190–199) wide. Dorsal shields as in female; dorsal idiosomal setae strongly serrate. Suture behind prodorsal shield a simple line; setae *sce* situated on prodorsal shield; eyes 12 (12–13) in diameter; *pob* 15 in diameter; ratios  $vi:vi-vi = 2.7$ ;  $ve:sci = 1.3$ ;  $ve:ve-sci = 3.1$ ; lengths:  $vi$  46 (46–56),  $ve$  101 (101–105),  $sci$  79 (79–87),  $sce$  82; distances:  $vi-vi$  17,  $vi-ve$  31 (31–32),  $ve-sci$  33 (33–34),  $sci-sce$  43 (41–43). Sutures behind shields CD and E not observed; ratios  $c_i:c_i-c_i = 2.7$ ,  $e_2:e_1 = 1.9$ ,  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 1.0:1.0:1.0:1.4$ ; lengths:  $c_i$  84 (80–84),  $d_i$  81 (75–81),  $d_2$  89 (89–94),  $e_i$  53 (53–55),  $e_2$  103 (102–103),  $f_i$  72; distances:  $c_i-c_i$  31 (31–33),  $c_i-d_i$  48 (46–48),  $d_i-d_i$  31 (31–33),  $d_i-d_2$  55 (55–56),  $d_i-e_i$  60 (58–60),  $e_i-e_i$  31 (31–33),  $e_i-e_2$  43 (40–43),  $e_i-f_i$  24 (24–31),  $f_i-f_i$  43 (41–43). Suranal setae  $h_1$  34 (29–34),  $h_2$  27 (27–30). Ventral setae *1a*:  $3a:4a = 1.1:1.1:1.0$ ; lengths: *1a* 42 (41–42), *3a* 42 (41–42) and *4a* 40 (35–40). Aggenital area with 2 pairs of setae on a small shield,  $ag_1$  32 (31–32),  $ag_2$  31 (27–31); pseudanal setae  $ps_3$  13,  $ps_2$  14,  $ps_1$  10 (9–10).

**Legs.** Length: leg I 217 (210–217), leg II 193 (188–193), leg III 194 (187–194), leg IV 200 (189–200). Setae *dFI* (26) and *dGI* (26) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + *1elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1 $\kappa$ , 3, 1, 1; tibiae 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 11 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  20 (20–21), I $\omega_2$  14 (14–15), II $\omega_1$  21 (20–21), II $\omega_2$  12 (12–14), III $\omega$  18 (18–19), IV $\omega$  17 (17–18).

**Deutonymph female** (Fig. 139 H, n = 1)

**Gnathosoma.** Chelicerae slender, 83, movable digits about 1/2 length of chelicerae, 43. Palp 120; palpfemur with 2 setae. Subcapitular setae  $m = 30$ ,  $m-m = 25$ .

**Idiosoma.** Oval, 281 long, 216 wide. Dorsal shields as in female; dorsal idiosomal setae strongly serrate. Suture behind prodorsal shield a simple line; setae *sce* situated on prodorsal shield; eyes 12 in diameter; *pob* 19 in diameter; ratios  $vi:vi-vi = 4.1$ ;  $ve:sci = 1.1$ ;  $ve:ve-sci = 1.8$ ; lengths:  $vi$  57,  $ve$  76,  $sci$  72,  $sce$  72; distances:  $vi-vi$  14,  $vi-ve$  31,  $ve-sci$  43,  $sci-sce$  47. Sutures behind shields CD

and E not observed; ratios  $c_i:c_i-c_i = 1.9$ ,  $e_2:e_1 = 1.2$ ,  $c_i-c_i:d_i-d_i:e_i-e_i:f_i-f_i = 1.2:1.2:1.0:1.7$ ; lengths:  $c_i$  58,  $d_i$  69,  $d_2$  70,  $e_i$  68,  $e_2$  84,  $f_i$  61; distances:  $c_i-c_i$  30,  $c_i-d_i$  55,  $d_i-d_i$  30,  $d_i-d_2$  57,  $d_i-e_i$  65,  $e_i-e_i$  25,  $e_i-e_2$  41,  $e_i-f_i$  43,  $f_i-f_i$  43. Suranal setae  $h_1$  41,  $h_2$  32. Ventral setae *1a*:  $3a:4a = 1.2:1.2:1.0$ ; lengths: *1a* 40, *3a* 39 and *4a* 33. Aggenital area with 2 pairs of setae, each on a platelet,  $ag_1$  17,  $ag_2$  18,  $ag_3$  20; pseudanal setae  $ps_3$  13,  $ps_2$  13,  $ps_1$  12.

**Legs.** Length: leg I 169, leg II 158, leg III 160, leg IV 170. Setae *dFI* (26) and *dGI* (24) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + *1elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1 $\kappa$ , 3, 1, 0; tibiae 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 11 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  14, II $\omega$  13, III $\omega$  7, IV $\omega$  5.

**Distribution** (Map p. 380). New Zealand (González-Rodríguez 1965, Wood 1967, Wood 1971b).

AK, CL, HB / SD, NN, BR, MB.

**Location of holotype.** BMNH.

**Material examined.** 1 paratype and 50 non-type specimens. **Paratype: AK:** Waitakere, nr Auckland: 29 Nov 1959, E. Collyer, *Leptospermum scoparium* [as 'Manuka'], colección Universidad de Chile, Santiago, 59–151Y, NZAC: 1/1 deutonymph female. **Other material: AK:** Waitakere Ra, 29 Nov 1959, E. Collyer, *Nightia excelsa*, 1/1 female [+ *Agistemus longisetus*]. **CL:** Kauaeranga Valley, 4 Sep 1964, E. Collyer, 1/1 protonymph. **HB:** Napier, 7 Apr 1965, E. Collyer, *Pseudopanax crassifolius* [as Lancewood] [on same slide with paratype male *Mediolata simplex* BUT different collection data **NN:** Nelson, 15 Jan 1965, E. Collyer, *Feijoa*, 1/1 female]. **SD:** Tennyson Inlet, 17 May 1964, E. Collyer, *Melicytus ramiflorus*, 1/1 female. Kenepuru Sound: Portage, 29 Jan 1966, E. Collyer, *Nightia excelsa*, 1/1 female [+ *Eryngiopus bifidus* 2 females, *Agistemus* sp. 3 deutonymph females, Caligonellidae 1 damaged female]. **NN:** Sherry River, 25 Feb 1965, E. Collyer, 'curly beech', 1/1 female. Honeymoon Bay, 20 Sep 1965, E. Collyer, *Microsorium scandens* [as *Phymatodes*], 1/1 female [+ *Eryngiopus bifidus* 2 females; *Pseudostigmaeus schizopeltatus* 1 female]. Kaiteriteri, 21 Sep 1965, E. Collyer, *Olearia rani*, 1/2 females. Baton River, 2 Apr 1966, E. Collyer, *Nothofagus solandri*, 1/2 females, 1 deutonymph female [+ *Eryngiopus arboreus* 1 male, 1 protonymph; *Mediolata zonaria* holotype female; *Pseudostigmaeus collyerae* 1 male]. Roding Valley, 1 May 1966, E. Collyer, *Kunzea ericoides*, 1/1 male [+ *Zetzellia maori* 6 females, 4 deutonymph females]. Waimea Plain, Palmers Bush, 7 Aug 1966, E. Collyer, foliage of *Podocarpus totara*, 1/2 females, 1 protonymph, 1 larva [+ on holotype slide *Stigmaeus arboricola*; + *Eryngiopus*

*arborea* 2 females]. Maitai R, South Branch, 19 Aug 1966, E. Collyer, *Phyllocladus trichomanoides*, 1/2 females, 1 protonymph. Awanui Inlet, 20 Aug 1966, E. Collyer, *Kunzea ericoides*, 1/4 females, 1 male, 1 deutonymph female, 1 protonymph. Perry Neudorf, 12 Dec 1966, E. Collyer, apple, 1/4 females [+ *Agistemus longisetus*; *Eryngiopus bifidus*]. Eves Bush, 10 Jan 1967, E. Collyer, *Podocarpus totara*, 1/1 male, 1 larva. Eves Bush, 23 Feb 1967, E. Collyer, *Podocarpus totara*, 1/1 female, 1 male. Eves Bush, 28 Feb 1967, E. Collyer, *Ripogonum scandens*, 1/1 female, 3 males [+ *Pseudostigmaeus collyerae* 10 females]. Totaranui, 14 Oct 1967, E. Collyer, *Metrosideros umbellata*, 1/1 female, 1 male. Totaranui, 15 Oct 1967, E. Collyer, *Metrosideros perforata*, 1/1 female. Kaihoka Lake, 14 Apr 1968, E. Collyer, *Carmichaelia* sp., 1/1 female, 2 males, 1 deutonymph female [+ *Eryngiopus arboreus* 2 females]. Eves Bush, 8 Aug 1968, E. Collyer, *Dacrycarpus dacrydioides*, 1/1 female [+ *Pseudostigmaeus collyerae* 1 female]. **BR**: Lake Rotoroa, 10 Oct 1964, E. Collyer, 'curly beech', 1/1 male. Near Charleston, 11 Apr 1966, E. Collyer, *Dothofagus menziesii*, 1/1 male. **MB**: Onamalutu Domain [=Scenic Reserve], 3 Sep 1966, E. Collyer, *Prumnopitys taxifolia*, 1/1 female [+ *Eryngiopus arboreus* 1/1 protonymph].

**Habitat.** *Carmichaelia* sp., *Carpodetus serratus*, *Dacrycarpus dacrydioides*, *Dothofagus menziesii*, *Knightia excelsa*, *Kunzea ericoides*, *Leptospermum scoparium* [as 'Manuka'], *Melicytus ramiflorus*, *Metrosideros parkinsonii*, *Metrosideros perforata*, *Metrosideros umbellata*, *Microsorium scandens* [as *Phymatodes*], *Nothofagus fusca*, *Nothofagus menziesii*, *Nothofagus solandri*, *Nothofagus* sp., *Olearia rani*, *Phyllocladus trichomanoides*, *Podocarpus dacrydioides*, *Podocarpus spicatus*, *Podocarpus totara*, *Prumnopitys taxifolia*, *Pseudopanax crassifolium*, *Ripogonum scandens*; moss on *Nothofagus menziesii*.

### **Mediolata simplex** Wood

Fig. 143–146, Plate 8 B

*Mediolata simplex* Wood, 1967: 122; Wood, 1971b: 60.

**Diagnosis. Female.** Palpfemur with 2 setae; dorsal shields well reticulated, without vacuoles; setae *sce* situated on prodorsal shield;  $vi: vi-vi = 1.9$ ;  $ve: sci = 0.9$ ;  $ve: ve-sci = 1.0$ ;  $c_1: c_1-c_1 = 0.7$ ;  $e_2: e_1 = 1.0$ ;  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.4: 1.2: 1.0: 1.7$ ;  $1a: 3a: 4a = 1.3: 1.3: 1.0$ ; coxa IV with 2 setae; trochanter IV without seta; femur I with 5 setae; femur III with 3 setae; genua I–II with 3 + 1  $\kappa$ , 3.

**Male.** As in female but:  $vi: vi-vi = 2.2$ ;  $ve: sci = 1.1$ ;  $ve: ve-sci = 1.1$ ;  $c_1: c_1-c_1 = 1.1$ ;  $e_2: e_1 = 1.1$ ;  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.3: 1.0: 1.0: 2.1$ ;  $1a: 3a: 4a = 1.4: 1.7: 1.0$ .

**Description. Female** (Fig. 143–144, Plate 8 B, n = 1)

**Gnathosoma.** Chelicerae slender, 86, movable digits about 1/2 length of chelicerae, 44. Palp 106; palpfemur with 2 setae. Subcapitular setae  $m = 36$ ,  $m-m = 29$ .

**Idiosoma.** Oval, 362 long, 241 wide. Dorsal shields well reticulated, without vacuoles; dorsal idiosomal setae strongly serrate. Suture behind prodorsal shield a simple line; setae *sce* situated on prodorsal shield; eyes 15 in diameter; *pob* 16 in diameter; ratios  $vi: vi-vi = 1.9$ ;  $ve: sci = 0.9$ ;  $ve: ve-sci = 1.0$ ; lengths:  $vi$  36,  $ve$  46,  $sci$  49,  $sce$  50; distances:  $vi-vi$  19,  $vi-ve$  36,  $ve-sci$  45,  $sci-sce$  55. Suture behind shield CD simple, behind E not observed; ratios  $c_1: c_1-c_1 = 0.7$ ,  $e_2: e_1 = 1.0$ ,  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.4: 1.2: 1.0: 1.7$ ; lengths:  $c_1$  38,  $d_1$  48,  $d_2$  44,  $e_1$  57,  $e_2$  56,  $f_1$  67; distances:  $c_1-c_1$  51,  $c_1-d_1$  70,  $d_1-d_1$  44,  $d_1-d_2$  61,  $d_1-e_1$  83,  $e_1-e_1$  37,  $e_1-e_2$  50,  $e_1-f_1$  49,  $f_1-f_1$  62. Suranal setae  $h_1$  61,  $h_2$  51. Ventral setae  $1a: 3a: 4a = 1.3: 1.3: 1.0$ ; lengths:  $1a$  74,  $3a$  75 and  $4a$  57. Aggenital area with 3 pairs of setae, each on a platelet,  $ag_1$  35,  $ag_2$  35,  $ag_3$  35; genital setae obviously longer than pseudanal setae, 50; pseudanal setae  $ps_3$  34,  $ps_2$  34,  $ps_1$  42.

**Legs.** Length: leg I 222, leg II 201, leg III 202, leg IV 207. Setae *dFI* (26) and *dGI* (25) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 11 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  22, II  $\omega$  17, III  $\omega$  10, IV  $\omega$  7.

**Male** (Fig. 145–146, n = 1)

**Gnathosoma.** Chelicerae slender, 63, movable digits about 1/2 length of chelicerae, 33. Palp 89; palpfemur with 2 setae. Subcapitular setae  $m = 24$ ,  $m-m = 20$ .

**Idiosoma.** Oval, 251 long, 181 wide. Dorsal shields as in female; dorsal idiosomal setae strongly serrate. Suture behind prodorsal shield a simple line; setae *sce* situated on prodorsal shield; eyes 14 in diameter; *pob* 12 in diameter; ratios  $vi: vi-vi = 2.2$ ;  $ve: sci = 1.1$ ;  $ve: ve-sci = 1.1$ ; lengths:  $vi$  31,  $ve$  43,  $sci$  39,  $sce$  39; distances:  $vi-vi$  14,  $vi-ve$  24,  $ve-sci$  38,  $sci-sce$  41. Sutures behind shields CD and E simple; ratios  $c_1: c_1-c_1 = 1.1$ ,  $e_2: e_1 = 1.1$ ,  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.3: 1.0: 1.0: 2.1$ ; lengths:  $c_1$  33,  $d_1$  41,  $d_2$  37,  $e_1$  41,  $e_2$  45,  $f_1$  50; distances:  $c_1-c_1$  31,  $c_1-d_1$  48,  $d_1-d_1$  24,  $d_1-d_2$  43,  $d_1-e_1$  47,  $e_1-e_1$  23,  $e_1-e_2$  32,  $e_1-f_1$  24,  $f_1-f_1$  48. Suranal setae  $h_1$  24,  $h_2$  32. Ventral setae  $1a: 3a: 4a = 1.4: 1.7: 1.0$ ; lengths:  $1a$  36,  $3a$  43 and  $4a$  25. Aggenital area with 2 pairs of setae on a small shield,  $ag_1$  27,  $ag_2$  25; pseudanal setae  $ps_3$  11,  $ps_2$  9,  $ps_1$  6.

**Legs.** Length: leg I 154, leg II 132, leg III 132, leg IV 134. Setae *dFI* (22) and *dGI* (19) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 11 + 2  $\omega$ ,

9 + 2 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  13, I $\omega_2$  10, II $\omega_1$  12, II $\omega_2$  10, III $\omega$  12, IV $\omega$  12.

**Distribution** (Map p. 381). New Zealand (Wood 1967, 1971b).

– / NN, CO.

**Material examined.** Holotype and 1 paratype. **Holotype** female: NEW ZEALAND: CO: Lindis Pass summit, 900 m, 2 Mar 1965, T. G. Wood, moss on rocks, NZAC: 1/1 female. **Paratype:** NN: Nelson, 15 Jan 1965, E. Collyer, *Feijoa*, NZAC: 1/1 allotype male [+ *Mediolata robusta* male on same slide, BUT different collection data: **HB:** Napier, 7 Apr 1965, E. Collyer, *Pseudopanax crassifolius* [as lancewood]].

**Habitat.** Bark of apple, *Feijoa*, *Leptospermum*; *Hedycarya arborea*, moss on rocks, *Pseudopanax crassifolius* [as lancewood].

#### *Mediolata whenua* sp. n.

Fig. 147–148

**Diagnosis. Female.** Palpfemur with 2 setae; dorsal shields smooth; setae *sce* situated on prodorsal shield; *vi*: *vi-vi* = 1.0; *ve*: *sci* = 1.0; *ve*: *ve-sci* = 0.6; *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 0.5; *e*<sub>2</sub>: *e*<sub>1</sub> = 1.0; *c*<sub>1-c</sub><sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub>: *e*<sub>1-e</sub><sub>1</sub>: *f*<sub>1-f</sub><sub>1</sub> = 1.4: 1.6: 1.0: 1.8; *la*: *3a*: *4a* = 2.0: 2.0: 1.0; coxa IV with 2 setae; trochanter IV without seta; femur I with 5 setae; femur III with 2 setae; genua I–II with 2 + 1 $\kappa$ , 1.

**Description. Female** (Fig. 147–148, n = 1)

**Gnathosoma.** Chelicerae slender, 57, movable digits nearly 1/2 length of chelicerae, 30. Palp 76; palpfemur with 2 setae. Subcapitular setae *m* = 18, *m-m* = 26.

**Idiosoma.** Oval, 307 long, 202 wide. Dorsal shields smooth, vacuoles not observed; dorsal idiosomal setae serrate. Suture behind prodorsal shield obvious, extending to based of *sci*; setae *sce* situated on prodorsal shield; eyes 10 in diameter; *pob* 14 in diameter; ratios *vi*: *vi-vi* = 1.0; *ve*: *sci* = 1.0; *ve*: *ve-sci* = 0.6; lengths: *vi* 19, *ve* 21, *sci* 22, *sce* 28; distances: *vi-vi* 20, *vi-ve* 29, *ve-sci* 33, *sci-sce* 34. Suture behind shield CD and E absent; ratios *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 0.5, *e*<sub>2</sub>: *e*<sub>1</sub> = 1.0, *c*<sub>1-c</sub><sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub>: *e*<sub>1-e</sub><sub>1</sub>: *f*<sub>1-f</sub><sub>1</sub> = 1.4: 1.6: 1.0: 1.8; lengths: *c*<sub>1</sub> 19, *d*<sub>1</sub> 18, *d*<sub>2</sub> 19, *e*<sub>1</sub> 22, *e*<sub>2</sub> 21, *f*<sub>1</sub> 32; distances: *c*<sub>1-c</sub><sub>1</sub> 39, *c*<sub>1-d</sub><sub>1</sub> 55, *d*<sub>1-d</sub><sub>1</sub> 42, *d*<sub>1-d</sub><sub>2</sub> 31, *d*<sub>1-e</sub><sub>1</sub> 55, *e*<sub>1-e</sub><sub>1</sub> 27, *e*<sub>1-e</sub><sub>2</sub> 33, *e*<sub>1-f</sub><sub>1</sub> 27, *f*<sub>1-f</sub><sub>1</sub> 48. Suranal setae *h*<sub>1</sub> 32, *h*<sub>2</sub> 28. Ventral setae *la*: *3a*: *4a* = 2.0: 2.0: 1.0; lengths: *la* 30, *3a* 29 and *4a* 15. Aggenital area with 3 pairs of setae, each on a platelet, *ag*<sub>1</sub> 16, *ag*<sub>2</sub> 22, *ag*<sub>3</sub> 26; genital setae obviously longer than pseudanal setae, 34; pseudanal setae *ps*<sub>3</sub> 9, *ps*<sub>2</sub> 15, *ps*<sub>1</sub> 24.

**Legs.** Length: leg I 152, leg II 116, leg III 115, leg IV 121. Setae *dFI* (12) and *dGI* (11) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2;

trochanters 1, 1, 1, 0; femora 5, 4, 2, 1; genua 2 + 1 $\kappa$ , 1, 1, 1; tibiae 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 11 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  12, II $\omega$  9, III $\omega$  6, IV $\omega$  5.

**Distribution** (Map p. 381). New Zealand (this paper). – / NN.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: NN: Nelson, Isel Park, 19 Jan 1971, [?], under black scales, NZAC: 1/1 female.

**Habitat.** Under black scales.

**Etymology.** The species name *whenua* is the Maori word for land, referring to the habitat of the species.

**Remarks.** *Mediolata whenua* sp. n. resembles *M. bresisetis* Wood in that femur III has 2 setae and genu II has 1 setae, but can be separated from the latter by genu I having 2 + 1 $\kappa$ .

#### *Mediolata woodi* sp. n.

Fig. 149–152

**Diagnosis. Female.** Palpfemur with 2 setae; dorsal shields well reticulated, with vacuoles; setae *sce* situated on prodorsal shield; *vi*: *vi-vi* = 2.2; *ve*: *sci* = 1.1; *ve*: *ve-sci* = 1.1; *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 1.4; *e*<sub>2</sub>: *e*<sub>1</sub> = 1.1; *c*<sub>1-c</sub><sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub>: *e*<sub>1-e</sub><sub>1</sub>: *f*<sub>1-f</sub><sub>1</sub> = 1.2: 1.0: 1.2: 1.9; *la*: *3a*: *4a* = 1.0: 1.5: 1.0; coxa IV with 2 setae; trochanter IV without seta; femur I with 5 setae; femur III with 3 setae; genua I–II with 3 + 1 $\kappa$ , 3. Tarsi I–IV with 11 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ .

**Male.** As in female but: *vi*: *vi-vi* = 1.6; *ve*: *sci* = 1.1; *ve*: *ve-sci* = 1.8; *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 1.9; *e*<sub>2</sub>: *e*<sub>1</sub> = 2.0; *c*<sub>1-c</sub><sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub>: *e*<sub>1-e</sub><sub>1</sub>: *f*<sub>1-f</sub><sub>1</sub> = 1.1: 1.1: 1.0: 1.8; *la*: *3a*: *4a* = 1.3: 1.3: 1.0; tarsi I–IV with 11 + 2 $\omega$ , 9 + 2 $\omega$ .

**Description. Female** (Fig. 149–150, n = 1)

**Gnathosoma.** Chelicerae slender, 112, movable digits less than 1/2 length of chelicerae, 49. Palp 111; palpfemur with 2 setae. Subcapitular setae *m* = 25, *m-m* = 32.

**Idiosoma.** Oval, 418 long, 309 wide. Dorsal shields well reticulated, with vacuoles within cells; dorsal idiosomal setae strongly serrate. Suture behind prodorsal shield a simple line; setae *sce* situated on prodorsal shield; eyes 14 in diameter; *pob* 8 in diameter; ratios *vi*: *vi-vi* = 2.2; *ve*: *sci* = 1.1; *ve*: *ve-sci* = 1.1; lengths: *vi* 50, *ve* 68, *sci* 60, *sce* 62; distances: *vi-vi* 23, *vi-ve* 41, *ve-sci* 60, *sci-sce* 60. Suture behind shield CD simple, behind E not observed; ratios *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 1.4, *e*<sub>2</sub>: *e*<sub>1</sub> = 1.1, *c*<sub>1-c</sub><sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub>: *e*<sub>1-e</sub><sub>1</sub>: *f*<sub>1-f</sub><sub>1</sub> = 1.2: 1.0: 1.2: 1.9; lengths: *c*<sub>1</sub> 52, *d*<sub>1</sub> 64, *d*<sub>2</sub> 63, *e*<sub>1</sub> 65, *e*<sub>2</sub> 74, *f*<sub>1</sub> 66; distances: *c*<sub>1-c</sub><sub>1</sub> 37, *c*<sub>1-d</sub><sub>1</sub> 76, *d*<sub>1-d</sub><sub>1</sub> 31, *d*<sub>1-d</sub><sub>2</sub> 81, *d*<sub>1-e</sub><sub>1</sub> 83, *e*<sub>1-e</sub><sub>1</sub> 38, *e*<sub>1-e</sub><sub>2</sub> 57, *e*<sub>1-f</sub><sub>1</sub> 52, *f*<sub>1-f</sub><sub>1</sub> 59. Suranal setae *h*<sub>1</sub> 58, *h*<sub>2</sub> 47. Ventral setae *la*: *3a*: *4a* = 1.0: 1.5: 1.0; lengths: *la* 53, *3a* 78 and *4a* 51. Aggenital area with 3 pairs of

setae, each on a platelet,  $ag_1$  27,  $ag_2$  29,  $ag_3$  34; genital setae obviously longer than pseudanal setae, 56; pseudanal setae  $ps_3$  38,  $ps_2$  39,  $ps_1$  43.

**Legs.** Length: leg I 226, leg II 201, leg III 199, leg IV 198. Setae  $dFI$  (26) and  $dGI$  (27) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ ; tarsi 11 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  18, II $\omega$  17, III $\omega$  8, IV $\omega$  6.

**Male** (Fig. 151–152, n = 2)

**Gnathosoma.** Chelicerae slender, 101 (100–101), movable digits less than 1/2 length of chelicerae, 40 (40–41). Palp 98 (93–98); palpfemur with 2 setae. Subcapitular setae  $m$  = 26 (26–30),  $m-m$  = 28 (28–29).

**Idiosoma.** Oval, 331 (312–331) long, 217 (212–217) wide. Dorsal shields and setae as in female. Suture behind prodorsal shield a simple line; setae  $sce$  situated on prodorsal shield; eyes 14 in diameter;  $pob$  9 (8–9) in diameter; ratios  $vi$ :  $vi-vi$  = 1.6;  $ve$ :  $sci$  = 1.1;  $ve$ :  $ve-sci$  = 1.8; lengths:  $vi$  45 (44–45),  $ve$  70,  $sci$  62 (60–62),  $sce$  67 (65–67); distances:  $vi-vi$  28 (21–28),  $vi-ve$  32 (30–32),  $ve-sci$  40 (40–43),  $sci-sce$  41 (31–41). Sutures behind shields CD and E not observed; ratios  $c_i$ :  $c_i-c_i$  = 1.9,  $e_2$ :  $e_1$  = 2.0,  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i$  = 1.1: 1.1: 1.0: 1.8; lengths:  $c_1$  59 (52–59),  $d_1$  62 (53–62),  $d_2$  70 (68–70),  $e_1$  45 (40–45),  $e_2$  90 (81–90),  $f_1$  68 (62–68); distances:  $c_i-c_i$  31,  $c_i-d_i$  53 (52–53),  $d_i-d_i$  32 (31–32),  $d_i-d_2$  61 (56–61),  $d_i-e_i$  70 (65–70),  $e_i-e_i$  29 (29–31),  $e_i-e_2$  41 (41–44),  $e_i-f_i$  32 (15–32),  $f_i-f_i$  51 (50–51). Suranal setae  $h_1$  30 (28–30),  $h_2$  29 (25–29). Ventral setae  $1a$ :  $3a$ :  $4a$  = 1.3: 1.3: 1.0; lengths:  $1a$  43 (43–44),  $3a$  41 (41–43) and  $4a$  32. Aggenital area with 2 pairs of setae on a small shield,  $ag_1$  26 (25–26),  $ag_2$  26 (25–26); pseudanal setae  $ps_3$  13 (13–14),  $ps_2$  11,  $ps_1$  7.

**Legs.** Length: leg I 207, leg II 187 (187–191), leg III 185 (185–189), leg IV 187 (187–190). Setae  $dFI$  (23) and  $dGI$  (24 (24–25)) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 1; genua 3 + 1  $\kappa$ , 3, 1, 1; tibiae 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ ; tarsi 11 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  15 (15–16), I $\omega_2$  12 (12–13), II $\omega_1$  14 (14–16), II $\omega_2$  11 (11–12), III $\omega$  14 (14–15), IV $\omega$  14.

**Distribution** (Map p. 381). New Zealand (this paper).  
– / NN, NC.

**Material examined.** Holotype and 5 paratypes. **Holotype** female: NEW ZEALAND: NC: Arthurs Pass, Bridal Veil, 4 Oct 1966, E. Collyer, *Halocarpus bidwillii*, NZAC: 1/1 female. **Paratypes**: same collection data as holotype slide: NZAC: 1/1 allotype male. **NN**: Nelson, Fairfield Park, 17 Dec 1964, E. Collyer, *Nothofagus fusca*,

1/1 female [+ *Zetzellia maori* 2 females]. Nelson, Eves Bush, 2 Nov 1966, E. Collyer, *Podocarpus totara*, 1/1 female, 1 male, 1 larva [+ *Mediolata xerxes* holotype male].

**Habitat.** *Halocarpus bidwillii*, *Nothofagus fusca*, *Podocarpus totara*.

**Etymology.** This species is named in honour of Dr T. G. Wood who contributed many important papers on the Stigmaeidae of New Zealand.

**Remarks.** *Mediolata woodi* sp. n. resembles *M. robusta* González-Rodríguez in that  $c_i-c_i$  is closer together than  $f_i-f_i$ ,  $c_i$ :  $c_i-c_i$  > 1.3, but can be separated by the ratios  $vi$ :  $vi-vi$  = 2.2,  $ve$ :  $ve-sci$  = 1.1 and  $c_i$ :  $c_i-c_i$  = 1.4 in female and  $vi$ :  $vi-vi$  = 1.6,  $ve$ :  $ve-sci$  = 1.8 and  $c_i$ :  $c_i-c_i$  = 1.9 in male.

### *Mediolata xerxes* sp. n.

Fig. 153–154

**Diagnosis. Male.** Palpfemur with 2 setae; dorsal shields not reticulated, without vacuoles; setae  $sce$  situated on prodorsal shield;  $vi$ :  $vi-vi$  = 0.9;  $ve$ :  $sci$  = 1.0;  $ve$ :  $ve-sci$  = 0.8;  $c_i$ :  $c_i-c_i$  = 0.5;  $e_2$ :  $e_1$  = 1.1;  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i$  = 2.3: 1.9: 1.0: 1.7;  $1a$ :  $3a$ :  $4a$  = 1.0: 2.4: 1.0; coxa IV with 2 setae; trochanter IV without seta; femur I with 5 setae; femur III with 2 setae; genua I–II with 1 + 1  $\kappa$ , 1.

**Description. Male** (Fig. 153–154, n = 2)

**Gnathosoma.** Chelicerae slender, 67 (67–70), movable digits nearly 1/2 length of chelicerae, 30 (30–33). Palp 83 (82–87); palpfemur with 2 setae.

**Idiosoma.** Oval, 217 (217–223) long, 157 (137–157) wide. Dorsal shields not reticulated, without vacuoles; dorsal idiosomal setae serrate. Suture behind prodorsal shield a narrow band of striae; setae  $sce$  situated on prodorsal shield; eyes 18 (17–18) in diameter;  $pob$  24 (23–24) in diameter; ratios  $vi$ :  $vi-vi$  = 0.9;  $ve$ :  $sci$  = 1.0;  $ve$ :  $ve-sci$  = 0.8; lengths:  $vi$  19 (19–20),  $ve$  25 (24–25),  $sci$  26 (26–29),  $sce$  28 (28–29); distances:  $vi-vi$  22 (22–23),  $vi-ve$  23 (23–24),  $ve-sci$  37 (26–37),  $sci-sce$  30 (30–36). Sutures behind shields CD a simple line; ratios  $c_i$ :  $c_i-c_i$  = 0.5,  $e_2$ :  $e_1$  = 1.1,  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i$  = 2.3: 1.9: 1.0: 1.7; lengths:  $c_1$  25 (24–25),  $d_1$  20 (20–24),  $d_2$  22 (22–27),  $e_1$  23 (22–23),  $e_2$  25 (25–26),  $f_1$  30 (30–36); distances:  $c_i-c_i$  50 (48–50),  $c_i-d_i$  50 (50–53),  $d_i-d_i$  42 (38–42),  $d_i-d_2$  25 (25–31),  $d_i-e_i$  40 (36–40),  $e_i-e_i$  22 (20–27),  $e_i-e_2$  27 (26–27),  $e_i-f_i$  27 (23–27),  $f_i-f_i$  37 (37–38). Suranal setae  $h_1$  16 (16–22),  $h_2$  20 (20–24). Ventral setae  $1a$ :  $3a$ :  $4a$  = 1.8: 2.4: 1.0; lengths:  $1a$  36 (32–36),  $3a$  45 (42–45) and  $4a$  20 (18–20). Aggenital area with 2 pairs of setae on a small shield,  $ag_1$  27 (25–27),  $ag_2$  26 (25–26); pseudanal setae  $ps_3$  15 (13–15),  $ps_2$  11 (10–11),  $ps_1$  7 (7–8).

**Legs.** Length: leg I 150 (148–150), leg II 132 (129–132), leg III 136 (136–137), leg IV 138 (136–138). Setae *dFI* (20–21) and *dGI* (19–20) weakly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 2, 1; genua 1 + 1  $\kappa$ , 1, 1, 1; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 11 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$ <sub>1</sub> 15 (13–15), I $\omega$ <sub>2</sub> 14 (13–14), II $\omega$ <sub>1</sub> 11 (10–11), II $\omega$ <sub>2</sub> 10 (10–11), III $\omega$  20 (18–20), IV $\omega$  17 (17–20).

**Distribution** (Map p. 381). New Zealand (this paper).  
– / NN.

**Material examined.** Holotype and 1 paratype. **Holotype** female: NEW ZEALAND: NN: Eves Bush, 2 Nov 1966, E. Collyer, *Podocarpus totara*, 1/1 male [+ *Mediolata woodi* 1 female, 1 male, 1 larva]. **Paratype:** NN: Nelson, 17 Nov 1963, T. G. Wood, bark of *Eucalyptus* sp., NZAC: 1/1 male.

**Habitat.** Bark of *Eucalyptus* sp., *Podocarpus totara*.

**Etymology.** The species name is derived from the Greek word *xerxes*, meaning male referring to the fact that only male of this species is known.

**Remarks.** *Mediolata xerxes* sp. n. resembles *Mediolata ornatula* González-Rodríguez in that genu I has 1 + 1  $\kappa$  and genu II having 1 seta, but can be separated from the latter by feumur II with 4 setae and trochanter IV without seta.

#### *Mediolata zonaria* sp. n.

Fig. 155–156

**Diagnosis. Female.** Palpfemur with 2 setae; dorsal shields not reticulated, without vacuoles; prodorsal shield bearing only 2 pairs of setae, setae *sci* and *sce* situated on platelets; *vi*: *vi*–*vi* = 0.5; *ve*: *sci* = 0.6; *ve*: *ve*–*sci* = 0.5; *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.5; *e*<sub>2</sub>: *e*<sub>1</sub> = 1.0; *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.2: 1.3: 1.0: 1.6; *1a*: *3a*: *4a* = 1.0: 2.4: 1.0; coxa IV with 2 setae; trochanter IV with 1 seta; femur I with 5 setae; femur III with 2 setae; genua I–II with 2 + 1  $\kappa$ , 1.

**Description. Female** (Fig. 155–156, n = 1)

**Gnathosoma.** Chelicerae slender, 53, movable digits about 1/2 length of chelicerae, 25. Palp 79; palpfemur with 2 setae. Subcapitular setae *m* > 9, *m*–*m* = 23.

**Idiosoma.** Oval, 257 long, 138 wide. Dorsal shields not reticulated, without vacuoles; dorsal idiosomal setae weakly serrate. Suture behind prodorsal shield a wide band; prodorsal shield bearing only 2 pairs of setae, setae *sci* and *sce* situated on platelets; eyes 8 in diameter; *pob* surrounded by striae, 16 in diameter; ratios *vi*: *vi*–*vi* = 0.5; *ve*: *sci* = 0.6; *ve*: *ve*–*sci* = 0.5; lengths: *vi* 12, *ve* 15, *sci* 26, *sce* 28; distances: *vi*–*vi* 22, *vi*–*ve* 25, *ve*–*sci* 31, *sci*–*sce*

32. Suture behind shield CD wide, behind E not observed; ratios *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.5, *e*<sub>2</sub>: *e*<sub>1</sub> = 1.0, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.2: 1.3: 1.0: 1.6; lengths: *c*<sub>1</sub> 15, *d*<sub>1</sub> 16, *d*<sub>2</sub> 15, *e*<sub>1</sub> 18, *e*<sub>2</sub> 18, *f*<sub>1</sub> 26; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 30, *c*<sub>1</sub>–*d*<sub>1</sub> 56, *d*<sub>1</sub>–*d*<sub>1</sub> 33, *d*<sub>1</sub>–*d*<sub>2</sub> 23, *d*<sub>1</sub>–*e*<sub>1</sub> 47, *e*<sub>1</sub>–*e*<sub>1</sub> 25, *e*<sub>1</sub>–*e*<sub>2</sub> 22, *e*<sub>1</sub>–*f*<sub>1</sub> 25, *f*<sub>1</sub>–*f*<sub>1</sub> 40. Suranal setae *h*<sub>1</sub> 29, *h*<sub>2</sub> 27. Ventral setae *1a*: *3a*: *4a* = 1.0: 2.4: 1.0; lengths: *1a* 18, *3a* 41 and *4a* 17. Aggenital area with 3 pairs of setae, each on a platelet, *ag*<sub>1</sub> 9, *ag*<sub>2</sub> 10, *ag*<sub>3</sub> 20; genital setae obviously longer than pseudanal setae, 22; pseudanal setae *ps*<sub>3</sub> 11, *ps*<sub>2</sub> 18, *ps*<sub>1</sub> 25.

**Legs.** Length: leg I 136, leg II 106, leg III 109, leg IV 123. Setae *dFI* (17) and *dGI* (17) strongly serrate. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 1; genua 2 + 1  $\kappa$ , 1, 1, 1; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 11 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  11, II $\omega$  8, III $\omega$  4, IV $\omega$  3.5.

**Distribution** (Map p. 381). New Zealand (this paper).  
– / NN.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: NN: Baton River, 2 Apr 1966, E. Collyer, *Nothofagus solandri*, 1/1 female [+ *Eryngiopus arboreus* 1 male, 1 protonymph; *Mediolata robusta* 2 females, 1 deutonymph female; *Pseudostigmaeus collyerae* 1 male].

**Habitat.** *Nothofagus solandri*.

**Etymology.** The species name is derived from the Greek word *zone*, meaning belt referring to the broad striae behind prodorsal shield.

**Remarks.** *Mediolata zonaria* sp. n. is unique in having *sci* and *sce* situated on platelets and *pob* surrounded by striae. It resembles *Mediolata whenua* sp. n. in that femur III has 2 setae and genua I–II have 2 + 1  $\kappa$ , 1, but can be separated from the latter by trochanter IV having 1 seta.

### Genus *Mullederia* Wood

*Mullederia* Wood, 1964b: 579–580. Type species: *Mullederia arborea* Wood, 1964b, by original designation.

*Nonocaligus* Habeeb, 1966: 1. Type species: *Ledermuelleria neomaculata* Meyer & Ryke, 1959. Synonymy by Meyer, 1969: 264.

**Diagnosis. Female.** Idiosoma nearly round in dorsoventral view, generally red or dark red in life. Chelicerae separate. Palptibial claw subequal to palptarsus; accessory claw stout, spine-like; terminal eupathidia on palptarsus basally fused and terminally split into 3 small prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1 $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (basally fused). Subcapitulum with 2 pairs of subcapitular setae, *m* laterad of pharynx, *n* posteriorad of *m*. Prodorsum and dorsal hysterosoma covered with a single shield, which bears 4 pairs of prodorsal setae (*vi*, *ve*, *sci* and *sce*), a pair of eyes, a pair of *pob* and 6 pairs of hysterosomal setae (*c*<sub>1</sub>, *c*<sub>2</sub>, *d*<sub>2</sub>, *e*<sub>1</sub>, *e*<sub>2</sub>, and *f*<sub>1</sub>); setae *d*<sub>1</sub> absent; humeral shields fused with dorsal shield. Suranal shield (H) entire, with 2 pairs of setae (*h*<sub>1</sub> and *h*<sub>2</sub>), *h*<sub>3</sub> absent. Endopodal shields I–IV absent. Ventral opisthosoma with 1–2 pairs of aggenital setae; genitoanal valves with 3 pairs of pseudanal setae, genital setae absent. Leg tarsal claws slender or vestigial, basal 1/2–2/3 enclosed with membranous arolium; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 2–3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 *elcp*, 1, 2, 1–2; trochanters 1, 1, 1, 0–1; femora 5, 5, 2, 1–2; genua 2 + 1  $\kappa$ , 0–1, 0, 0; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 0–1  $\phi\phi$ ; tarsi 12 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 0–1 $\omega$ .

**Male.** Solenidia on tarsi I–IV: 2, 2, 2, 2.

Only one species was previously described from New Zealand. Two new species are added in this paper.

#### Key to species of *Mullederia* from New Zealand (females)

- 1 Setae *c*<sub>2</sub> shorter (*c*<sub>2</sub>:*f*<sub>1</sub> = 0.5) (Fig. 161 C) or longer than *f*<sub>1</sub> (*c*<sub>2</sub>:*f*<sub>1</sub> = 1.3–1.6) (Fig. 163 B) ..... 2
- Setae *c*<sub>2</sub> and *f*<sub>1</sub> subequal in length, *c*<sub>2</sub>:*f*<sub>1</sub> = 1.0 (Fig. 157 E, F) ..... (p. 79)... *M. arborea* Wood
- 2 Ratios *c*<sub>2</sub>:*f*<sub>1</sub> = 0.5 (Fig. 161 C); *c*<sub>2</sub>:*h*<sub>1</sub> = 0.5; *f*<sub>1</sub>:*h*<sub>1</sub> = 1.0 ..... (p. 80)... *M. procurrens* sp. n.
- Ratios *c*<sub>2</sub>:*f*<sub>1</sub> = 1.3–1.6 (Fig. 163 B); *c*<sub>2</sub>:*h*<sub>1</sub> = 0.9; *f*<sub>1</sub>:*h*<sub>1</sub> = 0.6 ..... (p. 80)... *M. scutellaris* sp. n.

### *Mullederia arborea* Wood

Fig. 157–160, Plate 8 C

*Mullederia arborea* Wood, 1964b: 580; Wood, 1970: 682; Rimando & Corpuz-Raros, 1996: 145.

**Diagnosis. Female.** Setae *sci* slightly shorter than *ve*; *c*<sub>1</sub>–*c*<sub>1</sub>:*e*<sub>1</sub>–*e*<sub>1</sub>:*f*<sub>1</sub>–*f*<sub>1</sub> = 1.1:1.0:1.6; *c*<sub>2</sub>:*f*<sub>1</sub> = 1.0; *c*<sub>2</sub>:*h*<sub>1</sub> = 0.8; *f*<sub>1</sub>:*h*<sub>1</sub> = 0.8; leg claws present.

**Male.** Setae *sci* shorter than *ve*; *c*<sub>1</sub>–*c*<sub>1</sub>:*e*<sub>1</sub>–*e*<sub>1</sub>:*f*<sub>1</sub>–*f*<sub>1</sub> = 1.1:1.0:1.7; *c*<sub>2</sub>:*f*<sub>1</sub> = 0.9; *c*<sub>2</sub>:*h*<sub>1</sub> = 1.0; *f*<sub>1</sub>:*h*<sub>1</sub> = 0.9.

**Description. Female** (Fig. 157–158, Plate 8 C, n = 2)

**Gnathosoma.** Chelicerae 146 (134–146), movable digits nearly 2/5 length of chelicerae, 53 (45–53). Palp 118 (118–120); accessory claw spine-like. Subcapitular setae subequal, *m* = 35, *n* = 36; *m*–*m* = 35, *n*–*n* = 35, *m*–*n* = 13.

**Idiosoma.** Round, 558 (472–558) long, 553 (466–553) wide. Dorsal shields strongly sclerotised with deep pits restricted to thick polygonal reticula; dorsal idiosomal setae stout (except *c*<sub>2</sub>, *f*<sub>1</sub>, *h*<sub>1</sub> and *h*<sub>2</sub>) and faintly barbed. Eyes 28 in diameter; *pob* 20 in diameter. Prodorsal setae *sci* slightly shorter than *ve* and subequal to *sce*; lengths: *vi* 210, *ve* 209, *sci* 197, *sce* 195; distances: *vi*–*vi* 75, *vi*–*ve* 112, *ve*–*sci* 75, *sci*–*sce* 119. Dorsal hysterosomal setae *c*<sub>1</sub> 1.5 times distance of *c*<sub>1</sub>–*c*<sub>1</sub>; ratio *c*<sub>1</sub>–*c*<sub>1</sub>:*e*<sub>1</sub>–*e*<sub>1</sub>:*f*<sub>1</sub>–*f*<sub>1</sub> = 1.1:1.0:1.6; lengths: *c*<sub>1</sub> 174, *d*<sub>2</sub> 192, *e*<sub>1</sub> 145, *e*<sub>2</sub> 191, *f*<sub>1</sub> 38; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 113, *e*<sub>1</sub>–*e*<sub>1</sub> 105, *e*<sub>1</sub>–*e*<sub>2</sub> 125, *f*<sub>1</sub>–*f*<sub>1</sub> 170; humeral setae *c*<sub>2</sub> 37, *c*<sub>2</sub>:*f*<sub>1</sub> = 1.0. Suranal setae *h*<sub>1</sub> 45, *h*<sub>2</sub> 45; ratios *c*<sub>2</sub>:*h*<sub>1</sub> = 0.8, *f*<sub>1</sub>:*h*<sub>1</sub> = 0.8. Ventral setae *1a* longer than others, *1a* 68, *3a* 47 and *4a* 54. Aggenital area with 2 pairs of setae, each on a platelet, *ag*<sub>1</sub> 20, *ag*<sub>2</sub> 35; pseudanal setae *ps*<sub>1</sub> thicker than other two pairs, *ps*<sub>3</sub> 15, *ps*<sub>2</sub> 20, *ps*<sub>1</sub> 18.

**Legs.** Length: leg I 337, leg II 354, leg III 352, leg IV 350. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 5, 2, 1; genua 2 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ , 5 + 1  $\phi\phi$ ; tarsi 12 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7. Lengths of solenidia: I $\omega$  29, II $\omega$  30, III $\omega$  20.

**Male** (Fig. 159–160, n = 2)

**Gnathosoma.** Chelicerae 108 (108–113), movable digits nearly 2/5 length of chelicerae, 41 (41–44). Palp 113 (109–113); accessory claw spine-like. Subcapitular setae subequal, *m* = 30, *n* = 28 (28–30); *m*–*m* = 21 (18–21), *n*–*n* = 33 (31–33), *m*–*n* = 18 (18–19).

**Idiosoma.** Round, 390 (390–395) long, 373 (358–373) wide. Dorsal shields and setae as in female. Eyes 26 (23–26) in diameter; *pob* 18 in diameter. Prodorsal setae *sci* shorter than *ve* and longer than *sce*; lengths: *vi* 185 (170–185), *ve* 229 (229–243), *sci* 169 (169–175), *sce* 194 (194–204); distances: *vi*–*vi* 48 (48–53), *vi*–*ve* 65 (62–65), *ve*–*sci* 61 (61–67), *sci*–*sce* 74 (72–74). Dorsal hysterosomal setae *c*<sub>1</sub> 1.8 times distance of *c*<sub>1</sub>–*c*<sub>1</sub>; ratio *c*<sub>1</sub>–*c*<sub>1</sub>:*e*<sub>1</sub>–*e*<sub>1</sub>:*f*<sub>1</sub>–*f*<sub>1</sub>

= 1.1: 1.0: 1.7; lengths:  $c_1$  145 (145–147),  $d_1$  193 (193–202),  $e_1$  132 (132–134),  $e_2$  199 (199–203),  $f_1$  25 (25–26); distances:  $c_1-c_1$  79,  $e_1-e_1$  69 (69–77),  $e_1-e_2$  89 (84–89),  $f_1-f_1$  117 (117–126); humeral setae  $c_2$  29 (29–31),  $c_2:f_1 = 0.9$ . Suranal setae  $h_1$  29 (29–31),  $h_2$  28 (28–31); ratios  $c_2:h_1 = 1.0$ ,  $f_1:h_1 = 0.9$ . Ventral setae subequal in length,  $1a$  45 (45–49),  $3a$  44 (43–44) and  $4a$  43. Aggenital area with 2 pairs of setae on a small shield,  $ag_1$  20,  $ag_2$  28 (28–30); pseudanal setae small,  $ps_1$  and  $ps_2$  peg-like;  $ps_3$  9,  $ps_2$  5 (4–5),  $ps_1$  4 (4–5).

**Legs.** Length: leg I 277 (277–280), leg II 275 (275–276), leg III 275 (275–277), leg IV 276 (276–277). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 5, 2, 1; genua 2 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 12 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega_1$  29 (28–29), I $\omega_2$  43 (43–45), II $\omega_1$  34 (34–35), II $\omega_2$  46, III $\omega_1$  27 (25–27), III $\omega_2$  41 (39–41), IV $\omega_1$  27 (27–28), IV $\omega_2$  27 (27–28).

**Distribution** (Map p. 381). New Zealand (Wood 1964b, 1967), Campbell Island (Wood, 1970).

GB / NN / CA.

**Material examined.** Holotype and 6 paratypes.

**Holotype** female: NEW ZEALAND: NN: Dun Mt track, 320 m, 27 June 1964, [no collector], *Weinmannia racemosa*, NZAC: 1/1 female. Holotype female (nearest other label) [+ 2 paratype females]. **Paratypes:** on same slide with holotype, 2 females. **GB:** L Waikaremoana, 19 Feb 1964, T. G. Wood, *Fuchsia excorticata*, NZAC: 1/1 female. **NN:** Dun Mt Track, 600 m, 15 Feb 1964, T. G. Wood, *Rubus* sp., NZAC: 1/2 males [1 = allotype]. Karamea, L Hanlon, 20 Oct 1972, G. W. Ramsay, general beating, NZAC: 1/1 female.

**Habitat.** Apple, *Coprosma*, *Corynocarpus laevigata*, *Fuchsia excorticata*, *Melicytus ramiflorus*, *Nothofagus* sp., *Rubus* sp., *Weinmannia racemosa*.

#### *Mullederia procurrens* sp. n.

Fig. 161–162, Plate 8 D

**Diagnosis. Female.** Setae *sci* shorter than *ve*;  $c_1-c_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.1: 1.0: 1.3$ ;  $c_2:f_1 = 0.5$ ;  $c_2:h_1 = 0.5$ ;  $f_1:h_1 = 1.0$ ; leg claws present.

**Description. Female** (Fig. 161–162, Plate 8 D, n = 1)

**Gnathosoma.** Chelicerae 125, movable digits slightly longer than 2/5 length of chelicerae, 56. Palp 115; accessory claw spine-like. Subcapitular setae subequal,  $m = 32$ ,  $n = 33$ ;  $m-m = 28$ ,  $n-n = 33$ ,  $m-n = 15$ .

**Idiosoma.** Round, 485 long, 409 wide. Dorsal shields strongly sclerotised with deep pits restricted to thick

polygonal reticula; dorsal idiosomal setae stout and faintly barbed (except  $c_2$ ,  $f_1$ ,  $h_1$  and  $h_2$ ). Eyes 23 in diameter; *pob* 19 in diameter. Prodorsal setae *sci* shorter than *ve* and subequal to *sce*; lengths: *vi* 185, *ve* 207, *sci* 182, *sce* 180; distances: *vi-vi* 55, *vi-ve* 84, *ve-sci* 65, *sci-sce* 86. Dorsal hysterosomal setae  $c_1$  1.9 times distance of  $c_1-c_1$ ; ratio  $c_1-c_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.1: 1.0: 1.3$ ; lengths:  $c_1$  161,  $d_1$  193,  $e_1$  125,  $e_2$  168,  $f_1$  48; distances:  $c_1-c_1$  87,  $e_1-e_1$  79,  $e_1-e_2$  101,  $f_1-f_1$  100; humeral setae  $c_2$  23,  $c_2:f_1 = 0.5$ . Suranal setae  $h_1$  48,  $h_2$  47; ratios  $c_2:h_1 = 0.5$ ,  $f_1:h_1 = 1.0$ . Ventral setae  $1a$  longer than others,  $1a$  55,  $3a$  45 and  $4a$  40. Aggenital area with 2 pairs of setae, each on a platelet,  $ag_1$  18,  $ag_2$  39; pseudanal setae  $ps_1$  thick,  $ps_3$  15,  $ps_2$  19,  $ps_1$  19.

**Legs.** Length: leg I 288, leg II 293, leg III 290, leg IV 286. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 5, 2, 1; genua 2 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 12 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7. Lengths of solenidia: I $\omega$  27, II $\omega$  31, III $\omega$  18.

**Distribution** (Map p. 381). New Zealand (this paper). - / NN.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: KA: [Nelson; incorrect. = Kaikoura; G.W. Ramsay 2004], Kaikoura Peninsula, 26 Aug 1970, G. W. Ramsay, ex seaweed HWM, NZAC: 1/1 female.

**Habitat.** Seaweed.

**Etymology.** The species name is a combination of the Latin words *pro* and *currens*, referring to the ornamental pattern of the dorsal shield.

**Remarks.** This species can only be distinguished from *M. arborea* Wood by the relative lengths of  $c_2$  and  $f_1$  (setae  $c_2$  about 1/2 length of  $f_1$ ) and the ratios  $c_2:h_1 = 0.5$ ,  $f_1:h_1 = 1$ .

#### *Mullederia scutellaris* sp. n.

Fig. 163–164, Plate 9 A

**Diagnosis. Female.** Setae *sci* shorter than *ve*;  $c_1-c_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.0: 1.0: 1.5$ ;  $c_2:f_1 = 1.3-1.6$ ;  $c_2:h_1 = 0.9$ ;  $f_1:h_1 = 0.6$ ; leg claws present.

**Description. Female** (Fig. 163–164, Plate 9 A, n = 2)

**Gnathosoma.** Chelicerae 118 (103–118), movable digits nearly 2/5 length of chelicerae, 43 (41–43). Palp 96 (96–101); accessory claw spine-like. Subcapitular setae *m* shorter than *n*,  $m = 24$  (24–25),  $n = 28$  (28–30);  $m-m = 23$  (23–25),  $n-n = 38$  (36–38),  $m-n = 21$ .

**Idiosoma.** Round, 465 (445–465) long, 469 (428–469) wide. Dorsal shields strongly sclerotised with deep pits restricted to thick polygonal reticula; dorsal idiosomal setae stout and faintly barbed (except  $c_2$ ,  $f_1$ ,  $h_1$  and  $h_2$ ).



Eyes 28 (24–28) in diameter; *pob* 32 (32–34) in diameter. Prodorsal setae *sci* shorter than *ve* and subequal to *sce*; lengths: *vi* 209 (202–209), *ve* 241 (240–241), *sci* 187 (187–200), *sce* 192 (192–202); distances: *vi-vi* 60 (53–60), *vi-ve* 65 (65–69), *ve-sci* 86 (74–86), *sci-sce* 84 (79–84). Dorsal hysterosomal setae  $c_1$  1.9 times distance of  $c_1-c_1$ ; ratio  $c_1-c_1: e_1-e_1: f_1-f_1 = 1.0: 1.0: 1.5$ ; lengths:  $c_1$  183 (175–183),  $d_2$  193 (193–197),  $e_1$  170 (170–190),  $e_2$  192 (192–197),  $f_1$  24; distances:  $c_1-c_1$  98 (98–100),  $e_1-e_1$  101 (89–101),  $e_1-e_2$  102 (10–102),  $f_1-f_1$  151 (123–151); humeral setae  $c_2$  38 (34–38),  $c_2: f_1 = 1.3-1.6$ . Suranal setae  $h_1$  41 (41–43),  $h_2$  41 (41–43); ratios  $c_2: h_1 = 0.9, f_1: h_1 = 0.6$ . Ventral setae *la* slightly longer than other two pairs, *la* 49 (49–53), *3a* 44 (44–45) and *4a* 45 (41–45). Aggenital area with 2 pairs of setae, each on a platelet, *ag*<sub>1</sub> 20 (18–20), *ag*<sub>2</sub> 30 (30–32); pseudanal setae normal, *ps*<sub>3</sub> 15 (15–16), *ps*<sub>2</sub> 23 (22–23), *ps*<sub>1</sub> 18 (18–19).

**Legs.** Length: leg I 258 (241–258), leg II 250 (249–250), leg III 260 (257–260), leg IV 257 (257–260). Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 5, 2, 1; genua 2 + 1*κ*, 1, 0, 0; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 12 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 7. Lengths of solenidia: I*ω* 25 (24–25), II*ω* 31 (31–32), III*ω* 18 (17–18).

**Distribution** (Map p. 381). New Zealand (this paper). –/NN.

**Material examined.** Holotype and 1 paratype. **Holotype** female: NEW ZEALAND: NN: Nelson, Riwaka R Nth Branch, 11 Mar 1971, G. W. Ramsay, NZAC: 1/1 female.

**Paratype:** same collection data as holotype slide, NZAC: 1/1 female.

**Habitat.** Unknown.

**Etymology.** The species name is derived from the Latin word *scutum*, referring to the ornamental pattern of dorsal shield.

**Remarks.** Females of *M. scutellaris* sp. n. can be distinguished from those of *M. arborea* Wood and *M. procurrens* sp. n. by the relative lengths: setae  $c_2$  about 1.5 length of  $f_1$ ; ratios  $c_2: h_1 = 0.9; f_1: h_1 = 0.6$ .

### Genus *Primagistemus* Fan & Zhang

*Primagistemus* Fan & Zhang, 2002a: 2. Type species: *Stigmaeus loadmani* Wood, 1967, by original designation.

**Diagnosis. Female.** Idiosoma oval in dorsoventral view, colour unknown. Chelicerae separate. Palptibial claw slightly shorter than palptarsus; accessory claw slender, seta-like; terminal eupathidia on palptarsus basally fused and split halfway into 3 small prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 1, 2 + 1

claw + 1 accessory claw, 4 + 1*ω* + 1 subterminal spine-like eupathidium + 3 eupathidia (basally fused). Subcapitulum with 2 pairs of subcapitular setae, *m* posterolaterad of pharynx, *n* posteromedial of *m*. Prodorsum with a large shield, bearing 4 pairs of setae (*vi*, *ve*, *sci* and *sce*); eyes present, *pob* absent. Dorsal hysterosomal area C–F medially covered with a rectangular shield, bearing 3 pairs of setae ( $c_1$ ,  $d_1$  and  $e_1$ ); setae  $d_1$  and  $d_2$  situated on different shields or platelets; humeral shields small, dorsolateral, with setae  $c_2$ ; intercalary shields (F) divided along midline, with a pair of setae ( $f_1$ ). Suranal shield (H) entire, with 2 pairs of setae ( $h_1$  and  $h_2$ ),  $h_3$  absent. Endopodal shields I–II minute or vestigial, not fused along midline, III–IV absent. Ventral opisthosoma with 3 pairs of aggenital setae; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws robust; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *la*, *3a* and *4a*) 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 2; genua 3 + 1*κ*, 2, 0, 0; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 13 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 7 + 1*ω*.

**Male.** Unknown.

Only one species is known from New Zealand.

### *Primagistemus loadmani* (Wood)

Fig. 165–166

*Stigmaeus loadmani* Wood, 1967: 102; Wood, 1981: 370. *Primagistemus loadmani*. – Fan & Zhang, 2002a: 4.

**Diagnosis. Female.** Dorsal idiosomal setae acicular; setae *ve* about 2.8 times distance of *ve-sci* and more than 7 times length of *sci*;  $c_1$  about 2/3 distance of  $c_1-c_1$ ;  $d_1$  more than 1/2 distance of  $d_1-d_1$ ;  $e_1$  equal to distance of  $e_1-e_1$ .

**Description. Female** (Fig. 165 A–H, 166, *n* = 2)

**Gnathosoma.** Chelicerae 119 (118–119), movable digits longer than 1/2 length of chelicerae, 67 (67–69). Palp 91 (91–94), accessory claw slender, seta-like. Subcapitular setae *n* 1.7 times length of *m*, *m* = 30 (30–31), *n* = 51 (51–53); *m-m* 1.4 times distance of *n-n*, *m-m* = 41 (41–43), *n-n* = 30 (30–36), *m-n* = 6 (6–7).

**Idiosoma.** Oval, 429 (342–429) long, 315 (269–315) wide. Dorsal shields smooth; dorsal idiosomal setae acicular. Eyes 11 (11–14) in diameter. Prodorsal setae *sci* minute, about 1/7 length of *ve* and *sce*; lengths: *vi* 45 (43–45), *ve* 76 (72–76), *sci* 10, *sce* 75; distances: *vi-vi* 26, *vi-ve* 22 (22–28), *ve-sci* 24 (24–26), *sci-sce* 40 (40–43). Dorsal hysterosomal setae  $c_1$  about 4/5 distance of  $c_1-c_1$  and  $c_1-d_1$ ; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.5: 1.6: 1.0: 1.8$ ; lengths:  $c_1$  67 (65–67),  $d_1$  56 (55–56),  $d_2$  68 (63–68),  $e_1$  46 (46–

58),  $e_2$  52 (52–60),  $f_1$  30 (30–31); distances:  $c_1-c_1$  88 (88–95),  $c_1-d_1$  70 (69–70),  $d_1-d_1$  94 (92–94),  $d_1-d_2$  70 (53–70),  $d_1-e_1$  62 (62–67),  $e_1-e_1$  60 (57–60),  $e_1-e_2$  66 (41–66),  $e_1-f_1$  56 (40–56),  $f_1-f_1$  109 (107–109); humeral setae  $c_2$  75 (67–75). Suranal setae  $h_1$  40 (40–41),  $h_2$  40 (40–42). First pair of ventral setae longer than other 2 pairs;  $1a = 75$  (75–77),  $3a = 55$  (55–58),  $4a = 54$  (54–62). Aggenital area with 3 pairs of subequal setae, first pair each on a platelet, second and third pairs jointly on a small shield on each side;  $ag_1 = 30$  (29–30),  $ag_2 = 33$  (33–49),  $ag_3 = 56$  (55–56); genital setae 51 (48–51); pseudanal setae  $ps_3$  30 (26–30),  $ps_2$  26 (24–26),  $ps_1$  31.

**Legs.** Length: leg I 240 (240–242), leg II 175 (175–185), leg III 176 (176–179), leg IV 192 (183–192). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 3, 2; genua 3 + 1  $\kappa$ , 2, 0, 0; tibiae 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  21 (19–21), II  $\omega$  19 (19–20), III  $\omega$  13 (11–13), IV  $\omega$  8 (8–10).

**Deutonymph female** (Fig. 165 I, n = 2)

**Gnathosoma.** Chelicerae 103 (100–103), movable digits longer than 1/2 length of chelicerae, 60 (57–60). Palp 85 (82–85), accessory claw slender, seta-like. Subcapitular setae  $n$  1.6 times length of  $m$ ,  $m = 25$ ,  $n = 41$  (41–43);  $m-m$  1.4 times distance of  $n-n$ ,  $m-m = 38$  (37–38),  $n-n = 28$  (27–28),  $m-n = 7$  (6–7).

**Idiosoma.** Oval, 356 (356–364) long, 288 (274–288) wide. Dorsal shields smooth; dorsal idiosomal setae acicular. Eyes 13 (12–13) in diameter. Prodorsal setae *sci* minute, about 1/7 length of *ve* and *sce*; lengths: *vi* 38 (38–40), *ve* 67 (67–71), *sci* 9, *sce* 68 (68–71); distances: *vi-vi* 30 (27–30), *vi-ve* 28 (25–28), *ve-sci* 27 (25–27), *sci-sce* 34 (34–37). Dorsal hysterosomal setae  $c_1$  about 4/5 distance of  $c_1-c_1$  and  $c_1-d_1$ ; ratio  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.5$ : 1.5: 1.0: 1.6; lengths:  $c_1$  60 (60–66),  $d_1$  50,  $d_2$  55 (50–55),  $e_1$  45 (45–50),  $e_2$  51 (51–62),  $f_1$  42 (42–46); distances:  $c_1-c_1$  78 (78–81),  $c_1-d_1$  71 (66–71),  $d_1-d_1$  80 (80–85),  $d_1-d_2$  41 (41–51),  $d_1-e_1$  51 (51–59),  $e_1-e_1$  52 (52–55),  $e_1-e_2$  33 (33–38),  $e_1-f_1$  32 (32–37),  $f_1-f_1$  83 (83–88); humeral setae  $c_2$  66 (66–78). Suranal setae  $h_1$  39 (36–39),  $h_2$  35 (35–36). First pair of ventral setae longer than other 2 pairs;  $1a = 70$  (68–70),  $3a = 48$  (48–50),  $4a = 32$  (32–41). Aggenital shield horseshoe-like, with 3 pairs of setae,  $ag_1 = 18$  (18–21),  $ag_2 = 25$  (25–28),  $ag_3 = 22$  (22–24); pseudanal setae  $ps_3$  14 (14–16),  $ps_2$  15,  $ps_1$  15.

**Legs.** Length: leg I 201 (201–212), leg II 166 (156–166), leg III 165 (165–166), leg IV 188 (175–188). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 0; trochanters 1, 1, 1, 0; femora 5, 4, 3, 2; genua 3 + 1  $\kappa$ , 2, 0, 0; tibiae 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  18 (18–19), II  $\omega$  14 (14–15), III  $\omega$  9 (9–10), IV  $\omega$  5.

**Distribution** (Map p. 381). New Zealand (Wood 1967, 1981; Fan & Zhang 2002a).

?AK / NN, BR / CH

**Material examined.** Holotype, 1 paratype, and 21 non-type specimens. **Holotype** female: NEW ZEALAND: NN: Ruby Bay, (sea level), 17 June 1965, E. Collyer, ferns, NZAC: 1/1 female. **Paratype:** same collection data as holotype slide: NZAC: 1/1 female. **Other material:** ?AK: ?"Shanlan", Matai track, 14 Aug 1983, 2/2 females. NN: Abel Tasman N.P., Canaan, 25 Sep 1966, E. Collyer, *Dracophyllum* sp., 1/1 female, 2 deutonymph females [+ *Eryngiopus arboreus* 1 female; *Mediolata brevisetis* 1 female]. BR: Lake Rotoiti Track, 7 June 1965, E. Collyer, *Elaeocarpus hookerianus*, 1/1 deutonymph female. Near Charleston, 11 Apr 1966, E. Collyer, *Dacrydium cupressinum*, 1/6 females, 4 deutonymph females. Near Charleston, 11 Apr 1966, E. Collyer, *Leptospermum scoparium*, 1/2 deutonymph females [+ *Zetziella maori* 1 female, 2 deutonymph females, 1 protonymph; *Eustigmaeus corticolus* 2 females; *Mecognatha hirsuta* 1 deutonymph female]. West Coast, Oct 1966, E. Collyer, *Dacrydium cupressinum*, 1/1 female [*Pseudostigmaeus collyerae* 1 protonymph]. CH: Chatham Is, East Sister Is, 12 Feb 1974, A. Wright, fern on cliff face, 74/2, 1/2 deutonymph females.

**Habitat.** *Alectryon excelsum*, *Dacrydium cupressinum*, *D. intermedium*, *Dracophyllum* sp., *Elaeocarpus hookerianus*, ferns, *Leptospermum scoparium*, *Ripogonum scandens*; mixed leaf litter of *Agathis australis* and *Weinmannia racemosa*; moss on *Nothofagus* forest floor.

### Genus *Pseudostigmaeus* Wood

*Pseudostigmaeus* Wood, 1967: 107. Type species: *Pseudostigmaeus collyerae* Wood, 1967, by original designation.

**Diagnosis. Female.** Idiosoma narrowly to broadly oval in dorsoventral view, generally red, orange, or yellow in life. Chelicerae separate. Palptibial claw subequal to palptarsus; accessory claw slender, seta-like; terminal eupathidia on palptarsus mostly fused and split terminally into 3 vestigial prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1  $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (mostly fused). Subcapitulum with 2 pairs of subcapitular setae,  $m$  anterolaterad of pharynx. Prodorsum with a large shield, bearing 3 pairs of setae (*vi*, *ve* and *sci*), *sce* situated on platelets; eyes present, *pob* absent. Dorsal hysterosomal area C–F mainly striated, without prominent shield; setae  $d_1$  and  $d_2$  situated on different platelets; humeral shields small or vestigial,

dorsolateral, with setae  $c_2$ ; intercalary shields (F) small, divided along midline, with a pair of setae ( $f_1$ ). Suranal shield (H) divided or entire, with 2 pairs of setae ( $h_1$  and  $h_2$ ),  $h_3$  absent. Endopodal shields I–II and III–IV present, not fused along midline. Ventral opisthosoma with 3 pairs of aggenital setae; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws robust; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding  $1a$ ,  $3a$ , and  $4a$ ) 2 + 1  $elcp$ , 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 2–3, 2; genua 3 + 1  $\kappa$ , 2–3 + 0–1  $\kappa$ , 0–1, 1; tibiae 5 + 0–1  $\phi$  + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ .

**Male.** Solenidia on tarsi I–IV: 2, 2, 2, 1.

Three species were previously described from New Zealand. One new species is added in this paper.

#### Key to species of *Pseudostigmaeus* from New Zealand (adults)

- 1 Setae  $ve$  no more than 5 times length of  $sci$  (Fig. 167 A);  $1a$  and  $3a$  subequal (Fig. 167 F) ..... 2
- Setae  $ve$  relatively long, about 8 times length of  $sci$  (Fig. 171 A);  $1a$  more than 3 times length of  $3a$  (Fig. 171 G) ..... (p. 85)... *P. longisetis* Wood
- 2 Setae  $ve$ :  $sci < 3.5$ ;  $ag_1$ ,  $ag_2$ , and  $ag_3$  on different platelets (Fig. 167 E) ..... 3
- Setae  $ve$ :  $sci = 4.8$ ;  $ag_1$ ,  $ag_2$ , and  $ag_3$  jointly on a small shield on each side (Fig. 179 D) ..... (p. 87)... *P. striatus* Wood
- 3 Suranal shield entire in female (Fig. 167 D);  $ag_1$  and  $ag_2$  jointly on a small shield on each side,  $ag_3$  each on a platelet in female (Fig. 167 E) ..... (p. 83)... *P. collyerae* Wood
- Suranal shield divided along midline in female (Fig. 175 E);  $ag_1$  each on a platelet,  $ag_2$  and  $ag_3$  jointly on a small shield on each side in female (Fig. 175 F) ..... (p. 86)... *P. schizopeltatus* sp. n.

#### *Pseudostigmaeus collyerae* Wood

Fig. 167–170

*Pseudostigmaeus collyerae* Wood, 1967: 109; Wood, 1970: 682; Wood, 1971c: 410.

**Diagnosis. Female.** Setae  $ve$  2.4 times length of  $sci$ ;  $c_2$  2.3 times length of  $c_1$ ; suranal shield entire;  $1a$ :  $3a$ :  $4a = 1.2$ :  $1.2$ :  $1.0$ ;  $ag_1$  and  $ag_2$  jointly on a small shield on each side,  $ag_3$  each on a platelet.

**Male.** Setae  $ve$  2.5 times length of  $sci$ ;  $c_2$  4.8 times length

of  $c_1$ ; suranal shield entire;  $1a$ :  $3a$ :  $4a = 1.2$ :  $1.2$ :  $1.0$ ;  $ag_{1-3}$  situated on an undivided shield.

**Description. Female** (Fig. 167 A–F, 168,  $n = 3$ )

**Gnathosoma.** Chelicerae 153 (134–153), movable digits 83 (76–83), about 1/2 length of chelicerae. Palp 132 (125–132), accessory claw spine-like. Subcapitular setae  $n$  2.7 times length of  $m$ ,  $m = 43$  (39–43),  $n = 116$  (115–120);  $m-m$  about 3/5 distance of  $n-n$ ,  $m-m = 27$  (24–27),  $n-n = 45$  (44–48),  $m-n = 28$  (28–31).

**Idiosoma.** Oval, 435 (386–458) long, 291 (231–303) wide. Eyes 11 (10–11) in diameter. Prodorsal setae  $ve$  2.4 times length of  $sci$ ,  $sci$  less than 1/2 length of  $sce$ ; lengths:  $vi$  31 (26–31),  $ve$  82 (66–82),  $sci$  34 (28–34),  $sce$  79 (58–79); distances:  $vi-vi$  40 (36–40),  $vi-ve$  22 (19–25),  $ve-sci$  47 (46–53),  $sci-sce$  38 (21–38). Dorsal hysterosomal setae  $c_1$  about 1/2 distance of  $c_1-c_1$ ,  $e_1$  longer than 1/2 distance of  $e_1-e_1$ ; ratio  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.5$ :  $1.3$ :  $1.0$ :  $2.0$ ; lengths:  $c_1$  41 (31–41),  $d_1$  35 (27–35),  $d_2$  55 (45–55),  $e_1$  29 (26–29),  $e_2$  34 (29–34),  $f_1$  59 (55–59); distances:  $c_1-c_1$  78 (63–89),  $c_1-d_1$  67 (67–78),  $d_1-d_1$  67 (61–79),  $d_1-d_2$  75 (55–79),  $d_1-e_1$  84 (81–84),  $e_1-e_1$  53 (41–55),  $e_1-e_2$  56 (43–63),  $e_1-f_1$  51 (38–60),  $f_1-f_1$  105 (89–106); humeral setae  $c_2$  94 (94–125), 2.3 times length of  $c_1$ . Suranal shield entire,  $h_1$  45 (41–45),  $h_2$  51 (44–51). Endopodal shields faintly sclerotised. Ventral setae  $1a$  and  $3a$  slightly longer than  $4a$ , ratio  $1a$ :  $3a$ :  $4a = 1.2$ :  $1.2$ :  $1.0$ ; lengths:  $1a$  40 (38–40),  $3a$  40 (39–40),  $4a$  33 (30–33). Aggenital area with 3 pairs of setae,  $ag_1$  and  $ag_2$  jointly on a small shield on each side,  $ag_3$  each on a platelet; lengths:  $ag_1$  22 (19–22),  $ag_2$  29 (25–29),  $ag_3$  29 (25–29); genital setae 10 (10–11); pseudanal setae  $ps_1$  25 (24–25),  $ps_2$  27 (23–27),  $ps_3$  27 (22–27).

**Legs.** Length: leg I 221 (207–221), leg II 177 (168–177), leg III 176 (170–176), leg IV 199 (185–199). Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  28 (25–28), II  $\omega$  20 (18–20), III  $\omega$  9 (8–9), IV  $\omega$  9.

**Male** (Fig. 169–170,  $n = 2$ )

**Gnathosoma.** Chelicerae 123 (123–132), movable digits 67 (67–75), about 1/2 length of chelicerae. Palp 113 (113–116), accessory claw spine-like. Subcapitular setae  $n$  2.5 times length of  $m$ ,  $m = 39$  (32–39),  $n = 96$  (96–99);  $m-m$  about 1/2 distance of  $n-n$ ,  $m-m = 24$  (24–28),  $n-n = 46$  (16–50),  $m-n = 29$  (28–29).

**Idiosoma.** Oval, 325 (325–417) long, 241 (238–241) wide. Eyes 10 in diameter. Prodorsal setae  $ve$  2.5 times length of  $sci$ ,  $sci$  about 1/2 length of  $sce$ ; lengths:  $vi$  22 (22–23),  $ve$  48 (48–61),  $sci$  19 (19–21),  $sce$  38 (38–46); distances:  $vi-vi$  36 (36–38),  $vi-ve$  21,  $ve-sci$  61 (41–61),  $sci-sce$  27

(21–27). Dorsal hysterosomal setae  $c_i$  about 1/4 distance of  $c_i-c_i$ ,  $e_i$  about 1/3 distance of  $e_i-e_i$ ; ratio  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i$  = 1.9: 1.4: 1.0: 2.0; lengths:  $c_i$  20 (20–22),  $d_i$  17 (17–21),  $d_2$  27 (27–37),  $e_i$  14 (14–15),  $e_2$  15 (15–20),  $f_i$  48; distances:  $c_i-c_i$  79 (79–81),  $c_i-d_i$  62 (62–66),  $d_i-d_i$  58 (58–65),  $d_i-d_2$  62 (56–62),  $d_i-e_i$  69 (69–70),  $e_i-e_i$  42 (36–42),  $e_i-e_2$  49 (47–49),  $e_i-f_i$  48 (48–49),  $f_i-f_i$  82 (80–82); humeral setae  $c_2$  96 (96–103), 4.8 times length of  $c_i$ . Suranal shield entire,  $h_1$  22,  $h_2$  41 (41–44). Endopodal shields faintly sclerotised. Ventral setae  $1a$  and  $3a$  slightly longer than  $4a$ , ratio  $1a$ :  $3a$ :  $4a$  = 1.2: 1.2: 1.0; lengths:  $1a$  29 (28–29),  $3a$  31 (29–31),  $4a$  25 (24–25). Aggenital area with 3 pairs of setae, all on an undivided shield; lengths:  $ag_1$  24 (21–24),  $ag_2$  24 (24–30),  $ag_3$  24 (24–30); pseudanal setae  $ps_3$  24 (24–25),  $ps_2$  9 (8–9),  $ps_1$  6.

**Legs.** Length: leg I 173 (173–187), leg II 137, leg III 133 (133–138), leg IV 161 (159–161). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  8, I  $\omega_2$  22 (22–27), II  $\omega_1$  8 (6–8), II  $\omega_2$  17 (16–17), III  $\omega_1$  6, III  $\omega_2$  7, IV  $\omega$  6 (6–7).

#### Deutonymph female (Fig. 167, G–H, n = 1)

**Gnathosoma.** Chelicerae 108, movable digits 58, about 1/2 length of chelicerae. Palp 98, accessory claw spine-like. Subcapitular setae  $n$  2.9 times length of  $m$ ,  $m = 31$ ,  $n = 91$ ;  $m-m$  about 3/5 distance of  $n-n$ ,  $m-m = 20$ ,  $n-n = 33$ ,  $m-n = 21$ .

**Idiosoma.** Oval, 342 long, 216 wide. Eyes 9 in diameter. Prodorsal setae  $ve$  2.5 times length of  $sci$ ,  $sci$  about 1/2 length of  $sce$ ; lengths:  $vi$  19,  $ve$  49,  $sci$  20,  $sce$  41; distances:  $vi-vi$  32,  $vi-ve$  19,  $ve-sci$  38,  $sci-sce$  31. Dorsal hysterosomal setae  $c_i$  less than 1/3 distance of  $c_i-c_i$ ,  $e_i$  about 1/2 distance of  $e_i-e_i$ ; ratio  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i$  = 1.9: 1.5: 1.0: 2.0; lengths:  $c_i$  20,  $d_i$  20,  $d_2$  36,  $e_i$  19,  $e_2$  21,  $f_i$  44; distances:  $c_i-c_i$  67,  $c_i-d_i$  55,  $d_i-d_i$  53,  $d_i-d_2$  55,  $d_i-e_i$  65,  $e_i-e_i$  35,  $e_i-e_2$  53,  $e_i-f_i$  43,  $f_i-f_i$  69; humeral setae  $c_2$  77, 3.9 times length of  $c_i$ . Suranal shield entire,  $h_1$  31,  $h_2$  33. Endopodal shields faintly sclerotised. Ventral setae  $1a$  and  $3a$  longer than  $4a$ , ratio  $1a$ :  $3a$ :  $4a$  = 1.6: 1.4: 1.0; lengths:  $1a$  28,  $3a$  24,  $4a$  17. Aggenital area with 3 pairs of setae,  $ag_1$  and  $ag_2$  jointly on a small shield on each side,  $ag_3$  each on a platelet; lengths:  $ag_1$  11,  $ag_2$  12,  $ag_3$  12; pseudanal setae  $ps_3$  15,  $ps_2$  15,  $ps_1$  15.

**Legs.** Length: leg I 171, leg II 127, leg III 132, leg IV 148. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 0; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 2 + 1  $\kappa$ , 0, 0; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  19, II  $\omega$  15, III  $\omega$  6, IV  $\omega$  6.

#### Protonymph (n = 1)

**Gnathosoma.** Chelicerae 98, movable digits 50, about 1/2 length of chelicerae. Palp 89, accessory claw spine-like. Subcapitular setae  $n$  2.8 times length of  $m$ ,  $m = 28$ ,  $n = 78$ ;  $m-m$  about 3/5 distance of  $n-n$ ,  $m-m = 18$ ,  $n-n = 32$ ,  $m-n = 21$ .

**Idiosoma.** Oval, 342 long, 192 wide. Eyes 9 in diameter. Prodorsal setae  $ve$  2.2 times length of  $sci$ ,  $sci$  about 1/2 length of  $sce$ ; lengths:  $vi$  17,  $ve$  38,  $sci$  17,  $sce$  34; distances:  $vi-vi$  28,  $vi-ve$  17,  $ve-sci$  34,  $sci-sce$  23. Dorsal hysterosomal setae  $c_i$  more than 1/5 distance of  $c_i-c_i$ ,  $e_i$  nearly 1/2 distance of  $e_i-e_i$ ; ratio  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i$  = 2.0: 1.5: 1.0: 1.9; lengths:  $c_i$  14,  $d_i$  14,  $d_2$  28,  $e_i$  15,  $e_2$  16,  $f_i$  38; distances:  $c_i-c_i$  64,  $c_i-d_i$  55,  $d_i-d_i$  49,  $d_i-d_2$  46,  $d_i-e_i$  60,  $e_i-e_i$  32,  $e_i-e_2$  39,  $e_i-f_i$  39,  $f_i-f_i$  61; humeral setae  $c_2$  55, 3.9 times length of  $c_i$ . Suranal setae  $h_1$  25,  $h_2$  26. Endopodal shields faintly sclerotised. Ventral setae  $1a$  and  $3a$  longer than  $4a$ , ratio  $1a$ :  $3a$ :  $4a$  = 1.5: 1.3: 1.0; lengths:  $1a$  24,  $3a$  21,  $4a$  16. Aggenital area with 3 pairs of setae, on an undivided shield; lengths:  $ag_1$  11,  $ag_2$  12,  $ag_3$  12; pseudanal setae  $ps_3$  13,  $ps_2$  15,  $ps_1$  12.

**Legs.** Length: leg I 149, leg II 120, leg III 121, leg IV 132. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 0; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 2 + 1  $\kappa$ , 0, 0; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  15, II  $\omega$  11, III  $\omega$  5, IV  $\omega$  5.

**Distribution** (Map p. 382). New Zealand (Wood 1967, 1971c), Campbell Island (Wood 1970).

TK / NN, BR, WD, NC, FD, SI / CA.

**Material examined.** Holotype, 6 paratypes, and 113 non-type specimens. **Holotype** female: NEW ZEALAND: TK: N. Egmont Chalet, 1000 m, 26 Dec 1964, E. Collyer, *Coprosma pseudocuneata*, NZAC: 1/1 female, 1 male [allotype]. **Paratypes**: on same slide with holotype, NZAC: 1/1 male [allotype]. TK: Mt Egmont, 3000 m, 25 Dec 1964, E. Collyer, *Libocedrus bidwillii*, NZAC: 3/2 females, 1 male, 1 deutonymph female, 1 protonymph. **Other material**: TK: same data as holotype, 1/1 female. N. Egmont Chalet, 12 Dec 1964, E. Collyer, *Coprosma pseudocuneata*, 1/1 female. NN: Takaka Hill, Canaan Road, 15 May 1965, E. Collyer, *Dacrydium cupressinum*, 1/2 females, 3 deutonymph females, 1 protonymph. Abel Tasman N.P., Canaan Rd, 5 Sep 1965, E. Collyer, *Elaeocarpus hookerianus*, 1/1 female, 2 males. Abel Tasman N.P., Canaan Rd, 5 Sep 1965, E. Collyer, *Nothofagus menziesii*, 1/1 male, 2 deutonymph females, 1 protonymph. Dun Track, 13 Sep 1965, E. Collyer, *Hebe* sp., 1/1 male, 1 deutonymph female. Dun Mountain, above the bush, 13 Sep 1965, E. Collyer, *Leptocophylla juniperina* [as *Cyathodes*], 1/1 deutonymph female. Cobb Lake, 12 Dec 1965, E. Collyer, *Dracophyllum filifolium* 1/

1 female, 1 male [+ *Mediolata mollis* holotype and paratype females, nymph; *Eryngiopus arboreus* male]. Abel Tasman N.P., Canaan, Mt Evans Track, 16 Dec 1965, E. Collyer, *Lepidothamnus intermedius*, 1/2 females, 2 males, 2 deutonymph females. Abel Tasman N.P., Canaan, Mt Evans Track, 16 Dec 1965, E. Collyer, *Coprosma pseudocuneata*, 1/2 females, 1 deutonymph female. Lake Sylvester, Cobb, 2 Jan 1966, E. Collyer, *Halocarpus bidwillii*, 1/4 females, 2 larvae. Abel Tasman N.P., Canaan Rd, 11 Jan 1966, E. Collyer, *Nothofagus* spp., 1/1 female. Abel Tasman N.P., Canaan, Trig K, 11 Jan 1966, E. Collyer, *Nothofagus* sp., 1/3 males, 4 deutonymph females. Dun Mountain, 19 Feb 1966, E. Collyer, *Dracophyllum filifolium*, 1/1 female, 1 deutonymph female. Abel Tasman N.P., Canaan, Trig K, 26 Feb 1966, E. Collyer, *Libocedrus plumosa*, 1/1 female, 1 deutonymph female. Baton River, 2 Apr 1966, E. Collyer, *Nothofagus solandri*, 1/1 male [+ *Eryngiopus arboreus* 1 male, 1 protonymph; *Mediolata robusta* 2 females, 1 deutonymph female; *Mediolata zonzria* holotype female; *Pseudostigmaeus collyerae* 1 male]. Fringed Hill, 17 June 1966, E. Collyer, *Leptecophylla juniperina* [as *Cyathodes*], 2/12 females, 4 males, 4 deutonymph females, 3 protonymph, 2 larvae. Abel Tasman N.P., Canaan, 7 July 1966, E. Collyer, *Nothofagus menziesii*, 1/3 deutonymph females. Eves Bush, 28 Feb 1967, E. Collyer, *Ripogonum scandens*, 1/10 females [+ *Mediolata robusta* 1 female, 3 males]. Eves Bush, 8 Aug 1968, E. Collyer, *Dacrycarpus dacrydioides*, 1/1 female [+ *Mediolata robusta* 1 female]. Eves Bush, Oct 1969, E. Collyer, *Leptecophylla juniperina* [as *Cyathodes*]. Mangarakau, 12 Mar 1971, G. W. Ramsay, *Brachyglottis hectori* [as *Senecio*], 1/1 female. **BR**: Lake Rotoroa, 2 Jan 1965, E. Collyer, *Sophora microphylla*, 1/1 male. Lake Rotoiti, View Road, 12 Feb 1966, E. Collyer, *Halocarpus bidwillii*, 1/1 male, 1 deutonymph female, 2 protonymphs. Buller R, roadside, 10 Apr 1966, E. Collyer, apple, 1/?? [+ *Eryngiopus arboreus*; *Eryngiopus bifidus*]. **WD**: West Coast, Oct 1966, E. Collyer, *Dacrydium cupressinum*, 1/1 protonymph [*Primagistemus loadmani* 1 female]. Westland: nr Haast, Ship Creek, 10 Oct 1966, E. Collyer, *Dracophyllum* sp., 1/1 female. West Coast, 12 Oct 1966, E. Collyer, *Dacrycarpus dacrydioides*, 1/1 deutonymph [+ *Eryngiopus bifidus* 1 female]. **NC**: Arthurs Pass, 3 Oct 1966, E. Collyer, *Dracophyllum* sp., 1/1 male. Arthurs Pass, 12 Nov 1968, E. Collyer, *Coprosma* sp., 1/5 females, 3 males [+ *Zetzellia maori* 1 female]. **FD**: Wilmot Pass, 640 m, 20 Mar 1970, G. W. Ramsay, *Coprosma propinqua*, 1/3 females, 1 male. **SI**: Stewart I, Oban, 4 Feb 1968, E. Collyer, *Coprosma foetidissima*, 1/1 female, 2 males, [*Eryngiopus arboreus* 1 female].

**Habitat.** Apple, *Brachyglottis hectori* [as *Senecio*], *Coprosma cuneata*, *Coprosma foetidissima*, *Coprosma*

*propinqua*, *Coprosma pseudocuneata*, *Coprosma* sp., *Dacrydium bidwillii*, *Dacrycarpus dacrydioides*, *Dacrydium cupressinum*, *Dracophyllum* sp., *Elaeocarpus hookerianus*, *Halocarpus bidwillii*, *Lepidothamnus intermedius*, *Leptecophylla juniperina* [as *Cyathodes*], *Libocedrus bidwillii*, *Libocedrus plumosa*, *Microsorium scandens* [as *Phymatodes*], *Nothofagus menziesii*, *Nothofagus solandri*, *Nothofagus* sp., *Olearia nummularifolia*, *Podocarpus* sp., *Ripogonum scandens*, *Sophora microphylla*.

### **Pseudostigmaeus longisetis** Wood

Fig. 171–174

*Pseudostigmaeus longisetis* Wood, 1970: 680; Wood, 1971c: 410.

**Diagnosis. Female.** Setae *ve* relatively long, about 8.0 times length of *sci*;  $c_2$  4.6 times length of  $c_1$ ; suranal shield divided along midline;  $1a: 3a: 4a = 5.1: 1.4: 1.0$ ;  $ag_1$  each on a platelet,  $ag_2$  and  $ag_3$  jointly on a small shield on each side.

**Male.** Setae *ve* 7.9 times length of *sci*;  $c_2$  3.7 times length of  $c_1$ ; suranal shield entire;  $1a: 3a: 4a = 4.4: 1.1: 1.0$ ;  $ag_{1-3}$  situated on an undivided shield.

**Description. Female** (Fig. 171–172,  $n = 1$ )

**Gnathosoma.** Chelicerae 131, movable digits 66, about 1/2 length of chelicerae. Palp 118, accessory claw spine-like. Subcapitular setae  $n$  2.7 times length of  $m$ ,  $m = 35$ ,  $n = 96$ ;  $m-m$  1/2 distance of  $n-n$ ,  $m-m = 20$ ,  $n-n = 40$ ,  $m-n = 26$ .

**Idiosoma.** Oval, 527 long, 287 wide. Eyes 10 in diameter. Prodorsal setae *ve* relatively long, about 8 times length of *sci*, *sci* about 1/5 length of *sce*; lengths:  $vi$  22,  $ve$  168, *sci* 21, *sce* 50; distances:  $vi-vi$  36,  $vi-ve$  25,  $ve-sci$  46,  $sci-sce$  44. Dorsal hysterosomal setae  $c_1$  more than 1/5 distance of  $c_1-c_1$ ,  $e_1$  about 1/5 distance of  $e_1-e_1$ ; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 2.0: 1.7: 1.0: 1.8$ ; lengths:  $c_1$  22,  $d_1$  22,  $d_2$  36,  $e_1$  21,  $e_2$  22,  $f_1$  45; distances:  $c_1-c_1$  101,  $c_1-d_1$  99,  $d_1-d_1$  84,  $d_1-d_2$  95,  $d_1-e_1$  94,  $e_1-e_1$  50,  $e_1-e_2$  83,  $e_1-f_1$  55,  $f_1-f_1$  90; humeral setae  $c_2$  101, 4.6 times length of  $c_1$ . Suranal shield divided along midline,  $h_1$  41,  $h_2$  40. Endopodal shields faintly sclerotised. Ventral setae *1a* whip-like, ratio  $1a: 3a: 4a = 5.1: 1.4: 1.0$ ; lengths: *1a* 122, *3a* 34, *4a* 24. Aggenital area with 3 pairs of setae,  $ag_1$  each on a platelet,  $ag_2$  and  $ag_3$  jointly on a small shield on each side; lengths:  $ag_1$  24,  $ag_2$  25,  $ag_3$  25; genital setae 8; pseudanal setae  $ps_3$  20,  $ps_2$  22,  $ps_1$  20.

**Legs.** Length: leg I 202, leg II 146, leg III 153, leg IV 156. Counts of setae and solenidia on legs I–IV: coxae 2 + 1elcp, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1κ, 3 + 1κ, 1, 1; tibiae 5 + 1φ + 1φp, 5 + 1φp,

5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  23, II $\omega$  14, III $\omega$  7, IV $\omega$  8.

**Male** (Fig. 173–174, n = 1)

**Gnathosoma.** Not observed (lost in the single specimen).

**Idiosoma.** Oval, 337 long, 185 wide. Eyes 14 in diameter. Prodorsal setae *ve* 7.9 times length of *sci*, *sci* less than 1/2 length of *sce*; lengths: *vi* 19, *ve* 118, *sci* 15, *sce* 36; distances: *vi-vi* 31, *vi-ve* 21, *ve-sci* 36, *sci-sce* 17. Dorsal hysterosomal setae *c*<sub>1</sub> slightly shorter than distance of *c*<sub>1</sub>-*c*<sub>1</sub>, *e*<sub>1</sub> about 1/2 distance of *e*<sub>1</sub>-*e*<sub>1</sub>; ratio *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.0: 1.7: 1.6: 2.8; lengths: *c*<sub>1</sub> 19, *d*<sub>1</sub> 17, *d*<sub>2</sub> 26, *e*<sub>1</sub> 17, *e*<sub>2</sub> 18, *f*<sub>1</sub> 38; distances: *c*<sub>1</sub>-*c*<sub>1</sub> 23, *c*<sub>1</sub>-*d*<sub>1</sub> 74, *d*<sub>1</sub>-*d*<sub>1</sub> 40, *d*<sub>1</sub>-*d*<sub>2</sub> 48, *d*<sub>1</sub>-*e*<sub>1</sub> 67, *e*<sub>1</sub>-*e*<sub>1</sub> 36, *e*<sub>1</sub>-*e*<sub>2</sub> 41, *e*<sub>1</sub>-*f*<sub>1</sub> 24, *f*<sub>1</sub>-*f*<sub>1</sub> 65; humeral setae *c*<sub>2</sub> 71, 3.7 times length of *c*<sub>1</sub>. Suranal shield entire, *h*<sub>1</sub> 29, *h*<sub>2</sub> 36. Endopodal shields faintly sclerotised. Ventral setae *la* whip-like, ratio *la: 3a: 4a* = 4.4: 1.1: 1.0; lengths: *la* 70, *3a* 18, *4a* 16. Aggenital area with 3 pairs of setae on an undivided shield, equal in length, 18; pseudanal setae *ps*<sub>3</sub> 17, *ps*<sub>2</sub> 7, *ps*<sub>1</sub> 4.

**Legs.** Length: leg I 176, leg II 132, leg III 133, leg IV 145. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *lecp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  25, I $\omega$ <sub>2</sub> 27, II $\omega$ <sub>1</sub> 16, II $\omega$ <sub>2</sub> 25, III $\omega$ <sub>1</sub> 7, III $\omega$ <sub>2</sub> 25, IV $\omega$ <sub>1</sub> 8, IV $\omega$ <sub>2</sub> 26.

**Distribution** (Map p. 382). Campbell Island (Wood 1970), New Zealand (this paper).

– / FD / CA.

**Material examined.** Holotype and 2 non-type specimens. **Holotype** female: NEW ZEALAND: **Campbell Island:** Bishop 8294, 100–180 m, Beeman Hill, 11–16 Dec 1961, [J.L. Gressitt], yellow moss, MONZ: 1/1 female. **Other material:** **FD:** Hunter Mts, Mt Burns, 4200 m, 10 Jan. 1970, J. I. Townsend, 1/1 male. Taxonomy [sample] 70/13, other data unknown, NZAC: 1/1 female.

**Habitat.** Mollymawk nests, weed and grass turf, yellow moss.

### ***Pseudostigmaeus schizopeltatus* sp. n.**

Fig. 175–178

**Diagnosis. Female.** Setae *ve* 3.2 times length of *sci*; *c*<sub>2</sub> 3.3 times length of *c*<sub>1</sub>; suranal shield divided along midline; *la: 3a: 4a* = 1.3: 1.4: 1.0; *ag*<sub>1</sub> each on a platelet, *ag*<sub>2</sub> and *ag*<sub>3</sub> jointly on a small shield on each side.

**Male.** Setae *ve* 2.3 times length of *sci*; *c*<sub>2</sub> 4.0 times length of *c*<sub>1</sub>; suranal shield entire; *la: 3a: 4a* = 1.8: 1.8: 1.0; *ag*<sub>1–3</sub> situated on an undivided shield.

**Description. Female** (Fig. 175–176, n = 5)

**Gnathosoma.** Chelicerae 125 (118–128), movable digits 65 (64–69), about 1/2 length of chelicerae. Palp 103 (103–120), accessory claw spine-like. Subcapitular setae *n* 3.0 times length of *m*, *m* = 30 (26–30), *n* = 90 (84–90); *m-m* about 3/5 distance of *n-n*, *m-m* = 19 (19–20), *n-n* = 33 (31–34), *m-n* = 24 (22–24).

**Idiosoma.** Oval, 349 (332–354) long, 202 (175–212) wide. Eyes 14 (12–14) in diameter. Prodorsal setae *ve* 3.2 times length of *sci*, *sci* about 1/5 length of *sce*; lengths: *vi* 24 (23–24), *ve* 68 (64–78), *sci* 21 (21–23), *sce* 53 (53–56); distances: *vi-vi* 31 (29–31), *vi-ve* 20 (20–22), *ve-sci* 34 (34–36), *sci-sce* 24 (24–25). Dorsal hysterosomal setae *c*<sub>1</sub> more than 1/3 distance of *c*<sub>1</sub>-*c*<sub>1</sub>, *e*<sub>1</sub> about 3/5 distance of *e*<sub>1</sub>-*e*<sub>1</sub>; ratio *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.7: 1.5: 1.0: 2.0; lengths: *c*<sub>1</sub> 24 (21–24), *d*<sub>1</sub> 23 (23–25), *d*<sub>2</sub> 46 (43–50), *e*<sub>1</sub> 23 (23–25), *e*<sub>2</sub> 23 (23–25), *f*<sub>1</sub> 51 (51–58); distances: *c*<sub>1</sub>-*c*<sub>1</sub> 69 (52–69), *c*<sub>1</sub>-*d*<sub>1</sub> 66 (65–69), *d*<sub>1</sub>-*d*<sub>1</sub> 60 (48–60), *d*<sub>1</sub>-*d*<sub>2</sub> 40 (40–46), *d*<sub>1</sub>-*e*<sub>1</sub> 70 (67–77), *e*<sub>1</sub>-*e*<sub>1</sub> 40 (40–50), *e*<sub>1</sub>-*e*<sub>2</sub> 38 (38–42), *e*<sub>1</sub>-*f*<sub>1</sub> 34 (33–35), *f*<sub>1</sub>-*f*<sub>1</sub> 79 (67–86); humeral setae *c*<sub>2</sub> 78 (77–86), 3.3 times length of *c*<sub>1</sub>. Suranal shield divided along midline, *h*<sub>1</sub> 38 (35–41), *h*<sub>2</sub> 38 (35–41). Endopodal shields faintly sclerotised. Ventral setae *la* and *3a* longer than *4a*, ratio *la: 3a: 4a* = 1.3: 1.4: 1.0; lengths: *la* 24 (24–25), *3a* 25 (24–25), *4a* 18 (16–18). Aggenital area with 3 pairs of setae, *ag*<sub>1</sub> each on a platelet, *ag*<sub>2</sub> and *ag*<sub>3</sub> jointly on a small shield on each side; lengths: *ag*<sub>1</sub> 14 (14–15), *ag*<sub>2</sub> 16 (15–18), *ag*<sub>3</sub> 16 (15–18); genital setae 10 (9–10); pseudanal setae *ps*<sub>3</sub> 16 (16–18), *ps*<sub>2</sub> 18 (17–18), *ps*<sub>1</sub> 17 (17–18).

**Legs.** Length: leg I 190 (169–190), leg II 131 (123–137), leg III 132 (125–138), leg IV 144 (140–150). Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *lecp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I $\omega$  20 (19–20), II $\omega$  15 (15–17), III $\omega$  6, IV $\omega$  6.

**Male** (Fig. 177–178, n = 1)

**Gnathosoma.** Chelicerae 132, movable digits 67, about 1/2 length of chelicerae. Palp 116, accessory claw spine-like. Subcapitular setae *n* 2.5 times length of *m*, *m* = 31, *n* = 76; *m-m* about 3/4 distance of *n-n*, *m-m* = 31, *n-n* = 40, *m-n* = 25.

**Idiosoma.** Oval, 325 long, 245 wide. Eyes 9 in diameter. Prodorsal setae *ve* 2.3 times length of *sci*, *sci* slightly longer than 1/5 length of *sce*; lengths: *vi* 21, *ve* 45, *sci* 20, *sce* 45; distances: *vi-vi* 24, *vi-ve* 24, *ve-sci* 35, *sci-sce* 20. Dorsal hysterosomal setae *c*<sub>1</sub> less than 1/3 distance of *c*<sub>1</sub>-*c*<sub>1</sub>, *e*<sub>1</sub> about 1/3 distance of *e*<sub>1</sub>-*e*<sub>1</sub>; ratio *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.5: 1.3: 1.0: 1.4; lengths: *c*<sub>1</sub> 22, *d*<sub>1</sub> 20, *d*<sub>2</sub> 37, *e*<sub>1</sub> 16, *e*<sub>2</sub> 19, *f*<sub>1</sub> 50; distances: *c*<sub>1</sub>-*c*<sub>1</sub> 75, *c*<sub>1</sub>-*d*<sub>1</sub> 60, *d*<sub>1</sub>-*d*<sub>1</sub> 62, *d*<sub>1</sub>-*d*<sub>2</sub> 56, *d*<sub>1</sub>-*e*<sub>1</sub> 69, *e*<sub>1</sub>-*e*<sub>1</sub> 49, *e*<sub>1</sub>-*e*<sub>2</sub> 41, *e*<sub>1</sub>-*f*<sub>1</sub> 38, *f*<sub>1</sub>-*f*<sub>1</sub> 71; humeral setae *c*<sub>2</sub> 88, 4.0 times length of *c*<sub>1</sub>. Suranal shield

entire,  $h_1$  28,  $h_2$  36. Endopodal shields faintly sclerotised. Ventral setae  $1a$  and  $3a$  longer than  $4a$ , ratio  $1a:3a:4a = 1.8:1.8:1.0$ ; lengths:  $1a$  27,  $3a$  27,  $4a$  15. Aggenital area with 3 pairs of setae, all on an undivided shield; lengths:  $ag_1$  22,  $ag_2$  24,  $ag_3$  24; pseudanal setae  $ps_3$  18,  $ps_2$  8,  $ps_1$  5. **Legs.** Length: leg I 172, leg II 135, leg III 133, leg IV 151. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ ; tarsi 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega_1$  9, I  $\omega_2$  17, II  $\omega_1$  6.5, II  $\omega_2$  11, III  $\omega_1$  4.5 (absent on right side), III  $\omega_2$  6, IV  $\omega$  6.

**Distribution** (Map p. 382). New Zealand (Wood 1967, 1971c, this paper).

GB, HB / NN, BR, MB, NC, MC.

**Material examined.** Holotype, 16 paratypes, and 114 non-type specimens. **Holotype** female: NEW ZEALAND: [?NN: ], July 1968, [?E. Collyer], Kahikatea [*Dacrycarpus dacrydioides*], NZAC: 1/1 female + 6 males. **Paratypes:** NN: on same slide with holotype: NZAC: 1/6 females. Eves Bush, 7 Aug 1966, [?E. Collyer], NZAC: 1/2 females. Canaan [Trip], 1 Sep 1968, E. Collyer, *Nothofagus menziesii*, NZAC: 6/1 male [allotype], 3 females, 2 deutonymph females. Riwaka R Nth branch, 11 Mar 1971, G. W. Ramsay, NZAC: 1/2 females [+ 1 cunaxid]. **Other material:** GB: L Waikaremoana, 1000 m, 23 Apr 1965, E. Collyer, *Nothofagus fusca*, 1/1 female. HB: Ruahine Ranges, Maropea Hut, 1200 m, 23 Feb 1970, G. W. Ramsay, beaten from *Phyllocladus* sp. and *Chionochloa* sp., 1/2 females, 2 males. NN: Upper Pelorus R, 8 May 1965, E. Collyer, *Nothofagus menziesii*, 1/1 female, 1 male. Kaiteiteri, 23 June 1965, E. Collyer, *Microsorium scandens* [as *Phymatodes*], 1/1 female. Honey-moon Bay, 20 Sep 1965, E. Collyer, *Microsorium scandens* [as *Phymatodes*], 1/1 female [+ *Eryngiopus bifidus* 2 females; *Mediolata robusta* 1 female]. Eves Bush, 6 Dec 1965, E. Collyer, *Prumnopitys ferruginea*, 1/1 female. Upper Baton River, south bank, 18 June 1966, E. Collyer, *Nothofagus menziesii*, 1/3 females, 3 deutonymph females, 1 protonymph. Abel Tasman N.P., Canaan, 25 Sep 1966, E. Collyer, *Phyllocladus* sp., 1/1 female, 1 male. Eves Bush, 18 Aug 1968, E. Collyer, *Leucopogon fasciculatus* [as *Cyathodes fasciculata*], 1/1 female. Eves Bush, Sep 1968, E. Collyer, *Leptecophylla juniperina* [as *Cyathodes*], 1/1 female. Eves Bush, Oct 1969, E. Collyer, *Leptecophylla juniperina* [as *Cyathodes*], 1/2 females. BR: Lake Rotoroa, 2 Jan 1965, E. Collyer, *Nothofagus menziesii*, 1/2 females. Lake Rotoroa, 2 Jan 1965, E. Collyer, *Sophora microphylla*, 1/1 female. Mt Robert, 19 Feb 1966, E. Collyer, *Podocarpus nivalis*, 1/1 female, 1 deutonymph female. Buller Gorge, 10 Apr 1966, E. Collyer, *Dacrycarpus dacrydioides*, 1/2 females, 4 males,

1 deutonymph female. Buller Gorge, 10 Apr 1966, E. Collyer, *Metrosideros* sp., climbing, 1/2 females [+ *Eryngiopus arboreus* 2 females]. Maruia, Lake Daniells, 6 June 1966, E. Collyer, derelict apple tree, 2/13 females, 5 males, 4 deutonymph females. MB: Mt Patriarch Ridge, 1370 m, 29 Mar 1970, G. W. Ramsay, beaten from *Coprosma*, *Kunzea ericoides*, 1/2 females. NC: Arthurs Pass, Dobson Falls, 4 Oct 1966, E. Collyer, *Gaultheria* sp., 1/1 female. Arthurs Pass, 14 Nov 1968, E. Collyer, *Olearia nummularifolia*, 1/1 female, 2 deutonymph females. MC: Cashmere Hills, Kennedys Bush, 13 May 1967, E. Collyer, *Sophora microphylla*, 1/13 females, 8 males, 5 deutonymph females, 4 protonymphs. Cashmere Hills, Kennedys Bush, 13 May 1967, E. Collyer, *Hoheria angustifolia*, divaricating *Coprosma* sp., 1/6 females, 9 males, 2 deutonymph females, 2 protonymphs.

**Habitat.** Apple tree, *Chionochloa* sp., *Coprosma*, *Dacrycarpus dacrydioides*, *Gaultheria* sp., *Hoheria angustifolia*, Kahikatea [*Dacrycarpus dacrydioides*], *Kunzea ericoides*, *Leucopogon fasciculatus* [as *Cyathodes fasciculata*], *Leptecophylla juniperina* [as *Cyathodes*], *Metrosideros* sp., *Microsorium scandens* [as *Phymatodes*], *Nothofagus fusca*, *Nothofagus menziesii*, *Olearia nummularifolia*, *Phyllocladus* sp., *Podocarpus nivalis*, *Prumnopitys ferruginea*, *Sophora microphylla*.

**Etymology.** The species name is derived from the Greek words *skhizein* meaning to split and *pelta* meaning shield.

**Remarks.** Females of *P. schizopeltatus* sp. n. are similar to those of *P. collyerae* Wood in having 2 pairs of aggenital platelets and the ratio  $ve:sci < 3.5$ , but can be distinguished from the latter by having suranal shield divided along midline,  $ag_1$  each on a platelet,  $ag_2$  and  $ag_3$  jointly on a small shield on each side.

### *Pseudostigmaeus striatus* Wood

Fig. 179–182

*Pseudostigmaeus striatus* Wood, 1967: 111; Wood, 1971c: 411.

**Diagnosis. Female.** Setae  $ve$  long, about 4.8 times length of  $sci$ ;  $c_2$  5.4 times length of  $c_1$ ;  $1a:3a:4a = 1.2:1.3:1.0$ ;  $ag_{1-3}$  jointly on a small shield on each side.

**Description. Female** (Fig. 179–180,  $n = 1$ )

**Gnathosoma.** Chelicerae 131, movable digits 68, about 1/2 length of chelicerae. Palp 112, accessory claw spine-like. Subcapitular setae  $n$  2.6 times length of  $m$ ,  $m = 40$ ,  $n = 102$ ;  $m-m$  nearly 1.5 times distance of  $n-n$ ,  $m-m = 55$ ,  $n-n = 38$ ,  $m-n = 23$ .

**Idiosoma.** Oval, 417 long, 253 wide. Eyes 14 in diameter. Prodorsal setae  $ve$  long, about 4.8 times length of  $sci$ ,  $sci$  about 1/2 length of  $sce$ ; lengths:  $vi$  25,  $ve$  119,  $sci$  25,  $sce$

52; distances:  $vi-vi$  33,  $vi-ve$  30,  $ve-sci$  42,  $sci-sce$  23. Dorsal hysterosomal setae  $c_1$  nearly 1/5 distance of  $c_1-c_1$ ,  $e_1$  about 3/5 distance of  $e_1-e_1$ ; ratio  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1$  = 1.4: 1.2: 1.0: 2.1; lengths:  $c_1$  23,  $d_1$  25,  $d_2$  45,  $e_1$  25,  $e_2$  28,  $f_1$  54; distances:  $c_1-c_1$  59,  $c_1-d_1$  77,  $d_1-d_1$  51,  $d_1-d_2$  50,  $d_1-e_1$  92,  $e_1-e_1$  42,  $e_1-e_2$  42,  $e_1-f_1$  33,  $f_1-f_1$  90; humeral setae  $c_2$  125, 5.4 times length of  $c_1$ . Suranal shield divided along midline,  $h_1$  50,  $h_2$  52. Endopodal shields faintly sclerotised. Ventral setae  $1a$  and  $3a$  slightly longer than  $4a$ , ratio  $1a: 3a: 4a$  = 1.2: 1.3: 1.0; lengths:  $1a$  36,  $3a$  39,  $4a$  31. Aggenital area with 3 pairs of setae,  $ag_1$ ,  $ag_2$  and  $ag_3$  jointly on a small shield on each side; lengths:  $ag_1$  23,  $ag_2$  25,  $ag_3$  25; genital setae 13; pseudanal setae  $ps_2$  22,  $ps_2$  29,  $ps_1$  25.

**Legs.** Length: leg I 205, leg II 177, leg III 151, leg IV 167. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  30, II  $\omega$  20, III  $\omega$  9, IV  $\omega$  9.

**Deutonymph female** (Fig. 181–182,  $n = 1$ )

**Gnathosoma.** Chelicerae 103, movable digits 53, about 1/2 length of chelicerae. Palp 94, accessory claw spine-like. Subcapitular setae  $n$  2.7 times length of  $m$ ,  $m = 31$ ,  $n = 85$ ;  $m-m$  about 3/5 distance of  $n-n$ ,  $m-m = 24$ ,  $n-n = 32$ ,  $m-n = 20$ .

**Idiosoma.** Oval, 344 long, 226 wide. Eyes 12 in diameter. Prodorsal setae  $ve$  long, about 6.6 times length of  $sci$ ,  $sci$  slightly longer than 1/5 length of  $sce$ ; lengths:  $vi$  17,  $ve$  125,  $sci$  19,  $sce$  45; distances:  $vi-vi$  26,  $vi-ve$  23,  $ve-sci$  36,  $sci-sce$  29. Dorsal hysterosomal setae  $c_1$  less than 1/3 distance of  $c_1-c_1$ ,  $e_1$  nearly 1/2 distance of  $e_1-e_1$ ; ratio  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1$  = 1.6: 1.2: 1.0: 1.6; lengths:  $c_1$  19,  $d_1$  19,  $d_2$  32,  $e_1$  19,  $e_2$  19,  $f_1$  38; distances:  $c_1-c_1$  65,  $c_1-d_1$  61,  $d_1-d_1$  48,  $d_1-d_2$  53,  $d_1-e_1$  70,  $e_1-e_1$  41,  $e_1-e_2$  51,  $e_1-f_1$  36,  $f_1-f_1$  65; humeral setae  $c_2$  94, 4.9 times length of  $c_1$ . Suranal shield entire,  $h_1$  33,  $h_2$  34. Endopodal shields faintly sclerotised. Ventral setae  $1a$  slightly longer than  $3a$  and  $4a$ , ratio  $1a: 3a: 4a$  = 1.2: 1.0: 1.0; lengths:  $1a$  29,  $3a$  25,  $4a$  24. Aggenital area with 3 pairs of setae,  $ag_1$ ,  $ag_2$  and  $ag_3$  jointly on a small shield on each side; lengths:  $ag_1$  12,  $ag_2$  17,  $ag_3$  17; pseudanal setae  $ps_3$  15,  $ps_2$  18,  $ps_1$  16.

**Legs.** Length: leg I 169, leg II 130, leg III 127, leg IV 145. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 0; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 2 + 1  $\kappa$ , 0, 0; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  22, II  $\omega$  16, III  $\omega$  7, IV  $\omega$  7.

**Distribution** (N.Z., map p. 382). New Zealand, Cook Islands (Wood 1967, 1971c).

– / NN, MC, FD.

**Material examined.** Holotype, 2 paratypes, and 2 non-type specimens. **Holotype** female: NEW ZEALAND: **MC:** McLennan's Bush, W. of Methven [as Methuan], 300 m, 27 Feb 1965, N. A. Walker, moss and litter, NZAC: 1/1 female. **Paratypes:** COOK IS, Mangaia, 12 May 1965, G. W. Ramsay, leaf litter, NZAC: 2/1 male [allotype], 1 deutonymph female. **Other material:** NN: ?? [no collection data], Taxonomy [sample] 70/10, E. Collyer, 1/1 female [+ *Scutastigmaeus longisetis* 7 females]. **FD:** Hunter Mts, Borland Saddle, 760 m, [no date], G. W. Ramsay, *Polytrichum* moss, 1/1 female [+ *Eustigmaeus mixtus* 4 females].

**Habitat.** Leaf litter, moss (*Polytrichum*) and litter, mosses on rocks under *Olearia* sp. and *Coprosma* sp., turf of *Celmisia* sp. and other mat plants, turf of *Chionchloa* sp. and *Celmisia* sp.

#### Genus *Scutastigmaeus* gen. n.

Type species: *Stigmaeus longisetis* Wood, by present designation.

**Diagnosis. Female.** Idiosoma narrowly to broadly oval in dorsoventral view, colour in life unknown. Chelicerae separate. Palptibial claw subequal to palptarsus in length; accessory claw slender, spine-like; terminal eupathidia on palptarsus mostly fused and terminally split into 3 vestigial prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1  $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (mostly fused). Subcapitulum with 2 pairs of subcapitular setae,  $m$  anterolaterad of pharynx. Prodorsal shield somewhat reduced, with 3–4 pairs of setae;  $sce$  present; eyes present, *pob* absent. Dorsal hysterosomal area C–F covered with a central shield; setae  $d_1$  and  $d_2$  situated on different shields or platelets; humeral shields small or vestigial, dorsolateral, with setae  $c_2$ ; intercalary shields (F) small, divided along midline. Suranal shield (H) entire or divided, with 2 pairs of setae ( $h_1$  and  $h_2$ ),  $h_3$  absent. Endopodal shields I–II and III–IV present, divided along midline. Ventral opisthosoma with 3 pairs of aggenital setae; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae. Leg tarsal empodial shafts branching into 3 pairs of tenent hairs before extending beyond tips of claws; counts of setae and solenidia on legs I–IV: coxae (excluding  $1a$ ,  $3a$  and  $4a$ ) 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1  $\kappa$ , 2–3 + 0–1  $\kappa$ , 0–1, 0–1; tibiae 5 + 0–1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ .

**Male.** Unknown.

**Remarks.** Species of *Scutastigmaeus* gen. n. resemble those of *Pseudostigmaeus* in that terminal eupathidia on



the palptarsi are mostly fused and terminally split into 3 vestigial prongs and setae *m* are anterolaterad of the pharynx; they can be distinguished from the latter by dorsal hysterosoma having a central shield. They are also similar to some species of *Stigmaeus* in the pattern of dorsal hysterosomal shields but can be readily recognized by the mostly fused terminal eupathidia on the palps. The prodorsal shield is another useful character for separating species of the new genus from those of *Stigmaeus*.

Three species are known world-wide, all from New Zealand.

#### Key to species of *Scutastigmaeus* gen. n. from New Zealand (females)

- 1 Setae *sce* on prodorsal shield (Fig. 183 A); *ve* very long, *ve: ve-sci* > 4.5; *sce: sci* > 4.0; genu III without setae (Fig. 184 C) ..... 2
- Setae *sce* on platelets (Fig. 187 A); *ve* short, *ve: ve-sci* = 1.3; *sce: sci* = 2.0; genu III with 1 seta (Fig. 188 C) ..... (p. 90)... *S. montanus* (Wood)
- 2 Central hysterosomal shield extending beyond level of setae *e<sub>i</sub>* (Fig. 183 A); *c<sub>2</sub>* about 4 times length of *c<sub>1</sub>*;  $\phi$  on tibiae I absent (Fig. 184 A); genu II with 2 setae,  $\kappa$  absent (Fig. 184 B); genu IV with 1 seta (Fig. 184 D) ..... (p. 89)... *S. confusus* (Wood)
- Central hysterosomal shield not reaching level of setae *e<sub>i</sub>* (Fig. 185 A); *c<sub>2</sub>* shorter than *c<sub>1</sub>*;  $\phi$  on tibiae I present (Fig. 186 A); genu II with 2 + 1 $\kappa$  (Fig. 186 B); genu IV without setae (Fig. 180 D) ..... (p. 90)... *S. longisetis* (Wood)

#### *Scutastigmaeus confusus* (Wood)

Fig. 183–184

*Stigmaeus confusus* Wood, 1967: 106; Wood, 1981: 370.  
Comb. n..

**Diagnosis. Female.** Prodorsal shield with 4 pairs of setae; *ve: sci* = 5.8; *sce: sci* = 5.0; central hysterosomal shield extending beyond level of setae *e<sub>i</sub>*; suranal shield entire; *ag<sub>1</sub>* each on a platelet, *ag<sub>2</sub>* and *ag<sub>3</sub>* jointly on a small shield on each side; femur II with 4 setae; genua I–IV with 3 + 1 $\kappa$ , 2, 0, 1; solenidion  $\phi$  on tibiae I absent.

**Description. Female** (Fig. 183–184, n = 6)

**Gnathosoma.** Chelicerae 89 (89–96), movable digits about 1/2 length of chelicerae, 40 (39–42). Palp 81 (79–81), accessory claw spine-like. Subcapitular setae *n* whip-like, more than 2 times length of *m*, *m* = 23 (23–27), *n* = 65 (59–66); *m-m* = 26 (25–27), *n-n* = 30 (30–33), *m-n* = 10 (9–11).

**Idiosoma.** Oval, 337 (318–337) long, 195 (173–195) wide. Prodorsum with a large moderately sclerotised shield, bearing 4 pairs of setae; eyes 11 (11–12) in diameter; ratio *vi: vi-vi* = 0.7, *ve: sci* = 5.8, *sce: sci* = 5.0; setae *vi* 20 (19–22), *ve* whip-like, far exceeding bases of *sci*, 115 (92–115), *sci* 20 (19–24), *sce* 99 (70–99); distances: *vi-vi* 28 (21–28), *vi-ve* 16 (16–17), *ve-sci* 25 (25–26), *sci-sce* 14 (14–17). Dorsal hysterosomal area C–F with an elongate shield and 7 pairs of small or minute platelets; setae *c<sub>1</sub>* 25 (25–28), *d<sub>1</sub>* 21 (22–24), *d<sub>2</sub>* 35 (35–45), *e<sub>1</sub>* 21 (21–25), *e<sub>2</sub>* 20 (20–25), *f<sub>1</sub>* 83 (61–83); ratios *c<sub>1</sub>: c<sub>1</sub>-c<sub>1</sub>* = 0.5, *e<sub>1</sub>: e<sub>1</sub>-e<sub>1</sub>* = 0.4, *c<sub>1</sub>-c<sub>1</sub>: d<sub>1</sub>-d<sub>1</sub>*; *e<sub>1</sub>-e<sub>1</sub>: f<sub>1</sub>-f<sub>1</sub>* = 1.0: 1.2: 1.0: 1.4; distances: *c<sub>1</sub>-c<sub>1</sub>* 51 (50–51), *c<sub>1</sub>-d<sub>1</sub>* 59 (59–65), *d<sub>1</sub>-d<sub>1</sub>* 59 (55–59), *d<sub>1</sub>-d<sub>2</sub>* 50 (41–50), *d<sub>1</sub>-e<sub>1</sub>* 62 (60–62), *e<sub>1</sub>-e<sub>1</sub>* 50 (46–50), *e<sub>1</sub>-e<sub>2</sub>* 38 (38–39), *e<sub>1</sub>-f<sub>1</sub>* 20 (20–22), *f<sub>1</sub>-f<sub>1</sub>* 72 (67–70); humeral setae *c<sub>2</sub>* 98 (85–98), 3.9 times length of *c<sub>1</sub>*. Suranal shield entire, *h<sub>1</sub>* 40 (26–40), *h<sub>2</sub>* 35 (33–36). Endopodal shields faintly sclerotised, smooth. Ventral setae *1a* and *3a* longer than *4a*, ratio *1a: 3a: 4a* = 1.3: 1.4: 1.0; lengths: *1a* 29 (23–29), *3a* 31 (31–33) and *4a* 22 (22–23). Aggenital area with 3 pairs of setae, first pair each on a platelet, second and third pairs jointly on a small shield on each side, *ag<sub>1</sub>* 20 (17–20), *ag<sub>2</sub>* 25 (23–25), *ag<sub>3</sub>* 43 (43–54); genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae, lengths: *g<sub>1</sub>* 50 (48–51), *ps<sub>1</sub>* 26 (25–27), *ps<sub>2</sub>* 21 (21–29), *ps<sub>3</sub>* 28 (27–30).

**Legs.** Length: leg I 162 (156–174), leg II 130 (119–130), leg III 120 (118–120), leg IV 137 (137–139). Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I absent. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1 $\kappa$ , 2, 0, 1; tibiae 5 + 1 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ , 5 + 1 $\phi$ ; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  23 (23–24), II $\omega$  16 (16–18), III $\omega$  7 (7–8), IV $\omega$  6.

**Distribution** (Map p. 382). New Zealand (Wood 1967, 1981).

ND, AK, TK / NN.

**Material examined.** Holotype, 6 paratypes, and 8 non-type specimens. **Holotype** female: NEW ZEALAND: **AK:** Waitakere Range, 200 m, 13 Feb 1964, T. G. Wood, bark of palm, *Rhopalostylis sapida*, NZAC: 1/1 female. **Paratypes:** **ND:** Waipoua Forest, 13 Nov 1964, G. S. Grandison, moss and litter around kauri trees, NZAC: 1/6 females. **Other material:** **AK:** Waitakere Range, 10 miles west of Auckland: 13 Feb 1964, T. G. Wood, moss and litter, 1/1 deutonymph female. Waitakere, 31 Oct 1982, U. Gerson, *Cyathea dealbata*, 1/1 female. Waitakere, 31 Nov 1982, U. Gerson, *Cyathea medullaris*, 1/1 female. **TK:** Mt Egmont, 900 m, 13 Apr 1964, N. A. Walker, *Podocarpus* litter, moss and lichen, 1/1 female [+ *Scutastigmaeus longisetis* 3 females]. Tangarakau Gorge,

W. of Mt Egmont, 18 Apr 1965, N.A. Walker, *Podocarpus* litter and moss, 1/3 females. NN: Eves Bush, 3 Nov 1965, E. Collyer, "ex. *Myotus obscordatus*"[?], 1/1 female.

**Habitat.** Bark of nikau palm (*Rhopalostylis sapida*), *Cyathea dealbata*, *Cyathea medullaris*, foliage of *Myrtus obscordata*, lichen, moss and litter around kauri (*Agathis australis*), *Myotus obscordatus*, *Podocarpus* litter and moss.

### *Scutastigmaeus longisetis* (Wood)

Fig. 185–186

*Stigmaeus longisetis* Wood, 1967: 105; Wood, 1981: 370.

**Comb. n.**

**Diagnosis. Female.** Prodorsal shield with 4 pairs of setae; *ve: sci* = 9.1; *sce: sci* = 9.3; central hysterosomal shield not reaching level of setae *e*<sub>1</sub>; suranal shield entire; *ag*<sub>1–3</sub> jointly on a horseshoe-shaped shield; femur II with 4 setae; genua I–IV with 3 + 1κ, 2 + 1κ, 0, 0; solenidion φ on tibiae I present.

**Description. Female** (Fig. 185–186, n = 2)

**Gnathosoma.** Chelicerae 134, movable digits about 3/5 lengths of chelicerae, 74 (72–74). Palp 112 (103–112), accessory claw spine-like. Subcapitular setae *n* whip-like, more than twice length of *m*, *m* = 39 (39–41), *n* = 95 (92–95); *m*–*m* = 24, *n*–*n* = 30 (30–32), *m*–*n* = 19 (19–20).

**Idiosoma.** Oval, 489 (385–489) long, 272 (257–272) wide. Prodorsum with a moderately sclerotised triangular shield, bearing 4 pairs of setae; eyes 10 in diameter; ratios *vi: vi* = 0.9, *ve: sci* = 9.1, *sce: sci* = 9.3; setae *vi* 31 (31–35), *ve* whip-like, far exceeding bases of *sci*, 254 (254–257), *sci* 28 (28–31), *sce* 260 (260–265); distances: *vi*–*vi* 35 (35–41), *vi*–*ve* 22 (22–26), *ve*–*sci* 41 (38–41), *sci*–*sce* 12 (12–17). Dorsal hysterosomal area C–F with a slightly elongate shield and 5 pairs of small or minute platelets; setae *c*<sub>1</sub> on central shield, 261 (255–261), *d*<sub>1</sub> on central shield, 34 (34–43), *d*<sub>2</sub> 282 (277–282), *e*<sub>1</sub> 32 (32–36), *e*<sub>2</sub> 277 (277–285), *f*<sub>1</sub> 44 (44–48); ratios *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 3.8, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> = 0.7, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.4: 1.4: 1.0: 2.3; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 68 (68–69), *c*<sub>1</sub>–*d*<sub>1</sub> 57 (50–57), *d*<sub>1</sub>–*d*<sub>1</sub> 65 (65–72), *d*<sub>1</sub>–*d*<sub>2</sub> 73 (73–77), *d*<sub>1</sub>–*e*<sub>1</sub> 81 (81–86), *e*<sub>1</sub>–*e*<sub>1</sub> 47 (47–48), *e*<sub>1</sub>–*e*<sub>2</sub> 61 (45–61), *e*<sub>1</sub>–*f*<sub>1</sub> 62 (61–62), *f*<sub>1</sub>–*f*<sub>1</sub> 107 (107–107); humeral setae *c*<sub>2</sub> 206 (206–214), 0.8 times length of *c*<sub>1</sub>. Suranal shield entire, *h*<sub>1</sub> 49 (49–50), *h*<sub>2</sub> 50 (50–51). Endopodal shields faintly sclerotised, smooth. Ventral setae subequal, ratio *1a: 3a: 4a* = 1.1: 1.0: 1.0; lengths: *1a* 51 (50–51), *3a* 46 (46–47) and *4a* 45 (45–46). Aggenital area with 3 pairs of setae jointly on a horseshoe-shaped shield, *ag*<sub>1</sub> 21 (19–21), *ag*<sub>2</sub> 21 (21–22), *ag*<sub>3</sub> 21; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae, lengths: *g*<sub>1</sub> 10 (9–10), *ps*<sub>1</sub> 23 (23–24), *ps*<sub>2</sub> 23 (23–24), *ps*<sub>3</sub> 24 (24–25).

**Legs.** Length: leg I 211 (193–211), leg II 132 (115–132), leg III 143 (120–143), leg IV 165 (156–165). Solenidia κ on genua II and φ on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1κ, 2 + 1κ, 0, 0; tibiae 5 + 1φ + 1φφ, 5 + 1φφ, 5 + 1φφ, 5 + 1φφ; tarsi 13 + 1ω, 9 + 1ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: Iω 27, IIω 20 (18–20), IIIω 9 (8–9), IVω 7.

**Distribution** (Map p. 382). New Zealand (Wood 1967, 1981).

TK / NN, KA / AN.

**Material examined.** Holotype, 2 paratypes, and 23 non-type specimens. **Holotype** female: NEW ZEALAND: KA: Upper Clarence R, Williams Stream, 1000 m, 30 Oct 1962, J. I. Townsend: moss, NZAC: 1/1 female.

**Paratypes:** same collection data as holotype slide: NZAC: 2/2 females. **Other material:** TK: Mt Egmont, 900 m, 13 Apr 1964, N. A. Walker, *Podocarpus* litter, moss and lichen, 1/3 females [+ *Scutastigmaeus confusus* 1 female]. NN: Mt Gomorrah, 1300 m, 6 June 1965, T. G. Wood, moss among *Nothofagus* litter, 1/2 females. ?? [no collection data], Taxonomy [sample] 70/10, E. Collyer, 3/17 females [+ *Pseudostigmaeus striatus* 1 female]. **Antipodes Is**, 69/62, 1/1 female.

**Habitat.** Moss, and forest litter, moss, *Nothofagus* litter, *Podocarpus* litter, moss on rocks.

### *Scutastigmaeus montanus* (Wood)

Fig. 187–188

*Stigmaeus montanus* Wood, 1981: 374. **Comb. n.**

**Diagnosis. Female.** Prodorsal shield with 3 pairs of setae, *sce* on platelets; *ve: sci* = 2.6; *sce: sci* = 2.0; hysterosoma with a spindle-shaped central shield; suranal shield divided along midline; *ag*<sub>1–3</sub> jointly on a small shield on each side; femur II with 4 setae; genua I–IV with 3 + 1κ, 3 + 1κ, 1, 1; solenidion φ on tibiae I absent.

**Description. Female** (Fig. 187–188, n = 1)

**Gnathosoma.** Chelicerae 109, movable digits about 1/2 length of chelicerae, 54. Palp 105, accessory claw spine-like. Subcapitular setae *n* whip-like, more than 3 times length of *m*, *m* = 24, *n* = 93; *m*–*m* = 23, *n*–*n* = 34, *m*–*n* = 21.

**Idiosoma.** Oval, 447 long, 304 wide. Prodorsum with a faintly sclerotised, almost rounded shield and a pair of minute platelets; eyes 14 in diameter; 3 pairs of setae arising from almost rounded shield and one pair from minute platelets; ratios *vi: vi* = 0.5, *ve: sci* = 2.6, *sce: sci* = 2; setae *vi* 17, *ve* reaching bases of *sci*, 47, *sci* 18, *sce* 36; distances: *vi*–*vi* 34, *vi*–*ve* 23, *ve*–*sci* 37, *sci*–*sce* 34. Dorsal hysterosomal area C–F with a spindle-shaped shield

and 7 pairs of small or minute platelets; setae  $c_1$  on platelets, 21,  $d_1$  on platelets, 17,  $d_2$  24,  $e_1$  on platelets, 17,  $e_2$  21,  $f_1$  33; ratios  $c_1:c_2=0.2$ ,  $e_1:e_2=0.3$ ,  $c_1-c_2:d_1-d_2:e_1-e_2:f_1-f_2=1.4:1.1:1.0:1.7$ ; distances:  $c_1-c_2$  86,  $c_1-d_1$  79,  $d_1-d_2$  69,  $d_1-e_1$  73,  $e_1-e_2$  61,  $e_1-e_2$  76,  $e_1-f_1$  52,  $f_1-f_2$  106; humeral setae  $c_2$  69, 3.3 times length of  $c_1$ . Suranal shield divided along midline,  $h_1$  34,  $h_2$  41. Endopodal shields faintly sclerotized, smooth. Ventral setae *1a* whip-like, more than 3 times length of *3a* and *4a*, ratio *1a:3a:4a* = 3.8:1.0:1.0; lengths: *1a* 91, *3a* 25 and *4a* 24. Aggenital area with 3 pairs of setae jointly on a small shield on each side,  $ag_1$  24,  $ag_2$  24,  $ag_3$  24; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae, lengths:  $g_1$  14,  $ps_1$  19,  $ps_2$  24,  $ps_3$  20.

**Legs.** Length: leg I 185, leg II 138, leg III 139, leg IV 156. Solenidia  $\kappa$  on genua II present,  $\phi$  on tibiae I absent. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  16, II $\omega$  13, III $\omega$  7, IV $\omega$  7.

**Distribution** (Map p. 382). New Zealand (Wood 1981). –/FD.

**Material examined.** Holotype and 1 paratype. **Holotype** female: NEW ZEALAND: **FD**: [L. Manapouri], Turret Range, Mt Grey, 1250 m, 9 Jan 1970, A. C. Eyles, *Pimelia* foliage and litter, NZAC: 1/1 female [+ paratype female]; positions denoted by arrows on label. **Paratype**: on same slide with holotype: NZAC: 1/1 female.

**Habitat.** *Pimelia* foliage and litter.

### Genus *Stigmaeus* Koch

*Stigmaeus* Koch, 1836a: 4, 9. Type species: *Stigmaeus cruentus* Koch, 1836a (unknown), by original designation. Current concept of *Stigmaeus* is based on *Stigmaeus rhodomelas* Berlese, 1910: 205.

*Stigmaeodes* Canestrini, 1889: 512. Type species: *Stigmaeus elongatus* Berlese, 1886. Synonymy by Oudemans, 1923a: 140.

*Stigmaeus (Stigmaeus)* Berlese, 1910: 205. Type species: *Stigmaeus rhodomelas* Berlese, 1910. Raised by Oudemans, 1923a: 142.

**Diagnosis. Female.** Idiosoma narrowly to broadly oval in dorsoventral view, white, yellow, red or dark red in life. Chelicerae separate. Palptibial claw subequal to or slightly shorter than palptarsus; accessory claw seta-like or spine-like; terminal eupathidia on palptarsus basally fused and split into 3 long prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1 $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (basally fused). Subcapitulum

with 2 pairs of subcapitular setae, *m* anterolaterad of pharynx. Prodorsal typically with a large shield, bearing 3 pairs of setae (*vi*, *ve* and *sci*) and a pair of platelets bearing setae *sce*; eyes present or absent, *pob* present or absent. Dorsal hysterosomal area C–F typically with 1–2 shields surrounded by 3–5 pairs of platelets, shield with 2–3 pairs of setae; setae  $d_1$  and  $d_2$  never on same shield; humeral shields large or small, dorso- or ventrolateral, with setae  $c_2$ ; intercalary shields (F) obvious, entire or divided along midline, with a pair of setae ( $f_1$ ). Suranal shield (H) entire or divided, with 2–3 pairs of setae ( $h_3$  absent or present). Endopodal shields I–II and III–IV present, divided along midline. Ventral opisthosoma with 3–5 pairs of aggenital setae; genital and anal valves fused or contiguous, with 1–3 pairs of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws robust; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 4–6, 4–6, 3, 2; genua 3–5 + 1 $\kappa$ , 3–4 + 0–1 $\kappa$ , 0–3, 0–3; tibiae 5 + 0–1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 1 $\omega$ , 8–9 + 1 $\omega$ , 7 + 1 $\omega$ , 6–7 + 0–1 $\omega$ .

**Male.** Solenidia on tarsi I–IV: 2, 2, 2, 2.

**Remarks.** This genus is one of the oldest and most diverse genera in the Stigmaeidae and in need of a thorough revision.

Eight species have been described from New Zealand.

### Key to species of *Stigmaeus* from New Zealand (adults, including deutonymph female of *S. rotundus*)

- 1 With 4 pairs of aggenital setae in both sexes and 2 pairs of genital setae in female (Fig. 189 F); tarsus II with 8 + 1 $\omega$  (Fig. 190 B) ..... 2
- With 2–3 pairs of aggenital setae in both sexes and a pair of genital setae in female (Fig. 213 D); tarsus II with 9 + 1 $\omega$  (Fig. 214 B) ..... 3
- 2 Setae  $e_1$  each on a platelet (Fig. 189 A);  $ag_1$  and  $ag_2$  each on a platelet in female (Fig. 189 F); femur I with 4 setae, genu I with 4 + 1 $\kappa$  (Fig. 190 A); genu II with 1 seta,  $\kappa$  absent (Fig. 190 B); genua III and IV without seta;  $\phi$  on tibiae I absent (Fig. 190 A) ..... (p. 92)... *S. arboricola* Wood
- Setae  $e_1$  on a shield (Fig. 207 A);  $ag_1$  and  $ag_2$  jointly on a shield in female (Fig. 207 F); femur I with 6 setae, genu I with 5 + 1 $\kappa$  (Fig. 208 A); genu II with 4 + 1 $\kappa$  (Fig. 208 B); genua III and IV each with 1 seta (Fig. 208 C–D);  $\phi$  on tibiae I present (Fig. 208 A) ..... (p. 97)... *S. rupicola* Wood

- 3 Femur II with 5 setae (Fig. 214 B); genua III and IV each with a seta (Fig. 214 C–D) ..... 4
- Femur II with 4 setae (Fig. 194 B); genua III and IV without setae (Fig. 194 C–D) ..... 7
- 4 Central hysterosomal shield square, bearing 2 pairs of setae (Fig. 213 A) ..... 5
- Central hysterosomal shield rectangular, bearing 3 pairs of setae (Fig. 201 A) ..... 6
- 5 All dorsal idiosomal setae acicular, pointed (Fig. 213 A); *sce: sci* = 2.0 in female; *sce: sci* = 2.2 in male ..... (p. 98)... **S. summersi** Wood
- At least *vi*, *sci*, *c<sub>1</sub>*, *d<sub>1</sub>*, *e<sub>1</sub>*, *h<sub>1</sub>*, and *h<sub>2</sub>* terminated in a cluster of barbs (Fig. 197 A); *sce: sci* = 1.3 in female; *sce: sci* = 2.0 in male ..... (p. 94)... **S. luxtoni** Wood
- 6 Ratios *sce: sci* = 1.6, *c<sub>2</sub>: c<sub>1</sub>* = 1.4, *c<sub>1</sub>: c<sub>1</sub>-c<sub>1</sub>* = 0.6 in female (Fig. 195 A) ... (p. 94)... **S. campbellensis** Wood
- Ratios *sce: sci* = 2.4, *c<sub>2</sub>: c<sub>1</sub>* = 0.9, *c<sub>1</sub>: c<sub>1</sub>-c<sub>1</sub>* = 1.5 in female (Fig. 201 A) ..... (p. 95)... **S. novazealandicus** Wood
- 7 Setae *c<sub>1</sub>* on platelets, shield E divided along midline (Fig. 193 A); femur I with 4 setae (Fig. 194 A); genua I–II with 4 + 1κ, 2 (Fig. 194 A–B) ..... (p. 93)... **S. brevisetis** Wood
- Setae *c<sub>1</sub>* on central hysterosomal shield with *d<sub>1</sub>*, shield E entire (Fig. 205 A); femur I with 6 setae (Fig. 206 A); genua I–II with 3 + 1κ, 2 + 1κ (Fig. 206 A–B) ..... (p. 97)... **S. rotundus** Wood

### **Stigmaeus arboricola** Wood

Fig. 189–192

*Stigmaeus arboricola* Wood, 1981: 376.

**Diagnosis. Female.** Prodorsum with a longitudinal refringent ridge-like mark, without shield; eyes absent; *ve* overlapping setae in next row, *ve: sci* = 3.8; *sce: sci* = 1.6; *c<sub>1</sub>: c<sub>1</sub>-c<sub>1</sub>* = 0.6; dorsal hysterosomal area C–F without shield; suranal shield divided along midline; *h<sub>3</sub>* present; aggenital area with 4 pairs of setae, each on a platelet; genitoanal valves with 2 pairs of genital setae; trochanter IV with 1 seta; femora I–II each with 4 setae; genua I–IV with 4 + 1κ, 1, 0, 0; solenidion φ on tibiae I absent; tarsus II with 8 + 1ω.

**Male.** As in female but: *sce: sci* = 1.2; *c<sub>1</sub>: c<sub>1</sub>-c<sub>1</sub>* = 0.5; *h<sub>3</sub>* absent; 3 pairs of aggenital setae sharing a shield; tarsi I–IV each with 2 solenidia.

**Description. Female** (Fig. 189–190, n = 2)

**Gnathosoma.** Chelicerae 73 (73–78), movable digits about 1/5 length of chelicerae, 31 (30–31). Palp 55 (55–60), accessory claw seta-like. Subcapitular setae *n* slightly longer than *m*, *m* = 16 (12–16), *n* = 20 (20–21); *m-m* = 19 (19–20), *n-n* = 28 (28–34), *m-n* = 13 (13–14).

**Idiosoma.** Oval, 315 (315–366) long, 135 (135–181) wide. Prodorsum without prominent shields, but with a longitudinal refringent ridge-like mark; 4 pairs of setae arising from minute platelets; eyes and *pob* absent; ratios *vi: vi-vi* = 0.6 (0.5–0.6), *ve: sci* = 3.8 (3.8–4.3), *sce: sci* = 1.6 (1.4–1.6); setae *vi* 15 (12–15), *ve* 61 (53–61), overlapping setae in next row, *sci* 16 (15–16), *sce* 26 (21–26); distances: *vi-vi* 25, *vi-ve* 14, *ve-sci* 44 (44–53), *sci-sce* 37 (37–47). Dorsal hysterosomal area C–F without prominent shield; setal lengths: *c<sub>1</sub>* 11 (9–11), *d<sub>1</sub>* 14 (9–14), *d<sub>2</sub>* 14 (9–14), *e<sub>1</sub>* 13 (9–13), *e<sub>2</sub>* 13 (10–13), *f<sub>1</sub>* 20 (14–20); ratios *c<sub>1</sub>: c<sub>1</sub>-c<sub>1</sub>* = 0.6 (0.5–0.6), *e<sub>1</sub>: e<sub>1</sub>-e<sub>1</sub>* = 0.4 (0.2–0.4), *c<sub>1</sub>-c<sub>1</sub>: d<sub>1</sub>-d<sub>1</sub>*; *e<sub>1</sub>-e<sub>1</sub>: f<sub>1</sub>-f<sub>1</sub>* = 1.0: 1.1: 1.6–2.0: 2.4–2.7; distances: *c<sub>1</sub>-c<sub>1</sub>* 19 (19–20), *c<sub>1</sub>-d<sub>1</sub>* 55 (55–64), *d<sub>1</sub>-d<sub>1</sub>* 20 (20–22), *d<sub>1</sub>-d<sub>2</sub>* 41 (41–58), *d<sub>1</sub>-e<sub>1</sub>* 46 (46–57), *e<sub>1</sub>-e<sub>1</sub>* 31 (31–40), *e<sub>1</sub>-e<sub>2</sub>* 22 (22–35), *e<sub>1</sub>-f<sub>1</sub>* 29 (29–35), *f<sub>1</sub>-f<sub>1</sub>* 46 (46–53); humeral setae *c<sub>2</sub>* 51 (50–51), 4.6 (4.6–5.6) times length of *c<sub>1</sub>*. Suranal shield divided along midline, bearing 3 pairs of setae, *h<sub>1</sub>* 24 (20–24), *h<sub>2</sub>* 30 (27–30), *h<sub>3</sub>* 18 (18–19). Endopodal shields faintly sclerotised, smooth. Ventral setae *1a* and *3a* slightly longer than *4a*, ratio *1a: 3a: 4a* = 1.1: 1.1: 1.0; lengths: *1a* 22 (21–22), *3a* 22 and *4a* 20 (20–21). Aggenital area with 4 pairs of setae, each on a platelet, *ag<sub>1</sub>* 12 (11–12), *ag<sub>2</sub>* 12 (10–12), *ag<sub>3</sub>* 14 (12–14), *ag<sub>4</sub>* 16 (17–21); genitoanal valves with 2 pairs genital setae and 3 pairs of pseudanal setae, lengths: *g<sub>1</sub>* 14 (14–15), *g<sub>2</sub>* 20 (20–21), *ps<sub>3</sub>* 14 (14–17), *ps<sub>2</sub>* 25 (25–30), *ps<sub>1</sub>* 34 (34–38).

**Legs.** Length: leg I 109 (109–116), leg II 86 (86–92), leg III 93 (93–94), leg IV 107 (107–109). Solenidia κ on genua II and φ on tibiae I absent. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 1, 1; femora 4, 4, 3, 2; genua 4 + 1κ, 1, 0, 0; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 13 + 1ω, 8 + 1ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: Iω 8 (7–8), IIω 7 (5–7), IIIω 4 (3–4), IVω 4 (3–4).

**Male** (Fig. 191–192, n = 1)

**Gnathosoma.** Chelicerae 65, movable digits about 1/5 length of chelicerae, 27. Palp 52, accessory claw seta-like. Subcapitular setae *n* slightly longer than *m*, *m* = 13, *n* = 16; *m-m* = 17, *n-n* = 27, *m-n* = 12.

**Idiosoma.** Oval, 256 long, 107 wide. Prodorsum with a longitudinal refringent ridge-like mark; 4 pairs of setae arising from minute platelets; eyes and *pob* absent; ratios *vi: vi-vi* = 0.4, *ve: sci* = 3.8, *sce: sci* = 1.2; setae *vi* 9, *ve* 42, overlapping setae in next row, *sci* 11, *sce* 13; distances: *vi-vi* 22, *vi-ve* 10, *ve-sci* 36, *sci-sce* 21. Dorsal hysterosomal area C–F without shield; setal lengths: *c<sub>1</sub>* 9, *d<sub>1</sub>* 10, *d<sub>2</sub>* 10, *e<sub>1</sub>* 10, *e<sub>2</sub>* 10, *f<sub>1</sub>* 11; ratios *c<sub>1</sub>: c<sub>1</sub>-c<sub>1</sub>* = 0.5, *e<sub>1</sub>: e<sub>1</sub>-e<sub>1</sub>* = 0.7, *c<sub>1</sub>-c<sub>1</sub>: d<sub>1</sub>-d<sub>1</sub>*; *e<sub>1</sub>-e<sub>1</sub>: f<sub>1</sub>-f<sub>1</sub>* = 1.7: 1.8: 1.0: 3.2; distances: *c<sub>1</sub>-c<sub>1</sub>* 20, *c<sub>1</sub>-d<sub>1</sub>* 40, *d<sub>1</sub>-d<sub>1</sub>* 21, *d<sub>1</sub>-d<sub>2</sub>* 32, *d<sub>1</sub>-e<sub>1</sub>* 27, *e<sub>1</sub>-e<sub>1</sub>* 12, *e<sub>1</sub>-e<sub>2</sub>* 23, *e<sub>1</sub>-f<sub>1</sub>* 22, *f<sub>1</sub>-f<sub>1</sub>* 38; humeral setae *c<sub>2</sub>* 26, 2.8 times length of *c<sub>1</sub>*. Suranal shield divided along mid-

line, bearing 2 pairs of setae,  $h_1$  17,  $h_2$  30. Endopodal shields smooth. Ventral setae  $1a$  and  $3a$  slightly longer than  $4a$ , ratio  $1a:3a:4a = 1.2:1.2:1.0$ ; lengths:  $1a$  15,  $3a$  15 and  $4a$  13. Aggenital area with 4 pairs of setae,  $ag_{1-3}$  sharing a shield,  $ag_1$  12,  $ag_2$  12,  $ag_3$  12,  $ag_4$  16, on platelets; genitoanal valves 3 pairs of pseudanal setae, lengths:  $ps_3$  8,  $ps_2$  5,  $ps_1$  4.

**Legs.** Length: leg I 102, leg II 82, leg III 93, leg IV 105. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I absent. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 1, 1; femora 4, 4, 3, 2; genua 4 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 2 $\omega$ , 8 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega_1$  8, I $\omega_2$  10, II $\omega_1$  16, II $\omega_2$  11, III $\omega_1$  4, III $\omega_2$  9, IV $\omega_1$  4, IV $\omega_2$  8.

**Distribution** (Map p. 382). New Zealand (Wood 1981). AK / NN.

**Material examined.** Holotype and 3 non-type specimens. **Holotype** female: NEW ZEALAND: NN: Waimea Plain, Palmers Bush, 7 Aug 1966, E. Collyer, foliage of *Podocarpus totara*, NZAC: 1/1 female [+ *Eryngiopus arboreus* 2 females; *Mediolata robusta* 2 females, 1 protonymph, 1 larva]. **Other material:** AK: Auckland: Kumeu Research Orchard, 25 June 1990, P. Dentener [90/28], *Nothofagus menziesii*, 1/1 female. Auckland: 25 Mar 2003, Q.-H. Fan, litter, 1/1 male. NN: Appleby, Lansdowne Road, below high tide level, 26 Mar 1970, E. Collyer, *Salicornia* sp., 1/1 deutonymph.

**Habitat.** Foliage of *Nothofagus menziesii*, *Podocarpus totara*, litter.

### *Stigmaeus brevisetis* Wood

Fig. 193–194, Plate 9 B

*Stigmaeus brevisetis* Wood, 1967: 102; Wood, 1981: 370.

**Diagnosis. Male.** Prodorsum with a reticulated shield and a pair of small platelets; eyes absent; *ve* very short, not reaching bases of *sci*, *ve:sci* = 1.1; *sce:sci* = 1.1;  $c_1:c_1-c_1 = 0.3$ ; dorsal hysterosomal area C–F with 3 elongated shields and 5 pairs of platelets; suranal shield entire; aggenital area with 2 pairs of setae on a trapezoid shield; genitoanal valves without genital setae; trochanter IV without seta; femora I–II each with 4 setae; genua I–IV with 4 + 1  $\kappa$ , 2, 0, 0; solenidion  $\phi$  on tibiae I present; tarsus II with 9 + 2 $\omega$ .

**Description. Male** (Fig. 193 A–G, 194, Plate 9 B,  $n = 2$ )

**Gnathosoma.** Chelicerae 79 (81–79), movable digits about 1/5 length of chelicerae, 29 (29–31). Palp 51 (51–56). Subcapitular setae  $n$  slightly longer than  $m$ ,  $m = 17$  (17–18),  $n = 24$  (22–24);  $m-m = 32$  (31–32),  $n-n = 30$  (30–32),  $m-n = 7$ .

**Idiosoma.** Oval, 322 (320–322) long, 199 (198–199) wide. Prodorsum with a well-sclerotised and reticulated shield bearing *vi*, *ve*, and *sci*, and a pair of platelets bearing *sce*; eyes and *pob* absent; ratios *vi:vi-vi* = 0.5, *ve:sci* = 1.1, *sce:sci* = 1.1; setae *vi* 16 (16–18), *ve* 22, very short, not reaching bases of *sci*, *sci* 21, *sce* 23; distances: *vi-vi* 32 (32–34), *vi-ve* 27 (27–28), *ve-sci* 48 (48–50), *sci-sce* 22 (22–23). Dorsal hysterosomal area C–F with 3 elongated shields and 5 pairs of large or minute platelets, ornamentation as in prodorsal shield; setae  $c_1$  on platelets, 17 (17–18),  $d_1$  on central shield, 17,  $d_2$  on marginal shields, 17 (17–18),  $e_1$  on large platelets, 19 (17–19),  $e_2$  19 (17–19),  $f_1$  22; ratios  $c_1:c_1-c_1 = 0.3$ ,  $e_1:e_1-e_1 = 0.5$ ,  $c_1-c_1:d_1-d_1:e_1-e_1:f_1-f_1 = 1.6:1.1:1.0:1.9$ ; distances:  $c_1-c_1$  57 (53–57),  $c_1-d_1$  66 (66–69),  $d_1-d_1$  35,  $d_1-d_2$  44 (44–46),  $d_1-e_1$  52 (50–52),  $e_1-e_1$  38 (38–40),  $e_1-e_2$  29 (29–30),  $e_1-f_1$  31 (30–31),  $f_1-f_1$  66 (66–70); humeral setae  $c_2$  42 (42–45), 2.5 times length of  $c_1$ . Suranal shield entire,  $h_1$  25 (25–28),  $h_2$  32 (32–34). Endopodal shields faintly sclerotised and reticulated. Ventral setae subequal, ratio  $1a:3a:4a = 1.0:1.1:1.1$ ; lengths:  $1a$  21,  $3a$  23 (21–23) and  $4a$  24 (24–27). Aggenital area with 2 pairs of setae on a trapezoid shield,  $ag_1$  21 (21–22),  $ag_2$  27 (17–27); genitoanal valves without genital setae, lengths of pseudanal setae:  $ps_3$  22 (22–24),  $ps_2$  9 (9–10),  $ps_1$  6.

**Legs.** Length: leg I 143 (143–149), leg II 117 (117–125), leg III 132, leg IV 151 (151–156). Solenidia  $\kappa$  on genua II absent,  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 0; femora 4, 4, 3, 2; genua 4 + 1  $\kappa$ , 2, 0, 0; tibiae 5 + 1  $\phi$  + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p; tarsi 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega_1$  16, I $\omega_2$  19 (19–20), II $\omega_1$  15 (14–15), II $\omega_2$  18, III $\omega_1$  8 (8–9), III $\omega_2$  17, IV $\omega_1$  7, IV $\omega_2$  17.

**Protonymph** (Fig. 193 H–I,  $n = 1$ )

**Gnathosoma.** Chelicerae 61, movable digits less than 1/3 length of chelicerae, 20. Palp 46, accessory claw spine-like. Subcapitular setae  $n$  absent;  $m = 17$ ,  $m-m = 22$ .

**Idiosoma.** Oval, 257 long, 173 wide. Prodorsum as in male; eyes and *pob* absent; ratios *vi:vi-vi* = 0.5, *ve:sci* = 1.1, *sce:sci* = 1.0; setae *vi* 16, *ve* 22, far from bases of *sci*, *sci* 20, *sce* 20; distances: *vi-vi* 33, *vi-ve* 24, *ve-sci* 40, *sci-sce* 20. Dorsal hysterosomal area C–F as in male; lengths:  $c_1$  17,  $d_1$  18,  $d_2$  18,  $e_1$  20,  $e_2$  21,  $f_1$  23; ratios  $c_1:c_1-c_1 = 0.3$ ,  $e_1:e_1-e_1 = 0.7$ ,  $c_1-c_1:d_1-d_1:e_1-e_1:f_1-f_1 = 1.9:1.2:1.0:1.6$ ; distances:  $c_1-c_1$  58,  $c_1-d_1$  58,  $d_1-d_1$  37,  $d_1-d_2$  41,  $d_1-e_1$  41,  $e_1-e_1$  30,  $e_1-e_2$  25,  $e_1-f_1$  22,  $f_1-f_1$  47; humeral setae  $c_2$  45, 2.6 times length of  $c_1$ . Suranal shield entire,  $h_1$  30,  $h_2$  32. Endopodal shields faintly sclerotised. Ventral setae subequal, ratio  $1a:3a:4a = 1.2:1.1:1.0$ ; lengths:  $1a$  18,  $3a$  17 and  $4a$  15. Aggenital area with a pair of setae, each on a platelet anterior to a large shield,  $ag_1$  16; genitoanal

valves without genital setae, lengths of pseudanal setae:  $ps_3$  15,  $ps_2$  14,  $ps_1$  12.

**Legs.** Length: leg I 125, leg II 92, leg III 90, leg IV 121. Solenidia  $\kappa$  on genua II absent,  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, ?, ?; trochanters 1, 0, ?, 0; femora 4, 4, 3, 1; genua 4 + 1  $\kappa$ , 2, 0, 0; tibiae 5 + 1  $\phi$  + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 6 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  14, II  $\omega$  11, III  $\omega$  7, IV  $\omega$  5.

**Distribution** (Map p. 382). New Zealand (Wood 1967, 1981).

– / SD, SC.

**Material examined.** Holotype and 2 paratypes.

**Holotype** male: NEW ZEALAND: SC: Kurow, 300 m, 2 Mar 1965, T. G. Wood, moss on rocks, NZAC: 1/male.

**Paratypes:** SD: Stephens I, 2 Feb 1964, G. W. Ramsay, moss, NZAC: 1/1 male, 1 protonymph.

**Habitat.** Moss, moss on logs and rocks.

### *Stigmaeus campbellensis* Wood

Fig. 195–196

*Stigmaeus campbellensis* Wood, 1970: 677; Wood, 1981: 369.

**Diagnosis. Female.** Prodorsum with a reticulated shield and a pair of platelets; eyes present; *ve* exceeding bases of *sci*, *ve*: *sci* = 2.1; *sce*: *sci* = 1.6; *c<sub>i</sub>*: *c<sub>i</sub>*–*c<sub>j</sub>* = 0.6; dorsal hysterosomal area C–F with a rectangular shield and 4 pairs of large platelets; suranal shield entire; aggenital area with 3 pairs of setae on a horseshoe-shaped shield; genitoanal valves with a pair of genital setae; trochanter IV with 1 seta; femora I–II with 6 and 5 setae, respectively; genua I–IV with 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; solenidion  $\phi$  on tibiae I present; tarsus II with 9 + 1  $\omega$ .

**Description. Female** (Fig. 195–196, n = 1)

**Gnathosoma.** Chelicerae 173, movable digits about 1/2 length of chelicerae, 90. Palp 143, accessory claw spine-like. Subcapitular setae *n* about 1/2 length of *m*, *m* = 53, *n* = 28; *m*–*m* = 38, *n*–*n* = 28, *m*–*n* = 24.

**Idiosoma.** Oval, 482 long, 307 wide. Prodorsum with a well-sclerotised and reticulated shield bearing *vi*, *ve*, and *sci*, and a pair of platelets bearing *sce*; eyes 55–60 in diameter; *pob* absent; ratios *vi*: *vi*–*vi* = 2.8, *ve*: *sci* = 2.1, *sce*: *sci* = 1.6; setae *vi* 76, *ve* 95, exceeding bases of *sci*, *sci* 46, *sce* 75; distances: *vi*–*vi* 27, *vi*–*ve* 47, *ve*–*sci* 58, *sci*–*sce* 37. Dorsal hysterosomal area C–F with an elongate shield bearing *c<sub>i</sub>*, *d<sub>i</sub>*, and *e<sub>i</sub>*, and 4 pairs of large platelets each bearing a seta, ornamentation as in prodorsal shield; lengths: *c<sub>i</sub>* 60, *d<sub>i</sub>* 65, *e<sub>i</sub>* 71, *e<sub>2</sub>* 80, *f<sub>i</sub>* 83; ratios *c<sub>i</sub>*: *c<sub>j</sub>*–*c<sub>i</sub>* = 0.6, *e<sub>i</sub>*: *e<sub>j</sub>*–*e<sub>i</sub>* = 1.0, *c<sub>i</sub>*–*c<sub>j</sub>*: *d<sub>i</sub>*–*d<sub>j</sub>*: *e<sub>i</sub>*–*e<sub>j</sub>*: *f<sub>i</sub>*–*f<sub>j</sub>* = 1.4: 1.4: 1.0: 2.0; distances: *c<sub>i</sub>*–*c<sub>j</sub>* 99, *c<sub>i</sub>*–*d<sub>j</sub>* 98, *d<sub>i</sub>*–*d<sub>j</sub>* 100, *d<sub>i</sub>*–*d<sub>2</sub>* 72,

*d<sub>i</sub>*–*e<sub>i</sub>* 80, *e<sub>i</sub>*–*e<sub>j</sub>* 70, *e<sub>j</sub>*–*e<sub>2</sub>* 72, *e<sub>i</sub>*–*f<sub>i</sub>* 41, *f<sub>i</sub>*–*f<sub>j</sub>* 142; humeral setae *c<sub>2</sub>* 81, 1.4 times length of *c<sub>i</sub>*. Suranal shield entire, *h<sub>1</sub>* 83, *h<sub>2</sub>* 83. Endopodal shields well sclerotised and reticulated. Ventral setae subequal, ratio *1a*: *3a*: *4a* = 1.0: 1.1: 1.0; lengths: *1a* 31, *3a* 33 and *4a* 31. Aggenital area with 3 pairs of setae on a horseshoe-shaped shield, *ag<sub>1</sub>* 31, *ag<sub>2</sub>* 33, *ag<sub>3</sub>* 38; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae, lengths: *g<sub>1</sub>* 20, *ps<sub>3</sub>* 32, *ps<sub>2</sub>* 59, *ps<sub>1</sub>* 66.

**Legs.** Length: leg I 258, leg II 235, leg III 227, leg IV 239. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ , 5 + 1  $\phi p$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  35, II  $\omega$  32, III  $\omega$  16, IV  $\omega$  20.

**Distribution** (Map p. 383). Campbell Island (Wood 1970).

– / – / CA.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: **Campbell Island:** Bishop 8148, Perseverance harbour, Lookout Bay, 3. Feb 1963, K. A. J. Wise, mould under tussock, MONZ: 1/1 female.

**Habitat.** *Azorella*, leaf mould under tussock, mixed moss, moss and leaf mould, moss and lichens, moss and lichens on rocks.

### *Stigmaeus luxtoni* Wood

Fig. 197–200, Plate 9 C

*Stigmaeus luxtoni* Wood, 1981: 372.

**Diagnosis. Female.** Prodorsum with a reticulated shield and a pair of platelets; eyes present; *ve* exceeding bases of *sci*, *ve*: *sci* = 1.9; *sce*: *sci* = 1.3; *c<sub>i</sub>*: *c<sub>j</sub>*–*c<sub>i</sub>* = 0.9; dorsal hysterosomal area C–F with a square shield and 5 pairs of large platelets; suranal shield entire; aggenital area with 3 pairs of setae on a horseshoe-shaped shield; genitoanal valves with a pair of genital setae; trochanter IV with 1 seta; femora I–II with 6 and 5 setae, respectively; genua I–IV with 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; solenidion  $\phi$  on tibiae I present; tarsus II with 9 + 1  $\omega$ .

**Male.** As in female but: *ve*: *sci* = 2.5; *sce*: *sci* = 2.0; dorsal hysterosomal area C–F with 2 shields and 4 pairs of large platelets, anterior shield bearing 2 pairs of setae and posterior one bearing a pair of setae; tarsi I–IV each with 2 solenidia.

**Description. Female** (Fig. 197–198, Plate 9 C, n = 1)

**Gnathosoma.** Chelicerae 169, movable digits about 3/5 length of chelicerae, 96. Palp 149, accessory claw spine-like. Subcapitular setae *n* shorter than *m*, *m* = 43, *n* = 36; *m*–*m* = 41, *n*–*n* = 36, *m*–*n* = 28.

**Idiosoma.** Oval, 566 long, 482 wide. Setae terminated in a cluster of barbs (except *ve* and  $c_2$ ). Prodorsum with a well-sclerotised and reticulated shield bearing *vi*, *ve*, and *sci*, and a pair of platelets bearing *sce*; eyes present, *pob* absent; ratios *vi*:  $vi-vi = 2.5$ , *ve*: *sci* = 1.9, *sce*: *sci* = 1.3; setae *vi* 91, *ve* exceeding bases of *sci*, 135, *sci* 72, *sce* 96; distances: *vi-vi* 36, *vi-ve* 60, *ve-sci* 70, *sci-sce* 60. Dorsal hysterosomal area C-F with a square shield bearing  $c_1$  and  $d_1$ , and 5 pairs of large platelets each bearing a seta, ornamentation as in prodorsal shield; lengths:  $c_1$  84,  $d_1$  94,  $d_2$  84,  $e_1$  91,  $e_2$  103,  $f_1$  99; ratios  $c_1$ :  $c_1-c_1 = 0.9$ ,  $e_1$ :  $e_1-e_1 = 0.8$ ,  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.0$ : 1.0: 1.2: 1.8; distances:  $c_1-c_1$  92,  $c_1-d_1$  139,  $d_1-d_1$  96,  $d_1-d_2$  135,  $d_1-e_1$  72,  $e_1-e_1$  111,  $e_1-e_2$  120,  $e_1-f_1$  96,  $f_1-f_1$  169; humeral setae  $c_2$  147, 1.8 times length of  $c_1$ . Suranal shield entire,  $h_1$  92,  $h_2$  92. Endopodal shields well sclerotised and reticulated. Ventral setae subequal, ratio *1a*: *3a*: *4a* = 1.1: 1.0: 1.0; lengths: *1a* 39, *3a* 38 and *4a* 36. Aggenital area with 3 pairs of setae on a horseshoe-shaped shield,  $ag_1$  36,  $ag_2$  38,  $ag_3$  46; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae, lengths:  $g_1$  24,  $ps_3$  43,  $ps_2$  41,  $ps_1$  67.

**Legs.** Length: leg I 303, leg II 269, leg III 270, leg IV 308. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I-IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  34, II $\omega$  29, III $\omega$  14, IV $\omega$  17.

**Male** (Fig. 199–200, n = 1)

**Gnathosoma.** Chelicerae 147, movable digits about 3/5 length of chelicerae, 82. Palp 137, accessory claw spine-like. Subcapitular setae *n* shorter than *m*, *m* = 36, *n* = 31; *m-m* = 43, *n-n* = 31, *m-n* = 22.

**Idiosoma.** Oval, 409 long, 284 wide. Prodorsum as in female; eyes present, *pob* absent; ratios *vi*:  $vi-vi = 2.6$ , *ve*: *sci* = 2.5, *sce*: *sci* = 2; setae *vi* 74, *ve* 127, far exceeding bases of *sci*, *sci* 50, *sce* 99; distances: *vi-vi* 29, *vi-ve* 53, *ve-sci* 55, *sci-sce* 24. Dorsal hysterosomal area C-F with 2 shields and 4 pairs of large platelets, anterior shield bearing  $c_1$  and  $d_1$  and posterior one bearing  $e_1$ , ornamentation as in prodorsal shield; lengths:  $c_1$  62,  $d_1$  63,  $d_2$  67,  $e_1$  48,  $e_2$  135,  $f_1$  66; ratios  $c_1$ :  $c_1-c_1 = 0.9$ ,  $e_1$ :  $e_1-e_1 = 1.0$ ,  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.4$ : 1.3: 1.0: 1.9; distances:  $c_1-c_1$  67,  $c_1-d_1$  72,  $d_1-d_1$  63,  $d_1-d_2$  79,  $d_1-e_1$  39,  $e_1-e_1$  48,  $e_1-e_2$  53,  $e_1-f_1$  58,  $f_1-f_1$  92; humeral setae  $c_2$  123, 2.0 times length of  $c_1$ . Suranal shield entire,  $h_1$  19,  $h_2$  72. Endopodal shields well sclerotised and reticulated. Ventral setae subequal, ratio *1a*: *3a*: *4a* = 1.1: 1.0: 1.0; lengths: *1a* 36, *3a* 34, and *4a* 34. Aggenital area with 3 pairs of setae on a large expanded shield,  $ag_1$  39,  $ag_2$  39,  $ag_3$  43; genitoanal valves without genital setae, lengths of pseudanal setae:  $ps_3$  31,  $ps_2$  12,  $ps_1$  11.

**Legs.** Length: leg I 272, leg II 228, leg III 215, leg IV 241. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I-IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega$  24, II $\omega$  48, III $\omega$  26, III $\omega_2$  48, III $\omega_1$  12, III $\omega_2$  41, IV $\omega_1$  12, IV $\omega_2$  31.

**Distribution** (Map p. 383). New Zealand (Wood 1981). WO / -.

**Material examined.** Holotype and 1 paratype. **Holotype** female: NEW ZEALAND: WO: Rukuhia, 27 July 1967, M. Luxton, reclaimed peat pasture, NZAC: 1/1 female [+ 1 male]. **Paratype:** on same slide with holotype: NZAC: 1/1 male.

**Habitat.** Reclaimed peat pasture.

### **Stigmaeus novazealandicus** Wood

Fig. 201–204, Plate 9 D

*Stigmaeus novazealandicus* Wood, 1981: 374.

**Diagnosis. Female.** Prodorsum with a reticulated shield and a pair of platelets; eyes present; *ve* far exceeding bases of *sci*, *ve*: *sci* = 2.9; *sce*: *sci* = 2.4;  $c_1$ :  $c_1-c_1 = 1.5$ ; dorsal hysterosomal area C-F with a rectangular shield and 4 pairs of large platelets; suranal shield entire; aggenital area with 3 pairs of setae on a horseshoe-shaped shield; genitoanal valves with a pair of genital setae; trochanter IV with 1 seta; femora I-II with 6 and 5 setae, respectively; genua I-IV with 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; solenidion  $\phi$  on tibiae I present; tarsus II with 9 + 1 $\omega$ .

**Male.** As in femlae but: *ve*: *sci* = 3.5; *sce*: *sci* = 2.9; dorsal hysterosomal area C-F with 2 shields and 3 pairs of large platelets;  $c_1$ :  $c_1-c_1 = 1.3$ ; tarsi I-IV each with 2 solenidia.

**Description. Female** (Fig. 201–202, Plate 9 D, n = 3)

**Gnathosoma.** Chelicerae 163 (156–178), movable digits about 3/5 lengths of chelicerae, 96 (82–96). Palp 151 (146–157), accessory claw spine-like. Subcapitular setae *n* shorter than *m*, *m* = 37 (31–37), *n* = 30 (24–30); *m-m* = 41 (32–41), *n-n* = 23 (18–23), *m-n* = 24 (23–24).

**Idiosoma.** Oval, 489 (381–489) long, 368 (299–373) wide. Prodorsum with a well-sclerotised and reticulated shield bearing *vi*, *ve*, and *sci*, and a pair of large platelets bearing *sce*; eyes 48 (43–48) in diameter; *pob* absent; ratios *vi*:  $vi-vi = 3.4$ , *ve*: *sci* = 2.9, *sce*: *sci* = 2.4; setae *vi* 105 (96–105), *ve* 167 (142–167), far exceeding bases of *sci*, *sci* 57 (49–57), *sce* 138 (109–138); distances: *vi-vi* 31 (31–36), *vi-ve* 64 (54–64), *ve-sci* 68 (61–68), *sci-sce* 46 (40–46). Dorsal hysterosomal area C-F with a rectangular shield bearing  $c_1$ ,  $d_1$  and  $e_1$ , and 4 pairs of large platelets each

bearing a seta, ornamentation as in prodorsal shield; length:  $c_1$  138 (111–138),  $d_1$  145 (93–145),  $d_2$  137 (94–137),  $e_1$  144 (123–144),  $e_2$  154 (132–154),  $f_1$  159 (107–159); ratios  $c_1$ :  $c_1-c_1 = 1.5$ ,  $e_1$ :  $e_1-e_1 = 2.1$ ,  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.4$ : 1.6: 1.0: 2.3; distances:  $c_1-c_1$  95 (92–101),  $c_1-d_1$  100 (88–100),  $d_1-d_1$  111 (102–111),  $d_1-d_2$  78 (59–78),  $d_1-e_1$  75 (75–87),  $e_1-e_1$  69 (69–71),  $e_1-e_2$  87 (60–87),  $e_1-f_1$  46 (46–70),  $f_1-f_1$  161 (111–161); humeral setae  $c_2$  126 (101–126), 0.9 times length of  $c_1$ . Suranal shield entire,  $h_1$  133 (108–133),  $h_2$  134 (109–134). Endopodal shields well sclerotised and reticulated. Ventral setae subequal, ratio  $1a$ :  $3a$ :  $4a = 1.0$ : 1.1: 1.0; lengths:  $1a$  35 (30–35),  $3a$  36 (30–36) and  $4a$  34 (30–34). Aggenital area with 3 pairs of setae on a horseshoe-shaped shield,  $ag_1$  34 (27–34),  $ag_2$  35 (30–35),  $ag_3$  37 (34–37); genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae, lengths:  $g_1$  26 (24–26),  $ps_3$  33 (26–33),  $ps_2$  73 (68–73),  $ps_1$  96 (89–96).

**Legs.** Length: leg I 282 (280–289), leg II 231 (231–248), leg III 222 (219–222), leg IV 252 (252–260). Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  36 (32–36), II  $\omega$  30 (24–30), III  $\omega$  22 (22–23), IV  $\omega$  37 (31–37).

**Male** (Fig. 203 A–E, 204,  $n = 1$ )

**Gnathosoma.** Chelicerae 156, movable digits about 3/5 lengths of chelicerae, 98. Palp 99, accessory claw spine-like. Subcapitular setae  $n$  shorter than  $m$ ,  $m = 43$ ,  $n = 28$ ;  $m-m = 48$ ,  $n-n = 19$ ,  $m-n = 24$ .

**Idiosoma.** Oval, 356 long, 271 wide. Prodorsum as in female; eyes obscure; *pob* absent; ratios  $vi$ :  $vi-vi = 2.5$ ,  $ve$ :  $sci = 3.5$ ,  $sce$ :  $sci = 2.9$ ; setae  $vi$  89,  $ve$  145, far exceeding bases of  $sci$ ,  $sci$  41,  $sce$  120; distances:  $vi-vi$  36,  $vi-ve$  45,  $ve-sci$  55,  $sci-sce$  26. Dorsal hysterosomal area C–F with 2 shields and 3 pairs of large platelets, anterior shield bearing  $c_1$ ,  $d_1$  and  $d_2$  and posterior one bearing  $e_1$ ; ornamentation as in prodorsal shield; lengths:  $c_1$  108,  $d_1$  116,  $d_2$  120,  $e_1$  60,  $e_2$  120,  $f_1$  118; ratios  $c_1$ :  $c_1-c_1 = 1.3$ ,  $e_1$ :  $e_1-e_1 = 1.5$ ,  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 2.0$ : 2.1: 1.0: 2.0; distances:  $c_1-c_1$  81,  $c_1-d_1$  84,  $d_1-d_1$  86,  $d_1-d_2$  55,  $d_1-e_1$  48,  $e_1-e_1$  41,  $e_1-e_2$  55,  $e_1-f_1$  36,  $f_1-f_1$  84; humeral setae  $c_2$  111, 1.0 times length of  $c_1$ . Suranal shield entire,  $h_1$  31,  $h_2$  76. Endopodal shields well sclerotised and reticulated. Ventral setae equal in length, ratio  $1a$ :  $3a$ :  $4a = 1.0$ : 1.0: 1.0; lengths:  $1a$  28,  $3a$  29, and  $4a$  28. Aggenital area with 3 pairs of setae on a large expanded shield,  $ag_1$  28,  $ag_2$  31,  $ag_3$  39; genitoanal valves without genital setae, lengths of pseudanal setae:  $ps_3$  19,  $ps_2$  14,  $ps_1$  12.

**Legs.** Length: leg I 282, leg II 224, leg III 201, leg IV 224. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 0; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 1; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 2  $\omega$ , 7 + 2  $\omega$ . Lengths of solenidia: I  $\omega$  31, I  $\omega_2$  65, II  $\omega_1$  28, II  $\omega_2$  67, III  $\omega_1$  24, III  $\omega_2$  51, IV  $\omega_1$  41, IV  $\omega_2$  66.

**Deutonymph female** (Fig. 203 F–G,  $n = 1$ )

**Gnathosoma.** Chelicerae 138, movable digits about 3/5 length of chelicerae, 86. Palp 116, accessory claw spine-like. Subcapitular setae  $n$  shorter than  $m$ ,  $m = 28$ ,  $n = 24$ ;  $m-m = 26$ ,  $n-n = 19$ ,  $m-n = 14$ .

**Idiosoma.** Oval, 313 long, 224 wide. Prodorsum as in female; eyes obscure; *pob* absent; ratios  $vi$ :  $vi-vi = 2.9$ ,  $ve$ :  $sci = 3.1$ ,  $sce$ :  $sci = 2.8$ ; setae  $vi$  76,  $ve$  117, far exceeding bases of  $sci$ ,  $sci$  38,  $sce$  108; distances:  $vi-vi$  26,  $vi-ve$  48,  $ve-sci$  53,  $sci-sce$  32. Dorsal hysterosomal area C–F with 2 shields and 4 pairs of large platelets, anterior shield bearing  $c_1$  and  $d_1$  and posterior one bearing  $e_1$ ; ornamentation as in prodorsal shield; lengths:  $c_1$  108,  $d_1$  108,  $d_2$  100,  $e_1$  109,  $e_2$  113,  $f_1$  107; ratios  $c_1$ :  $c_1-c_1 = 1.5$ ,  $e_1$ :  $e_1-e_1 = 3.0$ ,  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 2.0$ : 2.5: 1.0: 2.5; distances:  $c_1-c_1$  72,  $c_1-d_1$  78,  $d_1-d_1$  89,  $d_1-d_2$  51,  $d_1-e_1$  74,  $e_1-e_1$  36,  $e_1-e_2$  54,  $e_1-f_1$  63,  $f_1-f_1$  89; humeral setae  $c_2$  97, 0.9 times length of  $c_1$ . Suranal shield entire,  $h_1$  90,  $h_2$  91. Endopodal shields faintly sclerotised and reticulated. Ventral setae equal in length, ratio  $1a$ :  $3a$ :  $4a = 1.0$ : 1.0: 1.0; lengths:  $1a$  24,  $3a$  24 and  $4a$  23. Aggenital area with 3 pairs of setae on a horseshoe-shaped shield,  $ag_1$  19,  $ag_2$  24,  $ag_3$  26; genitoanal valves without genital setae, lengths of pseudanal setae:  $ps_3$  27,  $ps_2$  43,  $ps_1$  62.

**Legs.** Length: leg I 217, leg II 173, leg III 156, leg IV 181. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1  $\kappa$ , 3 + 1  $\kappa$ , 1, 0; tibiae 5 + 1  $\phi$  + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 13 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  25, II  $\omega$  19, III  $\omega$  13, IV  $\omega$  23.

**Distribution** (Map p. 383). New Zealand (Wood 1981). TO / NN.

**Material examined.** Holotype and 5 paratypes. **Holotype** female: NEW ZEALAND: NN: Dun Mt, 15 Nov 1969, E. Collyer, NZAC: 1/1 female [+ 1 paratype female, 1 paratype male]; positions denoted by arrows on label. **Paratypes:** on same slide with holotype: NZAC: 1/1 female, 1 male. **TO:** Tongariro National Park, nr Chateau, 21 Apr 1965, N. A. Walker, moss and *Nothofagus* litter, NZAC: 1/1 female, 1 deutonymph female, 1 male.

**Habitat.** Moss and *Nothofagus* leaf litter.



**Stigmaeus rotundus** Wood

Fig. 205–206, Plate 10 A

*Stigmaeus rotundus* Wood, 1967: 99; Wood, 1981: 370.

**Diagnosis. Deutonymph female.** Prodorsum with a reticulated shield and a pair of platelets; eyes present; *ve* reaching bases of *sci*, *ve: sci* = 1.0; *sce: sci* = 1.1;  $c_1: c_1-c_1 = 0.5$ ; dorsal hysterosomal area C–F with 2 shields and 4 pairs of large platelets; suranal shield entire; aggenital area with 2 pairs of setae on a horseshoe-shaped shield; trochanter IV without seta; femora I–II with 6 and 4 setae, respectively; genua I–IV with 3 + 1 $\kappa$ , 2 + 1 $\kappa$ , 0, 0; solenidion  $\phi$  on tibiae I present; tarsus II with 9 + 1 $\omega$ .

**Description. Deutonymph female** (Fig. 205–206, Plate 10 A, n = 1)

**Gnathosoma.** Chelicerae 72, movable digits about 1/2 length of chelicerae, 38. Palp 65, accessory claw spine-like. Subcapitular setae *n* shorter than *m*, *m* = 17, *n* = 11; *m-m* = 15, *n-n* = 17, *m-n* = 14.

**Idiosoma.** Oval, 229 long, 180 wide. Prodorsum with a well-sclerotised and reticulated shield bearing *vi*, *ve* and *sci*, and a pair of platelets bearing *sce*; eyes 10 in diameter; *pob* absent; ratios *vi: vi-vi* = 1.3, *ve: sci* = 1.2, *sce: sci* = 1.1; setae *vi* 25, *ve* 26, reaching bases of *sci*, *sci* 22, *sce* 24; distances: *vi-vi* 20, *vi-ve* 40, *ve-sci* 22, *sci-sce* 25. Dorsal hysterosomal area C–F with 2 shields and 4 pairs of large platelets, anterior shield bearing  $c_1$  and  $d_1$  and posterior one bearing  $e_1$ ; ornamentation as in prodorsal shield; lengths:  $c_1$  25,  $d_1$  23,  $d_2$  23,  $e_1$  23,  $e_2$  23,  $f_1$  23; ratios  $c_1: c_1-c_1 = 0.5$ ,  $e_1: e_1-e_1 = 0.5$ ,  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.1: 1.2: 1.0: 1.0$ ; distances:  $c_1-c_1$  55,  $c_1-d_1$  49,  $d_1-d_1$  56,  $d_1-d_2$  40,  $d_1-e_1$  40,  $e_1-e_1$  48,  $e_1-e_2$  32,  $e_1-f_1$  37,  $f_1-f_1$  50; humeral setae  $c_2$  23, 0.9 times length of  $c_1$ . Suranal shield entire,  $h_1$  23,  $h_2$  20. Endopodal shields faintly sclerotised and reticulated. Ventral setae subequal, ratio *1a: 3a: 4a* = 1.1: 1.1: 1.0; lengths: *1a* 14, *3a* 14 and *4a* 12. Aggenital area with 2 pairs of setae on a horseshoe-shaped shield,  $ag_1$  12,  $ag_2$  11; genitoanal valves without genital setae, lengths of pseudanal setae:  $ps_3$  11,  $ps_2$  10,  $ps_1$  11.

**Legs.** Length: leg I 127, leg II 109, leg III 108, leg IV 115. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 0; femora 6, 4, 3, 2; genua 3 + 1 $\kappa$ , 2 + 1 $\kappa$ , 0, 0; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  10, II $\omega$  9, III $\omega$  4, IV $\omega$  3.

**Distribution** (Map p. 383). New Zealand (Wood 1967, 1981).

- / WD.

**Material examined.** Holotype only. **Holotype** female (deutonymph female): NEW ZEALAND: **WD**: near Fox

Glacier, 20 m, 17 Feb 1965, T. G. Wood, moss and litter, NZAC: 1/1 deutonymph female.

**Habitat.** Bark of *Podocarpus*, moss on rocks, sedge peat (*Cladium*); moss and forest litter.

**Remarks.** The taxonomic position of this species is questionable because only the deutonymph female is known, which shares characters with those of *Cheylostigmaeus*.

**Stigmaeus rupicola** Wood

Fig. 207–212

*Stigmaeus rupicola* Wood, 1967: 106; Wood, 1981: 370.

**Diagnosis. Female.** Prodorsum with an elongated shield and a pair of platelets; eyes absent; *ve* reaching bases of *sci*, *ve: sci* = 3.1; *sce: sci* = 1.6;  $c_1: c_1-c_1 = 0.6$ ; hysterosomal area C–F with 2 shields and 4 pairs of small platelets; suranal shield entire; aggenital area with 4 pairs of setae, first and second pairs on a square shield, third and fourth pairs on a small shield on each side; genitoanal valves with 2 pairs of genital setae; trochanter IV with 1 seta; femora I–II with 6 and 4 setae, respectively; genua I–IV with 5 + 1 $\kappa$ , 4 + 1 $\kappa$ , 1, 1; solenidion  $\phi$  on tibiae I present; tarsus II with 8 + 1 $\omega$ .

**Male.** As in femlae but: *ve: sci* = 1.5; *sce: sci* = 1.1; aggenital setae on a trapezoid shield; tarsi I–IV each with 2 solenidia.

**Description. Female** (Fig. 207–208, n = 2)

**Gnathosoma.** Chelicerae 119 (109–119), movable digits about 1/5 length of chelicerae, 48 (45–48). Palp 87 (87–92), accessory claw spine-like. Subcapitular setae *n* shorter than *m*, *m* = 30 (30–33), *n* = 16; *m-m* = 21 (21–23), *n-n* = 20 (20–21), *m-n* = 29 (29–32).

**Idiosoma.** Oval, 401 (387–401) long, 192 (178–192) wide. Prodorsum with an elongated shield bearing *vi*, *ve*, and *sci*, and a pair of platelets bearing *sce*; eyes and *pob* absent; ratios *vi: vi-vi* = 0.8, *ve: sci* = 3.1, *sce: sci* = 1.6; setae *vi* 22, *ve* 68 (65–68), reaching bases of *sci*, *sci* 22 (22–24), *sce* 35 (32–35); distances: *vi-vi* 26 (26–32), *vi-ve* 21 (20–21), *ve-sci* 56 (55–56), *sci-sce* 36 (35–36). Dorsal hysterosomal area C–F with 2 shields and 4 pairs of small platelets; anterior shield bearing  $c_1$  and  $d_1$  and posterior one bearing  $e_1$ ; lengths:  $c_1$  25,  $d_1$  22 (22–25),  $d_2$  24 (23–24),  $e_1$  26,  $e_2$  23 (23–28),  $f_1$  41 (36–41); ratios  $c_1: c_1-c_1 = 0.6$ ,  $e_1: e_1-e_1 = 0.6$ ,  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.0: 1.0: 1.0: 1.7$ ; distances:  $c_1-c_1$  41,  $c_1-d_1$  72 (71–72),  $d_1-d_1$  42 (42–45),  $d_1-d_2$  47 (43–47),  $d_1-e_1$  62 (60–62),  $e_1-e_1$  43 (41–43),  $e_1-e_2$  37 (28–37),  $e_1-f_1$  46 (38–46),  $f_1-f_1$  75 (74–75); humeral setae  $c_2$  78 (78–82), 3.1 times length of  $c_1$ . Suranal shield entire,  $h_1$  55 (51–55),  $h_2$  56 (53–56). Endopodal shields well sclerotised, smooth. Ventral setae subequal in length, ratio *1a: 3a: 4a* = 1.0: 1.0: 1.0; lengths: *1a* 28

(28–29), *3a* 27 (27–29) and *4a* 27 (27–29). Aggenital area with 4 pairs of setae, first and second pairs on a square shield, third and fourth pairs on a small shield on each side, *ag*<sub>1</sub> 24 (24–25), *ag*<sub>2</sub> 23 (23–25), *ag*<sub>3</sub> 22 (22–23), *ag*<sub>4</sub> 40 (40–41); genitoanal valves with 2 pairs genital setae and 3 pairs of pseudanal setae, lengths: *g*<sub>1</sub> 16, *g*<sub>2</sub> 16, *ps*<sub>3</sub> 29, *ps*<sub>2</sub> 43 (43–44), *ps*<sub>1</sub> 51.

**Legs.** Length: leg I 181 (181–190), leg II 141 (141–146), leg III 139 (139–143), leg IV 160 (167–167). Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 5 + 1 $\kappa$ , 4 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 1 $\omega$ , 8 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  21 (20–21), II $\omega$  12 (12–13), III $\omega$  5, IV $\omega$  4.5 (4.5–5).

**Male** (Fig. 209–210, *n* = 2)

**Gnathosoma.** Chelicerae 106, movable digits about 1/5 length of chelicerae, 43. Palp 87 (87–90), accessory claw spine-like. Subcapitular setae *n* shorter than *m*, *m* = 27 (27–28), *n* = 14 (12–14); *m*–*m* = 21 (20–21), *n*–*n* = 18 (18–20), *m*–*n* = 25.

**Idiosoma.** Oval, 372 (371–372) long, 174 (174–181) wide. Prodorsum as in female; eyes and *pob* absent; ratios *vi*: *vi*–*vi* = 0.8, *ve*: *sci* = 1.5, *sce*: *sci* = 1.1; setae *vi* 20, *ve* 34 (34–35), not reaching bases of *sci*, *sci* 23 (22–23), *sce* 25 (25–26); distances: *vi*–*vi* 24 (24–25), *vi*–*ve* 21 (19–21), *ve*–*sci* 49 (49–52), *sci*–*sce* 35 (35–36). Dorsal hysterosoma as in female; lengths: *c*<sub>1</sub> 22 (21–22), *d*<sub>1</sub> 20 (20–21), *d*<sub>2</sub> 23 (21–23), *e*<sub>1</sub> 22 (21–22), *e*<sub>2</sub> 26 (25–26), *f*<sub>1</sub> 32 (32–35); ratios *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.6, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> = 0.6, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.1: 1.0: 1.0: 1.5; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 39 (39–40), *c*<sub>1</sub>–*d*<sub>1</sub> 64 (62–64), *d*<sub>1</sub>–*d*<sub>1</sub> 37 (37–39), *d*<sub>1</sub>–*d*<sub>2</sub> 38 (38–42), *d*<sub>1</sub>–*e*<sub>1</sub> 57 (57–60), *e*<sub>1</sub>–*e*<sub>1</sub> 37, *e*<sub>1</sub>–*e*<sub>2</sub> 16 (16–26), *e*<sub>1</sub>–*f*<sub>1</sub> 36 (34–36), *f*<sub>1</sub>–*f*<sub>1</sub> 57 (57–59); humeral setae *c*<sub>2</sub> 73 (73–75), 3.3 times length of *c*<sub>1</sub>. Suranal shield entire, *h*<sub>1</sub> 37 (37–44), *h*<sub>2</sub> 39 (39–50). Endopodal shields well sclerotised, smooth. Ventral setae subequal, ratio *1a*: *3a*: *4a* = 1.1: 1.1: 1.0; lengths: *1a* 20, *3a* 20 (20–21) and *4a* 19 (15–19). Aggenital area with 4 pairs of setae on a trapezoid shield, *ag*<sub>1</sub> 17, *ag*<sub>2</sub> 17, *ag*<sub>3</sub> 17, *ag*<sub>4</sub> 34 (32–34); genitoanal valves without genital setae, lengths of pseudanal setae: *ps*<sub>3</sub> 35 (9–35), *ps*<sub>2</sub> 13 (10–13), *ps*<sub>1</sub> 11 (2–11).

**Legs.** Length: leg I 174, leg II 138, leg III 138, leg IV 154. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 5 + 1 $\kappa$ , 4 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 2 $\omega$ , 8 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega$  19 (19–20), I $\omega$ <sub>1</sub> 18 (16–18), II $\omega$ <sub>1</sub> 13 (13–14), II $\omega$ <sub>2</sub> 15 (14–15), III $\omega$ <sub>1</sub> 5 (5–6), III $\omega$ <sub>2</sub> 13 (13–14), IV $\omega$ <sub>1</sub> 5 (5–6), IV $\omega$ <sub>2</sub> 13 (13–14).

**Deutonymph female** (Fig. 211–212, *n* = 1)

**Gnathosoma.** Chelicerae 78, movable digits about 1/2 length of chelicerae, 36. Palp 72, accessory claw spine-like. Subcapitular setae *n* shorter than *m*, *m* = 18, *n* = 10; *m*–*m* = 20, *n*–*n* = 18, *m*–*n* = 21.

**Idiosoma.** Oval, 345 long, 165 wide. Prodorsum as in female; eyes and *pob* absent; ratios *vi*: *vi*–*vi* = 0.7, *ve*: *sci* = 3.2, *sce*: *sci* = 1.3; setae *vi* 17, *ve* 61, reaching bases of *sci*, *sci* 19, *sce* 24; distances: *vi*–*vi* 26, *vi*–*ve* 19, *ve*–*sci* 46, *sci*–*sce* 35. Dorsal hysterosomal area C–F as in female; lengths: *c*<sub>1</sub> 19, *d*<sub>1</sub> 19, *d*<sub>2</sub> 17, *e*<sub>1</sub> 19, *e*<sub>2</sub> 27, *f*<sub>1</sub> 36; ratios *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.5, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> = 0.6, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.2: 1.2: 1.0: 1.8; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 35, *c*<sub>1</sub>–*d*<sub>1</sub> 59, *d*<sub>1</sub>–*d*<sub>1</sub> 35, *d*<sub>1</sub>–*d*<sub>2</sub> 35, *d*<sub>1</sub>–*e*<sub>1</sub> 50, *e*<sub>1</sub>–*e*<sub>1</sub> 30, *e*<sub>1</sub>–*e*<sub>2</sub> 28, *e*<sub>1</sub>–*f*<sub>1</sub> 37, *f*<sub>1</sub>–*f*<sub>1</sub> 53; humeral setae *c*<sub>2</sub> 72, 3.8 times length of *c*<sub>1</sub>. Suranal shield entire, *h*<sub>1</sub> 34, *h*<sub>2</sub> 33. Endopodal shields well sclerotised, smooth. Ventral setae equal in length, ratio *1a*: *3a*: *4a* = 1.0: 1.0: 1.0; lengths: *1a* 18, *3a* 19 and *4a* 18. Aggenital area with 3 pairs of setae on a trapezoid shield, *ag*<sub>1</sub> 14, *ag*<sub>2</sub> 15, *ag*<sub>3</sub> 14; genitoanal valves without genital setae, lengths of pseudanal setae: *ps*<sub>3</sub> 25, *ps*<sub>2</sub> 30, *ps*<sub>1</sub> 25.

**Legs.** Length: leg I 149, leg II 113, leg III 121, leg IV 126. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 0; femora 6, 4, 3, 2; genua 5 + 1 $\kappa$ , 4 + 1 $\kappa$ , 1, 0; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 1 $\omega$ , 8 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  16, II $\omega$  11, III $\omega$  5, IV $\omega$  4.

**Distribution** (Map p. 383). New Zealand (Wood 1967, 1981).

– / NN.

**Material examined.** Holotype, 1 paratype, and 2 non-type specimens. **Holotype** male: NEW ZEALAND: NN: Sandy Bay, 29 Sep 1965, E. Collyer, living free on rocks (intertidal), NZAC: 1/1 male. **Paratype**: same collection data as holotype slide: NZAC: 1/1 deutonymph female. **Other material**: NN: Marahau, Sandy Bay, Aug 1966, E. Collyer, rocks, NZAC: 1/2 females.

**Habitat.** Crevices in granite rocks, rocks (intertidal), *Salicornia* sp., salt marsh.

### **Stigmaeus summersi** Wood

Fig. 213–216, Plate 10 B

*Stigmaeus summersi* Wood, 1967: 97; Wood, 1981: 370.

**Diagnosis. Female.** Prodorsum with a reticulated shield and a pair of platelets; eyes present; *ve* far exceeding bases of *sci*, *ve*: *sci* = 2.5; *sce*: *sci* = 2.0; *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.8; dorsal hysterosomal area C–F with 2 shields and 4 pairs of large platelets; suranal shield entire; aggenital area with 3 pairs of setae on a horseshoe-shaped shield; genitoanal

valves with a pair of genital setae; trochanter IV with 1 seta; femora I–II with 6 and 5 setae, respectively; genua I–IV with 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; solenidion  $\phi$  on tibiae I present; tarsus II with 9 + 1 $\omega$ .

**Male.** As in females but: *ve*: *sci* = 2.5; *sce*: *sci* = 2.2; *c*<sub>1</sub>–*c*<sub>1</sub> = 0.7; dorsal hysterosomal area C–F with 2 shields and 3 pairs of large platelets; aggenital setae on an expanded shield; tarsi I–IV each with 2 solenidia.

**Description. Female** (Fig. 213–214, Plate 10 B, n = 1)

**Gnathosoma.** Chelicerae 181, movable digits about 3/5 length of chelicerae, 103. Palp 169, accessory claw spine-like. Subcapitular setae *n* shorter than *m*, *m* = 49, *n* = 34; *m*–*m* = 38, *n*–*n* = 25, *m*–*n* = 33.

**Idiosoma.** Oval, 445 long, 349 wide. All dorsal idiosomal setae acicular, sparsely barbed, with hyaline sheath. Prodorsum with a well-sclerotised and reticulated shield bearing *vi*, *ve*, and *sci*, and a pair of platelets bearing *sce*; eyes present; *pob* absent; ratios *vi*: *vi*–*vi* = 2.3, *ve*: *sci* = 2.5, *sce*: *sci* = 2; setae *vi* 77, *ve* 140, far exceeding bases of *sci*, *sci* 56, *sce* 110; distances: *vi*–*vi* 33, *vi*–*ve* 57, *ve*–*sci* 65, *sci*–*sce* 46. Dorsal hysterosomal area C–F with 2 shields and 4 pairs of large platelets, anterior shield bearing *c*<sub>1</sub> and *d*<sub>1</sub> and posterior one bearing *e*<sub>1</sub>, ornamentation as in prodorsal shield; lengths: *c*<sub>1</sub> 84, *d*<sub>1</sub> 92, *d*<sub>2</sub> 110, *e*<sub>1</sub> 110, *e*<sub>2</sub> 130, *f*<sub>1</sub> 122; ratios *c*<sub>1</sub>–*c*<sub>1</sub> = 0.8, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> = 1.6, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.5: 1.7: 1.0: 2.3; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 103, *c*<sub>1</sub>–*d*<sub>1</sub> 101, *d*<sub>1</sub>–*d*<sub>1</sub> 115, *d*<sub>1</sub>–*d*<sub>2</sub> 83, *d*<sub>1</sub>–*e*<sub>1</sub> 67, *e*<sub>1</sub>–*e*<sub>1</sub> 67, *e*<sub>1</sub>–*e*<sub>2</sub> 84, *e*<sub>1</sub>–*f*<sub>1</sub> 41, *f*<sub>1</sub>–*f*<sub>1</sub> 154; humeral setae *c*<sub>2</sub> 101, 1.2 times length of *c*<sub>1</sub>. Suranal shield entire, *h*<sub>1</sub> 101, *h*<sub>2</sub> 101. Endopodal shields well sclerotised and reticulated. Ventral setae subequal in length, ratio *1a*: *3a*: *4a* = 1.0: 1.0: 1.0; lengths: *1a* 36, *3a* 37 and *4a* 36. Aggenital area with 3 pairs of setae on a horseshoe-shaped shield, *ag*<sub>1</sub> 31, *ag*<sub>2</sub> 35, *ag*<sub>3</sub> 43; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae, lengths: *g*<sub>1</sub> 26, *ps*<sub>3</sub> 29, *ps*<sub>2</sub> 79, *ps*<sub>1</sub> 79.

**Legs.** Length: leg I 325, leg II 233, leg III 240, leg IV 303. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega$  37, II $\omega$  31, III $\omega$  20, IV $\omega$  33.

**Male** (Fig. 215–216, n = 1)

**Gnathosoma.** Chelicerae 149, movable digits about 3/5 lengths of chelicerae, 91. Palp 154, accessory claw spine-like. Subcapitular setae *n* shorter than *m*, *m* = 46, *n* = 28; *m*–*m* = 40, *n*–*n* = 24, *m*–*n* = 19.

**Idiosoma.** Oval, 366 long, 231 wide. Dorsal idiosomal setae and prodorsum as in female; eyes 29 in diameter; *pob* absent; ratios *vi*: *vi*–*vi* = 2.3, *ve*: *sci* = 2.5, *sce*: *sci* = 2.2; setae *vi* 60, *ve* 94, exceeding bases of *sci*, *sci* 38, *sce*

84; distances: *vi*–*vi* 26, *vi*–*ve* 43, *ve*–*sci* 55, *sci*–*sce* 26. Dorsal hysterosomal area C–F with 2 unpaired central shields and 3 pairs of large platelets, anterior shield bearing *c*<sub>1</sub>, *d*<sub>1</sub> and *d*<sub>2</sub> and posterior one bearing *e*<sub>1</sub>, ornamentation as in prodorsal shield; lengths: *c*<sub>1</sub> 55, *d*<sub>1</sub> 59, *d*<sub>2</sub> 77, *e*<sub>1</sub> 57, *e*<sub>2</sub> 108, *f*<sub>1</sub> 81; ratios *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.7, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> = 1.5, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 2.1: 2.4: 1.0: 2.1; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 79, *c*<sub>1</sub>–*d*<sub>1</sub> 75, *d*<sub>1</sub>–*d*<sub>1</sub> 87, *d*<sub>1</sub>–*d*<sub>2</sub> 51, *d*<sub>1</sub>–*e*<sub>1</sub> 51, *e*<sub>1</sub>–*e*<sub>1</sub> 37, *e*<sub>1</sub>–*e*<sub>2</sub> 43, *e*<sub>1</sub>–*f*<sub>1</sub> 36, *f*<sub>1</sub>–*f*<sub>1</sub> 79; humeral setae *c*<sub>2</sub> 96, 1.7 times length of *c*<sub>1</sub>. Suranal shield entire, *h*<sub>1</sub> 31, *h*<sub>2</sub> 73. Endopodal shields well sclerotised and reticulated. Ventral setae *1a* and *3a* slightly longer than *4a*, ratio *1a*: *3a*: *4a* = 1.2: 1.2: 1.0; lengths: *1a* 28, *3a* 31 and *4a* 24. Aggenital area with 3 pairs of setae on a large expanded shield, *ag*<sub>1</sub> 24, *ag*<sub>2</sub> 36, *ag*<sub>3</sub> 38; genitoanal valves without genital setae, lengths of pseudanal setae: *ps*<sub>3</sub> 17, *ps*<sub>2</sub> 15, *ps*<sub>1</sub> 14.

**Legs.** Length: leg I 290, leg II 228, leg III 212, leg IV 241. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 5, 3, 2; genua 3 + 1 $\kappa$ , 3 + 1 $\kappa$ , 1, 1; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 13 + 2 $\omega$ , 9 + 2 $\omega$ , 7 + 2 $\omega$ , 7 + 2 $\omega$ . Lengths of solenidia: I $\omega$  36, II $\omega$  74, III $\omega$  25, III $\omega$  63, III $\omega$  17, III $\omega$  62, IV $\omega$  28, IV $\omega$  57.

**Larva** (n = 1)

**Gnathosoma.** Chelicerae 80, movable digits about 3/5 lengths of chelicerae, 47. Palp 82, accessory claw spine-like. Subcapitular setae *m* and *n* absent.

**Idiosoma.** Oval, 385 long, 182 wide. Prodorsum as in female; eyes 19 in diameter; *pob* absent; ratios *vi*: *vi*–*vi* = 1.8, *ve*: *sci* = 3.3, *sce*: *sci* = 2.7; setae *vi* 35, *ve* far exceeding bases of *sci*, 79, *sci* 24, *sce* 65; distances: *vi*–*vi* 20, *vi*–*ve* 29, *ve*–*sci* 28, *sci*–*sce* 24. Dorsal hysterosomal area C–F as in female; lengths: *c*<sub>1</sub> 60, *d*<sub>1</sub> 72, *d*<sub>2</sub> 68, *e*<sub>1</sub> 77, *e*<sub>2</sub> 80, *f*<sub>1</sub> 72; ratios *c*<sub>1</sub>–*c*<sub>1</sub> = 1.3, *e*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub> = 2.7, *c*<sub>1</sub>–*c*<sub>1</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.7: 1.6: 1.0: 1.4; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 48, *c*<sub>1</sub>–*d*<sub>1</sub> 50, *d*<sub>1</sub>–*d*<sub>1</sub> 46, *d*<sub>1</sub>–*d*<sub>2</sub> 37, *d*<sub>1</sub>–*e*<sub>1</sub> 28, *e*<sub>1</sub>–*e*<sub>1</sub> 29, *e*<sub>1</sub>–*e*<sub>2</sub> 38, *e*<sub>1</sub>–*f*<sub>1</sub> 26, *f*<sub>1</sub>–*f*<sub>1</sub> 41; humeral setae *c*<sub>2</sub> 64, 1.1 times length of *c*<sub>1</sub>. Suranal shield entire, *h*<sub>1</sub> 55, *h*<sub>2</sub> 32. Endopodal shields faintly sclerotised and reticulated. Ventral setae *1a* and *3a* equal in length, *4a* absent, ratio *1a*: *3a* = 1.0: 1.0; lengths: *1a* 23, *3a* 23. Aggenital area without setae; genitoanal valves without genital setae, lengths of pseudanal setae: *ps*<sub>3</sub> 15, *ps*<sub>2</sub> 17, *ps*<sub>1</sub> 24.

**Legs.** Length: leg I 142, leg II 115, leg III 117. Solenidia  $\kappa$  on genua II and  $\phi$  on tibiae I present. Counts of setae and solenidia on legs I–III: coxae 1 + 1*elcp*, 0, 0; trochanters 0, 0, 0; femora 4, 4, 3; genua 2 + 1 $\kappa$ , 2 + 1 $\kappa$ , 0; tibiae 5 + 1 $\phi$  + 1 $\phi$ p, 5 + 1 $\phi$ p, 5 + 1 $\phi$ p; tarsi 12 + 1 $\omega$ , 8 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  16, II $\omega$  13, III $\omega$  6.

**Distribution** (Map p. 383). New Zealand (Wood 1967, 1981).

GB, TK, TO / –.

**Material examined.** Holotype, 5 paratypes, and 9 non-type specimens. **Holotype** female: NEW ZEALAND: **GB:** near L Waikaremoana, 900 m, 19 Feb 1964, T. G. Wood, moss, NZAC: 1/1 female [+ 3 paratype males]. **Paratypes:** on same slide with holotype: NZAC: 1/3 males. Same collection data as holotype slide: NZAC: 1/1 male (allotype), 1 female. **Other material:** **GB:** near L Waikaremoana, 900 m, 19 Feb 1964, T. G. Wood, moss, NZAC: 1/1 larva. **TO:** L Taupo, 10 miles W. of Tokaanu, 21 Apr 1965, N. A. Walker, *Podocarpus* litter, moss and lichen, 2/1 male, 1 protonymph, 1 larva. **TK:** Mt Egmont, Dawson Falls, 1000 m, 4 Jan 1962, G. Kuschel, litter, 2/2 females, 3 males.

**Habitat.** Logs in exotic pine, moss among forest litter, moss and lichen, moss among *Pinus* litter, moss and *Podocarpus* litter, *Nothofagus* litter, *Rhododendron* leaf litter.

#### Genus *Storchia* Oudemans

*Storchia* Oudemans, 1923b: 150. Type species: *Caligonus robustus* Berlese, 1885, by original designation.

*Apostigmaeus* Grandjean, 1944: 105. Type species: *Apostigmaeus navicella* Grandjean, 1944. Synonymy by Wood, 1973: 88.

**Diagnosis. Female.** Idiosoma elongate to broadly oval in dorsoventral view, generally red or dark red in life. Chelicerae separate. Palptibial claw slightly shorter than palptarsus; accessory claw slender, seta-like; terminal eupathidia on palptarsus not fused; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1 $\omega$  + 2 subterminal spine-like eupathidia + 2 unfused terminal eupathidia. Subcapitulum with 2 pairs of subcapitular setae, *m* anterolaterad of pharynx. Prodorsum with a elongate shield bearing 2 pairs of setae (*vi* and *ve*), *sci* and *sce* on platelets; eyes absent, *pob* absent. Dorsal hysterosomal area C–F mainly striated, without prominent shield; setae *d*<sub>1</sub> and *d*<sub>2</sub> situated on different platelets; humeral shields small or vestigial, dorsolateral, with setae *c*<sub>2</sub>; intercalary shields (F) small, divided along midline, with a pair of setae (*f*<sub>1</sub>). Suranal shield (H) divided along midline, with 2–3 pairs of setae (*h*<sub>3</sub> present or absent). Endopodal shields I–II and III–IV absent. Ventral opisthosoma with 4 pairs of aggenital setae; genital and anal valves separate, with 2–3 pairs of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws robust; empodial shaft branching after extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1*elcp*, 2, 2, 1–2; trochanters 1, 1, 1–2, 1; femora 4, 4, 3, 2–3; genua 4–5 + 1 $\kappa$ , 4 + 0–1 $\kappa$ , 2–3, 2–3; tibiae 5 + 0–1 $\phi$  + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13–14 + 1 $\omega$ , 8–9 + 1 $\omega$ , 6–7 + 1 $\omega$ , 6–8 + 1 $\omega$ .

**Male.** Solenidia on tarsi I–IV: 2, 2, 2, 2.

Only one species was previously described from New Zealand. One new species is added in this paper.

#### Key to species of *Storchia* from New Zealand (adults)

- 1 With 2 pairs of genital setae in female (Fig. 217 G); tarsus IV with 7 + 1 $\omega$  (Fig. 218 D) ..... (p. 100)... *S. hendersonae* sp. n.
- With 3 pairs of genital setae in female (Fig. 219 E); tarsus IV with 8 + 1 $\omega$  (Fig. 220 D) ..... (p. 101)... *S. rubustus* (Berlese)

#### *Storchia hendersonae* sp. n.

Fig. 217–218

**Diagnosis. Female.** Setae *h*<sub>3</sub> present; ratio *1a*: *3a*: *4a* = 1.0: 2.7: 1.2; genital valves with 2 pairs of setae; coxa IV with 2 setae; trochanter III with 1 seta; femora IV with 2 setae; genua I–III with 4 + 1 $\kappa$ , 4, 2; solenidion  $\phi$  on tibia I absent; tarsus IV with 7 + 1 $\omega$ .

**Description. Female** (Fig. 217–218, n = 1)

**Gnathosoma.** Chelicerae 101, movable digits nearly 1/3 length of chelicerae, 31. Palp 73; Subcapitular setae *n* whip-like, nearly 3 times length of *m*, *m* 25, *n* 70; *m*–*m* = 27, *n*–*n* = 36, *m*–*n* = 18.

**Idiosoma.** Oval, 392 long, 217 wide. Prodorsal shield faintly reticulated; ratio *ve*: *sci* = 2.5; lengths: *vi* 24, *ve* 56, *sci* 22, *sce* 37; distances: *vi*–*vi* 29, *vi*–*ve* 17, *ve*–*sci* 43, *sci*–*sce* 24. Dorsal hysterosomal setae *c*<sub>1</sub> nearly 1/3 distance of *c*<sub>1</sub>–*c*<sub>2</sub>; ratio *c*<sub>1</sub>–*c*<sub>2</sub>: *d*<sub>1</sub>–*d*<sub>2</sub>: *e*<sub>1</sub>–*e*<sub>2</sub>: *f*<sub>1</sub>–*f*<sub>2</sub> = 1.1: 1.1: 1.0: 1.6; lengths: *c*<sub>1</sub> 28, *d*<sub>1</sub> 26, *d*<sub>2</sub> 31, *e*<sub>1</sub> 26, *e*<sub>2</sub> 31, *f*<sub>1</sub> 30; distances: *c*<sub>1</sub>–*c*<sub>2</sub> 86, *c*<sub>1</sub>–*d*<sub>1</sub> 63, *d*<sub>1</sub>–*d*<sub>2</sub> 60, *d*<sub>1</sub>–*d*<sub>2</sub> 65, *d*<sub>1</sub>–*e*<sub>1</sub> 75, *e*<sub>1</sub>–*e*<sub>2</sub> 55, *e*<sub>1</sub>–*e*<sub>2</sub> 58, *e*<sub>1</sub>–*f*<sub>1</sub> 46, *f*<sub>1</sub>–*f*<sub>2</sub> 86; humeral setae *c*<sub>2</sub> 43, about 1.5 times length of *c*<sub>1</sub>. Suranal shield divided along midline, bearing 3 pairs of setae, *h*<sub>1</sub> 25, *h*<sub>2</sub> 26, *h*<sub>3</sub> 25. Ventral setae *3a* whip-like; ratio *1a*: *3a*: *4a* = 1.0: 2.7: 1.2; lengths: *1a* 25, *3a* 68, *4a* 31. Aggenital area with 4 pairs of setae, each on a platelet, *ag*<sub>1</sub> 25, *ag*<sub>2</sub> 32, *ag*<sub>3</sub> 65, *ag*<sub>4</sub> 25; genital valves with 2 pairs of setae, *g*<sub>1</sub> 17, *g*<sub>2</sub> 18; pseudanal valves with 3 pairs of setae, *ps*<sub>1</sub> 20, *ps*<sub>2</sub> 20, *ps*<sub>3</sub> 21.

**Legs.** Length: leg I 170, leg II 112, leg III 120, leg IV 137. Solenidion  $\phi$  on tibiae I absent. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 1, 1; femora 4, 4, 3, 2; genua 4 + 1 $\kappa$ , 4, 2, 2; tibiae 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ , 5 + 1 $\phi\phi$ ; tarsi 13 + 1 $\omega$ , 9 + 1 $\omega$ , 7 + 1 $\omega$ , 7 + 1 $\omega$ . Lengths of solenidia: I $\omega$  13, II $\omega$  10, III $\omega$  6, IV $\omega$  6.

**Distribution** (Map p. 383). New Zealand (this paper).  
— / NN.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: NN: Nelson, Boulder Bank, 16 Aug 1970, G. W. Ramsay, under stones, NZAC: 1/1 female.

**Habitat.** Under stones.

**Etymology.** This species is named in honour of Rosa C. Henderson (Lancare Research, Auckland, New Zealand) for her assistance in this study.

**Remarks.** The female of *S. hendersonae* sp. n. resembles that of *S. robustus* (Berlese) in having 2 setae on coxa IV, 4 setae on femur I and 4 + 1κ on genu I, and lacking solenidion φ on tibia I, but can be separated from the latter by having 2 pairs of genital setae, having 7 + 1ω on tarsi IV.

### *Storchia robustus* (Berlese)

Fig. 219–220

*Caligonus robustus* Berlese, 1885, 22: 6.

*Stigmaeus robustus*. — Berlese, 1910: 204.

*Storchia robustus*. — Oudemans, 1923b: 150; Wood, 1973: 89; Vainstein & Kuznetsov, 1978b: 166; Ueckermann & Meyer, 1987: 394; Meyer & Ueckermann, 1989: 51; Fan & Chen, 1997: 162.

*Apostigmaeus navicella* Grandjean, 1944: 105; Meyer & Ryke, 1960: 266; Wood, 1967: 115; Meyer, 1969: 231; Wood 1971a: 76; Wood 1971c: 407; Chaudhri *et al.*, 1979: 206; Ehara, 1980: 243. Synonymy by Wood, 1973: 89.

**Diagnosis. Female.** Setae  $h_3$  present;  $1a: 3a: 4a = 1.0: 3.2: 1.1$ ; genital valves with 3 pairs of setae; coxa IV with 2 setae; trochanter III with 1 seta; femora IV with 2 setae; genua I–III with 4 + 1κ, 4, 2; solenidion φ on tibia I absent; tarsus IV with 8 + 1ω.

**Description. Female** (Fig. 219–220,  $n = 1$ )

**Gnathosoma.** Chelicerae 108, movable digits about 1/3 length of chelicerae, 35. Palp 76. Subcapitular setae  $n$  whip-like, more than 2 times length of  $m$ ,  $m$  29,  $n$  64;  $m-m = 30$ ,  $n-n = 34$ ,  $m-n = 18$ .

**Idiosoma.** Oval, 417 long, 267 wide. Prodorsal shield faintly reticulated; ratio  $ve: sci = 2.7$ ; lengths:  $vi$  25,  $ve$  61,  $sci$  23,  $sce$  40; distances:  $vi-vi$  27,  $vi-ve$  22,  $ve-sci$  41,  $sci-sce$  30. Dorsal hysterosomal setae  $c_1$  nearly 1/3 distance of  $c_1-c_1$ ; ratio  $c_1-c_1: d_1-d_1: e_1-e_1: f_1-f_1 = 1.0: 1.0: 1.0: 1.2$ ; lengths:  $c_1$  29,  $d_1$  29,  $d_2$  33,  $e_1$  26,  $e_2$  26,  $f_1$  27; distances:  $c_1-c_1$  98,  $c_1-d_1$  65,  $d_1-d_1$  66,  $d_1-d_2$  80,  $d_1-e_1$  71,  $e_1-e_1$  63,  $e_1-e_2$  52,  $e_1-f_1$  45,  $f_1-f_1$  78; humeral setae  $c_2$  46, about 1.6 times length of  $c_1$ . Suranal shield divided along midline, bearing 3 pairs of setae,  $h_1$  26,  $h_2$  31,  $h_3$  20. Ventral setae  $3a$  whip-like; ratio  $1a: 3a: 4a = 1.0: 3.2: 1.1$ ; lengths:  $1a$  29,  $3a$  92,  $4a$  33. Aggenital area with 4 pairs of setae, each on a platelet,  $ag_1$  30,  $ag_2$  41,  $ag_3$  71,  $ag_4$  26; genital valves with 3 pairs of setae,  $g_1$  20,  $g_2$  20,  $g_3$  19; pseudanal valves with 3 pairs of setae,  $ps_1$  18,  $ps_2$  19,  $ps_3$  19.

**Legs.** Length: leg I 157, leg II 131, leg III 128, leg IV 144. Solenidion φ on tibiae I absent. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 $elcp$ , 2, 2, 2; trochanters 1, 1, 1, 1; femora 4, 4, 3, 2; genua 4 + 1κ, 4, 2, 2; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 13 + 1ω, 9 + 1ω, 7 + 1ω, 8 + 1ω. Lengths of solenidia: Iω 14, IIω 11, IIIω 6, IVω 5.

**Distribution** (N.Z., Map p. 383). New Zealand (Wood 1967, 1971c), China (Fan & Chen 1997), France (Corsica) (Grandjean 1944), Hawaiian Islands (Goff 1987), Hungary (Komlovsky & Jenser 1992), Israel (Gerson 1968), Italy (Berlese 1885, 1910, Wood 1973), Japan (Ehara 1980), Namibia (Ueckermann & Meyer 1987, Meyer & Ueckermann 1989), Pakistan (Chaudhri *et al.* 1979), Solomon Islands (Wood 1971a), South Africa (Meyer & Ryke 1960, Meyer 1969, Ueckermann & Meyer 1987, Meyer & Ueckermann 1989), Former U.S.S.R. (Vainstein & Kuznetsov 1978b).

— / NN.

**Location of holotype.** ISZA.

**Material examined.** 10 non-type specimens. **Other material:** NN: Nelson, 17 Nov 1963, T. G. Wood, bark of gum tree (*Eucalyptus* sp.), 2/1 female, 2 deutonymph females. Nelson, *Eucalyptus* sp. [as Eucalypt bark], 1/1 female. Nelson, Boulder Bank, 23 Mar 1971, E. Collyer, stones among *Muehlenbeckia* sp., NZAC: 1/6 females.

**Habitat.** Abandoned birds nest, *Acacia nigrescens*, *Asparagus* sp., bark of apple, bark of *Eucalyptus* sp., *Combretum* sp., decaying organic material between grass, decaying organic material underneath banana trees, from a hole in a willow tree, forest litter, *Hakea* sp., lichens soil, moss, pine litter, soil, soil on *Asparagus* sp., *Grewia* sp., *Hakea* sp. and *Schotia afra*, stable and a store, straw in a barn, stones among *Muehlenbeckia* sp., straw in a stable, straw litter.

### Genus *Summersiella* González-R.

*Summersiella* González-R., 1967: 236. Type species: *Stigmaeus coprosmae* Wood, 1967 (= *Summersiella ancydactyla* González-R., 1967), by subsequent designation.

**Diagnosis. Female.** Idiosoma broadly oval in dorsoventral view, red or yellow in life. Chelicerae separate. Palptibial claw subequal to palptarsus; accessory claw slender, seta-like; palptarsi basally angled,  $bp$  spine-like, terminal eupathidia on palptarsus basally fused and split halfway into 3 long prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1ω + 1 subterminal spine-like eupathidium + 3 eupathidia (basally fused). Subcapitulum with 2 pairs of subcapitular setae,  $m$  laterad of pharynx.

Prodorsum with a shield bearing 4 pairs of setae (*vi*, *ve*, *sci* and *sce*); eyes present, *pob* present (unvisible on old specimens). Dorsal hysterosomal area C–F medially covered with a rectangular or a hexagonal shield bearing 3–5 pairs of setae; setae  $d_1$  and  $d_2$  situated on same or different shields (or pletelets); humeral shields minute or vestigial, dorsolateral, with setae  $c_2$ ; intercalary shields (F) divided along midline, with a pair of setae ( $f_i$ ). Suranal shield (H) entire, with 2 pairs of setae,  $h_3$  absent. Endopodal shields I–II and III–IV absent. Ventral opisthosoma with 3 pairs of aggenital setae; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws robust, basal 1/3 to 1/2 enclosed with membranous arolium; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1κ, 2, 0, 1; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 13 + 1ω, 9 + 1ω, 7 + 1ω, 7 + 1ω.

**Male.** Unknown.

One species is known from New Zealand.

### **Summersiella coprosmae (Wood)**

Fig. 221–222

*Stigmaeus coprosmae* Wood, 1967: 101; Wood, 1971c: 409; Fan & Zhang, 2002b: 150.

*Summersiella ancydactyla* González-R., 1967: 237. Synonymy by Wood, 1971c: 409.

*Pseudostigmaeus ancydactyla*. — Meyer, 1969: 244.

**Diagnosis.** Central hysterosomal shield faintly sclerotised; *ve* exceeding base of *sci*; ratios: *vi*:  $vi-vi=0.9$ , *ve*:  $ve-sci=1.2$ ,  $c_i$ :  $c_i-c_i=0.6$ ; solenidion ω on tarsus I (26–27).

**Description. Female** (Fig. 221–222, n = 4)

**Gnathosoma.** Chelicerae 90 (86–93), movable digits 37 (34–37), about 1/5 length of chelicerae. Palp 90 (89–91), accessory claw spine-like. Subcapitular setae subequal, *m* = 26 (22–26), *n* = 26 (23–26); *m-m* = 28 (28–30), *n-n* = 31 (30–31), *m-n* = 14 (14–17).

**Idiosoma.** Oval, 312 (279–320) long, 212 (196–212) wide. Prodorsal shield smooth; eyes 8 (8–10) in diameter; ratios *vi*:  $vi-vi=0.9$ , *ve*: *sci* = 1.3, *sce*: *sci* = 1.2; lengths: *vi* 27 (26–29), *ve* 47 (46–48), *sci* 37 (36–38), *sce* 44 (44–48); distances: *vi-vi* 30 (25–30), *vi-ve* 20 (20–23), *ve-sci* 38 (33–39), *sci-sce* 25 (23–25). Central hysterosomal shield rectangular, with 3 pairs of setae; ratios  $c_i$ :  $c_i-c_i=0.6$ ,  $c_i-c_i$ :  $d_i-d_i$ :  $e_i-e_i$ :  $f_i-f_i=1.1$ : 1.3 :1.0: 1.2; lengths:  $c_1$  32 (32–38),  $d_1$  24 (24–35),  $d_2$  27 (26–29),  $e_1$  33 (33–45),  $e_2$  25 (25–27),  $f_1$  20 (19–20); distances:  $c_i-c_i$  55 (53–63),  $c_i-$

$d_1$  51 (51–57),  $d_i-d_i$  68 (57–68),  $d_i-d_i$  40 (36–50),  $d_i-e_i$  46 (46–48),  $e_i-e_i$  52 (52–59),  $e_i-e_i$  32 (32–39),  $e_i-f_i$  15 (15–20),  $f_i-f_i$  63 (60–74); humeral setae  $c_2$  about as long as  $c_1$ , 39 (36–39). Suranal shield entire,  $h_1$  40 (38–41),  $h_2$  40 (38–40). Ventral setae subequal, lengths *1a* 23 (20–23), *3a* 23 (20–23) and *4a* 20 (20–21). Aggenital area with 3 pairs of setae, first pair each on a pletelet, second and third pairs jointly on a small shield on each side, *ag*<sub>1</sub> 19 (19–21), *ag*<sub>2</sub> 21 (20–21), *ag*<sub>3</sub> 21 (20–21); genital setae 21 (20–21); pseudanal setae *ps*<sub>1</sub> 21 (20–21), *ps*<sub>2</sub> 22 (20–22), *ps*<sub>3</sub> 19 (19–21).

**Legs.** Length: leg I 167 (154–180), leg II 135 (130–148), leg III 141 (128–143), leg IV 157 (145–162). Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 2, 2, 2; trochanters 1, 1, 2, 1; femora 6, 4, 3, 2; genua 3 + 1κ, 2, 0, 1; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 13 + 1ω, 9 + 1ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: Iω 28 (26–28), IIω 22 (20–22), IIIω 6 (5–6), IVω 3 (2–3).

**Distribution** (Map p. 384). New Zealand (Wood 1967, González-R., 1967, Wood 1971c).

?AK / SD, NN.

**Material examined.** Holotype, 9 paratypes, and 38 non-type specimens. **Holotype** female: NEW ZEALAND: NN: Source of Riwaka River, 15 Jan 1965, E. Collyer, *Coprosma australis* leaf cavities, NZAC: 1/1 female. **Paratypes**: NN: Nelson, Whangamoia Saddle, 610 m, 2 Mar 1965, E. Collyer, leaf cavities of *Coprosma australis*, NZAC: 2/8 females. Marahau, N.W. Nelson, 23 Sep 1965, E. Collyer, *Coprosma australis* cavities, NZAC: 1/1 female. **Other material**: ?AK: Waitakeres, 22 Feb 1959, E. Collyer, in cavities of *Coprosma* leaves, 1/1 female. ?Te Morehu Scenic Reserve [as “Te Morepu”], 11 Nov 1960, E. Collyer, 1/3 females. SD: Pelorus, 13 June 1965, E. Collyer, *Carpodetus serratus*, NZAC: 1/2 females [+ *Agistemus novazelandicus* 1 female]. NN: Whangamoia Saddle, 610 m, 2 Mar 1965, E. Collyer, leaf cavities of *Coprosma australis*, 6/6 females [remounted]. Marahau, N.W. Nelson, 23 Sep 1965, E. Collyer, *Coprosma australis* cavities, 1/6 females, 1 protonymph, 1 larva. Eves Bush, 3 Nov 1965, E. Collyer, *Coprosma australis*, 1/5 females. Totaranui beach, 14 Oct 1967, E. Collyer, *Coprosma australis* leaf cavities, 2/2 females [remounted]. Eves Bush, 3 Sep 1968, E. Collyer, *Coprosma australis* cavities, 1/12 females. Eves Bush, Oct 1969, E. Collyer, *Coprosma* spp., 1/2 females [+ *Eryngiopus arboreus* 4 females].

**Habitat.** Leaves of *Carpodetus serratus*, *Coprosma australis*, *Coprosma* spp., *Rubus* sp.

### Genus *Zetzellia* Oudemans

*Zetzellia* Oudemans, 1927: 263. Type species: *Zetzellia methlagli* Oudemans, 1927, by original designation.

*Mediolata* Canestrini. — Baker & Wharton, 1952: 205. Type species: *Stigmaeus longirostris* Berlese, 1887. Synonymy by González-Rodríguez, 1965: 15.

**Diagnosis. Female.** Idiosoma broadly oval in dorsoventral view, generally red, orange, or yellow in life. Chelicerae separate. Palptibial claw slightly shorter than palptarsus; accessory claw slender or robust, seta-like or spine-like; terminal eupathidia on palptarsus basally fused and split subterminally into 3 short prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 1, 2 + 1 claw + 1 accessory claw, 4 + 1 $\omega$  + 1 subterminal spine-like eupathidium + 3 eupathidia (mostly fused). Subcapitulum with 2 pairs of subcapitular setae, *m* posterolaterad of pharynx, *n* posteromedial of *m*. Prodorsum with a triangular shield bearing 3 pairs of setae (*vi*, *ve* and *sci*), *sce* absent; eyes present, *pob* present. Dorsal hysterosomal area C–F medially covered with a trapezoid central shield (sometimes divided along midline or reduced), which has no more than 4 pairs of setae (*c*<sub>1</sub>, *d*<sub>1</sub>, *e*<sub>1</sub> and *e*<sub>2</sub>); setae *d*<sub>1</sub> and *d*<sub>2</sub> situated on different shields; humeral shields small or vestigial, dorsolateral, with setae *c*<sub>2</sub>; intercalary shields (F) obvious, divided along midline, with a pair of setae (*f*<sub>1</sub>). Suranal shield (H) entire, with 2 pairs of setae (*h*<sub>1</sub> and *h*<sub>2</sub>), *h*<sub>3</sub> absent. Endopodal shields I–II minute or vestigial, not fused along midline; III–IV absent. Ventral opisthosoma with 1–2 pairs of aggenital setae; genitoanal valves with a pair of genital setae and 3 pairs of pseudanal setae. Leg tarsal claws robust; basal 1/5–1/4 enclosed with membranous arolium; empodial shafts branching into tenent hairs before extending beyond tips of claws, with 3 pairs of tenent hairs; counts of setae and solenidia on legs I–IV: coxae (excluding *1a*, *3a* and *4a*) 2 + 1 *elcp*, 1, 2, 1–2; trochanters 1, 1, 1, 1; femora 4–5, 4, 2, 1–2; genua 2–3 + 1  $\kappa$ , 0–1, 0, 0; tibiae 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 5 + 1  $\phi$ p, 4–5 + 0–1  $\phi$ p; tarsi 11–12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 6–7 + 0–1  $\omega$ .

**Male.** Setae *f*<sub>1</sub> situated on platelets, rarely on central shield; solenidia on tarsi I–IV: 2, 2, 1, 1.

Four species were previously described from New Zealand. Two new species are added in this paper.

#### Key to species of *Zetzellia* from New Zealand (adults)

- 1 Central hysterosomal shield longitudinally divided into a pair of shields (Fig. 227 A) or reduced to 3 pairs of small shields or platelets (Fig. 231 A) ..... 2
  - Central hysterosomal shield entire, bearing 4 pairs of setae (Fig. 223 A) ..... 5
- 2 Central hysterosomal shield reduced to 3 pairs of small shields or platelets in female, *c*<sub>1</sub> and *d*<sub>1</sub> each on a platelet (Fig. 231 B) ..... 3
  - Central hysterosomal shield longitudinally divided into a pair of shields in female, bearing 4 setae on each side (Fig. 227 B) ..... 4
- 3 Ratio *vi*: *vi*–*vi* = 0.9 in female (Fig. 231 A); *vi*: *vi*–*vi* = 0.6 in male; *c*<sub>1</sub> less than 1/3 distance of *c*<sub>1</sub>–*c*<sub>1</sub> in female (Fig. 231 A) ... (p. 106) ... **Z. maori** González-Rodríguez
  - Ratio *vi*: *vi*–*vi* = 1.6 in female (Fig. 235 A); *vi*: *vi*–*vi* = 1.3 in male; *c*<sub>1</sub> about 1/2 distance of *c*<sub>1</sub>–*c*<sub>1</sub> in female (Fig. 235 A) ..... (p. 108) ... **Z. oudemansi** Wood
- 4 Setae *c*<sub>1</sub> nearly 1/5 distance of *c*<sub>1</sub>–*c*<sub>1</sub> or *c*<sub>1</sub>–*d*<sub>1</sub>; *ve*: *sci* = 1.2 (Fig. 227 A) ..... (p. 105) ... **Z. biscutata** sp. n.
  - Setae *c*<sub>1</sub> more than 2/3 distance of *c*<sub>1</sub>–*c*<sub>1</sub> and nearly 2/3 distance of *d*<sub>1</sub>–*d*<sub>1</sub>; *ve*: *sci* = 0.9 (Fig. 239 A) ..... (p. 110) ... **Z. spiculosa** sp. n.
- 5 Reticula on central shield small, with 11–13 reticular cells between *d*<sub>1</sub>–*d*<sub>1</sub> (Plate 10 C); *c*<sub>1</sub> about 1/3 distance of *c*<sub>1</sub>–*c*<sub>1</sub> or *c*<sub>1</sub>–*d*<sub>1</sub> (Fig. 223 A) ..... (p. 103) ... **Z. antipoda** Wood
  - Reticula on central shield large, with 8–9 reticular cells between *d*<sub>1</sub>–*d*<sub>1</sub> (Plate 10 D); *c*<sub>1</sub> nearly 2/3 distance of *c*<sub>1</sub>–*c*<sub>1</sub> or *c*<sub>1</sub>–*d*<sub>1</sub> (Fig. 229 A) ..... (p. 105) ... **Z. gonzalezi** Wood

#### *Zetzellia antipoda* Wood

Fig. 223–226, Plate 10 C

*Zetzellia antipoda* Wood, 1967: 127.

**Diagnosis. Female.** Dorsal shields ornamented with polygonal reticulations; *sci* 2.3 times diameter of *pob*; ratios *vi*: *vi*–*vi* = 1.1, *ve*: *sci* = 1.3; central hysterosomal shield entire, bearing 4 pairs of setae with 11–13 reticular cells between *d*<sub>1</sub>–*d*<sub>1</sub>; *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.3; *c*<sub>1</sub>–*c*<sub>2</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.5: 1.9: 1.0: 1.5; genital setae 1.5 times length of *ps*<sub>3</sub>.

**Male.** As in female but: *sci* 2.9 times diameter of *pob*; ratios *vi*: *vi*–*vi* = 0.9, *ve*: *sci* = 1.1; central hysterosomal shield with 6 pairs of setae; *c*<sub>1</sub>: *c*<sub>1</sub>–*c*<sub>1</sub> = 0.4, *c*<sub>1</sub>–*c*<sub>2</sub>: *d*<sub>1</sub>–*d*<sub>1</sub>: *e*<sub>1</sub>–*e*<sub>1</sub>: *f*<sub>1</sub>–*f*<sub>1</sub> = 1.5: 2.0: 1.0: 1.1.

**Description. Female** (Fig. 223–224, Plate 10 C, n = 4)

**Gnathosoma.** Chelicerae 91 (86–91), movable digits about 1/5 length of chelicerae, 40 (35–40). Palp 82 (79–84). Subcapitular setae subequal, *m* 27 (26–28), *n* = 27 (26–27); *m*–*m* = 41 (39–41), *n*–*n* = 31 (29–31), *m*–*n* = 7.

**Idiosoma.** Oval, 395 (349–395) long, 312 (279–312) wide. Dorsal shields moderately sclerotised, ornamented with polygonal reticulations, cells small, vacuoles not visible; dorsal idiosomal setae rod-like, sparsely barbed. Posto-

cular body 1.5 times as large as eye; *sci* 2.3 times diameter of *pob*; ratios *vi*: *vi-vi* = 1.1, *ve*: *sci* = 1.3; eyes 11 (11–12) in diameter; *pob* 16 in diameter; setae *vi* 33 (33–36), *ve* 45 (43–48), *sci* 36 (32–36); distances: *vi-vi* 29 (28–30), *vi-ve* 30 (30–36), *ve-sci* 48 (48–50). Central hysterosomal shield entire, broadly oval, ornamented as prodorsal shield, bearing 4 pairs of setae (*c*<sub>1</sub>, *d*<sub>1</sub>, *e*<sub>1</sub> and *e*<sub>2</sub>), with 11–13 reticular cells between *d*<sub>1</sub>-*d*<sub>1</sub>; ratios *c*<sub>1</sub>: *c*<sub>1</sub>-*c*<sub>1</sub> = 0.3, *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.5: 1.9: 1.0: 1.5; lengths: *c*<sub>1</sub> 27 (26–31), *d*<sub>1</sub> 27 (24–31), *d*<sub>2</sub> 33 (31–33), *e*<sub>1</sub> 31 (31–35), *e*<sub>2</sub> 34 (31–34); *f*<sub>1</sub> on platelets, 42 (42–43); distances: *c*<sub>1</sub>-*c*<sub>1</sub> 89 (84–89), *c*<sub>1</sub>-*d*<sub>1</sub> 75 (74–75), *d*<sub>1</sub>-*d*<sub>1</sub> 115 (115–120), *d*<sub>1</sub>-*d*<sub>2</sub> 44 (44–51), *d*<sub>1</sub>-*e*<sub>1</sub> 69 (43–69), *e*<sub>1</sub>-*e*<sub>1</sub> 61 (60–62), *e*<sub>1</sub>-*e*<sub>2</sub> 40 (37–40), *e*<sub>1</sub>-*f*<sub>1</sub> 40 (36–40), *f*<sub>1</sub>-*f*<sub>1</sub> 91 (84–91); humeral setae *c*<sub>2</sub> 40 (38–41), 1.5 times length of *c*<sub>1</sub>. Suranal setae *h*<sub>1</sub> 41 (38–41), *h*<sub>2</sub> 40 (40–41). Ventral setae subequal, *1a* 30 (27–30), *3a* 28 (27–28) and *4a* 26 (26–29). Aggenital shield with 2 pairs of setae on a horseshoe-like shield, *ag*<sub>2</sub> about 1.3 times length of *ag*<sub>1</sub>, *ag*<sub>1</sub> = 25 (25–27), *ag*<sub>2</sub> = 33 (31–33); genital setae long, 32 (32–38), about 1.5 times length of *ps*<sub>3</sub>; pseudanal setae *ps*<sub>3</sub> 21 (21–22), *ps*<sub>2</sub> 22 (19–22), *ps*<sub>1</sub> 17 (17–19).

**Legs.** Length: leg I 205 (186–205), leg II 187 (156–187), leg III 201 (160–201), leg IV 222 (197–222). Setae *dFI* and *dGI* rod-like, barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1*κ*, 1, 0, 0; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 12 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 7 (sometimes a minute solenidion present). Lengths of solenidia: I*ω* 30 (23–30), II*ω* 30 (24–30), III*ω* 20 (19–20).

**Male** (Fig. 225–226, *n* = 1)

**Gnathosoma.** Chelicerae 80, movable digits nearly 1/5 length of chelicerae, 30. Palp 77. Subcapitular setae subequal, *m* 22, *n* = 19; *m-m* = 32, *n-n* = 25, *m-n* = 7.

**Idiosoma.** Oval, 314 long, 202 wide. Dorsal shields moderately sclerotised, ornamented with polygonal reticulations, cells small, vacuoles not visible; dorsal idiosomal setae rod-like, sparsely barbed. Postocular body 1.3 times as large as eye; *sci* 2.9 times diameter of *pob*; ratios *vi*: *vi-vi* = 0.9, *ve*: *sci* = 1.1; eyes 9 in diameter; *pob* 12 in diameter; setae *vi* 28, *ve* 36, *sci* 35; distances: *vi-vi* 30, *vi-ve* 25, *ve-sci* 41. Central hysterosomal shield entire, broadly oval, ornamented as prodorsal shield, bearing 6 pairs of setae (*c*<sub>1</sub>, *d*<sub>1</sub>, *d*<sub>2</sub>, *e*<sub>1</sub>, *e*<sub>2</sub> and *f*<sub>1</sub>), ratios *c*<sub>1</sub>: *c*<sub>1</sub>-*c*<sub>1</sub> = 0.4, *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.5: 2.0: 1.0: 1.1; lengths: *c*<sub>1</sub> 25, *d*<sub>1</sub> 25, *d*<sub>2</sub> 29, *e*<sub>1</sub> 21, *e*<sub>2</sub> 29; *f*<sub>1</sub> 35; distances: *c*<sub>1</sub>-*c*<sub>1</sub> 64, *c*<sub>1</sub>-*d*<sub>1</sub> 54, *d*<sub>1</sub>-*d*<sub>1</sub> 85, *d*<sub>1</sub>-*d*<sub>2</sub> 35, *d*<sub>1</sub>-*e*<sub>1</sub> 44, *e*<sub>1</sub>-*e*<sub>1</sub> 42, *e*<sub>1</sub>-*e*<sub>2</sub> 29, *e*<sub>1</sub>-*f*<sub>1</sub> 20, *f*<sub>1</sub>-*f*<sub>1</sub> 45; humeral setae *c*<sub>2</sub> 34, 1.4 times length of *c*<sub>1</sub>. Suranal setae *h*<sub>1</sub> 21, *h*<sub>2</sub> 23. Ventral setae subequal, *1a* 16, *3a* 16 and *4a* 15. Aggenital shield with 2 pairs of setae on a shield, *ag*<sub>1</sub> = 17, *ag*<sub>2</sub> = 18; pseudanal setae *ps*<sub>3</sub> 13, *ps*<sub>2</sub> 11, *ps*<sub>1</sub> 6.

**Legs.** Length: leg I 183, leg II 163, leg III 161, leg IV 182. Setae *dFI* 40, and *dGI* 24. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1*κ*, 1, 0, 0; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 12 + 2*ω*, 9 + 2*ω*, 7 + 1*ω*, 7 + 1*ω* (sometimes a minute solenidion present). Lengths of solenidia: I*ω*<sub>1</sub> 23, I*ω*<sub>2</sub> 29, II*ω*<sub>1</sub> 21, II*ω*<sub>2</sub> 26, III*ω* 14, IV*ω* 15.

**Deutonymph female** (*n* = 1)

**Gnathosoma.** Chelicerae 68, movable digits about 1/5 length of chelicerae, 26. Palp 72. Subcapitular setae subequal, *m* 22, *n* = 20; *m-m* = 36, *n-n* = 26, *m-n* = 10.

**Idiosoma.** Oval, 296 long, 257 wide. Dorsal shields moderately sclerotised, ornamented with polygonal reticulations; dorsal idiosomal setae rod-like, barbed. Postocular body 1.6 times as large as eye; *sci* 1.8 times diameter of *pob*; ratios *vi*: *vi-vi* = 1.2, *ve*: *sci* = 1.2; eyes 10 in diameter; *pob* 16 in diameter; setae *vi* 30, *ve* 36, *sci* 29; distances: *vi-vi* 25, *vi-ve* 27, *ve-sci* 46. Central hysterosomal shield entire, bearing 4 pairs of setae (*c*<sub>1</sub>, *d*<sub>1</sub>, *e*<sub>1</sub> and *e*<sub>2</sub>), ratios *c*<sub>1</sub>: *c*<sub>1</sub>-*c*<sub>1</sub> = 0.4, *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.4: 1.9: 1.0: 1.3; lengths: *c*<sub>1</sub> 22, *d*<sub>1</sub> 20, *d*<sub>2</sub> 25, *e*<sub>1</sub> 24, *e*<sub>2</sub> 24; *f*<sub>1</sub> on platelets, 31; distances: *c*<sub>1</sub>-*c*<sub>1</sub> 60, *c*<sub>1</sub>-*d*<sub>1</sub> 55, *d*<sub>1</sub>-*d*<sub>1</sub> 82, *d*<sub>1</sub>-*d*<sub>2</sub> 43, *d*<sub>1</sub>-*e*<sub>1</sub> 53, *e*<sub>1</sub>-*e*<sub>1</sub> 43, *e*<sub>1</sub>-*e*<sub>2</sub> 33, *e*<sub>1</sub>-*f*<sub>1</sub> 24, *f*<sub>1</sub>-*f*<sub>1</sub> 58; humeral setae *c*<sub>2</sub> 29, 1.3 times length of *c*<sub>1</sub>. Suranal setae *h*<sub>1</sub> 26, *h*<sub>2</sub> 26. Ventral setae subequal, *1a* 21, *3a* 19 and *4a* 19. Aggenital shield with 2 pairs of setae on a horseshoe-like shield, *ag*<sub>1</sub> = 19, *ag*<sub>2</sub> = 19; pseudanal setae *ps*<sub>3</sub> 16, *ps*<sub>2</sub> 16, *ps*<sub>1</sub> 14.

**Legs.** Length: leg I 156, leg II 140, leg III 137, leg IV 149. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 2, 2; genua 3 + 1*κ*, 1, 0, 0; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 12 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 7. Lengths of solenidia: I*ω* 17, II*ω* 14, III*ω* 9.

**Distribution** (Map p. 384). New Zealand (Wood 1967). AK, WN / SD, NN, BR.

**Material examined.** Holotype, 7 paratypes, and 22 non-type specimens. **Holotype** female: NEW ZEALAND: WN: Wellington Botanical Gardens, 26 Apr 1965, E. Collyer, among colonies of *Yezonychus cornus* on *Elaeocarpus dentatus*, NZAC: 1/1 female (nearest holotype label), 1 (paratype) female [+ *Agistemus novazelandicus* 1 male]. **Paratypes**: on same slide with holotype: NZAC: 1/1 female. NN: Pelorus, 13 June 1965, E. Collyer, among colonies of *Yezonychus cornus* on *Elaeocarpus dentatus*, 1/4 females, 2 deutonymph females [+ *Zetzellia gonzalezi* 4 female paratypes]. **Other material**: AK: Te Morehu Scenic Reserve, 26 May [no year], E. Collyer, under webbing of *Yezonychus* on *Rubus cissoides* [as bush lawyer], 1/2 females, 1 male. SD: Kenepuru Sound: Portage, 29 Jan 1966, E. Collyer,



*Elaeocarpus dentatus*, 1/4 females [+ *Agistemus collyerae* 3 females, 1 male, 1 deutonymph]. Upper Pelorus R, 8 May 1965, E. Collyer, feeding in colonies of *Yezonychus* on *Nothofagus truncata*, 1/5 females. **BR**: Lake Rotoiti track, 12 Feb 1966, E. Collyer, *Elaeocarpus hookerianus*, 1/3 females, 1 male [+ *Agistemus longisetus* 1 male]. No locality [no locality name], 23 Apr 1961, E. Collyer, under webbing of *Yezonychus* on *Rubus cissoides* [as bush lawyer], 1/1 female, 1 male, 4 deutonymph females.

**Habitat.** Among colonies of *Yezonychus cornus* on *Elaeocarpus dentatus*, *Elaeocarpus hookerianus*, feeding in colonies of *Yezonychus* on *Nothofagus truncata*, under webbing of *Yezonychus* on *Rubus cissoides*.

**Feeding habit.** Feed on *Yezonychus* sp.

### *Zetzellia biscutata* sp. n.

Fig. 227–228

**Diagnosis. Female.** Dorsal shields without reticulations; *sci* 1.2 times diameter of *pob*; ratios *vi*: *vi-vi* = 1.5, *ve*: *sci* = 1.2; central hysterosomal shield longitudinally divided into 2 shields, each bearing 4 setae; *c*<sub>1</sub>: *c*<sub>1</sub>-*c*<sub>1</sub> = 0.4; *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.3: 1.8: 1.0: 1.5; genital setae 1.4 times length of *ps*<sub>3</sub>.

**Description. Female** (Fig. 227–228, n = 1)

**Gnathosoma.** Chelicerae 73, movable digits about 1/2 length of chelicerae, 36. Palp 84. Subcapitular setae *n* longer than *m*, *m* 26, *n* = 38; *m-m* = 41, *n-n* = 30, *m-n* = 8.

**Idiosoma.** Oval, 289 long, 241 wide. Dorsal shields moderately sclerotised, without reticulations or vacuoles; dorsal idiosomal setae rod-like, sparsely barbed. Postocular body 2.2 times as large as eye; *sci* 1.2 times diameter of *pob*; ratios *vi*: *vi-vi* = 1.5, *ve*: *sci* = 1.2; eyes 11 in diameter; *pob* 24 in diameter; setae *vi* 31, *ve* 36, *sci* 29; distances: *vi-vi* 21, *vi-ve* 24, *ve-sci* 39. Central hysterosomal shield longitudinally divided into 2 shields, each bearing 4 setae, ratios *c*<sub>1</sub>: *c*<sub>1</sub>-*c*<sub>1</sub> = 0.4, *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.3: 1.8: 1.0: 1.5; lengths: *c*<sub>1</sub> 24, *d*<sub>1</sub> 26, *d*<sub>2</sub> 24, *e*<sub>1</sub> 29, *e*<sub>2</sub> 29; *f*<sub>1</sub> on platelets, 38; distances: *c*<sub>1</sub>-*c*<sub>1</sub> 60, *c*<sub>1</sub>-*d*<sub>1</sub> 62, *d*<sub>1</sub>-*d*<sub>1</sub> 84, *d*<sub>1</sub>-*d*<sub>2</sub> 47, *d*<sub>1</sub>-*e*<sub>1</sub> 23, *e*<sub>1</sub>-*e*<sub>1</sub> 48, *e*<sub>1</sub>-*e*<sub>2</sub> 31, *e*<sub>1</sub>-*f*<sub>1</sub> 30, *f*<sub>1</sub>-*f*<sub>1</sub> 72; humeral setae *c*<sub>2</sub> 32, 1.3 times length of *c*<sub>1</sub>. Suranal setae *h*<sub>1</sub> 36, *h*<sub>2</sub> 34. Ventral setae *1a* and *3a* slightly longer than *4a*, *1a* 31, *3a* 32 and *4a* 28. Aggenital shield with 2 pairs of setae on a horseshoe-like shield, *ag*<sub>2</sub> about 1.3 times length of *ag*<sub>1</sub>, *ag*<sub>1</sub> = 16, *ag*<sub>2</sub> = 20; genital setae *g*<sub>1</sub> 22, about 1.4 times length of *ps*<sub>3</sub>; pseudanal setae *ps*<sub>3</sub> 16, *ps*<sub>2</sub> 21, *ps*<sub>1</sub> 18.

**Legs.** Length: leg I 169, leg II 147, leg III 148, leg IV 168. Setae *dFI* and *dGI* rod-like, barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1 *κ*, 1, 0, 0; tibiae 5

+ 1 *opp*, 5 + 1 *opp*, 5 + 1 *opp*, 5 + 1 *opp*; tarsi 12 + 1 *ω*, 9 + 1 *ω*, 7 + 1 *ω*, 7. Lengths of solenidia: I *ω* 18, II *ω* 20, III *ω* 13.

**Distribution** (Map p. 384). New Zealand (this paper). – / NN.

**Material examined.** Holotype only. **Holotype** female: NEW ZEALAND: NN: Mangarakau, 12 Mar 1971, *Brachyglottis hectori* [as *Senecio*], NZAC: 1/1 female.

**Habitat.** *Brachyglottis hectori*.

**Etymology.** The species name is a combination of the Latin words *bi* (twice) and *scutatum* (shield), referring to the condition of dorsal hysterosomal shields.

**Remarks.** The female of *Z. biscutata* sp. n. resembles that of *Z. australis* González-Rodríguez in having the central hysterosomal shield longitudinally divided into a pair of shields and having the same number of setae and solenidia on legs, but can be distinguished from the latter by having the dorsal idiosomal setae much shorter, setae *c*<sub>1</sub> about 1/5 distance of *c*<sub>1</sub>-*c*<sub>1</sub> or *c*<sub>1</sub>-*d*<sub>1</sub> and ratio *ve*: *sci* = 1.2.

### *Zetzellia gonzalezi* Wood

Fig. 229–230, Plate 10 D

*Zetzellia gonzalezi* Wood, 1967: 129.

**Diagnosis. Female.** Dorsal shields ornamented with polygonal reticulations; *sci* 2.8 times diameter of *pob*; ratios *vi*: *vi-vi* = 1.4, *ve*: *sci* = 1.3; central hysterosomal shield entire, bearing 4 pairs of setae; with 8–9 reticular cells between *d*<sub>1</sub>-*d*<sub>1</sub>; *c*<sub>1</sub>: *c*<sub>1</sub>-*c*<sub>1</sub> = 0.6; *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.4: 2.3: 1.0: 1.4; genital setae 1.7 times length of *ps*<sub>3</sub>.

**Description. Female** (Fig. 229–230, Plate 10 D, n = 4)

**Gnathosoma.** Chelicerae 96 (87–96), movable digits about 1/5 length of chelicerae, 41 (37–41). Palp 75 (75–84). Subcapitular setae subequal, *m* 30 (30–31), *n* = 27 (27–30); *m-m* = 39 (34–39), *n-n* = 30 (26–30), *m-n* = 7 (7–8).

**Idiosoma.** Oval, 335 (303–335) long, 267 (240–267) wide. Dorsal shields moderately sclerotised, ornamented with polygonal reticulations, cells large, vacuoles not observed on old slides; dorsal idiosomal setae rod-like, sparsely barbed. Postocular body 1.7 times as large as eye; *sci* 2.8 times diameter of *pob*; ratios *vi*: *vi-vi* = 1.4, *ve*: *sci* = 1.3; eyes 9 (9–10) in diameter; *pob* 15 (15–16) in diameter; setae *vi* 33 (32–34), *ve* 55 (46–55), *sci* 42 (36–42); distances: *vi-vi* 23 (23–34), *vi-ve* 26 (24–26), *ve-sci* 41 (34–41). Central hysterosomal shield entire, broadly oval, bearing 4 pairs of setae (*c*<sub>1</sub>, *d*<sub>1</sub>, *e*<sub>1</sub> and *e*<sub>2</sub>), with 8–9 reticular cells between *d*<sub>1</sub>-*d*<sub>1</sub>; ratios *c*<sub>1</sub>: *c*<sub>1</sub>-*c*<sub>1</sub> = 0.6, *c*<sub>1</sub>-*c*<sub>1</sub>: *d*<sub>1</sub>-*d*<sub>1</sub>: *e*<sub>1</sub>-*e*<sub>1</sub>: *f*<sub>1</sub>-*f*<sub>1</sub> = 1.4: 2.3: 1.0: 1.4; lengths: *c*<sub>1</sub> 38 (31–38), *d*<sub>1</sub> 38 (31–38), *d*<sub>2</sub> 37 (32–37), *e*<sub>1</sub> 40 (32–40), *e*<sub>2</sub> 37 (33–37); *f*<sub>1</sub> on platelets, 45 (36–45); distances: *c*<sub>1</sub>-*c*<sub>1</sub> 62 (60–62), *c*<sub>1</sub>-*d*<sub>1</sub> 62 (60–62), *d*<sub>1</sub>-*d*<sub>1</sub> 97 (92–97), *d*<sub>1</sub>-*d*<sub>2</sub> 40 (36–43), *d*<sub>1</sub>-*e*<sub>1</sub> 60

(53–62),  $e_1-e_1$  43 (43–48),  $e_1-e_2$  40 (30–40),  $e_1-f_1$  35 (30–35),  $f_1-f_1$  61 (58–67); humeral setae  $c_2$  44 (41–44), 1.2 times length of  $c_1$ . Suranal setae  $h_1$  42 (36–42),  $h_2$  38 (33–38). Ventral setae subequal,  $1a$  27 (27–31),  $3a$  27 and  $4a$  27 (26–27). Aggenital shield divided along mid-line, first pair of aggenital setae each on a small platelet, second pair each on a large platelet;  $ag_2$  about 1.4 times length of  $ag_1$ ,  $ag_1 = 21$  (17–21),  $ag_2 = 30$  (27–30); genital setae long,  $32$  (32–36), about 1.7 times length of  $ps_3$ ; pseudanal setae  $ps_3$  19 (15–19),  $ps_2$  20 (15–20),  $ps_1$  16 (15–16).

**Legs.** Length: leg I 195 (190–195), leg II 177 (151–177), leg III 178 (162–178), leg IV 183 (183–197). Setae *dFI* and *dGI* rod-like, barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 (sometime a minute solenidion present). Lengths of solenidia: I $\omega$  24 (24–26), II $\omega$  22 (22–24), III $\omega$  12 (12–16).

**Distribution** (Map p. 384). New Zealand (Wood 1967). AK, WN / SD, NN.

**Material examined.** Holotype, 5 paratypes, and 7 non-type specimens. **Holotype** female: NEW ZEALAND: NN: Kaiteriteri, 21 Sep 1965, E. Collyer, *Olearia rani*, NZAC: 1/1 female. **Paratypes**: WN: Wellington Botanic Gardens, 26 Apr 1965, E. Collyer, *Elaeocarpus dentatus*, in domatia, 1/1 female [+ *Agistemus collyerae* 4 females, 1 protonymph]. Wellington Botanical Gardens, 26 Apr 1965, E. Collyer, *Elaeocarpus dentatus* among colonies of *Yezonychus cornus*, NZAC: 1/4 females [on same slide with paratypes of *Zetzellia antipoda*]. **Other material**: AK: Otara, 27 Jan 1960, E. Collyer, apple, 1/2 females [+ *Agistemus collyerae* 1 female; *Agistemus longisetus* 1 female]. SD: Kenepuru Sound: Portage, 29 Jan 1966, E. Collyer, *Melicytus* sp., 1/1 female. NN: Golden Bay, 8 Mar 1965, E. Collyer, *Ascarina* sp., 1/2 females. Onamalutu Domain [=Scenic Reserve], 3 Sep 1966, E. Collyer, *Prumnopitys taxifolia*, 1/2 females.

**Habitat.** Apple, *Elaeocarpus dentatus*, *Melicytus* sp., *Nothofagus fusca*, *Olearis rani*, *Prumnopitys taxifolia*.

**Feeding habit.** Among colonies of *Yezonychus cornus*.

### *Zetzellia maori* González-Rodríguez

Fig. 231–234

*Zetzellia maori* González-Rodríguez, 1965: 22; Wood, 1967: 127.

**Diagnosis. Female.** Dorsal shields without reticulations; *sci* 1.1 times diameter of *pob*; ratios *vi*:  $vi-vi = 0.9$ , *ve*: *sci* = 1.1; central hysterosomal shield reduced to 3 pairs of small shields;  $c_1$  and  $d_1$  each on a platelet,  $e_1$  and  $e_2$  jointly on a small shield on each side;  $c_1$ :  $c_1-c_1 = 0.3$ ;  $c_1-c_1$ :  $d_1-d_1$ :

$e_1-e_1$ :  $f_1-f_1 = 1.4$ : 1.6: 1.0: 1.5; genital setae 1.9 times length of  $ps_3$ .

**Male.** As in female but: *sci* 1.7 times diameter of *pob*; ratios *vi*:  $vi-vi = 0.6$ , *ve*: *sci* = 0.9; central hysterosomal shield longitudinally divided into 2 shields, each bearing 4 setae;  $c_1$ :  $c_1-c_1 = 0.3$ ;  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.4$ : 1.0: 1.0: 1.2.

**Description. Female** (Fig. 231–232, n = 6)

**Gnathosoma.** Chelicerae 81 (79–91), movable digits about 1/5 length of chelicerae, 36 (35–37). Palp 75 (70–81). Subcapitular setae subequal, *m* 26 (24–28), *n* = 30 (22–30); *m-m* = 38 (38–40), *n-n* = 27 (23–28), *m-n* = 8 (6–11).

**Idiosoma.** Oval, 301 (272–301) long, 209 (196–242) wide. Dorsal shields faintly sclerotised, without reticulations or vacuoles; dorsal idiosomal setae rod-like, sparsely barbed. Postocular body 2.7 times as large as eye; *sci* 1.1 times diameter of *pob*; ratios *vi*:  $vi-vi = 0.9$ , *ve*: *sci* = 1.1; eyes 9 (8–9) in diameter; *pob* 24 (20–24) in diameter; setae *vi* 24 (21–25), *ve* 29 (27–30), *sci* 26 (26–30); distances: *vi-vi* 27 (20–27), *vi-ve* 28 (21–30), *ve-sci* 30 (29–35). Central hysterosomal shield reduced to 3 pairs of small shields or platelets;  $c_1$  and  $d_1$  each on a platelet,  $e_1$  and  $e_2$  jointly on a small shield on each side, ratios  $c_1$ :  $c_1-c_1 = 0.3$ ,  $c_1-c_1$ :  $d_1-d_1$ :  $e_1-e_1$ :  $f_1-f_1 = 1.4$ : 1.6: 1.0: 1.5; lengths:  $c_1$  19 (28–23),  $d_1$  19 (17–20),  $d_2$  19 (19–21),  $e_1$  20 (19–20),  $e_2$  20 (19–20);  $f_1$  on platelets, 25 (24–28); distances:  $c_1-c_1$  65 (58–91),  $c_1-d_1$  61 (50–61),  $d_1-d_1$  75 (73–106),  $d_1-d_2$  42 (32–50),  $d_1-e_1$  55 (50–60),  $e_1-e_1$  48 (48–68),  $e_1-e_2$  17 (17–20),  $e_1-f_1$  45 (30–47),  $f_1-f_1$  55 (54–65); humeral setae  $c_2$  31 (29–33), 1.6 times length of  $c_1$ . Suranal setae  $h_1$  26 (26–32),  $h_2$  25 (24–29). Ventral setae subequal,  $1a$  25 (25–26),  $3a$  24 (24–25) and  $4a$  23 (23–25). Aggenital shield horseshoe-like, first pair of setae each on a platelet, second pair on the horseshoe-like shield,  $ag_2$  subequal to  $ag_1$ ,  $ag_1 = 22$  (18–22),  $ag_2 = 21$  (19–22); genital setae long, 27 (24–30), about 1.9 times length of  $ps_3$ ; pseudanal setae  $ps_3$  14 (14–15),  $ps_2$  15 (14–15),  $ps_1$  16 (13–16).

**Legs.** Length: leg I 149 (149–161), leg II 130 (131–142), leg III 132 (131–142), leg IV 144 (139–158). Setae *dFI* and *dGI* rod-like, barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1 *elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7 (sometimes a minute solenidion present). Lengths of solenidia: I $\omega$  18 (15–18), II $\omega$  20 (17–20), III $\omega$  12 (10–12).

**Male** (Fig. 233–234, n = 1)

**Gnathosoma.** Chelicerae 79, movable digits about 1/5 length of chelicerae, 35. Palp 75. Subcapitular setae subequal, *m* 23, *n* = 25; *m-m* = 35, *n-n* = 26, *m-n* = 7.

**Idiosoma.** Oval, 226 long, 169 wide. Dorsal shields faintly sclerotised, without reticulations or vacuoles; dorsal idiosomal setae rod-like, sparsely barbed. Postocular body 2.0 times as large as eye; *sci* 1.7 times diameter of *pob*; ratios *vi*: *vi-vi* = 0.6, *ve*: *sci* = 0.9; eyes 7 in diameter; *pob* 14 in diameter; setae *vi* 14, *ve* 22, *sci* 24; distances: *vi-vi* 25, *vi-ve* 19, *ve-sci* 25. Central hysterosomal shield longitudinally divided into 2 shields, each bearing 4 setae, ratios *c*<sub>1</sub>: *c*<sub>1-c</sub><sub>1</sub> = 0.3, *c*<sub>1-c</sub><sub>1</sub>: *d*<sub>1-d</sub><sub>1</sub>: *e*<sub>1-e</sub><sub>1</sub>: *f*<sub>1-f</sub><sub>1</sub> = 1.4: 1.0: 1.0: 1.2; lengths: *c*<sub>1</sub> 14, *d*<sub>1</sub> 13, *d*<sub>2</sub> 17, *e*<sub>1</sub> 13, *e*<sub>2</sub> 17; *f*<sub>1</sub> on platelets, 24; distances: *c*<sub>1-c</sub><sub>1</sub> 48, *c*<sub>1-d</sub><sub>1</sub> 45, *d*<sub>1-d</sub><sub>1</sub> 35, *d*<sub>1-d</sub><sub>2</sub> 31, *d*<sub>1-e</sub><sub>1</sub> 36, *e*<sub>1-e</sub><sub>1</sub> 34, *e*<sub>1-e</sub><sub>2</sub> 17, *e*<sub>1-f</sub><sub>1</sub> 19, *f*<sub>1-f</sub><sub>1</sub> 42; humeral setae *c*<sub>2</sub> 25, 1.8 times length of *c*<sub>1</sub>. Suranal setae *h*<sub>1</sub> 11, *h*<sub>2</sub> 17. Ventral setae subequal, *1a* 18, *3a* 19 and *4a* 18. Aggenital shield with 2 pairs of setae, *ag*<sub>2</sub> about 0.7 times length of *ag*<sub>1</sub>, *ag*<sub>1</sub> = 18, *ag*<sub>2</sub> = 13; pseudanal setae *ps*<sub>3</sub> 10, *ps*<sub>2</sub> 10, *ps*<sub>1</sub> 5.

**Legs.** Length: leg I 135, leg II 130, leg III 123, leg IV 145. Setae *dFI* and *dGI* rod-like, barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1κ, 1, 0, 0; tibiae 5 + 1φp, 5 + 1φp, 5 + 1φp, 5 + 1φp; tarsi 12 + 2ω, 9 + 2ω, 7 + 1ω, 7 + 1ω. Lengths of solenidia: Iω<sub>1</sub> 15, Iω<sub>2</sub> 25, IIω<sub>1</sub> 18, IIω<sub>2</sub> 23, IIIω<sub>1</sub> 9, IVω<sub>1</sub> 10.

**Distribution** (N.Z., Map p. 384). New Zealand (González-Rodríguez 1965, Wood 1967); Australia (González-Rodríguez 1965, Halliday 1998).

AK, CL, BP, HB / NN, BR, MB, NC

**Location of holotype.** BMNH.

**Material examined.** 1 paratype and 462 non-type specimens. **Paratype:** BP: Waioeka Gorge, 13 Feb 1960, E. Collyer, on wild apple in bush area, NZAC: 1/1 female. **Other material:** AK: Mt Albert Research Centre [P.D.D.], 27 Nov 1959, E. Collyer, “med. bush”, 1/1 female. Otara, 3 Dec 1959, E. Collyer, a hedge with *Tydeus*, 1/1 female. Waitakere Ra, Destruction Gully, 7 Jan 1961, E. Collyer, ?*Hebe* sp., 1/1 female. Oratia, plot 14, 21 Mar 1961, E. Collyer [?apple], 1/1 deutonymph. Waitakere Ra, Mill Bay, 4 Sep 1964, E. Collyer, *Knightia excelsa*, 1/6 females. Mt Albert Research Centre, 30 Sep 1982, U. Gerson, *Citrus* sp., leaves, 1/1 female. Kumeu Research Orchard, DSIR, Apr/June 1988, V. Holt, Citrus, unsprayed grapefruit, fruit/leaf, 1/1 female. CL: Kauaeranga Valley, 4 Sep 1964, E. Collyer, *Knightia excelsa*, 1/5 females. HB: [Havelock North], road to Waimarama, Craggy Range [Road], Apr 1965, E. Collyer, 1/1 female. NN: Nelson, Queens Gardens, 30 July 1964, E. Collyer, twigs (with scale insects), 1/2 females. Nelson, Isel Park, 24 Sep 1964, E. Collyer, *Leucodendron* sp., 1/1 female. Nelson, Isel Park, 24 Sep 1964, E. Collyer, *Rosmarinus* sp., 1/1 female, 3 males. Nelson, Isel Park, 25 Sep 1964, E. Collyer, *Banksia* sp., 1/5 females, 2 deutonymph females, 1 larva.

Nelson, Cemetery Park, 10 Nov 1964, E. Collyer, *Sophora* sp., 1/1 female. Nelson, Ngatitama St, 1 Oct 1964, E. Collyer, apple, 1/1 female, 1 protonymph [+ *Eryngiopus bifidus* 1 female; Tydeidae 6]. Motueka, Brooklyn Scenic Reserve, 18 Oct 1964, E. Collyer, *Coprosma* sp. galls and cavities, 1/4 females, 1 male, 1 deutonymph female, 1 protonymph. Nelson, Ngatitama Street, 29 Oct 1964, E. Collyer, apple tree bark, 1/3 females, 1 male. Nelson, Ngatitama Street, 10 Nov 1964, E. Collyer, apple, 1/1 female. Nelson, Queens Gardens, 10 Nov 1964, E. Collyer, *Banksia* sp., 1/6 females, 1 male. Nelson, Ngatitama Street, Dec 1964, E. Collyer, on bark of apple, 1/4 females. Nelson, Ngatitama Street, 3 Dec 1964, E. Collyer, *Prunus* sp., 1/1 female, 3 deutonymph females. Ruby Bay, 10 Dec 1964, E. Collyer, *Asplenium oblongifolium*, 1/1 female. Mapua, an orchard, 16 Dec 1964, E. Collyer, *Pittosporum* sp., 1/1 protonymph. Nelson, Fairfield Park, 17 Dec 1964, E. Collyer, *Nothofagus fusca*, 1/1 female [+ *Mediolata favulosa*]. Nelson, Fairfield Park, 17 Dec 1964, E. Collyer, *Nothofagus menziesii*, 1/4 females, 1 protonymph. Nelson, Fairfield Park, 17 Dec 1964, E. Collyer, *Nothofagus solandri*, 1/3 females, 2 males, 4 deutonymph females, 1 protonymph. Nelson, Fairfield Park, 17 Dec 1964, E. Collyer, *Podocarpus* sp., 1/2 deutonymph females. Mapua, 23 Feb 1965, E. Collyer, “broom”, 2/2 females. Mapua, an orchard, 23 Feb 1965, E. Collyer, *Erica lusitanica*, 1/2 females, 1 male. Ruby Bay, 20 Oct 1965, E. Collyer, *Brachyglottis* sp., 1/4 females. Totaranui, Goat Bay, 25 Oct 1965, E. Collyer, *Olearia paniculata*, 1/1 female. Ruby Bay, 14 Nov 1965, E. Collyer, *Kunzea ericoides*, 1/13 females, 2 males, 3 deutonymph females. Ruby Bay, 14 Nov 1965, E. Collyer, *Leptospermum scoparium*, 1/17 females, 1 deutonymph female. Lee Valley, Meade, 19 Dec 1965, E. Collyer, *Kunzea ericoides*, 1/12 females, 7 males, 6 deutonymph females. Abel Tasman N.P., end Canaan Road, 8 Jan 1966, E. Collyer, *Prumnopitys taxifolia* or *P. ferruginea*, 1/4 females. Nelson, Grampians, 22 Jan 1966, E. Collyer, *Kunzea ericoides*, 1/2 females [+ *Eryngiopus arboreus* 1 female]. Lee Valley, Meade, 5 Feb 1966, E. Collyer, *Kunzea ericoides*, 1/9 females, 2 males, 3 deutonymph females. Dun Track, 19 Feb 1966, E. Collyer, [?plant name], 1/2 females, 1 male. Rabbit Island: 23 Mar 1966, E. Collyer, “broom”, 1/10 females. Ruby Bay, 6 Apr 1966, E. Collyer, *Leptospermum scoparium*, 1/11 females, 1 male, 3 deutonymph females, 1 protonymph, 1 larva. Ruby Bay, 7 Apr 1966, E. Collyer, *Trifolium* sp., 1/1 female. Roding Valley, 1 May 1966, E. Collyer, *Kunzea ericoides*, 1/1 male [+ *Eryngiopus arboreus* 4 females]. Roding Valley, 1 May 1966, E. Collyer, *Kunzea ericoides*, 1/6 females, 4 deutonymph females [+ *Mediolata robusta* 1 male]. Aniseed Valley, 1 May 1966, E. Collyer, *Leptospermum scoparium*, 1/22 females, 5 males, 3 deutonymph females. Aniseed Valley, 1 May 1966, E. Collyer, *Prumnopitys*

*taxifolia*, 1/3 females [+ *Zetzellia gonzalezi* 2 females]. Nelson, Boulder Bank, 30 July 1966, E. Collyer, *Coprosma* sp., 1/1?? [+ *Agistemus collyerae*]. Nelson, Boulder Bank, 30 July 1966, E. Collyer, *Coprosma* sp., 1/1 male [+ *Agistemus collyerae* 1 female; *Eryngiopus nelsonensis* 2 females, 4 males]. Maitai R, Smiths Ford, 19 Aug 1966, E. Collyer, *Podocarpus totara*, 1/3 females, 1 deutonymph female [+ *Eryngiopus arboreus* 1 female]. Maitai R, Smiths Ford, 19 Aug 1966, E. Collyer, *Prumnopitys taxifolia*, 1/7 females, 2 males, 5 deutonymph females, 2 protonymphs. Awanui Inlet, 20 Aug 1966, E. Collyer, *Dacrycarpus dacrydioides*, 1/2 females, 3 males, 5 deutonymph females. Awanui Inlet, 20 Aug 1966, E. Collyer, *Kunzea ericoides*, 1/8 females, 4 deutonymph females. Motueka, Kina Peninsula, 3 Sep 1966, E. Collyer, *Nothofagus solandri*, 1/5 females, 3 males, 6 deutonymph females, 3 protonymphs, 1 larva [+ *Agistemus collyerae* 2 females]. Nelson, Wigzell Park, 2 Aug 1966, E. Collyer, *Lepidosaphes ulmi* on *Prunus* sp. [plum], 1/21 females, 5 males, 1 deutonymph female. Sandy Bay, 28 Aug 1966, E. Collyer, *Leptospermum scoparium*, 1/2 females, 3 males, 2 deutonymph females. Nelson, Wigzell Park, Dec 1966, E. Collyer, *Lepidosaphes ulmi* on tree, 1/3 females. Nelson, Wigzell Park, Jan 1967, E. Collyer, *Lepidosaphes ulmi* dead on twigs, 1/6 females. Perry Neudorf, 26 Jan 1967, E. Collyer, apple, 1/1 female [+ *Agistemus collyerae* 5 females; *Agistemus longisetus* 2 females; *Eryngiopus bifidus* 1 female]. Farewell Spit, 31 Jan 1967, E. Collyer, *Coprosma acerosa*, 1/1 female, 2 males, 1 deutonymph female. Dun Track, bottom, 10 Feb 1967, E. Collyer, "broom", 1/1 female. Nelson, Milton Street, 5 Sep 1967, E. Collyer, San Jose scale on twigs, 1/7 females, 4 males, 2 deutonymph females, 1 protonymph. Moutere, Jacketts Island: 21 Sep 1967, E. Collyer, *Pyrus communis* twigs, 1/1 female [+ *Eryngiopus bifidus* 1 female]. Moutere, Jacketts Island: 21 Sep 1967, E. Collyer, apple twigs, 1/1 female. Nelson, Milton Street, 25 Mar 1968, E. Collyer, San Jose scale on apple twigs, in scales, some feeding on them, 1/24 females, 1 deutonymph female. Nelson, Milton Street, 26 Mar 1968, E. Collyer, San Jose scale, dead tree, in and under scales, 1/2 females [+ *Eryngiopus nelsonensis* 1 female]. Eves Bush, 8 Aug 1968, E. Collyer, *Dacrydium cupressinum*, 1/5 females [+ *Mediolata robusta* 4 females]. Kohatu bank, 20 Aug 1968, E. Collyer, *Olearia* sp., 1/5 females, 2N [+ *Eryngiopus* sp. 1 protonymph; *Eustigmaeus corticolus* 3 females]. Nelson, Wigzell Park, Oct 1968, E. Collyer, *Lepidosaphes ulmi* on twigs, 4/4 females. Nelson, Boulder Bank, 10 May 1969, E. Collyer, *Ozothamnus leptophyllus*, 1/5 females, 1 male, 4 deutonymph females, 1 protonymph. **MB:** Wairau, Top Valley, 914 m, 28 Mar 1970, G. W. Ramsay, beaten from *Kunzea ericoides* - *Coprosma*, 1/1 male. **BR:** Head of L Rotoiti, 12 Feb 1966, E. Collyer, *Rubus schmidelioides*, 1/1 female. Lake Rotoiti track, 12 Feb 1966, E. Collyer,

*Elaeocarpus hookerianus*, 1/?? [+ *Zetzellia antipoda*; *Agistemus longisetus*]. Buller River, roadside, 10 Apr 1966, E. Collyer, apple, 1/1 female, 1 deutonymph female [+ *Agistemus longisetus* 2 females]. Near Charleston, 11 Apr 1966, E. Collyer, *Leptospermum scoparium*, 1/1 female, 2 deutonymph females [+ *Eustigmaeus corticolus* 2 females; *Mecognatha hirsuta* 1 deutonymph female; *Primagistemus loadmani* 2 deutonymph females]. **NC:** Upper Waimakariri R, 3 Oct 1966, E. Collyer, *Kunzea ericoides*, 1/5 females, 2 males, 2 deutonymph females. Lewis Pass, south side, 7 Feb 1968, E. Collyer, *Discaria toumatou*, 1/1 female. Arthurs Pass, 12 Nov 1968, E. Collyer, *Coprosma* sp., 1/1 female [+ *Pseudostigmaeus collyerae* 5 females, 3 males]. Upper Waimakariri R, 14 Nov 1968, E. Collyer, *Leptospermum scoparium*, 1/3 females, 1 male, 3 deutonymph females. ??: Stevens Bay, 12 Jan 1965, E. Collyer, *Meliccytus ramiflorus*, 1/3 females.

**Habitat.** *Alectryon excelsum*, *Albizzia* sp., apple (dwarf apples, Granny Smith apples, Irish peach apple) leaves and twig, *Asplenium lucidum*, *Asplenium oblongifolium*, *Banksia* sp., *Brachyglottis* sp., *Cassinia* sp., *Citrus* sp., *Coprosma acerosa*, *Coprosma* sp. galls and cavities, *Dacrycarpus dacrydioides*, *Dacrydium cupressinum*, *Discaria toumatou*, *Elaeocarpus hookerianus*, *Erica lusitanica*, *Geniostoma ligustrifolium*, *Hebe* sp., *Knighitia excelsa*, *Kunzea ericoides*, *Lepidosaphes ulmi* on tree, *Leptospermum ericoides*, *Leptospermum scoparium*, *Leucodendron* sp., loquat, *Macropiper excelsum*, *Meliccytus ramiflorus*, *Nothofagus fusca*, *Nothofagus menziesii*, *Nothofagus solandri*, *Olearia rani*, *Olearia paniculata*, *Olearia* sp., *Ozothamnus leptophyllus*, *Pittosporum* sp., *Podocarpus totara*, *Prumnopitys taxifolia*, *Prumnopitys ferruginea*, *Prunus* sp., *Pyrus communis* twigs, *Rosmarinus* sp., *Rubus fruticosus*, *Rubus schmidelioides*, San Jose scale on twigs, *Sarothamnus* sp., *Sophora microphylla*, tea, *Trifolium* sp., wild apple in bush area,

**Feeding habit.** Prey on *Brevipalpus phoenicis*, San Jose scale.

### *Zetzellia oudemansi* Wood

Fig. 235–238

*Zetzellia oudemansi* Wood, 1967: 126.

**Diagnosis. Female.** Dorsal shields without reticulations or vacuoles; *sci* 1.8 times diameter of *pob*; ratios  $v_i: v_i - v_i = 1.6$ ,  $v_e: sci = 1.0$ ; central hysterosomal shield reduced to 3 pairs of small shields or platelets;  $c_1$  and  $d_1$  each on a platelet,  $e_1$  and  $e_2$  jointly on a small shield on each side;  $c_1: c_1 - c_1 = 0.6$ ;  $c_1 - c_1: d_1 - d_1: e_1 - e_1: f_1 - f_1 = 1.0: 1.4: 1.0: 1.6$ ; genital setae 0.9 times length of  $ps_3$ .

**Male.** As in female but: *sci* 1.6 times diameter of *pob*;

ratios  $vi: vi-vi = 1.3$ ,  $ve: sci = 1.0$ ; central hysterosomal shield longitudinally divided into 2 shields, bearing 4 setae on each side;  $c_i: c_i-c_i = 0.4$ ;  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.5: 1.8: 1.0: 1.3$ .

**Description. Female** (Fig. 235 A–D, 236,  $n = 1$ )

**Gnathosoma.** Chelicerae 96, movable digits about 1/5 length of chelicerae, 41. Palp 92. Subcapitular setae  $n$  longer than  $m$ ,  $m$  30,  $n = 44$ ;  $m-m = 46$ ,  $n-n = 32$ ,  $m-n = 8$ .

**Idiosoma.** Oval, 328 long, 257 wide. Dorsal shields faintly sclerotised, without reticulations or vacuoles; dorsal idiosomal setae acute, faintly barbed. Postocular body 2.6 times as large as eye;  $sci$  1.8 times diameter of  $pob$ ; ratios  $vi: vi-vi = 1.6$ ,  $ve: sci = 1.0$ ; eyes 10 in diameter;  $pob$  26 in diameter; setae  $vi$  45,  $ve$  46,  $sci$  48; distances:  $vi-vi$  28,  $vi-ve$  33,  $ve-sci$  48. Central hysterosomal shield reduced to 3 pairs of small shields or platelets;  $c_i$  and  $d_i$  each on a platelet,  $e_i$  and  $e_2$  jointly on a small shield on each side, ratios  $c_i: c_i-c_i = 0.6$ ,  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.0: 1.4: 1.0: 1.6$ ; lengths:  $c_i$  33,  $d_i$  32,  $d_2$  38,  $e_i$  36,  $e_2$  41;  $f_i$  on platelets, 48; distances:  $c_i-c_i$  56,  $c_i-d_i$  77,  $d_i-d_i$  79,  $d_i-d_2$  48,  $d_i-e_i$  72,  $e_i-e_i$  58,  $e_i-e_2$  33,  $e_i-f_i$  33,  $f_i-f_i$  92; humeral setae  $c_2$  55, 1.7 times length of  $c_i$ . Suranal setae  $h_1$  48,  $h_2$  49. Ventral setae subequal,  $1a$  41,  $3a$  40 and  $4a$  38. Aggenital shield with 2 pairs of setae on a horseshoe-like shield,  $ag_2$  about 1.7 times length of  $ag_1$ ,  $ag_1 = 23$ ,  $ag_2 = 38$ ; genital setae 26, about 0.9 times length of  $ps_3$ ; pseudanal setae  $ps_3$  28,  $ps_2$  24,  $ps_1$  20.

**Legs.** Length: leg I 197, leg II 173, leg III 188, leg IV 199. Setae  $dFI$  and  $dGI$  acute, faintly barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7. Lengths of solenidia: I  $\omega$  23, II  $\omega$  22, III  $\omega$  13.

**Male** (Fig. 237–238,  $n = 1$ )

**Gnathosoma.** Chelicerae 86, movable digits about 1/5 length of chelicerae, 37. Palp 82. Subcapitular setae  $n$  longer than  $m$ ,  $m$  29,  $n = 38$ ;  $m-m = 41$ ,  $n-n = 30$ ,  $m-n = 89$ .

**Idiosoma.** Oval, 270 long, 231 wide. Dorsal shields faintly sclerotised, without reticulations or vacuoles; dorsal idiosomal setae acute, faintly barbed. Postocular body 2.4 times as large as eye;  $sci$  1.6 times diameter of  $pob$ ; ratios  $vi: vi-vi = 1.3$ ,  $ve: sci = 1.0$ ; eyes 11 in diameter;  $pob$  26 in diameter; setae  $vi$  36,  $ve$  40,  $sci$  41; distances:  $vi-vi$  27,  $vi-ve$  26,  $ve-sci$  40. Central hysterosomal shield longitudinally divided into 2 shields, each bearing 4 setae, ratios  $c_i: c_i-c_i = 0.4$ ,  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.5: 1.8: 1.0: 1.3$ ; lengths:  $c_i$  30,  $d_i$  25,  $d_2$  32,  $e_i$  30,  $e_2$  30;  $f_i$  on platelets, 43; distances:  $c_i-c_i$  70,  $c_i-d_i$  52,  $d_i-d_i$  85,  $d_i-d_2$

35,  $d_i-e_i$  49,  $e_i-e_i$  46,  $e_i-e_2$  28,  $e_i-f_i$  35,  $f_i-f_i$  62; humeral setae  $c_2$  45, 1.5 times length of  $c_i$ . Suranal setae  $h_1$  32,  $h_2$  17. Ventral setae subequal,  $1a$  35,  $3a$  33, and  $4a$  32. Aggenital shield with 2 pairs of setae,  $ag_2$  about 1.4 times length of  $ag_1$ ,  $ag_1 = 18$ ,  $ag_2 = 25$ ; pseudanal setae  $ps_3$  15,  $ps_2$  18,  $ps_1$  4.

**Legs.** Length: leg I 194, leg II 168, leg III 170, leg IV 194. Setae  $dFI$  and  $dGI$  acute, faintly barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 12 + 2  $\omega$ , 9 + 2  $\omega$ , 7 + 1  $\omega$ , 7 + 1  $\omega$ . Lengths of solenidia: I  $\omega$  20, I  $\omega$  37, II  $\omega$  29, II  $\omega$  33, III  $\omega$  10, IV  $\omega$  21.

**Deutonymph female** (Fig. 235 E,  $n = 1$ )

**Gnathosoma.** Chelicerae 85, movable digits about 1/5 length of chelicerae, 35. Palp 80. Subcapitular setae  $n$  longer than  $m$ ,  $m$  25,  $n = 30$ ;  $m-m = 37$ ,  $n-n = 24$ ,  $m-n = 5$ .

**Idiosoma.** Oval, 271 long, 217 wide. Dorsal shields faintly sclerotised, without reticulations or vacuoles; dorsal idiosomal setae acute, faintly barbed. Postocular body 2.5 times as large as eye;  $sci$  1.7 times diameter of  $pob$ ; ratios  $vi: vi-vi = 1.6$ ,  $ve: sci = 1.1$ ; eyes 10 in diameter;  $pob$  25 in diameter; setae  $vi$  37,  $ve$  46,  $sci$  42; distances:  $vi-vi$  23,  $vi-ve$  25,  $ve-sci$  37. Central hysterosomal shield reduced to 3 pairs of small shields;  $c_i$  and  $d_i$  each on a platelet,  $e_i$  and  $e_2$  jointly on a small shield on each side, ratios  $c_i: c_i-c_i = 0.5$ ,  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.2: 1.7: 1.0: 1.1$ ; lengths:  $c_i$  30,  $d_i$  31,  $d_2$  34,  $e_i$  36,  $e_2$  37;  $f_i$  on platelets, 44; distances:  $c_i-c_i$  56,  $c_i-d_i$  61,  $d_i-d_i$  82,  $d_i-d_2$  32,  $d_i-e_i$  60,  $e_i-e_i$  47,  $e_i-e_2$  29,  $e_i-f_i$  3137,  $f_i-f_i$  50; humeral setae  $c_2$  43, 1.4 times length of  $c_i$ . Suranal setae  $h_1$  39,  $h_2$  34. Ventral setae subequal,  $1a$  30,  $3a$  28 and  $4a$  28. Aggenital shield with 2 pairs of setae,  $ag_2$  about 1.2 times length of  $ag_1$ ,  $ag_1 = 22$ ,  $ag_2 = 27$ ; pseudanal setae  $ps_3$  15,  $ps_2$  19,  $ps_1$  14.

**Legs.** Length: leg I 165, leg II 139, leg III 140, leg IV 162. Counts of setae and solenidia on legs I–IV: coxae 2 + 1  $elcp$ , 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 2, 2; genua 3 + 1  $\kappa$ , 1, 0, 0; tibiae 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ , 5 + 1  $\phi$ ; tarsi 12 + 1  $\omega$ , 9 + 1  $\omega$ , 7 + 1  $\omega$ , 7. Lengths of solenidia: I  $\omega$  16, II  $\omega$  14, III  $\omega$  9.

**Distribution** (Map p. 384). New Zealand (Wood 1967). –/CO.

**Material examined.** Holotype and 2 paratypes. **Holotype** female: NEW ZEALAND: CO: Lindis Pass near top, 1000 m, 2 Mar 1965, T. G. Wood, moss on rocks, NZAC: 1/1 female [with arrow to top] [+ 1 female, 1 male]. **Paratypes:** on same slide with holotype: NZAC: 1/1 female, allotype male.

**Habitat.** Bark of *Leptospermum scoparium*, foliage of *Dysoxylum* sp., moss on rocks.

**Zetzellia spiculosa** sp. n.

Fig. 239–240

**Diagnosis. Female.** Dorsal shields without reticulations; *sci* 1.6 times diameter of *pob*; ratios *vi*:  $vi-vi = 1.3$ , *ve*: *sci* = 0.9; central hysterosomal shield longitudinally divided into 2 shields, bearing 4 setae on each side;  $c_i: c_i-c_i = 0.7$ ;  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.0: 1.8: 1.2: 1.3$ ; genital setae 1.5 times length of *ps*<sub>3</sub>.

**Description. Female** (Fig. 239 A–F, 240, n = 2)

**Gnathosoma.** Chelicerae 87 (87–96), movable digits about 1/2 length of chelicerae, 43 (41–43). Palp 84 (84–90). Subcapitular setae *n* longer than *m*, *m* 26 (26–28), *n* 32; *m*–*m* = 40 (40–45), *n*–*n* = 30, *m*–*n* = 8.

**Idiosoma.** Oval, 284 (284–289) long, 217 (202–217) wide. Dorsal shields faintly sclerotised, without reticulations or vacuoles; dorsal idiosomal setae rod-like, barbed. Postocular body 2.1 times as large as eye; *sci* 1.6 times diameter of *pob*; ratios *vi*:  $vi-vi = 1.3$ , *ve*: *sci* = 0.9; eyes 12 (12–13) in diameter; *pob* 25 (25–27) in diameter; setae *vi* 32, *ve* 38 (38–46), *sci* 41 (40–41); distances: *vi*–*vi* 24 (20–24), *vi*–*ve* 31 (30–31), *ve*–*sci* 36. Central hysterosomal shield longitudinally divided into 2 shields, bearing 4 setae on each side, ratios  $c_i: c_i-c_i = 0.7$ ,  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.0: 1.8: 1.2: 1.3$ ; lengths: *c*<sub>1</sub> 32 (32–35), *d*<sub>1</sub> 33 (31–33), *d*<sub>2</sub> 36 (36–38), *e*<sub>1</sub> 36, *e*<sub>2</sub> 33 (33–38); *f*<sub>1</sub> on platelets, 38 (38–42); distances: *c*<sub>1</sub>–*c*<sub>1</sub> 48 (48–58), *c*<sub>1</sub>–*d*<sub>1</sub> 55, *d*<sub>1</sub>–*d*<sub>1</sub> 87 (87–91), *d*<sub>1</sub>–*d*<sub>2</sub> 41 (41–45), *d*<sub>1</sub>–*e*<sub>1</sub> 60, *e*<sub>1</sub>–*e*<sub>1</sub> 57 (57–58), *e*<sub>1</sub>–*e*<sub>2</sub> 31 (31–32), *e*<sub>1</sub>–*f*<sub>1</sub> 26 (25–26), *f*<sub>1</sub>–*f*<sub>1</sub> 63 (63–72); humeral setae *c*<sub>2</sub> 38 (38–42). Suranal setae *h*<sub>1</sub> 36 (36–38), *h*<sub>2</sub> 34 (34–36). Ventral setae subequal, *1a* 27 (27–32), *3a* 33 (32–33) and *4a* 33. Aggenital shield with 2 pairs of setae on a horse-shoe-like shield, *ag*<sub>2</sub> slightly longer than *ag*<sub>1</sub>, *ag*<sub>1</sub> = 15 (15–17), *ag*<sub>2</sub> = 19 (19–22); genital setae 22, about 1.5 times length of *ps*<sub>3</sub>; pseudanal setae *ps*<sub>3</sub> 15, *ps*<sub>2</sub> 16 (16–20), *ps*<sub>1</sub> 17.

**Legs.** Length: leg I 171 (171–187), leg II 142 (142–161), leg III 144 (144–158), leg IV 175 (175–185). Setae *dFI* and *dGI* rod-like, barbed. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 1; femora 5, 4, 2, 2; genua 3 + 1*κ*, 1, 0, 0; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 12 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 7. Lengths of solenidia: I*ω* 20, II*ω* 21, III*ω* 12.

**Deutonymph female** (Fig. 239 G, n = 1)

**Gnathosoma.** Chelicerae 72, movable digits about 1/5 length of chelicerae, 27. Palp 72. Subcapitular setae subequal, *m* 24, *n* 26; *m*–*m* = 35, *n*–*n* = 26, *m*–*n* = 7.

**Idiosoma.** Oval, 219 long, 164 wide. Dorsal shields faintly sclerotised, without reticulations or vacuoles; dorsal idiosomal setae rod-like, barbed. Postocular body twice as large as eye; *sci* 1.5 times diameter of *pob*; ratios *vi*:  $vi-vi = 1.5$ , *ve*: *sci* = 0.9; eyes 11 in diameter; *pob* 24 in

diameter; setae *vi* 29, *ve* 32, *sci* 36; distances: *vi*–*vi* 20, *vi*–*ve* 24, *ve*–*sci* 31. Central hysterosomal shield longitudinally divided into 2 shields, bearing 4 setae on each side, ratios  $c_i: c_i-c_i = 0.8$ ,  $c_i-c_i: d_i-d_i: e_i-e_i: f_i-f_i = 1.1: 1.9: 1.0: 1.6$ ; lengths: *c*<sub>1</sub> 27, *d*<sub>1</sub> 29, *d*<sub>2</sub> 29, *e*<sub>1</sub> 31, *e*<sub>2</sub> 31; *f*<sub>1</sub> on platelets, 31; distances: *c*<sub>1</sub>–*c*<sub>1</sub> 36, *c*<sub>1</sub>–*d*<sub>1</sub> 46, *d*<sub>1</sub>–*d*<sub>1</sub> 62, *d*<sub>1</sub>–*d*<sub>2</sub> 36, *d*<sub>1</sub>–*e*<sub>1</sub> 46, *e*<sub>1</sub>–*e*<sub>1</sub> 33, *e*<sub>1</sub>–*e*<sub>2</sub> 24, *e*<sub>1</sub>–*f*<sub>1</sub> 18, *f*<sub>1</sub>–*f*<sub>1</sub> 52; humeral setae *c*<sub>2</sub> = *c*<sub>1</sub> = 27. Suranal setae *h*<sub>1</sub> = *h*<sub>2</sub> = 27. Ventral setae equal in length, *1a* = *3a* = *4a* = 25. Aggenital shield with 2 pairs of setae, *ag*<sub>1</sub> and *ag*<sub>2</sub> subequal, *ag*<sub>1</sub> = 17, *ag*<sub>2</sub> = 18; pseudanal setae *ps*<sub>3</sub> 12, *ps*<sub>2</sub> 12, *ps*<sub>1</sub> 13.

**Legs.** Length: leg I 151, leg II 125, leg III 124, leg IV 139. Counts of setae and solenidia on legs I–IV: coxae 2 + 1*elcp*, 1, 2, 2; trochanters 1, 1, 1, 0; femora 5, 4, 2, 2; genua 3 + 1*κ*, 1, 0, 0; tibiae 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*, 5 + 1*φp*; tarsi 12 + 1*ω*, 9 + 1*ω*, 7 + 1*ω*, 7.

**Distribution** (Map p. 384. New Zealand (this paper).

AK / –

**Material examined.** Holotype and 2 paratypes. **Holotype** female: NEW ZEALAND: AK: Auckland: Takapuna, Forrest Hill Rd, 26 July 1990, E. Jones, on *Miomantis caffra*, NZAC: 1/1 female [+ 1 female, 1 deutonymph female]. **Paratypes:** on same slide with holotype: NZAC: 1/1 female, 1 deutonymph female.

**Habitat.** *Miomantis caffra*.

**Etymology.** The specific name *spiculosa* is from Latin *spiculum*, meaning sting, referring to the shape of dorsal idiosomal setae.

**Remarks.** Females of *Z. spiculosa* sp. n. resemble those of *Z. australis* González-Rodríguez and *Z. biscutata* sp. n. in having the central hysterosomal shield longitudinally divided and having the same number of setae and solenidia on legs, but can be distinguished by the relative lengths of dorsal idiosomal setae (*c*<sub>1</sub> more than 2/3 distance of *c*<sub>1</sub>–*c*<sub>1</sub> and nearly 2/3 distance of *d*<sub>1</sub>–*d*<sub>1</sub>; ratio *ve*: *sci* = 0.9).

## REFERENCES

- Abo Elghar, M. R.; Elbadry, E. A.; Hassan, S. M.; Kilany, S. M. 1969. Studies on the feeding, reproduction and development of *Agistemus exsertus* on various pollen species (Acarina: Stigmaeidae). *Zeitschrift für angewandte Entomologie* 63(3): 282–284.
- Abonnenc, E. 1970. Notes sur les Acariens parasites des *Phlebotomes*. *Cahiers L'office de la Recherche Scientifique et Technique Outer-Mer. Série Entomologie médicale et Parasitologie* 8(1): 89–94.
- Abou-Awad, B. A.; Elsawi, S. A. 1993. Biology and life table of the predacious mite, *Agistemus exsertus* Gonz. (Acarina: Stigmaeidae). *Anzeiger für Schaedlingskunde, Pflanzenschutz, Umweltschutz* 66(5): 101–103. (Abstract)
- ; Reda, A. S. 1992. Studies on copulation, egg production and sex-ratio of the predaceous mite *Agistemus exsertus* Gonzalez (Acarina: Stigmaeidae). *Journal of Applied Entomology* 113(5): 472–475.
- Afify, A. M.; Gomma, E. A.; Zaher, M. A. 1969. Effectiveness of *Agistemus exsertus* Gonzalez (Acarina: Stigmaeidae). As an egg-predator of the spider mite, *Tetranychus cinnabarinus* Boisd. under varying room conditions. *Zeitschrift für Angewandte Entomologie* 63: 48–52.
- Arbabi, M.; Singh, J. 2002. Studies on *Agistemus industani* Gonzalez-Rodriguez (Acarina: Stigmaeidae), an efficient predator of *Tetranychus ludeni* Zacker on mulberry. *Acarina* 10(1): 85–89. (Abstract)
- Atyeo, W. T. 1963. New and redescribed species of Raphignathidae (Acarina) and a discussion of the chaetotaxy of the Raphignathoidea. *Journal of the Kansas Entomological Society* 36(3): 172–186.
- ; Baker, E. W.; Crossley, D. A. Jr. 1961. The genus *Raphignathus* Duges (Acarina, Raphignathidae) in the United States with notes on the old world species. *Acarologia* 3(1): 14–20.
- Baker, E. W.; Wharton, G. W. 1952. *An Introduction to Acarology*. MacMillan, New York. 465 pp.
- Berlese, A. 1885. *Acari, Myriopoda et Scorpiones hucusque in Italia reperta* 22. 11 text pages + Plates 1–10. (Reprint by Junk, the Hague, 1979, vol. III).
- 1886. *Acari dammosi alle Piante Coltivate*. Sacchetto, Padova. 31 pp + Plates I–V.
- 1887 *Acari, Myriopoda et Scorpiones hucusque in Italia reperta* 34. 13 text pages + Plates 1–10. (Reprint by Junk, the Hague, 1979, vol. IV).
- Berlese, A. 1910. Acari nuovi. Manipulus V, VI. *Redia* 6: 199–234 + Plates XVIII–XXI.
- Bolland, H. R. 1986. Review of the systematics of the family Camerobiidae (Acari, Raphignathoidea). I. The genera *Camerobia*, *Decaphyllobius*, *Tillandsobius* and *Tycherobius*. *Tijdschrift voor Entomologie* 129(7): 191–215.
- Bolland, H. R. 1991. Review of the systematics of the family Camerobiidae. II. The genus *Neophyllobius* Berlese, 1886 (Acari: Raphignathoidea). *Genus* 2(2): 59–226.
- ; Magowski, W. L. 1990. *Neophyllobius succineus* n. sp. from Baltic amber (Acari: Raphignathoidea: Camerobiidae). *Entomologische Berichten* 50(2): 17–21.
- Canestrini, G. 1889. Prospetto dell'Acarofauna Italiana, Famiglia degli Tetranychini. *Atti del reale Istituto Veneto di Scienze, Lettere ed Arti* (Series 6) 7(5): 491–537. (not seen).
- ; Fanzago, F. 1876. Nuovi Acari Italiani (sec. ser.). *Atti Societa Veneto Tretina di scienze naturali residente in Padova* 5(1): 130–142.
- Castagnoli, M.; Liguori, M. 1986. Further investigations on the mite fauna of the vine in Tuscany. *Redia* 69: 257–265.
- ; ———; Nannelli, R. 1984. Contribution to the knowledge of peach mites in Tuscany and observations on the progress of their populations. *Redia* 47: 493–504.
- Charlet, I. D.; McMurtry, J. A. 1977. Systematics and bionomics of predaceous and phytophagous mites associated with pine foliage in California. *Hilgardia* 45: 173–210.
- Chaudhri, W. M. 1965. New mites of the genus *Ledermuelleria*. *Acarologia* 7(3): 467–486.
- ; Akbar, S.; Rasool, A. 1974. *Taxonomic studies of the mites belonging to the families Temipalpidae, Tetranychidae, Tuckerellidae, Caligonellidae, Stigmaeidae and Phytoseiidae*. University of Agriculture, Lyallpur, Pakistan, (Project A 17 ENT 26). pp. 183–203.
- ; ———; ——— 1979. *Studies on the predatory leaf inhabiting mites of Pakistan*. US Department of Agriculture and Pakistan Agricultural Research Council. PL 480 Programme. Project No. PKARS, 30. pp. 139–229.
- Clements, D. R.; Harmsen, R. 1990. Predatory behavior and prey-stage preferences of stigmaeid and phytoseiid mites and their potential compatibility in biological control. *Canadian Entomologist* 122(3–4): 321–328.

- Clements, D. R.; Harmsen, R. 1992. Stigmaeid-phytoseiid interactions and the impact of natural enemy complexes on plant-inhabiting mites. *Experimental and Applied Acarology* 14(3-4): 327-341.
- ; ——— 1993. Prey preferences of adult and immature *Zetzellia mali* Ewing (Acari: Stigmaeidae) and *Typhlodromus caudiglans* Schuster (Acari: Phytoseiidae). *Canadian Entomologist* 125(5): 967-969.
- Collyer, E. 1964. Phytophagous mites and their predators in New Zealand orchards. *New Zealand Agricultural Research* 7: 551-568.
- Croft, B. A. 1994. Biological control of apple mites by a phytoseiid mite complex and *Zetzellia mali* (Acari: Stigmaeidae): long-term effects and impact of azinphosmethyl on colonization by *Amblyseius andersoni* (Acari: Phytoseiidae). *Environmental Entomology* 23(5): 1317-1325.
- ; MacRae, I. V. 1993. Biological control of apple mites: impact of *Zetzellia mali* (Acari: Stigmaeidae) on *Typhlodromus pyri* and *Metaseiulus occidentalis* (Acari: Phytoseiidae). *Environmental Entomology* 22(4): 865-873.
- Cunliffe, F. 1955. A proposed classification of the trombidiforme mites (Acarina). *Proceedings of the Entomological Society of Washington* 57(5): 209-218.
- De Leon, D. 1959. A new genus of mites occurring in Florida and Mexico (Acarina: Caligonellidae). *Florida Entomologist* 42(1): 17-19.
- Dogan, S.; Ayyildiz, N. 2003. Mites of the genus *Raphignathus* (Acari: Raphignathidae) from Turkey. *New Zealand Journal of Zoology* 30(1): 141-148.
- Dugès, A. L. 1833. Mémoires sur l'ordre des Acariens, lu & c. *Extr. in: l'Institut*, v. 1. fa. 24. p. 206-208. (see Oudemans 1937).
- 1834. Recherches sur l'ordre des Acariens en général et la famille des Trombidiés en particulier. *Annales des Sciences Naturelles. Zoologie (Series 2) 1*: 5-46 + Plate 1.
- Ehara, S. 1980. *Illustrations of the mites and ticks of Japan*. Zenkoku Noson Kyoiku Kyokai. 562 pp.
- Elbadry, E. A.; Elghar, M. R. A.; Hassan, S. M.; Kilany, S. M. 1969a. Life history studies on the predatory mite *Agistemus exsertus*. *Annals of the Entomological Society of America* 62: 649-651.
- ; ———; ———; ——— 1969b. *Agistemus exsertus* as a predator of two tetranychid mites. *Annals of the Entomological Society of America* 62: 660-661.
- El-Laithy, A. Y. M. 1998. Laboratory studies on growth parameters of three predatory mites associated with eriophyid mites in olive nurseries. *Zeitschrift für Pflanzenkrankheiten und Pflanzenschutz* 105(1): 78-83.
- Evans, G. O. 1992. *Principles of Acarology*. CAB International, Cambridge. 563 pp.
- Fan, Q.-H. 2000. The morphology of *Xenocaligonellidus smileyi* (Acari: Xenocaligonellidae). In: Yaling Zhang (ed.) *Systematic and Faunistic Research on Chinese Insects*. Beijing, China Agricultural Press, pp. 290-297.
- ; Chen, Y. 1997. The genus *Storchia*, with the description of a new species (Acari: Prostigmata: Stigmaeidae). *Systematic and Applied Acarology* 2: 161-166.
- ; Yin, X.-M. 2000. The genus *Raphignathus* (Acari: Raphignathidae) from China. *Systematic and Applied Acarology* 5: 83-98.
- ; Zhang, Z.-Q. 2002a. *Primagistemus* gen. nov. (Acari: Prostigmata: Stigmaeidae). *Zootaxa* 29: 1-8.
- ; ——— 2002b. Mites of the genus *Summersiella* Gonzalez (Acari: Stigmaeidae). *Systematic and Applied Acarology* 7: 149-158.
- Gerson, U. 1968. Some raphignathoid mites from Israel. *Journal of Natural History* 2: 429-437.
- 1972a. Mites of the genus *Ledermuelleria* (Prostigmata: Stigmaeidae) associated with mosses in Canada. *Acarologia* 13(2): 319-343.
- 1972b. A new species of *Camerobia* Southcott, with a redefinition of the family Camerobiidae (Acari: Prostigmata). *Acarologia* 13(3): 502-508.
- ; Blumberg, D. 1969. Biological notes on the mite *Saniosulus nudus*. *Journal of Economic Entomology* 62(3): 729-730.
- ; Frost, W. E.; Swift, S. F. 1997. A new genus of the family Eupalopsellidae from Australia (Acari: Prostigmata). *International Journal of Acarology* 23(3): 185-189.
- ; Smiley, R. L. 1990. *Acarine biocontrol agents: An illustrated key and manual*. Chapman and Hall, London. 174 pp.
- ; ———; Ochoa, R. 2003. *Mites (Acari) in Biological Control*. Blackwell Science. 539 pp.
- ; Walter, D. E. 1998. Transfer of *Mecognatha* Wood from Stigmaeidae to Mecognathidae, fam. nov., a new synonymy, and a key to families of Raphignathoidea (Acari: Prostigmata). *Systematic and Applied Acarology* 3: 145-147.



- Goff, M. L. 1987. *A catalog of Acari of the Hawaiian Islands*. University of Hawaii Research Extension Service 75: 1–75.
- González, R. H. 1985. Acaros eriofidos del manzano y peral en Chile (Acarina: Eriophyidae). *Revista Chilena de Entomología* 12: 77–84. (Abstract)
- González-R., R. H. 1967. *Summersiella*, a new stigmatid mite from New Zealand (Acarina: Prostigmata). *The Pan-Pacific Entomologist* 43(3): 236–239.
- González-Rodríguez, R. H. 1963. Four new mites of the genus *Agistemus* Summers, 1960 (Acarina: Stigmatidae). *Acarologia* 5(3): 342–350.
- 1965. A taxonomic study of the genera *Mediolata*, *Zetzellia* and *Agistemus* (Acarina: Stigmatidae). *University of California Publications in Entomology* 41: 1–64.
- Grandjean, F. 1944. Observations sur les acariens de la famille des Stigmatidae. *Archives des Sciences Physiques et Naturelles* 26: 103–131.
- 1946. Au sujet de l'organe de Claparède, des eupathidies multiples et des taenidies mandibulaires chez les Acariens actinochitineux. *Archives des Sciences Physiques et Naturelles* 28: 63–87.
- Habeeb, H. 1966. New genera in the Stigmatidae, Acarina. *Leaflets of Acadian Biology* 42: 1–2.
- Hafez, S. M.; Rasmy, A. H.; Elsayy, S. A. 1983. Effect of prey species and stages on predatory efficiency and development of the stigmatid mite, *Agistemus exsertus*. *Acarologia* 24(3): 281–283.
- Halliday, B. 1998. *Mites of Australia: A Checklist and Bibliography*. CSIRO Publishing, Melbourne. 317 pp.
- Hanna, M. A.; Shereef, G. M.; Megali, M. K. 1984. Effect of food type on longevity and fecundity of the predator mite, *Agistemus exsertus* (Acari: Prostigmata), with 1st description of its prelarva. *Bulletin de la Societe Entomologique d'Egypte* (63): 57–62.
- Hirst, S. 1926. Report on the Acari found on or associated with sandflies in India. *Indian Journal of Medical Research* 13: 1023–1026.
- Holdsworth, R. P. 1972. *Zetzellia mali* and *Agistemus fleschneri*: difference in spatial distribution. *Environmental Entomology* 1: 532–533.
- Hu, C., Jing, Z.; Liang, L. 1995. Two new species and one new record of the genus *Raphignathus* Duges (Acari: Raphignathidae). *Journal of Suzhou Railway Teachers College* 12(3): 21–26.
- Hu, S.; Chen, X.; Chou, Q.; Wu, M.; Wang, D. 1994. A study on spatial distribution pattern and spatial pattern of *Agistemus terminalis* (Quayle). *Journal of Nanchang University (Natural Science)* 18(3): 242–248.
- Hu, X.; Prokopy, R. J.; Mason, J. 1996. Populations of predatory and pest mites in first-level and second-level commercial apple orchard blocks in Massachusetts. *Journal of Applied Entomology* 120(1): 47–51.
- Inoue, K.; Tanaka, M. 1983. Biological characteristics of *Agistemus terminalis* (Quayle) (Acarina: Stigmatidae) as a predator of the citrus red mite, *Panonychus citri* (McGregor). *Japanese Journal of Applied Entomology and Zoology* 27(4): 280–288.
- Jamali, M. A.; Kamali, A.; Saboori, A.; Nowzari, J. 2001. Biology of *Zetzellia mali* (Ewing) (Acari: Stigmatidae) in Karaj, Iran. *Systematic & Applied Acarology* 6: 55–60.
- Kethley, J. 1990. Acarina: Prostigmata (Actinedida). In: Dindal, D. L. (ed.) *Soil Biology Guide*, Wiley, New York. pp. 667–756.
- Koç, K.; Ayyıldız, N. 1996. Türkiye faunası için yeni iki *Raphignathus* Duges (Acari, Prostigmata, Raphignathidae). *Turkish Journal of Zoology*, 20, 209–214.
- ; —— 1999. Some species of *Favognathus* Luxton, 1973 (Acari: Actinedida: Cryptognathidae) from Turkey. *Journal of Natural History* 33: 621–628.
- Koch, C. L. 1836a. *Deutschlands Crustaceen, Myriapoden und Arachniden. Ein Beitrag zur Deutschen Fauna. 4: 9.* (Herrich-Schäffer, Regensburg). (see Oudemans 1937).
- 1836b. *Deutschlands Crustaceen, Myriapoden und Arachniden. Ein Beitrag zur Deutschen Fauna. 5:10.* (Herrich-Schäffer, Regensburg). (see Oudemans 1937)
- 1841. *Deutschlands Crustaceen, Myriapoden und Arachniden. Ein Beitrag zur Deutschen Fauna. 37:20.* (Herrich-Schäffer, Regensburg). (see Oudemans 1937)
- Komlovsky, J. S.; Jenser, G. 1992. Little known predatory mite species of Hungary (Acari: Stigmatidae). *Acta Phytopathologica et Entomologia Hungarica* 27(1–4): 361–363.
- Kramer, P. 1877. Grundzüge zur Systematik der Milben. *Archiv für Naturgeschichte* 43(1): 215–247.
- Kramer, P. 1879. Ueber die Milbengattungen *Leptognathus* Hodge, *Raphignathus* Dug., *Caligonus* Koch, und die neue Gattung *Cryptognathus*. *Archiv für Naturgeschichte* 45(1): 142–157 + Plate VIII.
- Krantz, G. W. 1978. *A manual of acarology*, 2nd ed. Oregon State University Book Stores, Corvallis. 509 pp.

- Kuznetsov, N. N. 1976. Fauna of mites of the family Raphignathidae Kramer 1877. *Nauchnye Doklady Vysshei Shkoly Biologicheskie Nauki* 8: 37–44.
- 1977. A new genus and two new species of mites from the family Stigmaeidae (Acariformes). *Zoologicheskii Zhurnal* 56: 300–303.
- ; Petrov, V. M. 1984. Predacious mites of the Baltic region (Parasitiformes: Phytosidae, Acariformes: Prostigmata). *Zinatne, Riga* 90–111.
- Lawson, A. B.; Walde, S. J. 1993. Comparison of the responses of two predaceous mites, *Typhlodromus pyri* and *Zetzellia mali*, to variation in prey density. *Experimental and Applied Acarology* 17(11): 811–821.
- Li, L.-S., Xuan, J.-Y.; Fan, Q.-H. 1992. Taxonomic investigation of food mites in Sichuan province. *Journal of Southwest Agricultural University* 14(1): 23–34.
- Luxton, M. 1973. Mites of the genus *Cryptognathus* from Australia, New Zealand and Niue Island. *Acarologia* 15(1): 53–75.
- 1987. Mites of the family Cryptognathidae Oudemans, 1902 (Prostigmata) in the British Isles. *Entomologist's Monthly Magazine* 123: 113–115.
- MacRae, I. V.; Croft, B. A. 1996. Differential impact of egg predation by *Zetzellia mali* (Acari, Stigmaeidae) on *Metaseiulus occidentalis* and *Typhlodromus pyri* (Acari: Phytoseiidae). *Experimental and Applied Acarology* 20(3): 143–154.
- Martinez, O. E.; Conesa, G. C. E.; Macfarlane, D.; Ward, R. D.; Ortega, E. 1983. Ectoparasitic mites on phlebotomine sandflies (Diptera: Psychodidae) from Spain. *Annals of Tropical Medicine and Parasitology* 77(5): 545–546.
- Meyer, M. K. P. 1969. Some stigmaeid mites from South Africa (Acari: Trombidiformes). *Acarologia* 11(2): 227–271.
- ; Ryke, P. A. J. 1960. Mites of the superfamily Raphignathoidea (Acarina: Prostigmata) associated with South African plants. *Annals and Magazine of Natural History* 13(2): 209–234.
- (Smith); Ueckermann, E. A. 1989. African Raphignathoidea (Acari: Prostigmata). *Entomology Memoir. Department of Agriculture and Water Supply, Republic of South Africa*, 74: 1–58.
- Mitra, C. R. D.; Mitra, S. D. 1953. A new species of *Raphignathus* (Acarina) associated with *Phlebotomus* in India. *Zeitschrift für Parasitenkunde* 15: 429–432.
- Muma, M. H.; Selhime, A. G. 1971. *Agistemus floridanus* (Acarina: Stigmaeidae), a predatory mite, on Florida citrus. *Florida Entomologist* 54: 249–258.
- Nawar, M. S. 1992. Effect of prey density on predaceous efficiency and oviposition of *Agistemus exsertus* (Acari: Stigmaeidae). *Experimental and Applied Acarology* 15(2): 141–144.
- Osman, A. A.; Zaki, A. M. 1986. Studies on the predation efficiency of *Agistemus exsertus* Gonzalez (Acarina: Stigmaeidae) on the eriophyid mite *Aculops lycopersici* (Masse). *Anzeiger für Schaedlingskunde, Pflanzenschutz, Umweltschutz* 59(7): 135–136.
- Oudemans, A. C. 1902. Acari, neue Arten, Klassifikation, *Tijdschrift voor Entomologie* 45: 50–64.
- 1903. Acarologische aantekeningen VIII. *Entomologische Berichten* 14: 100–103.
- 1923a. Acarologische aantekeningen LXX. *Entomologische Berichten* 6(129): 138–144.
- 1923b. Acarologische aantekeningen LXXI. *Entomologische Berichten* 6(130): 145–155.
- 1927. Acarologische aantekeningen LXXXVIII. *Entomologische Berichten* 7(158): 257–263.
- 1931. Acarologische aantekeningen CVIII. *Entomologische Berichten* 8(179): 237–263.
- 1937. *Kritisch Historisch Overzicht der Acarologie 1805–1850. III/C Tarsenemini, Stomatostigmata, Eleutherengona*. E. J. Brill, Leiden, pp. 799–1348.
- Ozbel, Y.; Akkafa, F.; Ozensoy, S.; Balcioglu, I. C.; Ulukanligil, M.; Alkan, M. Z. 1999. Mites of *Phlebotomus sergenti* collected in Sanliurfa, Turkey. *Acta Parasitologica Turcica* 23(2): 153–155. (Abstract)
- Quayle, H. J. 1912. Red spiders and mites of citrus trees. *University of California Experiment Station Bulletin* 234: 483–530.
- Rack, G. 1962. Milben aus Taubennestern mit Beschreibung einer neuen Art, *Acheles gracilis* (Acarina, Raphignathidae). *Zoologischer Anzeiger* 168(7–10): 275–292.
- Rasmy, A. H. 1975. Eine methode zur Massenzucht der Raubmilbe *Agistemus exsertus* Gonz. (Acarina, Stigmaeidae). *Anzeiger für Schaedlingskunde, Pflanzenschutz, Umweltschutz* 48: 55–56.
- ; Hussein, H. E. 1995. Effect of mating on rate of predation of two species of predaceous mites, *Agistemus exsertus* Gonz. and *Phytoseiulus persimilis* Athias-Henriot. *Anzeiger für Schaedlingskunde, Pflanzenschutz, Umweltschutz* 68(7): 155–156. (Abstract).

- Rasmy, A. H.; Hussein, H. E. 1996. Effect of mating on egg production in two species of predatory mites, *Agistemus exsertus* Gonzalez and *Phytoseiulus persimilis* Athias-Henriot. *Anzeiger für Schadlingskunde, Pflanzenschutz, Umweltschutz* 69(4): 88–89 (Abstract).
- Reda, A. S. 1990. The use of artificial diets and natural diets in rearing *Agistemus exsertus* (Acari: Stigmaeidae). *Annals of Agricultural Science* 28(4): 2633–2642. (Abstract).
- Rice, R. E.; Jones, R. A.; Hoffman, M. L. 1976. Seasonal fluctuations in phytophagous and predaceous mite populations on stonefruits in California. *Environmental Entomology* 5: 557–564.
- Rimando, L. C.; Corpuz-Raros, L. A. 1996. Some Philippine Raphignathoidea (Acari). II. The genus *Mullederia* Wood and two new genera of Stigmaeid mites. *Asia Life Science* 5(2): 141–161.
- ; ——— 1997. Some Philippine Raphignathoidea (Acari). III. Revision of the genus *Eustigmaeus* Berlese *sensu lato* (Stigmaeid). *Philippine Entomologist* 11(1): 1–24.
- Robaux, P. 1975. Observations sur quelques Actinedida (= Prostigmates) du sol d'Amérique du nord. V. Barbutiidae, une nouvelle famille d'acariens (Acari: Raphignathoidea) et description d'une nouvelle espèce appartenant au genre *Barbutia*. *Acarologia* 17(2): 480–488.
- 1976. Observations sur quelques Actinedida (= Prostigmates) du sol d'Amérique du nord. VII. Sur deux espèces nouvelles de Raphignathidae (Acari). *Revue d'Ecologie et de Biologie du Sol* 13(3): 505–516.
- Santos, M. A. 1976a. Prey selectivity and switching response of *Zetzellia mali*. *Ecology* 57: 390–394.
- 1976b. Evaluation of *Zetzellia mali* as a predator of *Panonychus ulmi* and *Aculus schlechtendali*. *Environmental Entomology* 5(1): 187–191.
- 1982. Effects of low prey densities on the predation and oviposition of *Zetzellia mali* (Acarina: Stigmaeidae). *Environmental Entomology* 11(4): 972–974.
- 1991. Searching behavior and associational response of *Zetzellia mali* (Acarina: Stigmaeidae). *Experimental and Applied Acarology* 11(1): 81–87.
- ; Laing, J. E. 1985. Stigmaeid predators. In: Helle, W.; Sabelis, M. W. (eds.) *Spider Mites, Theirs Biology, Natural Enemies and Control*. Vol. 1. B. Elsevier, Amsterdam, Oxford etc. pp. 197–203.
- Shehata, M. & Baker, A. 1996. Mites infesting phlebotomine sandflies in southern Sinai, Egypt. *Medical and Veterinary Entomology* 10(2): 193–196.
- Shiba, M. 1976. Taxonomic investigation on free-living Prostigmata from Malay Peninsula. *Nature life of South East Asia* 7: 136–170.
- Slone, D. H.; Croft, B. A. 1998. Spatial aggregation of apple mites (Acari: Phytoseiidae, Stigmaeidae, Tetranychidae) as measured by a binomial model: effects of life stage, reproduction, competition, and predation. *Environmental Entomology* 27(4): 918–925.
- ; ——— 2001. Species association among predaceous and phytophagous apple mites (Acari: Eriophyidae, Phytoseiidae, Stigmaeidae, Tetranychidae). *Experimental and Applied Acarology* 25(2): 109–126.
- Southcott, R. V. 1957. Description of a new Australian raphignathoid mite, with remarks on the classification of the Trombidiformes (Acarina). *Proceedings of the Linnean Society of New South Wales* 81(3): 306–312.
- Summers, F. M. 1960a. Eupalopsis and eupalopsellid mites (Acarina: Stigmaeidae, Eupalopsellidae). *Florida Entomologist* 43(3): 119–138.
- 1960b. Several stigmaeid mites formerly included in *Mediolata* redescribed in *Zetzellia* Ouds, and *Agistemus*, new genus (Acarina). *Proceedings of the Entomological Society of Washington* 62(4): 233–247.
- 1964. Three uncommon genera of the mite family Stigmaeidae (Acarina). *Proceedings of the Entomological Society of Washington* 66(3): 184–192.
- 1966a. Key to families of the Raphignathoidea (Acarina). *Acarologia* 8(2): 227–229.
- 1966b. Genera of the family Stigmaeidae Oudemans (Acarina). *Acarologia* 8(2): 230–250.
- Swift, S. F. 1987. A new species of *Stigmaeus* (Acari: Prostigmata: Stigmaeidae) parasitic on phlebotomine flies (Diptera: Psychodidae). *International Journal of Acarology* 13(4): 239–243.
- Thistlewood, H. M. A.; Clements, D. R.; Harmsen, R. 1996. Chapter 2. 2 Stigmaeidae. In: Linquist, E. E.; Sabelis, M. W.; Bruin, J. (eds) *Eriophyoid Mites — Their Biology, Natural enemies and Control*. Elsevier Science. pp. 457–470.
- Tseng, Y.-H. 1982. Mites of the family Stigmaeidae of Taiwan with key to genera of the world (Acarina: Prostigmata). *Phytopathologist and Entomologist of the National Taiwan University* 9: 1–52.

- Ueckermann, E. A.; Smith Meyer, M. K. P. 1987. Afrotropical Stigmaeidae (Acari: Prostigmata). *Phytophylactica* 19: 371–397.
- Vacante, V.; Gerson, U. 1988. Three species of *Eryngiopus* (Acari: Stigmaeidae) from Italy, with key to species and summary of habitats. *Redia* 70: 385–401.
- Vainstein, B. A.; Kuznetsov, N. N. 1978a. Family Raphignathidae. In: Gilyarov, M. S. (ed.) *Identification Key of Soil Inhabiting Mites. Trombidiformes*. Nauka, Moscow. pp. 149–150.
- ; ——— 1978b. Family Stigmaeidae and Caligonellidae. In: Gilyarov, M. S. (ed.) *Identification Key of Soil Inhabiting Mites. Trombidiformes*. Nauka, Moscow. pp. 153–169.
- Wafa, A. K.; Zaher, M. A.; Afify, A. M.; Gomaa, E. A. 1969. Effect of diet on the development of the predaceous mite, *Agistemus exsertus* Gonzalez (Acarina: Stigmaeidae). *Zeitschrift für Angewandte Entomologie* 63: 382–388.
- Walde, S. J.; Hardman, J. M.; Magagula, C. N. 1997. Direct and indirect species interactions influencing within-season dynamics of apple rust mite, *Aculus schlechtendali* (Acari: Eriophyidae). *Experimental and Applied Acarology* 21(9): 587–614.
- ; Magagula, C. N.; Morton, M. L. 1995. Feeding preference of *Zetzellia mali*, does absolute or relative abundance of prey matter more? *Experimental and Applied Acarology* 19(6): 307–317.
- Walter, D. E.; Gerson, U. 1998. Dasythyreidae, new family, and *Xanthodasythyreus* n. g. (Acari: Prostigmata: Raphignathoidea) from Australia. *International Journal of Acarology* 24(3): 189–197.
- ; Proctor, H. C. 2001. *Mites in Soil*. CD-ROM. Australian Biological Resources Study/CSIRO Publishing.
- White, N. D.; Laing, J. E. 1977. Some aspects of the biology and a laboratory life table of the acarine predator *Zetzellia mali*. *Canadian Entomologist* 109(9): 1275–1281.
- Willmann, C. 1951a. Die hochalpine Milbenfauna der mittleren Hohen Tauern, insbesondere der Grossglockner-Gebietes (Acari). *Bonner Zoologische Beiträge* 2: 141–176.
- 1951b. Untersuchungen über die terrestrische Milbenfauna im pannonischen Klimagebiet Österreichs. *Stizungsberichte der Österreichischen Akademie der Wissenschaften Vienna, Mathematisch e Naturwissenschaftliche Klasse, Abtheilung I* 160: 91–176.
- Willmann, C. 1953. Neue Milben aus den östlichen Alpen. *Stizungsberichte der Österreichischen Akademie der Wissenschaften Vienna, Mathematisch e Naturwissenschaftliche Klasse, Abtheilung I* 162: 449–519.
- 1956. Milben aus dem Naturschutzgebiet auf dem Spiglitzer (Glatzer) Schneeberg. *Ceskoslovenska Parasitologie* 3: 236–241.
- Womersley, R. 1937. Acarina. Australasian Antarctic Expedition, 1911–1914. *Sci. Report, ser C*, 10(6): 1–24.
- Wood, T. G. 1964a. New records of terrestrial Prostigmata from New Zealand. *New Zealand Entomologist* 3: 39–40.
- 1964b. A new genus of Stigmaeidae (Acarina, Prostigmata) from New Zealand. *New Zealand Journal of Science* 7(4): 579–584.
- 1966. Mites of the genus *Ledermuelleria* Oudms. (Prostigmata, Stigmaeidae) from New Zealand, with records of one species from some Southern Pacific islands. *New Zealand Journal of Science* 9: 84–102.
- 1967. New Zealand mites of the family Stigmaeidae (Acari, Prostigmata). *Transactions of the Royal Society of New Zealand* 9(9): 93–139.
- 1968. A new species of *Cheyllostigmaeus* Willmann (Acari, Stigmaeidae) from New Zealand. *New Zealand Journal of Science* 11: 276–279.
- 1969. The Homocaligidae, a new family of mites (Acari: Raphignathoidea), including a description of a new species from Malaya and the British Solomon Islands. *Acarologia* 11(4): 711–729.
- 1970. Stigmaeidae (Acari: Prostigmata) from Campbell Island. *Acarologia* 12(4): 677–683.
- 1971a. Stigmaeidae (Acari: Prostigmata) from the British Solomon Islands. *Acarologia* 13(1): 65–87.
- 1971b. New species and records of Stigmaeidae (Acari: Prostigmata) from New Zealand. I. *Mediolata* G. Canestrini and *Mecognatha* Wood. *New Zealand Journal of Science* 14: 54–61.
- 1971c. New species and records of Stigmaeidae (Acari: Prostigmata) from New Zealand. II. The genera *Apostigmaeus* Grandjean, *Summersiella* Gonzalez, *Pseudostigmaeus* Wood and *Eryngiopus* Summers. *New Zealand Journal of Science* 14: 406–418.
- 1972. Redescription of *Stigmaeus youngi* (Hirst), Acari, Stigmaeidae. *Acarologia* 14(2): 163–165.
- 1973. Revision of Stigmaeidae (Acari: Prostigmata) in the Berlese collection. *Acarologia* 15(1): 76–95.

- Wood, T. G. 1974. Redescription of *Cheyllostigmaeus longisetosus* Willmann (Acari, Stigmaeidae). *Acarologia* 16(1): 62–67.
- 1981. New species and records of Stigmaeidae (Acari: Prostigmata) from New Zealand. III. Genus *Stigmaeus* Koch. *New Zealand Journal of Zoology* 8: 369–377.
- Yue, B.; Childers, C. C. 1994. Effects of temperature on life table parameters of *Agistemus exsertus* Gonzalez (Acari: Stigmaeidae) and its attack rate on *Panonychus citri* eggs. *International Journal of Acarology* 20(2): 109–113.
- ; Tsai, J. H. 1995. *Agistemus exsertus* Gonzalez (Acari: Stigmaeidae) as a predator of citrus red mite (*Panonychus citri* [McGregor]). *Journal of the New York Entomological Society* 103(1): 107–113.
- Yousef, A. E. A.; Zaher, M. A.; El-Hafiez, A. M. A. 1982. Effect of prey on the biology of *Amblyseius gossipi* Elbadry and *Agistemus exsertus* Gonzalez (Acari, Phytoseiidae, Stigmaeidae). *Zeitschrift für Angewandte Entomologie* 93(5): 453–456.
- Zaher, M. A.; Gomaa, E. A. 1979. Three new species of the genus *Raphignathus* in Egypt (Prostigmata: Raphignathidae). *Acarologia* 21(2): 187–203.
- Zhang, Z. -Q.; Gerson, U. 1995. *Eustigmaeus johnstoni*, new species (Acari: Stigmaeidae), parasitic on phlebotomine sandflies (Diptera: Psychodidae). *Tijdschrift voor Entomologie* 138: 297–301.

### Appendix 1: Raphignathoidea species from New Zealand listed by host.

- Acacia nigrescens* — *Storchia robustus*  
*Actinidia deliciosa* — *Mecognatha hirsuta*,  
*Mecognatha parilis*  
*Agathis australis* (kauri) — *Eustigmaeus distinctus*, *Eustigmaeus mixtus*,  
*Eustigmaeus simplex*, *Primagistemus loadmani*, *Scutastigmaeus confusus*  
*Albizzia* sp. — *Agistemus longisetus*,  
*Mecognatha hirsuta*, *Zetzellia maori*  
*Alectryon excelsum* — *Agistemus collyerae*,  
*Agistemus longisetus*, *Agistemus novazelandicus*, *Primagistemus loadmani*,  
*Zetzellia maori*  
*Alectryon excelsus* — *Agistemus longisetus*,  
*Eryngiopus arboreus*  
Apple — *Agistemus collyerae*, *Agistemus longisetus*, *Eryngiopus arboreus*,  
*Eryngiopus bifidus*, *Eryngiopus nelsonensis*, *Mecognatha hirsuta*, *M. parilis*,  
*Mediolata brevisetis*, *Mediolata favulosa*,  
*Mediolata robusta*, *Mediolata simplex*,  
*Mullederia arborea*, *Neophyllobius sturmerwoodi*, *Pseudostigmaeus collyerae*,  
*Pseudostigmaeus schizopeltatus*, *Storchia robustus*, *Zetzellia gonzalezi*, *Zetzellia maori*  
*Aristotelia serrata* — *Agistemus collyerae*  
*Ascarina lucida* — *Agistemus novazelandicus*  
*Ascarina* sp. — *Zetzellia gonzalezi*  
*Asparagus* sp. — *Storchia robustus*  
*Asplenium oblongifolium* — *Zetzellia maori*  
*Auricularia auricula-judae* — *Raphignathus gracilis*  
*Azorella* — *Stigmaeus campbellensis*  
*Banksia* sp. — *Zetzellia maori*  
Bark — *Cryptognathus vulgaris*, *Eryngiopus bifidus*, *Eustigmaeus corticolus*,  
*Eustigmaeus manapouriensis*,  
*Favognathus leopardus*, *Mecognatha hirsuta*, *Mecognatha parilis*, *Mediolata brevisetis*, *Mediolata favulosa*, *Mediolata simplex*, *Mediolata xerxes*, *Neophyllobius sturmerwoodi*, *Raphignathus collegiatus*,  
*Raphignathus crustus*, *Raphignathus gracilis*, *Scutastigmaeus confusus*,  
*Stigmaeus rotundus*, *Storchia robustus*,  
*Zetzellia maori*, *Zetzellia oudemansi*  
*Bischofia javanica* — *Raphignathus collegiatus*  
Black scales — *Mediolata whenua*  
*Brachyglottis hectori* [as *Senecio*] — *Agistemus collyerae*, *Eryngiopus arboreus*,  
*Eustigmaeus corticolus*, *Pseudostigmaeus collyerae*, *Zetzellia biscutata*  
*Brachyglottis* sp. — *Agistemus longisetus*,  
*Zetzellia maori*  
*Brevipalpus phoenicis* — *Zetzellia maori*  
*Brevipalpus* sp. — *Agistemus longisetus*,  
*Agistemus novazelandicus*, *Zetzellia maori*  
*Bryobia rubrioculus* — *Agistemus longisetus*  
*Carmichaelia* sp. — *Eryngiopus arboreus*,  
*Mediolata brevisetis*, *Mediolata delicata*,  
*Mediolata robusta*  
*Carpodetus serratus* — *Agistemus collyerae*,  
*Agistemus novazelandicus*, *Mediolata robusta*, *Summersiella coprosmae*  
*Cassinia* sp. — *Zetzellia maori*  
*Celmisia* sp. — *Pseudostigmaeus striatus*  
chaffinch — *Eustigmaeus corticolus*  
*Chionochloa* sp. — *Pseudostigmaeus schizopeltatus*  
Chironomid fly — *Eustigmaeus distinctus*  
*Cinnamomum* sp. — *Raphignathus gracilis*  
*Citrus* sp. — *Raphignathus gracilis*, *Agistemus collyerae*, *Agistemus longisetus*,  
*Eryngiopus bifidus*, *Zetzellia maori*  
*Cladium* — *Stigmaeus rotundus*  
Coconut palm — *Eustigmaeus mixtus*  
*Combretum* sp. — *Storchia robustus*  
*Coprosma acerosa* — *Eryngiopus bifidus*,  
*Zetzellia maori*  
*Coprosma australis* — *Mediolata brevisetis*,  
*Summersiella coprosmae*  
*Coprosma cuneata* — *Pseudostigmaeus collyerae*  
*Coprosma foetidissima* — *Eryngiopus arboreus*,  
*Pseudostigmaeus collyerae*  
*Coprosma propinqua* — *Pseudostigmaeus collyerae*  
*Coprosma pseudocuneata* — *Pseudostigmaeus collyerae*  
*Coprosma* sp. — *Agistemus collyerae*,  
*Agistemus longisetus*, *Eryngiopus arboreus*, *Eryngiopus bifidus*, *Eryngiopus nelsonensis*, *Mullederia arborea*,  
*Pseudostigmaeus collyerae*,  
*Pseudostigmaeus schizopeltatus*,  
*Pseudostigmaeus striatus*, *Summersiella coprosmae*, *Zetzellia maori*  
*Corynocarpus laevigata* — *Mullederia arborea*

- Crataegus* sp. — *Raphignathus collegiatus*  
*Cupressus* sp. — *Raphignathus gracilis*  
*Cyathea dealbata* — *Scutastigmaeus confusus*  
*Cyathea medullaris* — *Agistemus longisetus*,  
*Scutastigmaeus confusus*  
*Cyathodes fasciculata* — *Pseudostigmaeus*  
*schizopeltatus*  
*Cynodon dactylon* — *Raphignathus gracilis*  
*Dacrycarpus dacrydioides* — *Eryngiopus*  
*arboreus*, *Eryngiopus bifidus*, *Mediolata*  
*favulosa*, *Mediolata robusta*,  
*Pseudostigmaeus collyerae*,  
*Pseudostigmaeus schizopeltatus*, *Zetzellia*  
*maori*  
*Dacrydium bidwilli* — *Mediolata favulosa*,  
*Pseudostigmaeus collyerae*  
*Dacrydium cupressinum* — *Primagistemus*  
*loadmani*, *Pseudostigmaeus collyerae*,  
*Zetzellia maori*  
*Dacrydium intermedium* — *Primagistemus*  
*loadmani*  
*Dactylis glomerata* — *Raphignathus gracilis*  
Dead tree — *Eryngiopus nelsonensis*, *Zetzellia*  
*maori*  
Debris — *Favognathus leopardus*, *Mecognatha*  
*parilis*, *Raphignathus crustus*  
Decaying organic material — *Storchia robustus*  
Diaspididae — *Eryngiopus bifidus*  
*Dimocarpus longan* — *Raphignathus gracilis*  
*Discaria toumatou* — *Eryngiopus bifidus*,  
*Eryngiopus nelsonensis*, *Zetzellia maori*  
*Dothofagus menziesii* — *Mediolata robusta*  
*Dracophyllum filifolium* — *Eryngiopus arboreus*,  
*Mediolata brevisetis*, *Pseudostigmaeus*  
*collyerae*  
*Dracophyllum* sp. — *Eryngiopus arboreus*,  
*Mediolata brevisetis*, *Mediolata mollis*,  
*Mediolata polylocularis*, *Primagistemus*  
*loadmani*, *Pseudostigmaeus collyerae*,  
Dwarf trees — *Agistemus collyerae*, *Agistemus*  
*longisetus*, *Agistemus novazelanicus*,  
*Zetzellia maori*  
*Dysoxylum* sp. — *Zetzellia oudemansi*  
*Elaeocarpus dentatus* — *Agistemus collyerae*,  
*Agistemus longisetus*, *Zetzellia antipoda*,  
*Zetzellia gonzalezi*  
*Elaeocarpus hookerianus* — *Agistemus*  
*longisetus*, *Eryngiopus arboreus*,  
*Primagistemus loadmani*,  
*Pseudostigmaeus collyerae*, *Zetzellia*  
*antipoda*, *Zetzellia maori*  
*Erica lusitanica* — *Zetzellia maori*  
Eriophyidae — *Agistemus longisetus*
- Eucalyptus* sp. (gum) — *Raphignathus gracilis*,  
*Eustigmaeus corticolus*, *Mediolata*  
*brevisetis*, *Mediolata xerxes*, *Storchia*  
*robustus*  
*Eucalyptus tereticornis* — *Raphignathus gracilis*  
Eves bush — *Agistemus collyerae*, *Eryngiopus*  
*arboreus*, *Eryngiopus bifidus*, *Mediolata*  
*robusta*, *Mediolata woodi*, *Mediolata xerxes*,  
*Pseudostigmaeus collyerae*,  
*Pseudostigmaeus schizopeltatus*,  
*Scutastigmaeus confusus*, *Summersiella*  
*coprosmae*, *Zetzellia maori*  
Feijoa — *Mediolata robusta*, *Mediolata simplex*  
Feijoa sellowiana — *Agistemus longisetus*  
Ferns — *Agistemus novazelanicus*, *Eryngiopus*  
*arboreus*, *Eustigmaeus corticolus*,  
*Primagistemus loadmani*  
Forest falls — *Raphignathus gracilis*  
Forest litter — *Eustigmaeus simplex*,  
*Scutastigmaeus longisetis*, *Stigmaeus*  
*rotundus*, *Stigmaeus summersi*, *Storchia*  
*robustus*  
*Fringilla coelebs* nest — *Eustigmaeus corticolus*  
*Fuchsia excorticata* — *Mullederia arborea*  
Galls — *Agistemus collyerae*, *Agistemus*  
*novazelanicus*, *Zetzellia maori*  
*Gaultheria* sp. — *Pseudostigmaeus*  
*schizopeltatus*  
*Geniostoma ligustrifolium* — *Zetzellia maori*  
Grape — *Agistemus novazelanicus*  
Grapefruit — *Zetzellia maori*  
Grassy roadside verge — *Eustigmaeus*  
*brevisetosus*  
*Grevillea robusta* — *Raphignathus gracilis*  
*Griselinia lucida* — *Mediolata brevisetis*  
Ground foliage — *Mediolata polylocularis*  
*Hakea* sp. — *Storchia robustus*  
*Halcyon sancta vagans* — *Eryngiopus*  
*nelsonensis*  
*Halocarpus bidwillii* — *Mediolata woodi*,  
*Pseudostigmaeus collyerae*  
*Hebe* sp. — *Pseudostigmaeus collyerae*,  
*Zetzellia maori*  
*Hedycarya arborea* — *Mediolata simplex*  
*Hexathele hochstetteri* — *Favognathus*  
*leopardus*, *Mecognatha parilis*,  
*Raphignathus crustus*  
*Hoheria angustifolia* — *Pseudostigmaeus*  
*schizopeltatus*  
Horse chestnut — *Raphignathus collegiatus*  
House (dust) — *Raphignathus collegiatus*,  
*Raphignathus gracilis*

- Hymenanthra* sp. — *Cryptognathus vulgaris*,  
*Eryngiopus bifidus*, *Eryngiopus nelsonensis*  
 Kahikatea — *Pseudostigmaeus schizopeltatus*  
*Knightsia excelsa* — *Agistemus collyerae*,  
*Agistemus longisetus*, *Eryngiopus bifidus*,  
*Mediolata polyocularis*, *Mediolata robusta*,  
*Zetzellia maori*  
*Kunzea ericoides* — *Eryngiopus arboreus*,  
*Mediolata robusta*, *Pseudostigmaeus*  
*schizopeltatus*, *Zetzellia maori*  
*Lepidosaphes ulmi* — *Zetzellia maori*  
*Lepidothamnus intermedius* —  
*Pseudostigmaeus collyerae*  
*Leptecophylla juniperina* — *Pseudostigmaeus*  
*collyerae*, *Pseudostigmaeus schizopeltatus*  
*Leptospermum ericoides* — *Eryngiopus*  
*arboreus*, *Zetzellia maori*  
*Leptospermum juniperina* — *Pseudostigmaeus*  
*collyerae*, *Pseudostigmaeus schizopeltatus*  
*Leptospermum scoparium* (manuka) —  
*Mecognatha hirsuta*, *Eryngiopus similis*,  
*Eustigmaeus corticolus*, *Mediolata robusta*,  
*Primagistemus loadmani*, *Zetzellia maori*,  
*Zetzellia oudemansi*  
*Leptospermum* sp. — *Eryngiopus bifidus*,  
*Eustigmaeus dumosus*, *Eustigmaeus*  
*mixtus*, *Mediolata simplex*  
*Leucodendron* sp. — *Zetzellia maori*  
*Leucopogon fasciculatus* — *Pseudostigmaeus*  
*schizopeltatus*  
*Libocedrus bidwillii* — *Pseudostigmaeus*  
*collyerae*  
*Libocedrus plumosa* — *Pseudostigmaeus*  
*collyerae*  
 Lichen — *Cryptognathus vulgaris*, *Eryngiopus*  
*bifidus*, *Eustigmaeus distinctus*,  
*Eustigmaeus simplex*, *Ledermuelleriopsis*  
*incisa*, *Scutastigmaeus confusus*,  
*Scutastigmaeus longisetis*, *Stigmaeus*  
*summersi*  
 Litter — *Favognathus leopardus*, *Raphignathus*  
*atomatus*, *Raphignathus gracilis*,  
*Eryngiopus arboreus*, *Eryngiopus bifidus*,  
*Eustigmaeus clavigerus*, *Eustigmaeus*  
*corticolus*, *Eustigmaeus distinctus*,  
*Eustigmaeus eburneus*, *Eustigmaeus*  
*manapouriensis*, *Eustigmaeus mixtus*,  
*Eustigmaeus ptilisetus*, *Eustigmaeus*  
*simplex*, *Ledermuelleriopsis incisa*,  
*Primagistemus loadmani*,  
*Pseudostigmaeus striatus*, *Scutastigmaeus*  
*confusus*, *Scutastigmaeus longisetis*,  
*Scutastigmaeus montanus*, *Stigmaeus*  
*arboricola*, *Stigmaeus novazealandicus*,  
*Stigmaeus rotundus*, *Stigmaeus*  
*summersi*, *Storchia robustus*  
 Logs — *Eustigmaeus clavigerus*, *Stigmaeus*  
*summersi*  
 Loquat — *Agistemus longisetus*, *Zetzellia maori*  
*Luculia* sp. — *Agistemus collyerae*, *Agistemus*  
*longisetus*, *Agistemus novazealandicus*  
*Lygodium* sp. — *Agistemus collyerae*  
*Macropiper excelsum* — *Zetzellia maori*  
 Mealybugs — *Agistemus collyerae*, *Agistemus*  
*novazealandicus*  
*Melicytus ramiflorus* — *Eryngiopus arboreus*,  
*Mediolata robusta*, *Mullederia arborea*,  
*Zetzellia maori*  
*Metrosideros excelsa* — *Agistemus mecotrichus*  
*Metrosideros parkinsonii* — *Mediolata robusta*  
*Metrosideros perforata* — *Agistemus collyerae*,  
*Eryngiopus arboreus*, *Mediolata robusta*  
*Metrosideros* sp. — *Eryngiopus arboreus*,  
*Pseudostigmaeus schizopeltatus*,  
*Metrosideros umbellata* — *Mediolata robusta*  
*Microsorium scandens* — *Eryngiopus bifidus*,  
*Mediolata robusta*, *Pseudostigmaeus*  
*collyerae*, *Pseudostigmaeus schizopeltatus*  
*Miomantis caffra* — *Zetzellia spiculosa*  
 Mollymawk [nests] — *Pseudostigmaeus*  
*longisetis*  
 Moss — *Cryptognathus striatus*, *Cryptognathus*  
*vulgaris*, *Favognathus leopardus*,  
*Raphignathus collegiatus*, *Raphignathus*  
*crustus*, *Cheylostigmaeus luxtoni*,  
*Eryngiopus bifidus*, *Eryngiopus similis*,  
*Eustigmaeus brevisetosus*, *Eustigmaeus*  
*clavigerus*, *Eustigmaeus corticolus*,  
*Eustigmaeus distinctus*, *Eustigmaeus*  
*dumosus*, *Eustigmaeus granulatus*,  
*Eustigmaeus manapouriensis*,  
*Eustigmaeus mixtus*, *Eustigmaeus simplex*,  
*Ledermuelleriopsis incisa*,  
*Ledermuelleriopsis spinosa*, *Mediolata*  
*robusta*, *Mediolata simplex*, *Primagistemus*  
*loadmani*, *Pseudostigmaeus*  
*longisetis*, *Pseudostigmaeus striatus*,  
*Scutastigmaeus confusus*, *Scutastigmaeus*  
*longisetis*, *Stigmaeus brevisetis*, *Stigmaeus*  
*campbellensis*, *Stigmaeus*  
*novazealandicus*, *Stigmaeus rotundus*,  
*Stigmaeus summersi*, *Storchia robustus*,  
*Zetzellia oudemansi*  
*Muehlenbeckia* sp. — *Tycherobius aotearoa*,  
*Cryptognathus vulgaris*, *Eryngiopus bifidus*,  
*Eryngiopus nelsonensis*, *Storchia robustus*



- Mussel shell scale — *Eryngiopus nelsonensis*  
*Myotus obscordatus* — *Scutastigmaeus confusus*  
*Myrtus obcordata* — *Scutastigmaeus confusus*  
 Nest — *Eustigmaeus mixtus*, *Storchia robustus*  
 Nikau palm — *Scutastigmaeus confusus*  
*Nothofagus fusca* — *Mediolata brevisetis*,  
*Mediolata favulosa*, *Mediolata robusta*,  
*Mediolata woodi*, *Pseudostigmaeus*  
*schizopeltatus*, *Zetzellia gonzalezi*,  
*Zetzellia maori*  
*Nothofagus menziesii* — *Agistemus*  
*subreticulatus*, *Eryngiopus arboreus*,  
*Mediolata brevisetis*, *Mediolata favulosa*,  
*Mediolata robusta*, *Pseudostigmaeus*  
*collyerae*, *Pseudostigmaeus*  
*schizopeltatus*, *Stigmaeus arboricola*,  
*Zetzellia maori*  
*Nothofagus solandri* — *Agistemus collyerae*,  
*Agistemus longisetus*, *Eryngiopus*  
*arboreus*, *Mediolata robusta*, *Mediolata*  
*zonaria*, *Pseudostigmaeus collyerae*,  
*Zetzellia maori*  
*Nothofagus solandri* var. *cliffortioides* —  
*Eryngiopus arboreus*  
*Nothofagus* sp. — *Eustigmaeus brevisetosus*,  
*Eustigmaeus clavigerus*, *Eustigmaeus*  
*corticulus*, *Eustigmaeus manapouriensis*,  
*Eustigmaeus mixtus*, *Eustigmaeus simplex*,  
*Ledermuelleriopsis incisa*, *Mediolata*  
*robusta*, *Mullederia arborea*,  
*Primagistemus loadmani*,  
*Pseudostigmaeus collyerae*,  
*Scutastigmaeus longisetis*, *Stigmaeus*  
*novaezealandicus*, *Stigmaeus summersi*  
*Nothopanax* sp. — *Agistemus collyerae*,  
*Agistemus novaezealandicus*  
*Olearia colensoi* — *Mediolata favulosa*,  
*Mediolata oleariae*  
*Olearia lacunosa* — *Eustigmaeus corticulus*  
*Olearia nummularifolia* — *Pseudostigmaeus*  
*collyerae*, *Pseudostigmaeus schizopeltatus*  
*Olearia paniculata* — *Zetzellia maori*  
*Olearia rani* — *Mediolata robusta*, *Zetzellia*  
*gonzalezi*, *Zetzellia maori*  
*Olearia* sp. — *Eustigmaeus corticulus*,  
*Pseudostigmaeus striatus*, *Zetzellia maori*  
*Ozothamnus leptophyllus* — *Zetzellia maori*  
 Palm — *Raphignathus collegiatus*, *Eustigmaeus*  
*mixtus*, *Scutastigmaeus confusus*  
*Parsonsia* sp. — *Agistemus collyerae*,  
*Agistemus novaezealandicus*  
 Pasture — *Raphignathus gracilis*, *Stigmaeus*  
*luxtoni*
- Peanut — *Raphignathus gracilis*  
 Pear — *Eryngiopus bifidus*  
 Persimmon — *Mecognatha rara*  
*Phyllocladus* sp. — *Eryngiopus arboreus*,  
*Pseudostigmaeus schizopeltatus*  
*Phyllocladus trichomanoides* — *Eryngiopus*  
*bifidus*  
*Phymatodes* sp. — *Agistemus novaezealandicus*,  
*Eryngiopus bifidus*, *Mediolata robusta*,  
*Pseudostigmaeus collyerae*,  
*Pseudostigmaeus schizopeltatus*  
 Pigeons' nests — *Raphignathus gracilis*  
*Pimelia* — *Scutastigmaeus montanus*  
*Pinus coulteri* — *Raphignathus gracilis*  
*Pinus* sp. — *Cryptognathus striatus*, *Mecognatha*  
*hirsuta*, *Raphignathus crustus*, *Stigmaeus*  
*summersi*  
*Pittosporum* sp. — *Zetzellia maori*  
 Plantation — *Cryptognathus striatus*  
*Platanus orientalis* — *Raphignathus gracilis*  
 Podocarp litter — *Eustigmaeus corticulus*,  
*Eustigmaeus distinctus*  
*Podocarpus dacrydioides* — *Eryngiopus*  
*arboreus*, *Eryngiopus bifidus*, *Mediolata*  
*robusta*  
*Podocarpus ferrugineus* — *Eustigmaeus*  
*corticulus*, *Eustigmaeus distinctus*,  
*Mediolata oleariae*  
*Podocarpus nivalis* — *Pseudostigmaeus*  
*schizopeltatus*  
*Podocarpus* sp. — *Mecognatha hirsuta*,  
*Eustigmaeus mixtus*, *Eustigmaeus simplex*,  
*Pseudostigmaeus collyerae*,  
*Scutastigmaeus confusus*, *Scutastigmaeus*  
*longisetis*, *Stigmaeus rotundus*, *Stigmaeus*  
*summersi*, *Zetzellia maori*  
*Podocarpus spicatus* — *Eryngiopus arboreus*,  
*Mediolata robusta*  
*Podocarpus totara* — *Eryngiopus arboreus*,  
*Eryngiopus bifidus*, *Eustigmaeus mixtus*,  
*Mediolata robusta*, *Mediolata woodi*,  
*Mediolata xerxes*, *Stigmaeus arboricola*,  
*Zetzellia maori*  
*Podocarpus-Dacrydium* — *Eustigmaeus simplex*  
 Pohutakawa — *Agistemus mecotrichus*  
*Polytrichum* — *Eustigmaeus mixtus*,  
*Pseudostigmaeus striatus*  
 protorendzina — *Cryptognathus vulgaris*  
*Prumnopitys ferruginea* — *Pseudostigmaeus*  
*schizopeltatus*, *Zetzellia maori*  
*Prumnopitys taxifolia* — *Eryngiopus arboreus*,  
*Mediolata robusta*, *Zetzellia gonzalezi*,  
*Zetzellia maori*

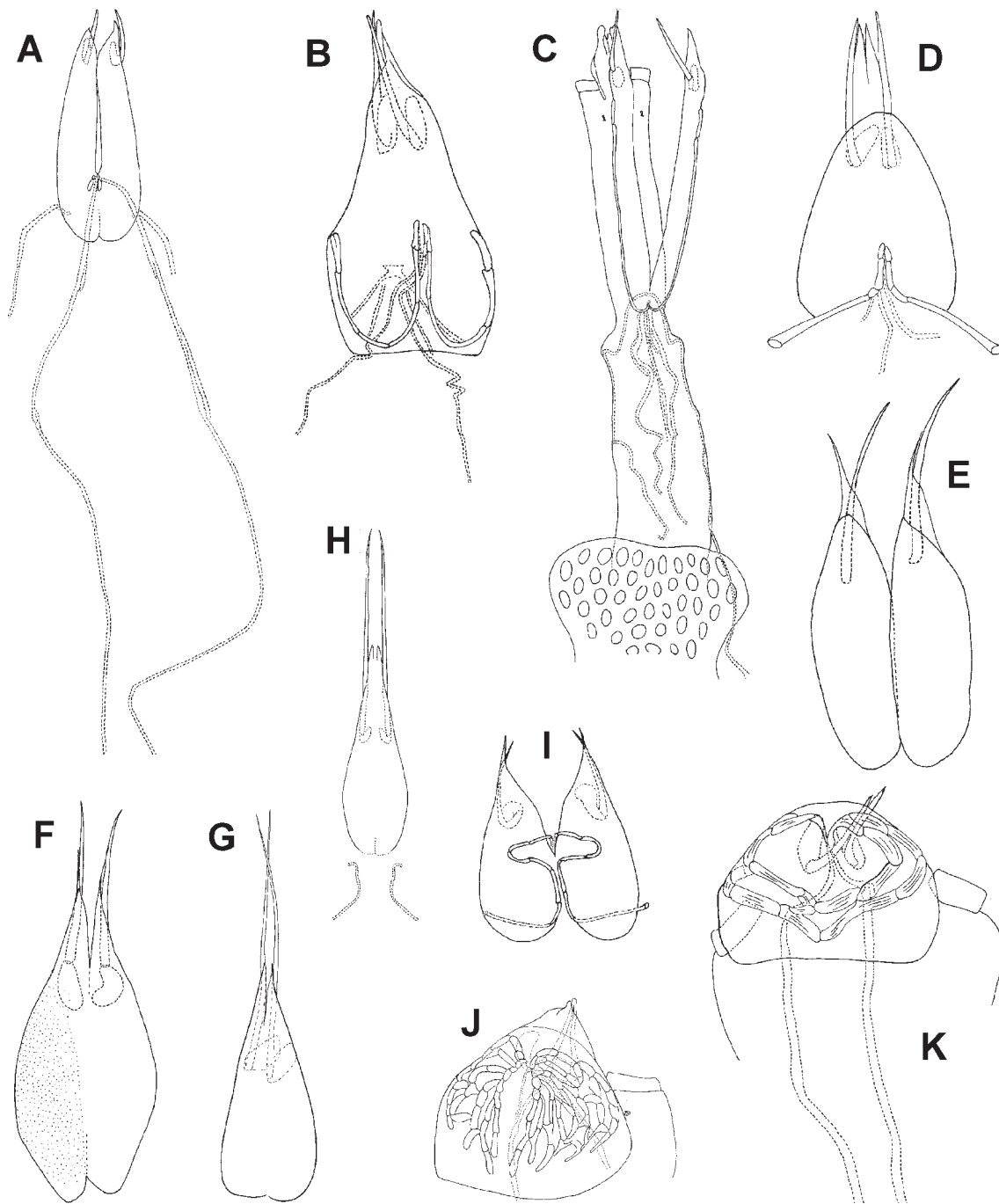
- Prunus persica* — *Agistemus longisetus*  
*Prunus* sp. — *Agistemus longisetus*, *Zetzellia maori*  
*Pseudopanax crassifolius* (lancewood) — *Mediolata robusta*  
*Psidium guayava* — *Raphignathus gracilis*  
Pteridophyte — *Raphignathus gracilis*  
*Pyrus communis* — *Eryngiopus bifidus*, *Zetzellia maori*  
*Quercus* sp. — *Raphignathus gracilis*  
*Rhipogonum scandens* — *Mecognatha parilis*, *Eryngiopus arboreus*  
*Rhopalostylis sapida* — *Scutastigmaeus confusus*  
*Ripogonum scandens* — *Agistemus novazelandicus*, *Eryngiopus arboreus*, *Mediolata robusta*, *Primagistemus loadmani*, *Pseudostigmaeus collyerae*  
Roadside cutting — *Cryptognathus vulgaris*, *Eryngiopus similis*, *Eustigmaeus dumosus*, *Eustigmaeus mixtus*, *Ledermuelleriopsis spinosa*  
*Rosmarinus* sp. — *Zetzellia maori*  
*Rubus australis* — *Agistemus collyerae*  
*Rubus cissoides* [bush lawyer] — *Zetzellia antipoda*  
*Rubus fruticosus* — *Agistemus collyerae*, *Agistemus longisetus*  
*Rubus schmidelioides* — *Agistemus collyerae*, *Zetzellia maori*  
*Rubus* sp. — *Agistemus collyerae*, *Agistemus longisetus*, *Agistemus novazelandicus*, *Mullederia arborea*, *Summersiella coprosmae*  
*Salicornia* sp. — *Stigmaeus arboricola*, *Stigmaeus rupicola*  
*Salix* sp. (willow) — *Cryptognathus striatus*, *Mecognatha hirsuta*, *Eustigmaeus corticolus*, *Storchia robustus*  
Salt marsh — *Stigmaeus rupicola*  
San Jose scales — *Eryngiopus bifidus*, *Eryngiopus nelsonensis*, *Zetzellia maori*  
*Sarothamnus* sp. — *Zetzellia maori*  
Scales — *Neophyllobius sturmerwoodi*, *Eryngiopus bifidus*, *Zetzellia maori*  
*Schotia afra* — *Storchia robustus*  
Seaweed — *Mullederia procurrens*  
Sedge peat — *Stigmaeus rotundus*  
*Serissa japonica* — *Raphignathus gracilis*  
Soil — *Cryptognathus vulgaris*, *Raphignathus collegiatus*, *Raphignathus gracilis*, *Eustigmaeus mixtus*, *Storchia robustus*  
*Sophora microphylla* (kowhai) — *Mecognatha hirsuta*, *Agistemus collyerae*, *Agistemus novazelandicus*, *Eryngiopus arboreus*, *Pseudostigmaeus collyerae*, *Pseudostigmaeus schizopeltatus*, *Zetzellia maori*  
*Sophora* sp. — *Agistemus collyerae*, *Agistemus longisetus*, *Zetzellia maori*  
Stones — *Tycherobius aotearoa*, *Mecognatha parilis*, *Eustigmaeus clavigerus*, *Eustigmaeus manapouriensis*, *Storchia hendersonae*, *Storchia robustus*  
Straw — *Raphignathus gracilis*, *Storchia robustus*  
Sturmer — *Neophyllobius sturmerwoodi*  
*Tamarix* sp. — *Raphignathus gracilis*  
Tea — *Zetzellia maori*  
Termite nest — *Eustigmaeus mixtus*  
*Tetranychus lambi* — *Agistemus collyerae*  
*Tremella* sp. — *Raphignathus gracilis*  
*Trifolium* sp. — *Zetzellia maori*  
Turf — *Pseudostigmaeus longisetis*, *Pseudostigmaeus striatus*  
Tydeus — *Zetzellia maori*  
*Unaspis yanonensis* — *Eryngiopus bifidus*  
Vetch — *Agistemus collyerae*  
*Vicia angustifolia* — *Agistemus collyerae*  
*Vicia sativa* — *Agistemus collyerae*  
*Vitex lucens* — *Agistemus collyerae*, *Agistemus longisetus*  
Weed and grass turf — *Pseudostigmaeus longisetis*  
*Weinmannia racemosa* — *Mullederia arborea*, *Primagistemus loadmani*  
*Yezonychus cornus* — *Agistemus novazelandicus*, *Zetzellia antipoda*, *Zetzellia gonzalezi*

**Appendix 2: Distribution by country of  
Raphignathoidea species known from  
the New Zealand subregion.**

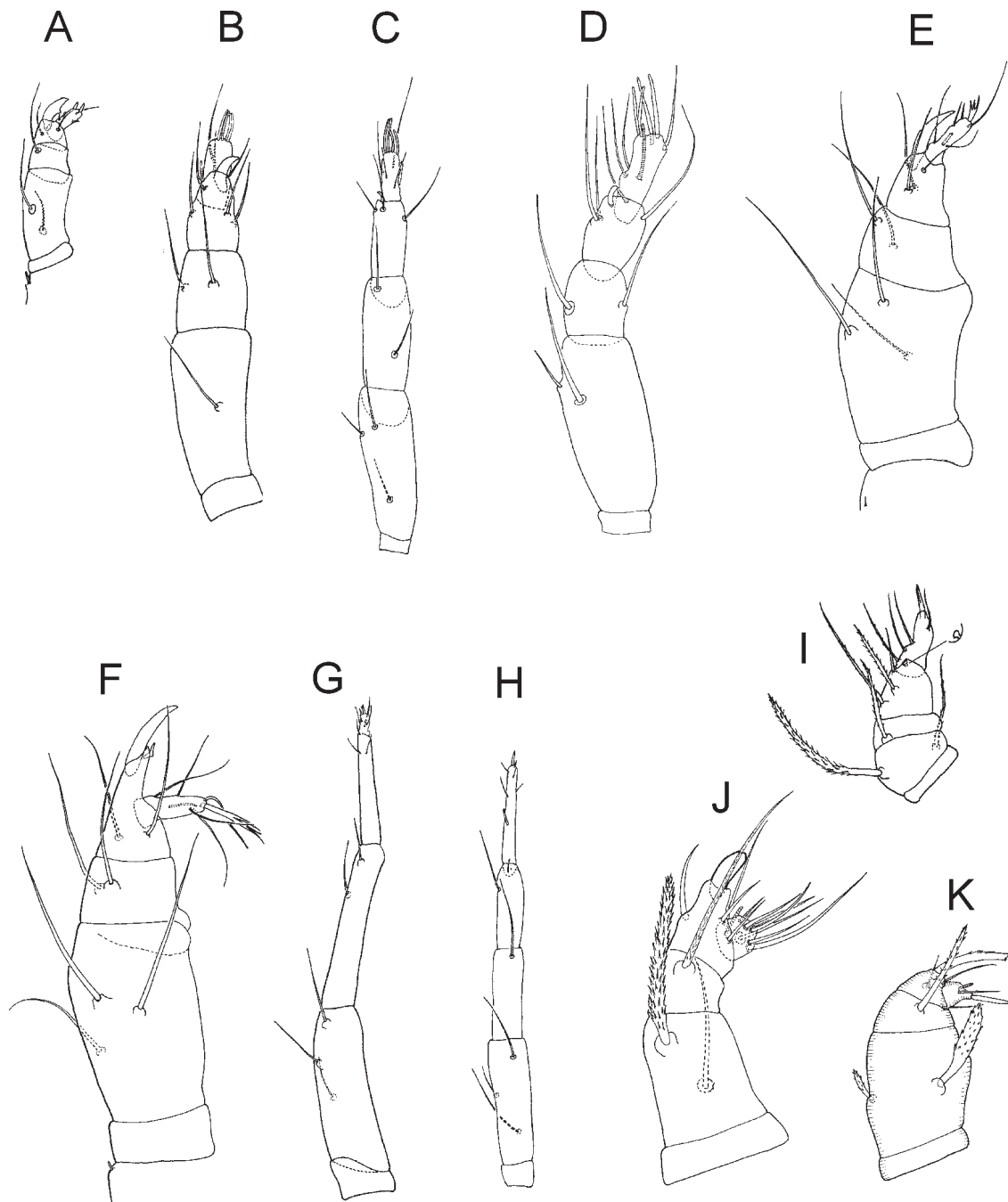
Algeria	<i>Raphignathus gracilis</i> (Rack)	<i>Agistemus mecotrichus</i> Fan & Zhang
Australia	<i>Agistemus collyerae</i> González-Rodríguez	<i>Agistemus novazelandicus</i> González-Rodríguez
	<i>Agistemus longisetus</i> González-Rodríguez	<i>Agistemus subreticulatus</i> (Wood)
	<i>Eustigmaeus mixtus</i> (Wood)	<i>Cheylostigmaeus luxtoni</i> Wood
	<i>Mecognatha hirsuta</i> Wood	<i>Cryptognathus striatus</i> Luxton
	<i>Zetzellia maori</i> Gonzalez	<i>Cryptognathus vulgaris</i> Luxton
China	<i>Agistemus longisetus</i> González-Rodríguez	<i>Eryngiopus arboreus</i> Wood
	<i>Agistemus novazelandicus</i> González-Rodríguez	<i>Eryngiopus bifidus</i> Wood
	<i>Raphignathus collegiatus</i> Atyeo, Baker & Crossley	<i>Eryngiopus nelsonensis</i> Wood
	<i>Raphignathus gracilis</i> (Rack)	<i>Eryngiopus similis</i> Wood
	<i>Storchia robustus</i> (Berlese)	<i>Eustigmaeus brevisetosus</i> (Wood)
Chile	<i>Agistemus longisetus</i> González-Rodríguez	<i>Eustigmaeus clavigerus</i> (Wood)
Cook Islands	<i>Pseudostigmaeus striatus</i> Wood	<i>Eustigmaeus corticolus</i> (Wood)
El Salvador	<i>Agistemus longisetus</i> González-Rodríguez	<i>Eustigmaeus distinctus</i> (Wood)
Egypt	<i>Raphignathus collegiatus</i> Atyeo, Baker & Crossley	<i>Eustigmaeus dumosus</i> (Wood)
	<i>Raphignathus gracilis</i> (Rack)	<i>Eustigmaeus eburneus</i> Fan & Zhang
France	<i>Neophyllobius sturmerwoodi</i> Bolland	<i>Eustigmaeus edentatus</i> Fan & Zhang
	<i>Storchia robustus</i> (Berlese)	<i>Eustigmaeus granulatus</i> (Wood)
Germany	<i>Raphignathus gracilis</i> (Rack)	<i>Eustigmaeus manapouriensis</i> (Wood)
Hawaiian Islands	<i>Storchia robustus</i> (Berlese)	<i>Eustigmaeus mixtus</i> (Wood)
Honduras	<i>Agistemus longisetus</i> González-Rodríguez	<i>Eustigmaeus pilosetus</i> Fan & Zhang
Hungary	<i>Storchia robustus</i> (Berlese)	<i>Eustigmaeus simplex</i> (Wood)
Israel	<i>Raphignathus gracilis</i> (Rack)	<i>Favognathus leopardus</i> Luxton
	<i>Storchia robustus</i> (Berlese)	<i>Ledermuelleriopsis incisa</i> Wood
Italy	<i>Agistemus collyerae</i> González-Rodríguez	<i>Ledermuelleriopsis spinosa</i> Wood
	<i>Eryngiopus bifidus</i> Wood	<i>Mecognatha hirsuta</i> Wood
	<i>Storchia robustus</i> (Berlese)	<i>Mecognatha parilis</i> Fan & Zhang
Japan	<i>Raphignathus gracilis</i> (Rack)	<i>Mecognatha rara</i> Fan & Zhang
	<i>Storchia robustus</i> (Berlese)	<i>Mediolata brevisetis</i> Wood
Malay Peninsula	<i>Eustigmaeus mixtus</i> (Wood)	<i>Mediolata delicata</i> Fan & Zhang
Mexico	<i>Agistemus longisetus</i> González-Rodríguez	<i>Mediolata favulosa</i> Wood
Namibia	<i>Storchia robustus</i> (Berlese)	<i>Mediolata mollis</i> Wood
New Zealand	<i>Agistemus collyerae</i> González-Rodríguez	<i>Mediolata oleariae</i> Wood
	<i>Agistemus longisetus</i> González-Rodríguez	<i>Mediolata polyocularis</i> Fan & Zhang
		<i>Mediolata robusta</i> González-Rodríguez
		<i>Mediolata simplex</i> Wood
		<i>Mediolata whenua</i> Fan & Zhang
		<i>Mediolata woodi</i> Fan & Zhang
		<i>Mediolata xerxes</i> Fan & Zhang
		<i>Mediolata zonaria</i> Fan & Zhang
		<i>Mullederia arborea</i> Wood
		<i>Mullederia procurrens</i> Fan & Zhang
		<i>Mullederia scutellaris</i> Fan & Zhang
		<i>Neophyllobius sturmerwoodi</i> Bolland
		<i>Primagistemus loadmani</i> (Wood)
		<i>Pseudostigmaeus collyerae</i> Wood
		<i>Pseudostigmaeus longisetis</i> Wood
		<i>Pseudostigmaeus schizopeltatus</i> Fan & Zhang
		<i>Pseudostigmaeus striatus</i> Wood
		<i>Raphignathus collegiatus</i> Atyeo, Baker & Crossley
		<i>Raphignathus crustus</i> Fan & Zhang
		<i>Raphignathus gracilis</i> (Rack)
		<i>Scutastigmaeus confusus</i> (Wood)
		<i>Scutastigmaeus longisetis</i> (Wood)
		<i>Scutastigmaeus montanus</i> (Wood)
		<i>Stigmaeus arboricola</i> Wood
		<i>Stigmaeus brevisetis</i> Wood
		<i>Stigmaeus luxtoni</i> Wood

<i>Stigmaeus novazealandicus</i> Wood	Pakistan
<i>Stigmaeus rotundus</i> Wood	<i>Storchia robustus</i> (Berlese)
<i>Stigmaeus rupicola</i> Wood	Peru
<i>Stigmaeus summersi</i> Wood	<i>Agistemus longisetus</i> González-Rodríguez
<i>Storchia hendersonae</i> Fan & Zhang	Solomon Islands
<i>Storchia robustus</i> (Berlese)	<i>Eustigmaeus mixtus</i> (Wood)
<i>Summersiella coprosmae</i> (Wood)	<i>Storchia robustus</i> (Berlese)
<i>Tycherobius aotearoa</i> Fan & Zhang	South Africa
<i>Zetzellia antipoda</i> Wood	<i>Storchia robustus</i> (Berlese)
<i>Zetzellia biscutata</i> Fan & Zhang	South Pacific Islands
<i>Zetzellia gonzalezi</i> Wood	<i>Eustigmaeus mixtus</i> (Wood)
<i>Zetzellia maori</i> Gonzalez	Turkey
<i>Zetzellia oudemansi</i> Wood	<i>Raphignathus collegiatus</i> Atyeo, Baker & Crossley
<i>Zetzellia spiculosa</i> Fan & Zhang	<i>Raphignathus gracilis</i> (Rack)
New Zealand: Campbell Island	U.S.A.
<i>Stigmaeus campbellensis</i> Wood	<i>Raphignathus collegiatus</i> Atyeo, Baker & Crossley
<i>Mecognatha hirsuta</i> Wood	<i>Raphignathus gracilis</i> (Rack)
<i>Pseudostigmaeus collyerae</i> Wood	Former U.S.S.R.
<i>Pseudostigmaeus longisetis</i> Wood	<i>Raphignathus collegiatus</i> Atyeo, Baker & Crossley
New Zealand: Three Kings Islands	<i>Raphignathus gracilis</i> (Rack)
<i>Raphignathus atomatus</i> Fan & Zhang	<i>Storchia robustus</i> (Berlese)

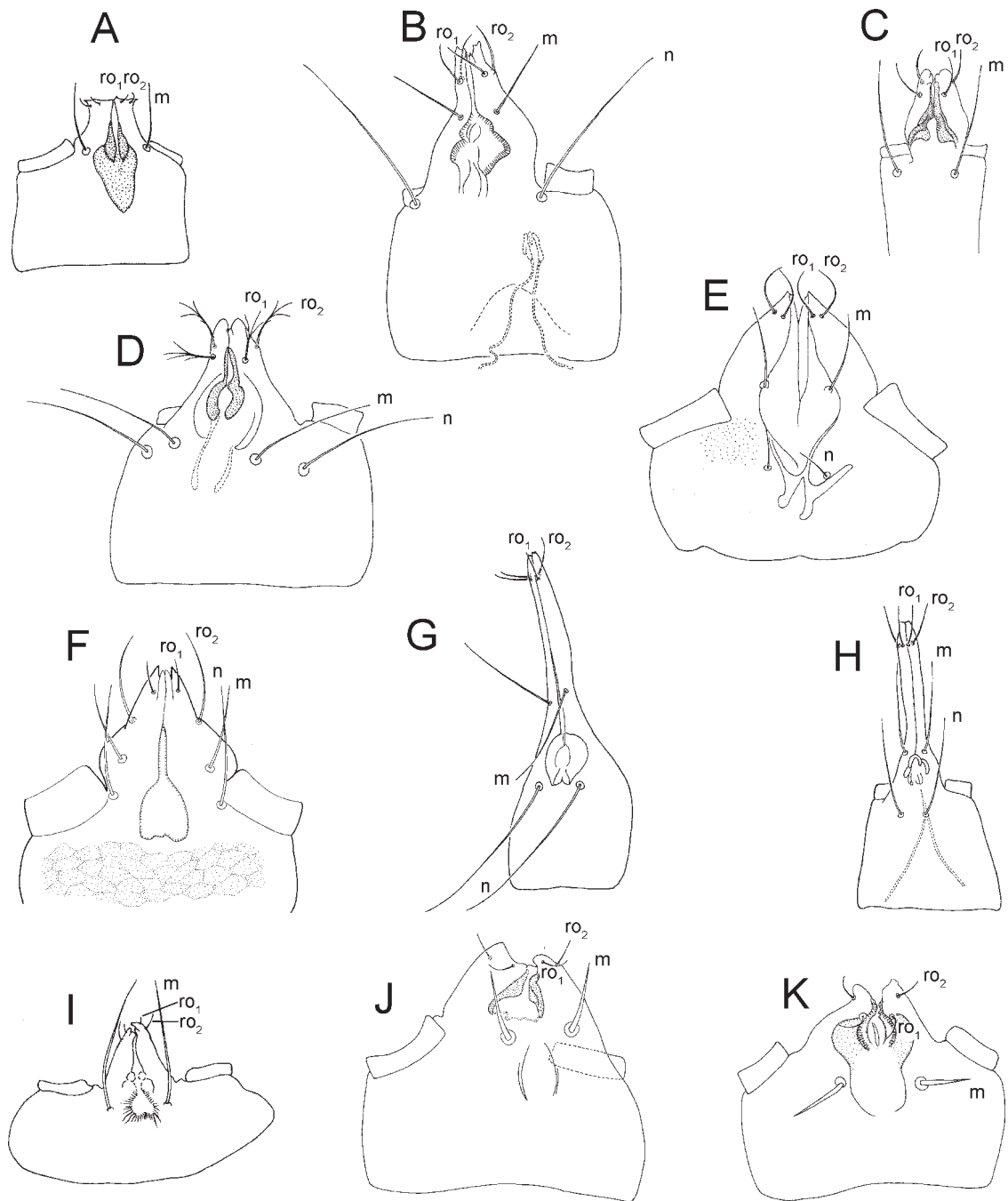




**Fig. 1.** Chelicerae. A, Barbutiidae; B, Caligonellidae; C, Cryptognathidae; D, Raphignathidae; E, Stigmaeidae; F, Homocaligidae; G, Mecognathidae; H, Eupalopsellidae; I, Xenocaligonellidae; J, Dasythyreidae; K, Camerobiidae.

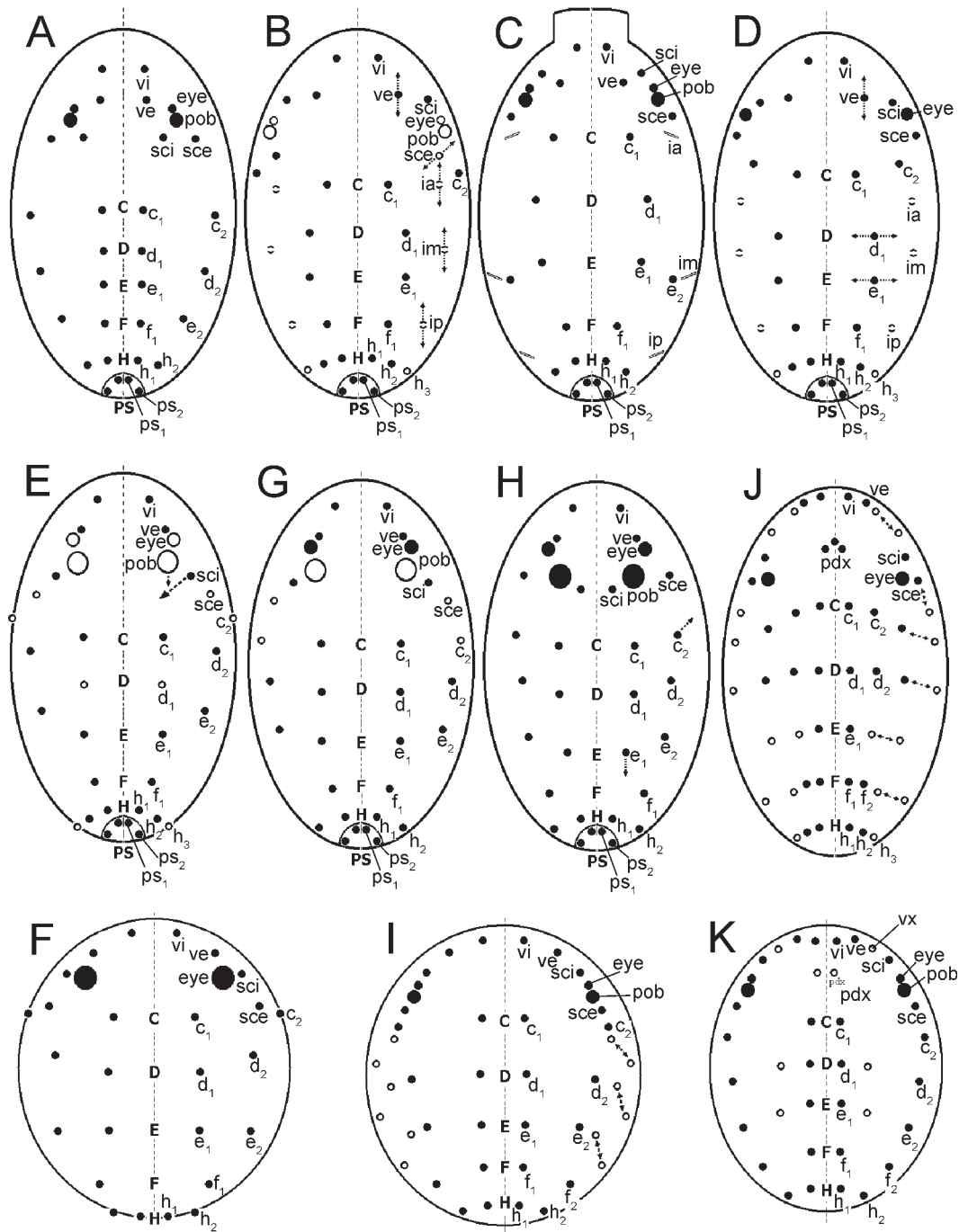


**Fig. 2.** Palps. A, Barbutiidae; B, Caligonellidae; C, Cryptognathidae; D, Raphignathidae; E, Stigmaeidae; F, Homocaligidae; G, Mecognathidae; H, Eupalopsellidae; I, Xenocaligonellidae; J, Dasythyreidae; K, Camerobiidae.

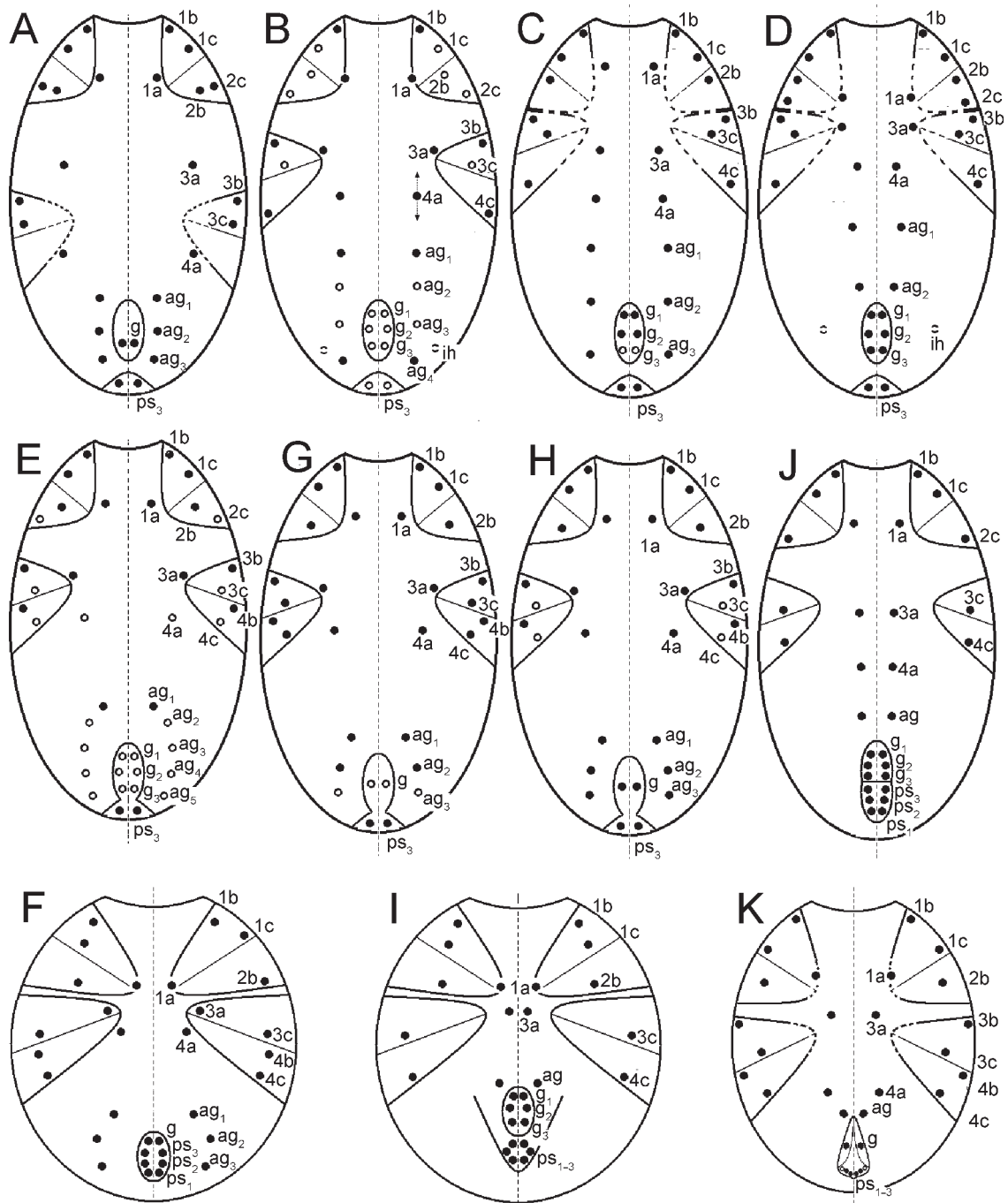


**Fig. 3.** Subcapitula. A, Barbutiidae; B, Caligonellidae; C, Cryptognathidae; D, Raphignathidae; E, Stigmaeidae; F, Homocaligidae; G, Mecognathidae; H, Eupalopsellidae; I, Xenocaligonellidae; J, Dasythyreidae; K, Camerobiidae.

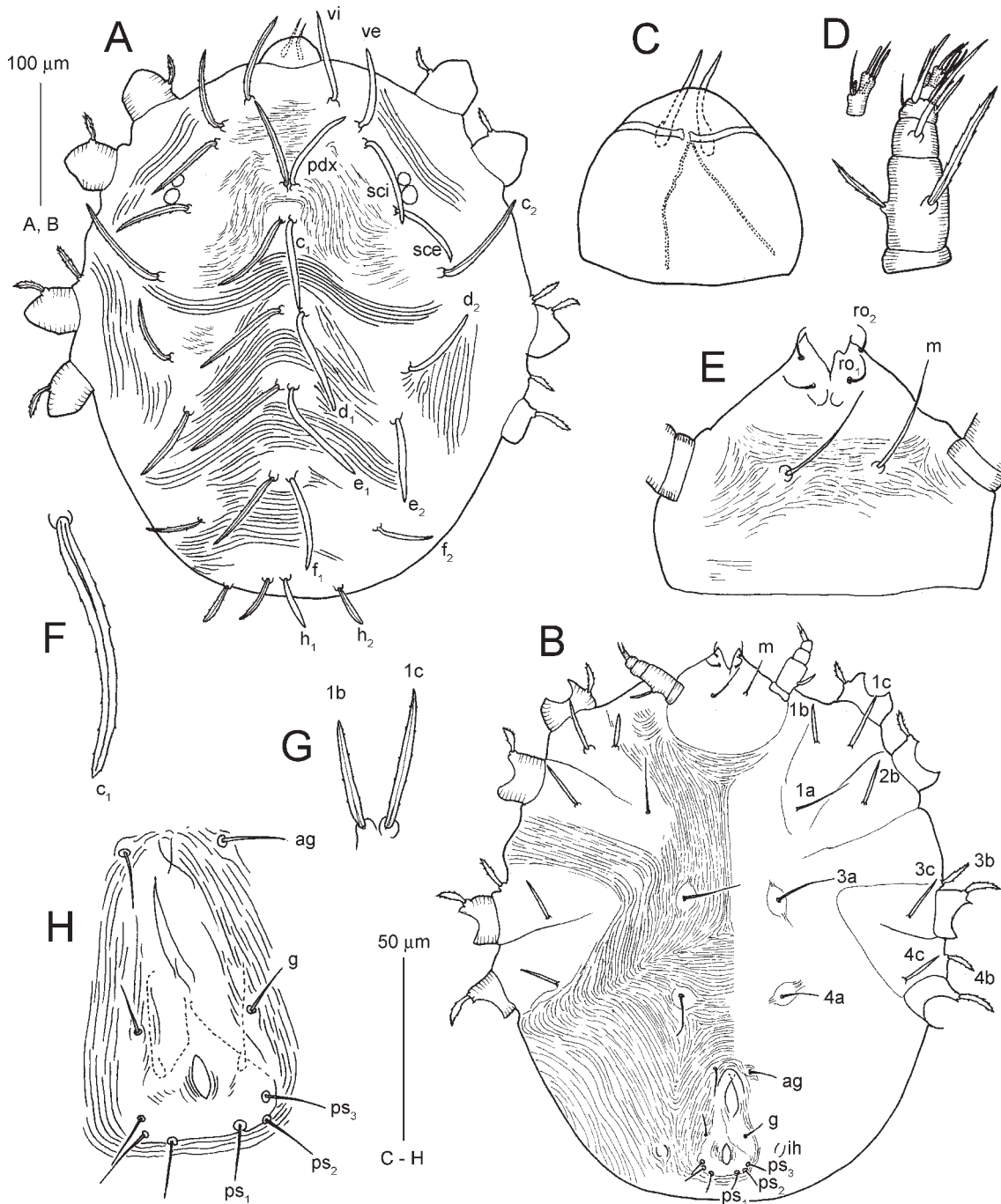




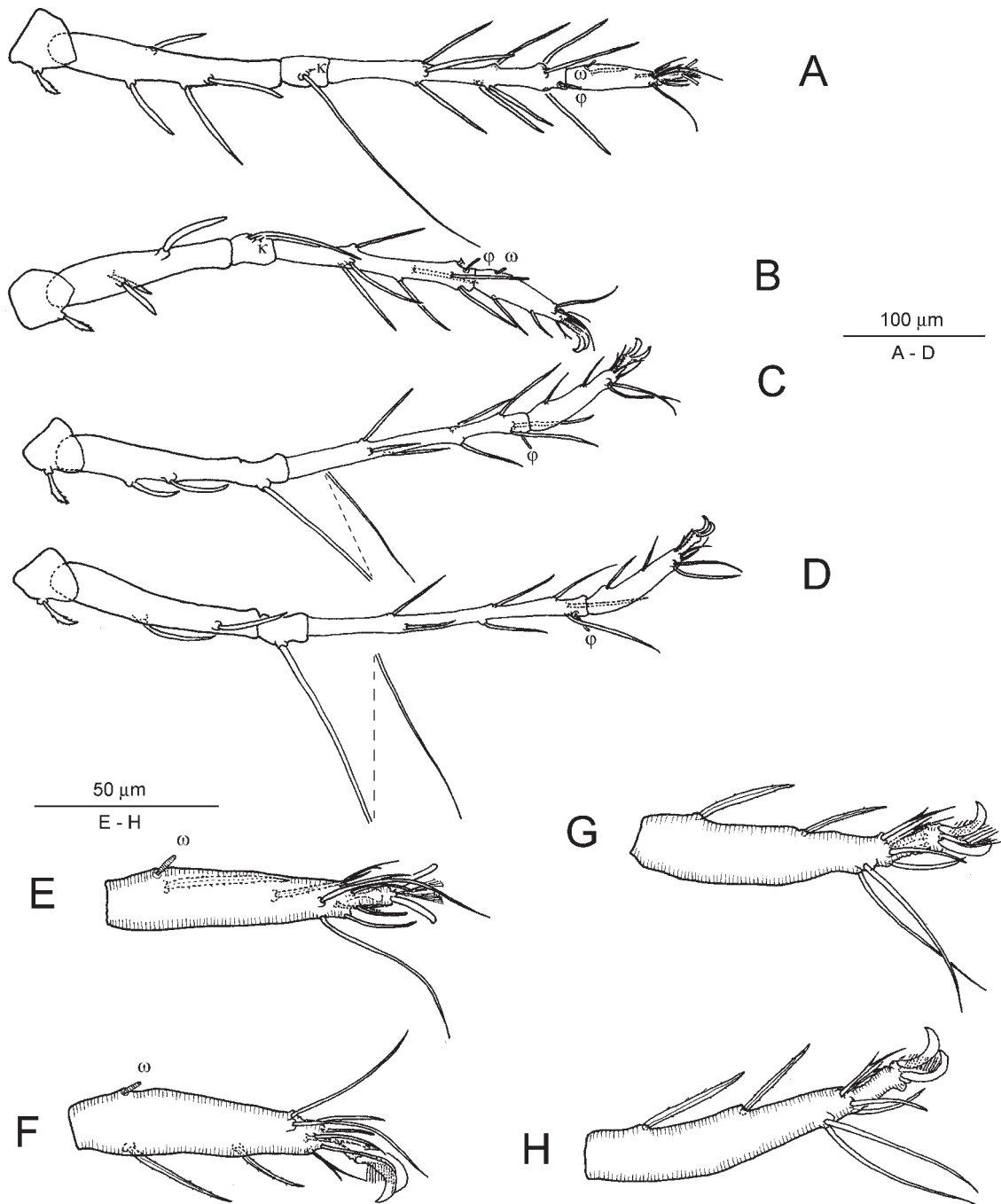
**Fig. 4.** Schemes of dorsal idiosoma. A, Barbutiidae; B, Caligonellidae; C, Cryptognathidae; D, Raphignathidae; E, Stigmaeidae; F, Homocaligidae; G, Mecognathidae; H, Eupalopsellidae; I, Xenocaligonellidae; J, Dasythyreidae; K, Camerobiidae. (Solid dots: present; cycle: present or absent).



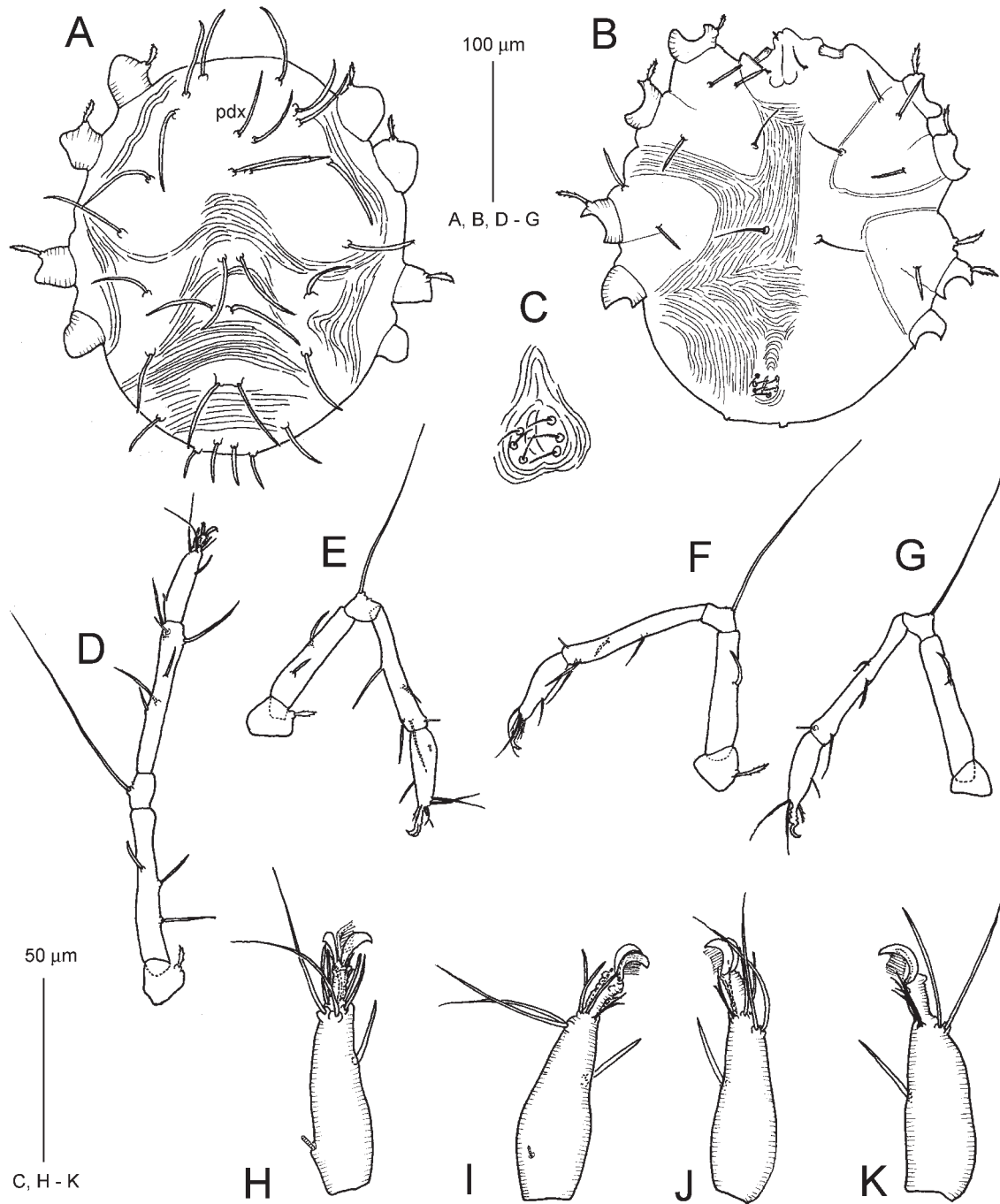
**Fig. 5.** Schemes of ventral idiosoma. A, Barbutiidae; B, Caligonellidae; C, Cryptognathidae; D, Raphignathidae; E, Stigmaeidae; F, Homocaligidae; G, Mecognathidae; H, Eupalopsellidae; I, Xenocaligonellidae; J, Dasythyreidae; K, Camerobiidae. (Solid dots: present; circle: present or absent).



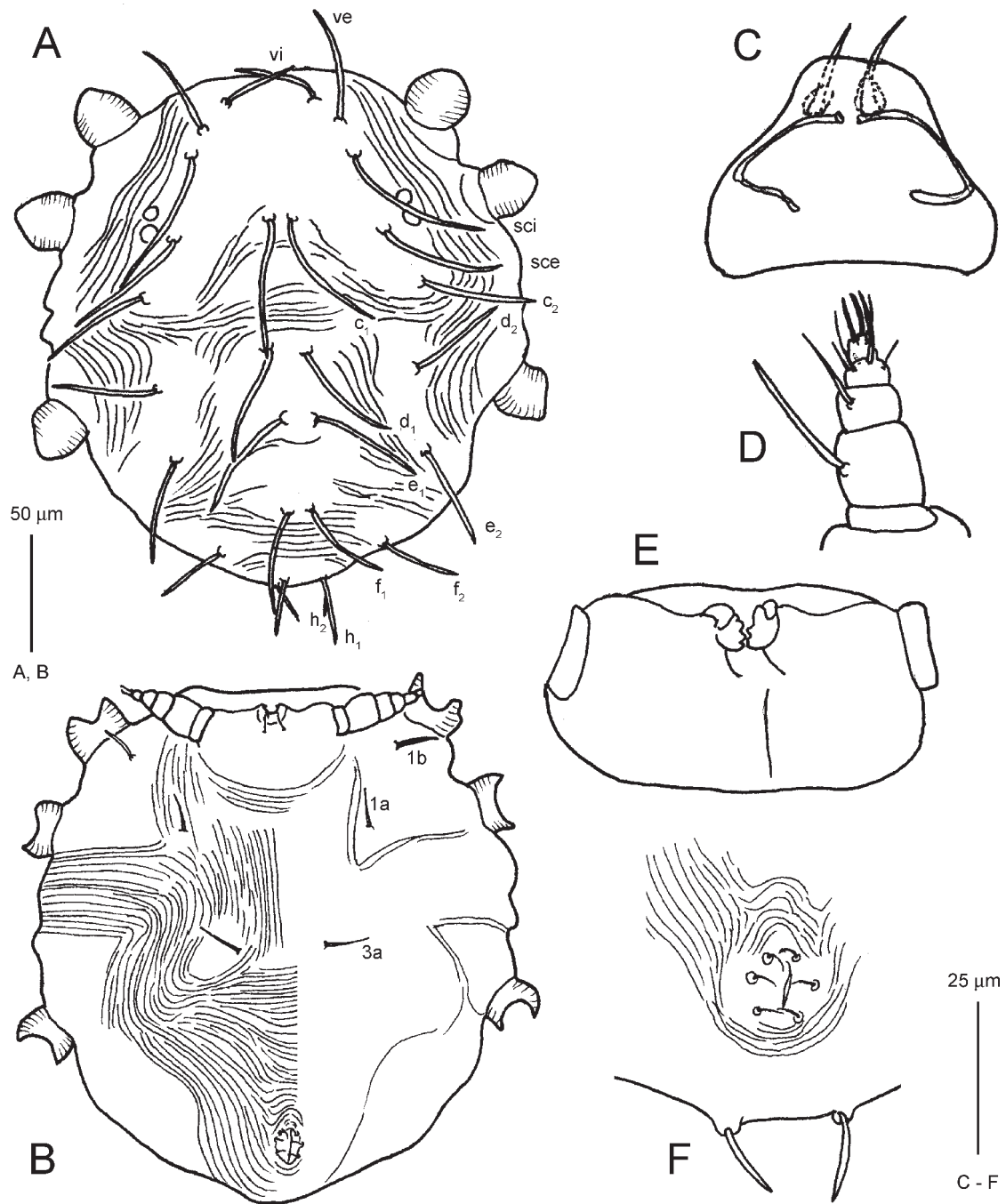
**Fig. 6.** *Neophyllobius sturmerwoodi* Bolland, 1991 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, stylophore; D, palp; E, subcapitulum; F, dorsal idiosomal seta; G, setae on coxa I; H, genitoanal area.



**Fig. 7.** *Neophyllobius sturmerwoodi* Bolland, 1991 (female). A, leg I; B, leg II; C, leg III; D, leg IV; E, tarsus I; F, tarsus II; G, tarsus III; H, tarsus IV.



**Fig. 8.** *Neophyllobius sturmerwoodi* Bolland, 1991 (protonymph). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, anal valves; D, leg I; E, leg II; F, leg III; G, leg IV; H, tarsus I; I, tarsus II; J, tarsus III; K, tarsus IV.



**Fig. 9.** *Neophyllobius sturmerwoodi* Bolland, 1991 (larva). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, stylophore; D, palp; E, subcapitulum; F, anal valves.

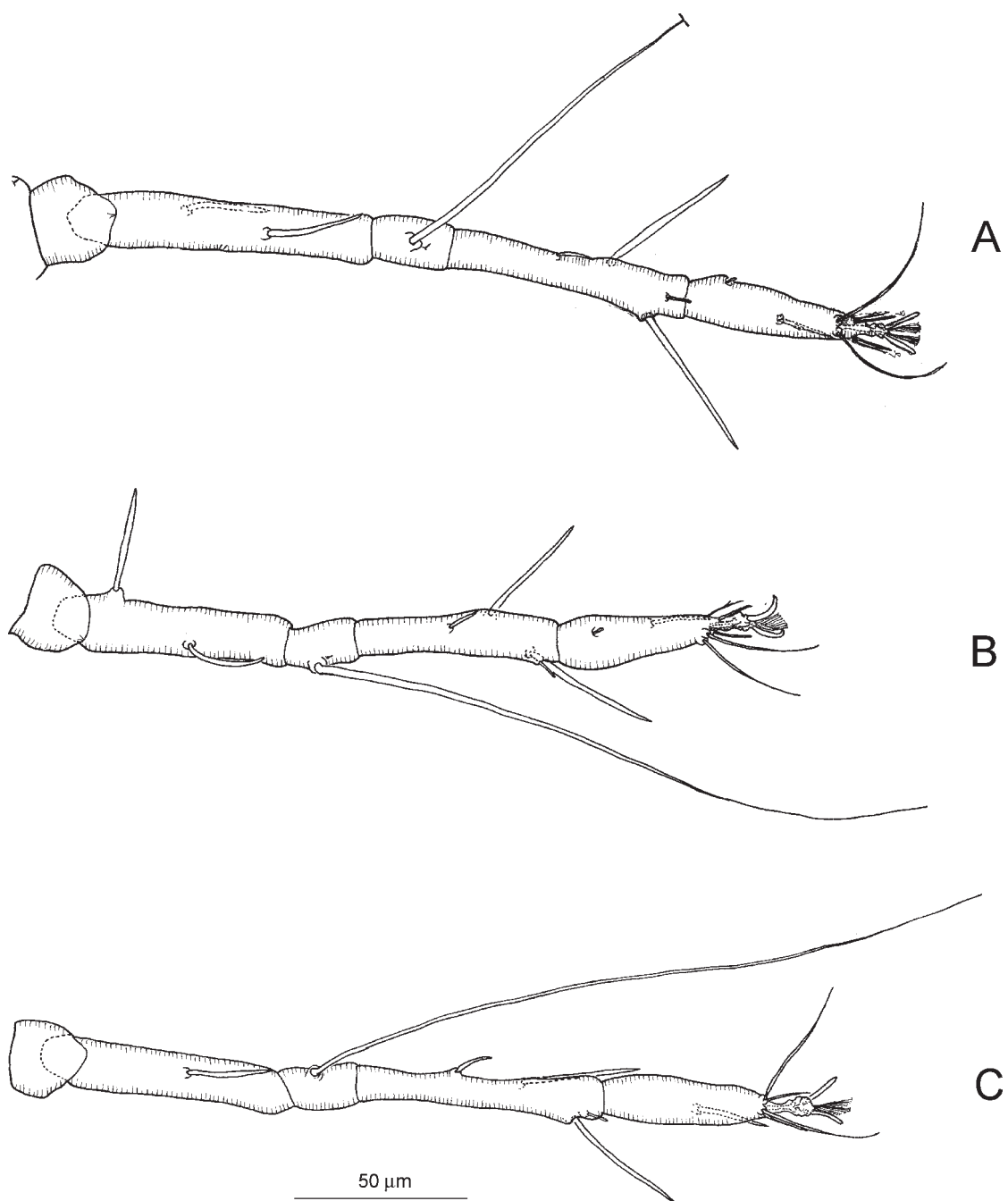
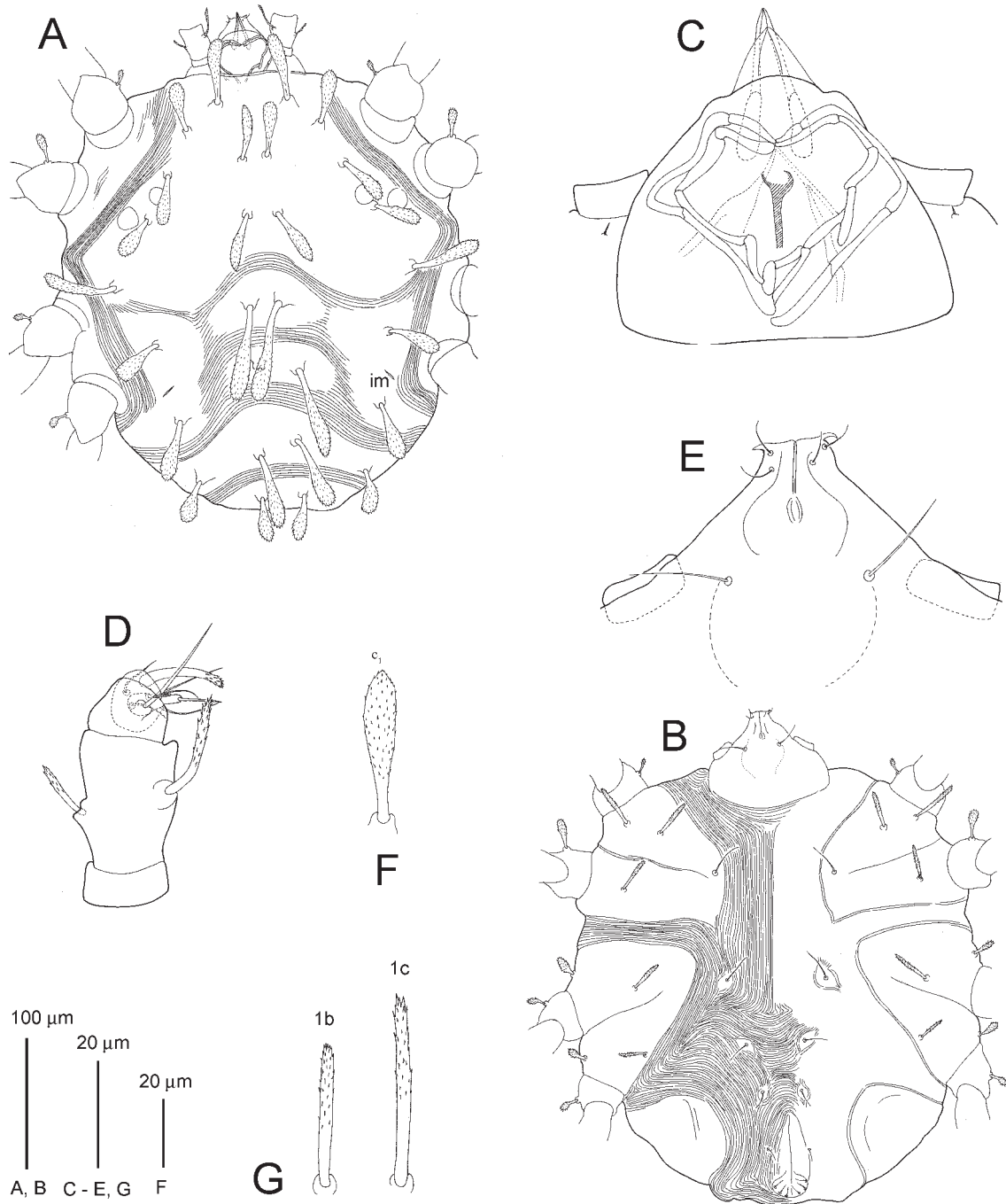


Fig. 10. *Neophyllobius sturmerwoodi* Bolland, 1991 (larva). A, leg I; B, leg II; C, leg III.



**Fig. 11.** *Tycherobius aotearoa* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal idiosomal seta; G, setae on coxa I.



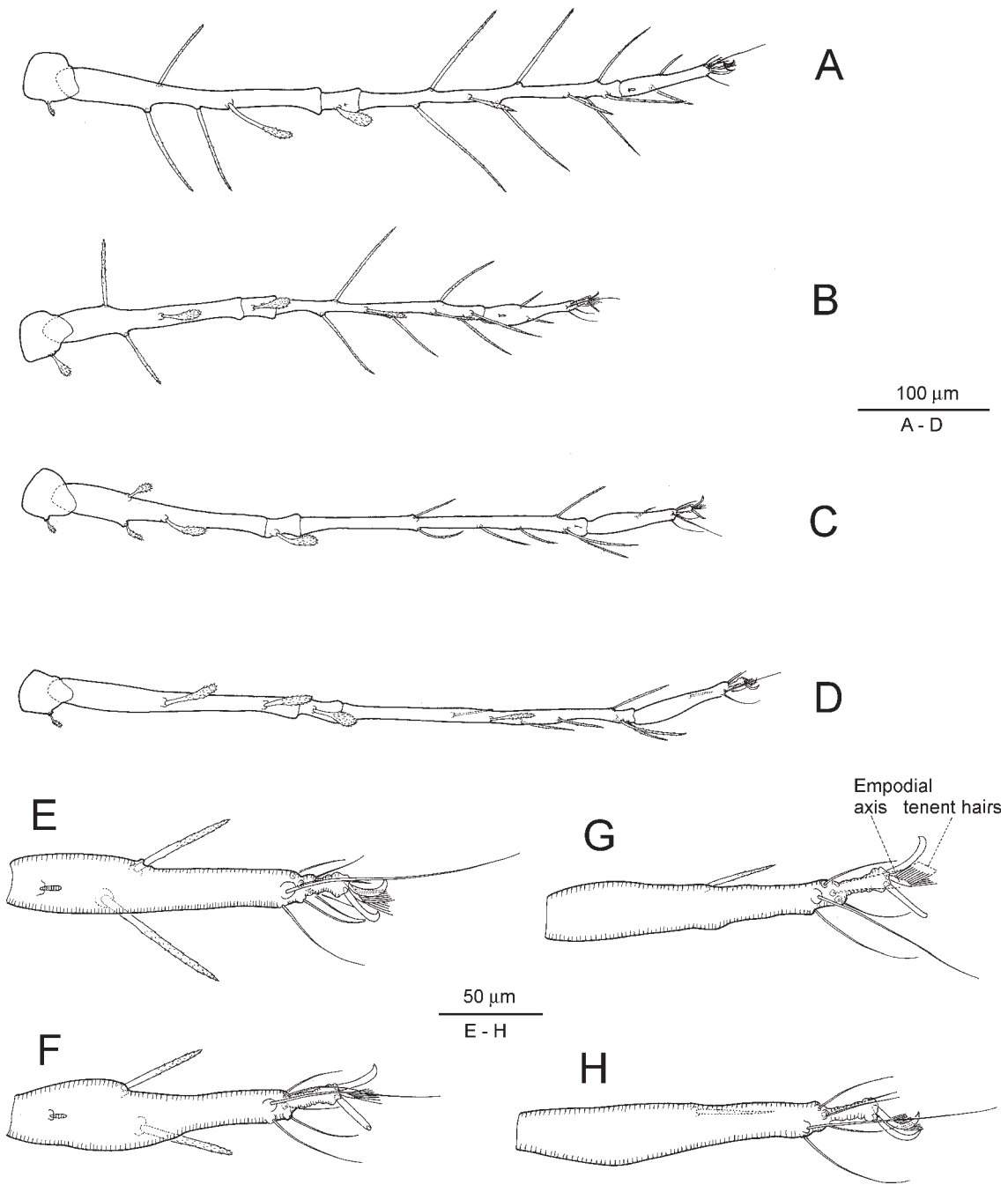
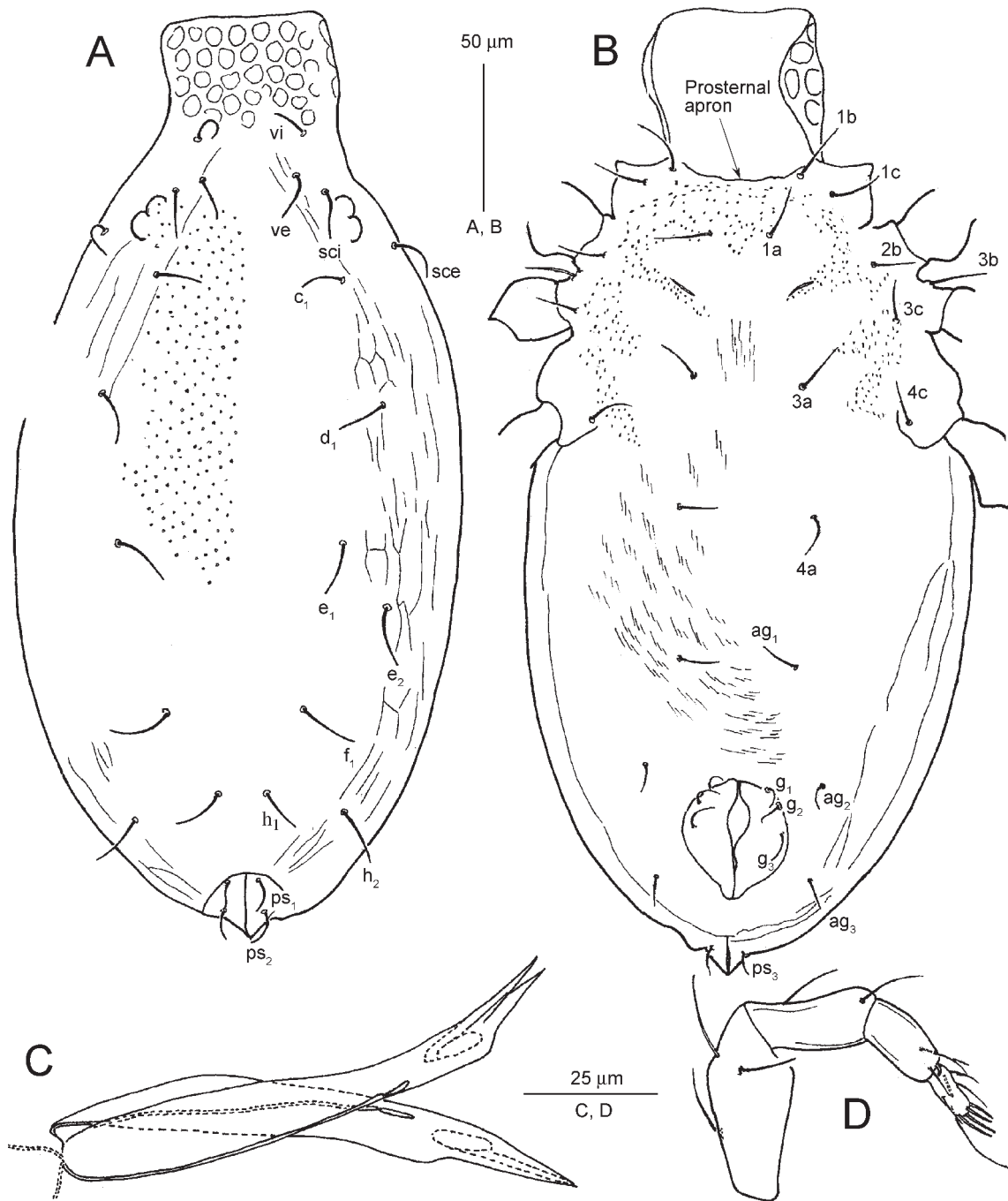
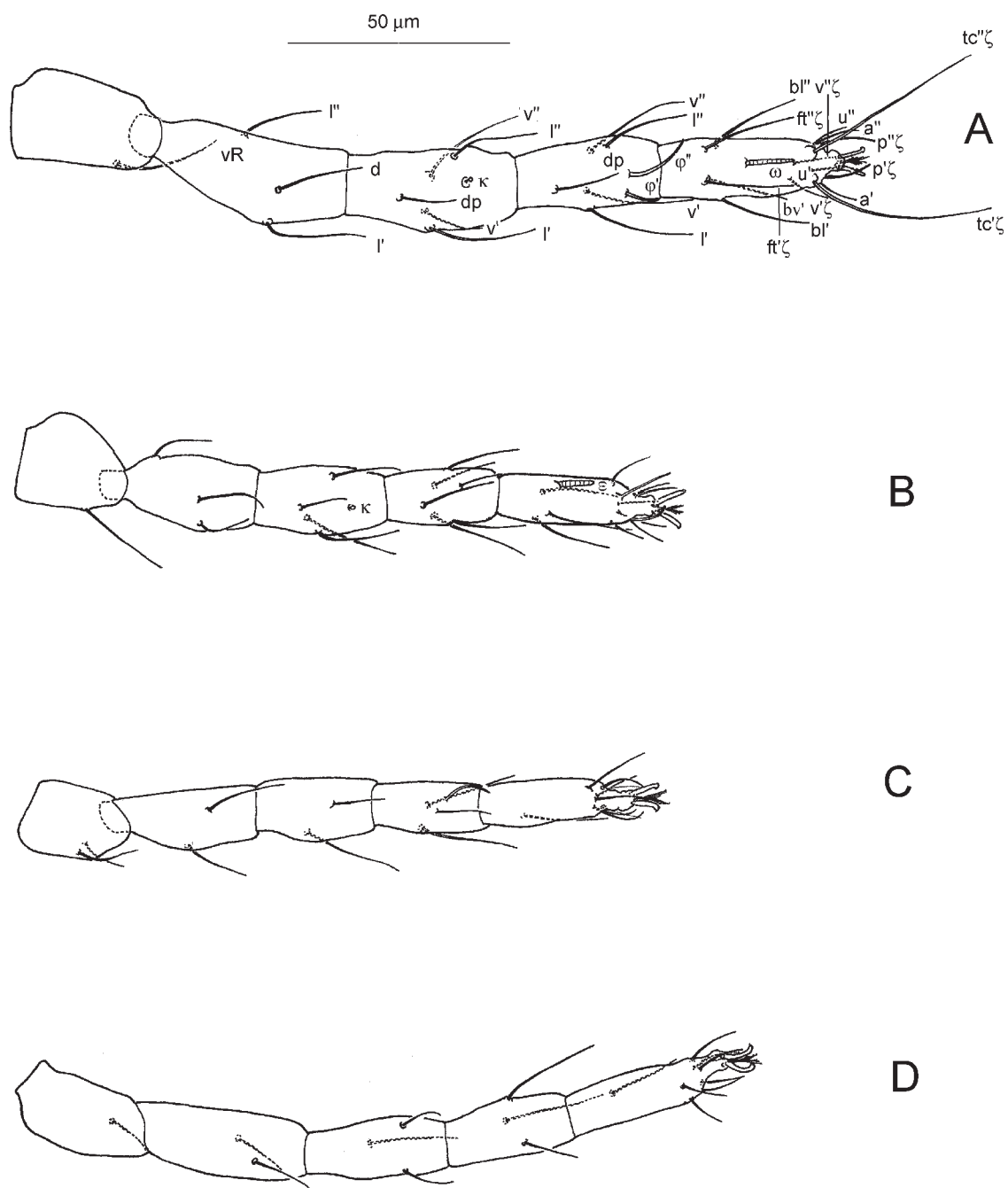


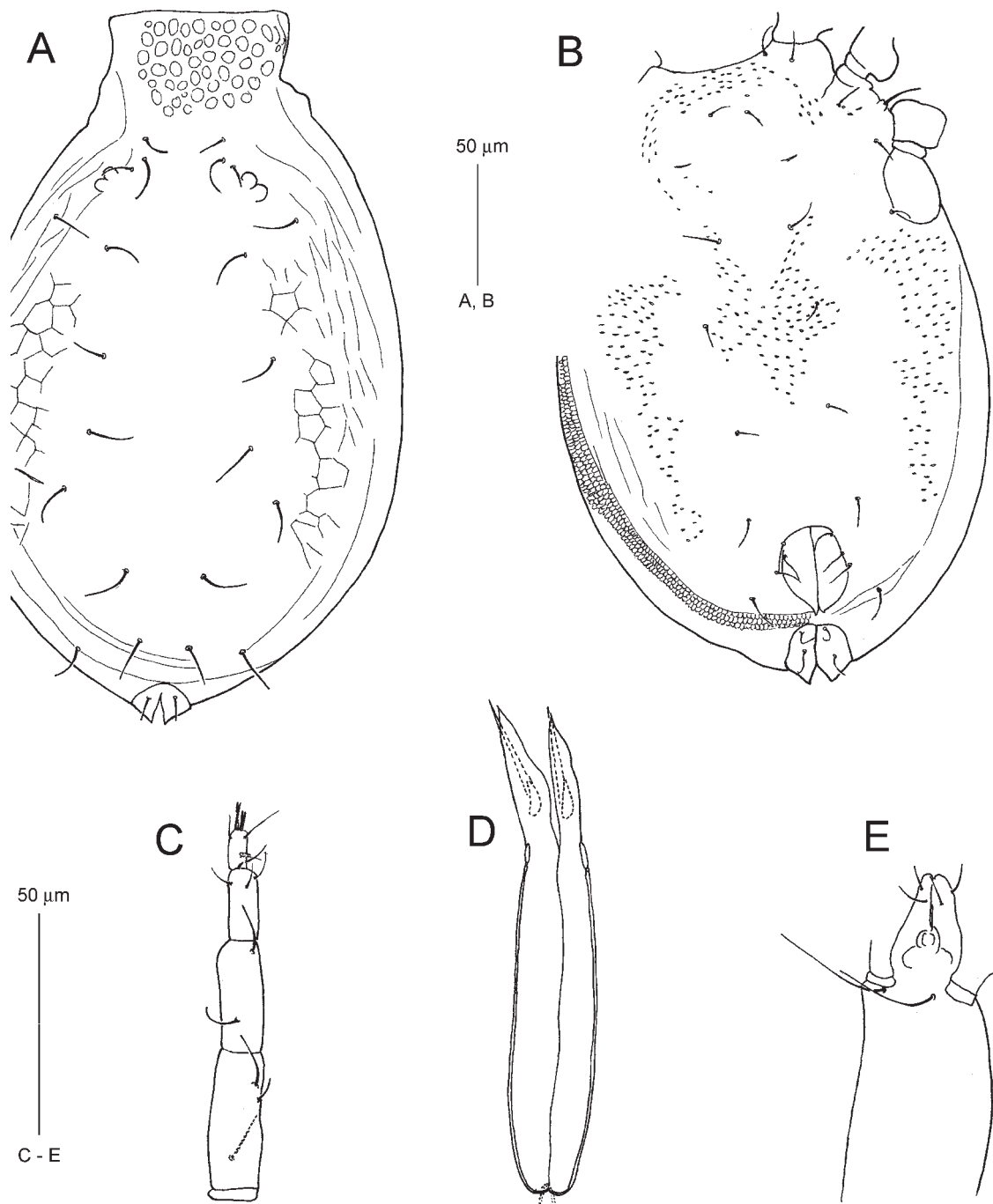
Fig. 12. *Tycherobius aotearoa* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV; E, tarsus I; F, tarsus II; G, tarsus III; H, tarsus IV.



**Fig. 13.** *Cryptognathus striatus* Luxton, 1973 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp.



**Fig. 14.** *Cryptognathus striatus* Luxton, 1973 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 15.** *Cryptognathus vulgaris* Luxton, 1973 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, chelicerae; E, subcapitulum.

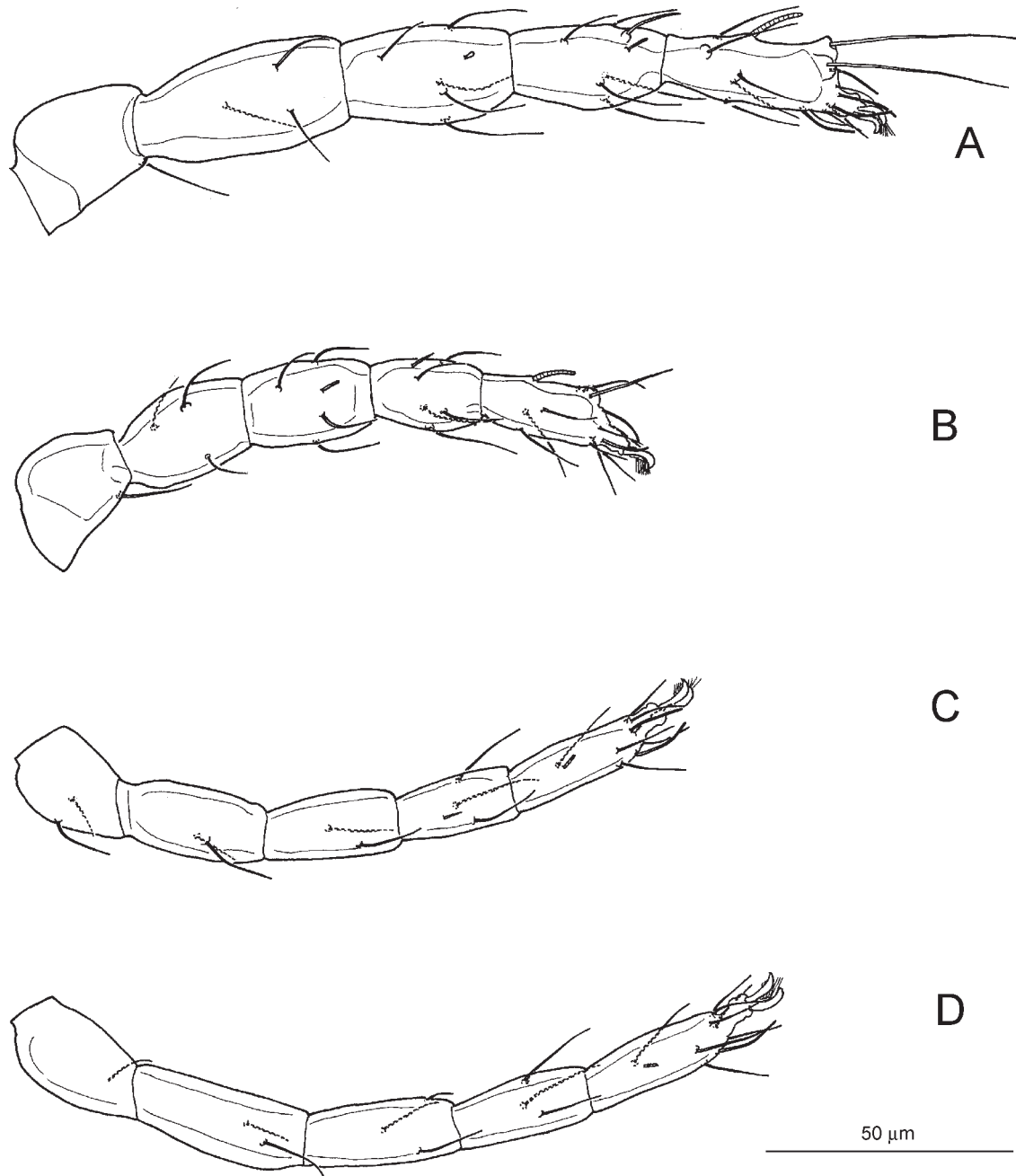
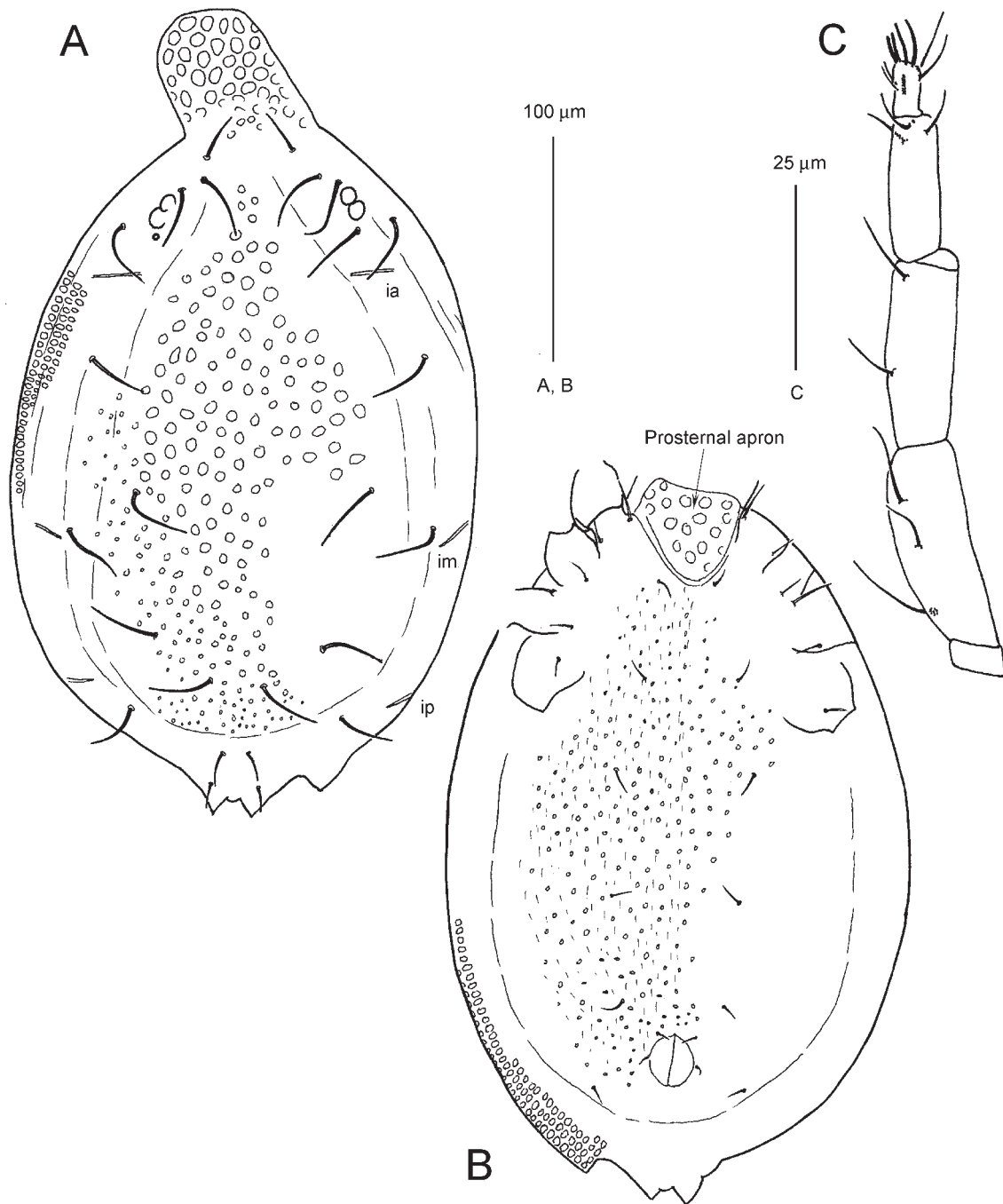


Fig. 16. *Cryptognathus vulgaris* Luxton, 1973 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 17.** *Favograthus leopardus* (Luxton, 1973) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp.

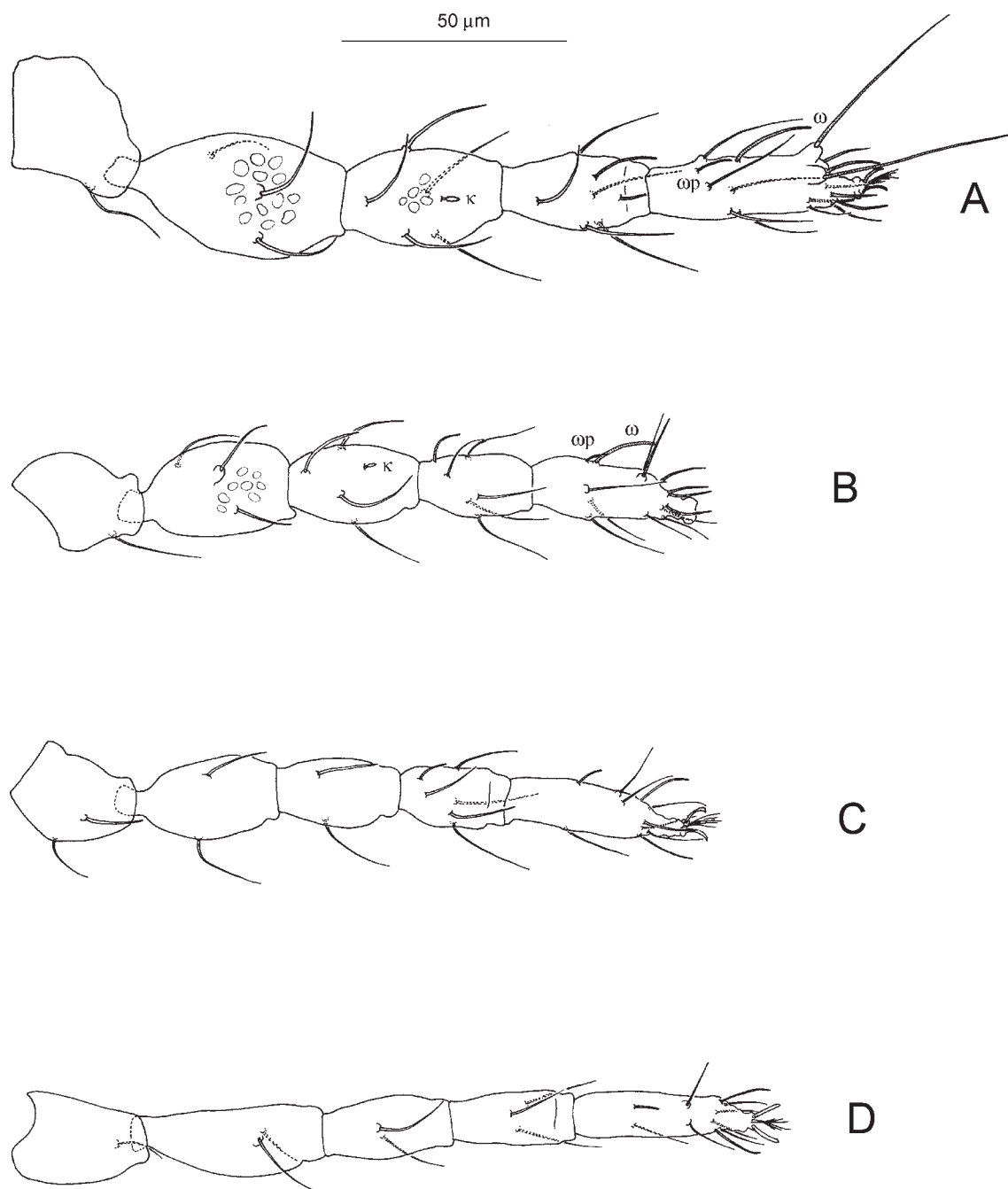
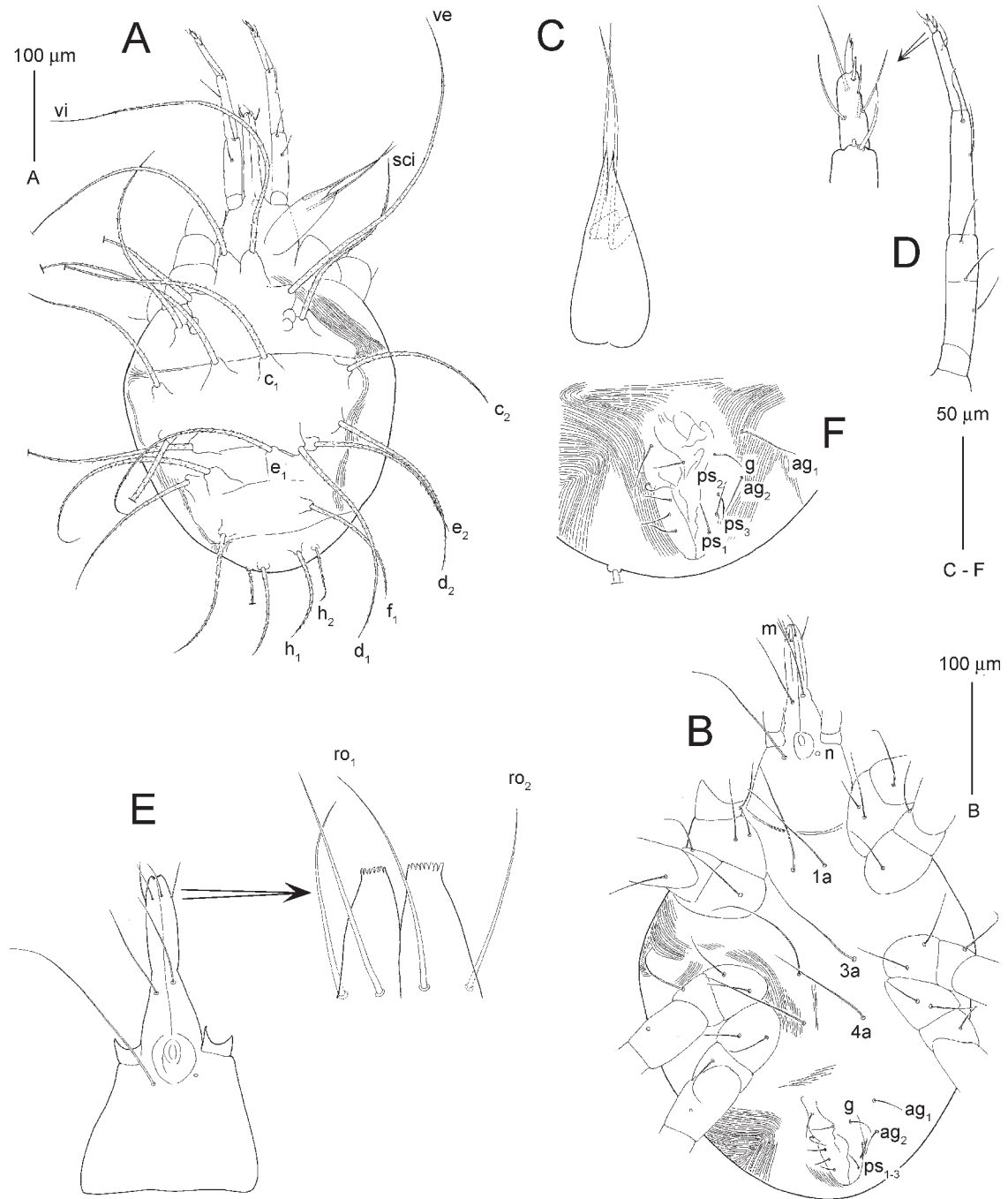


Fig. 18. *Favograthus leopardus* (Luxton, 1973) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 19.** *Mecognatha hirsuta* Wood, 1967 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, genital area.



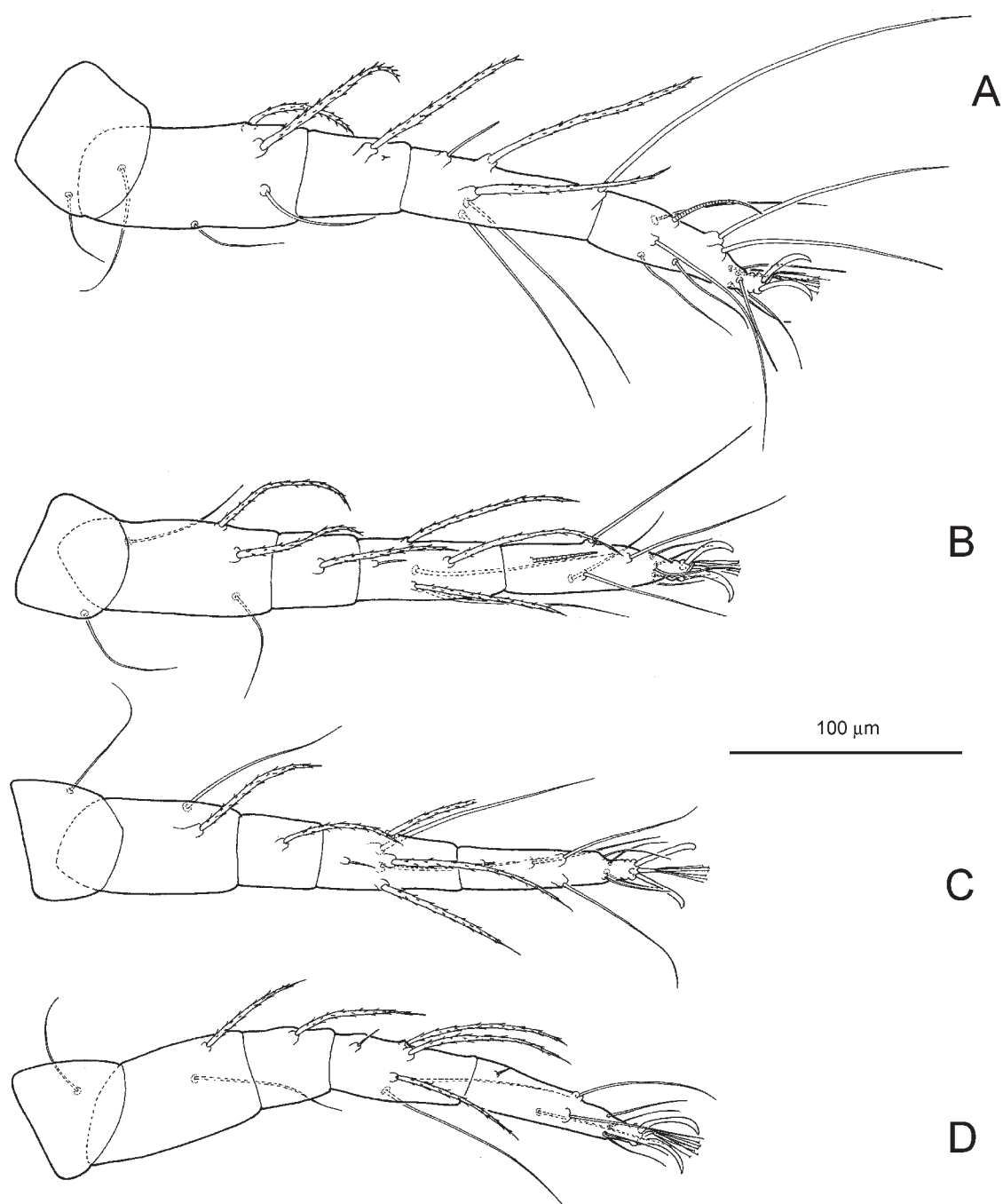
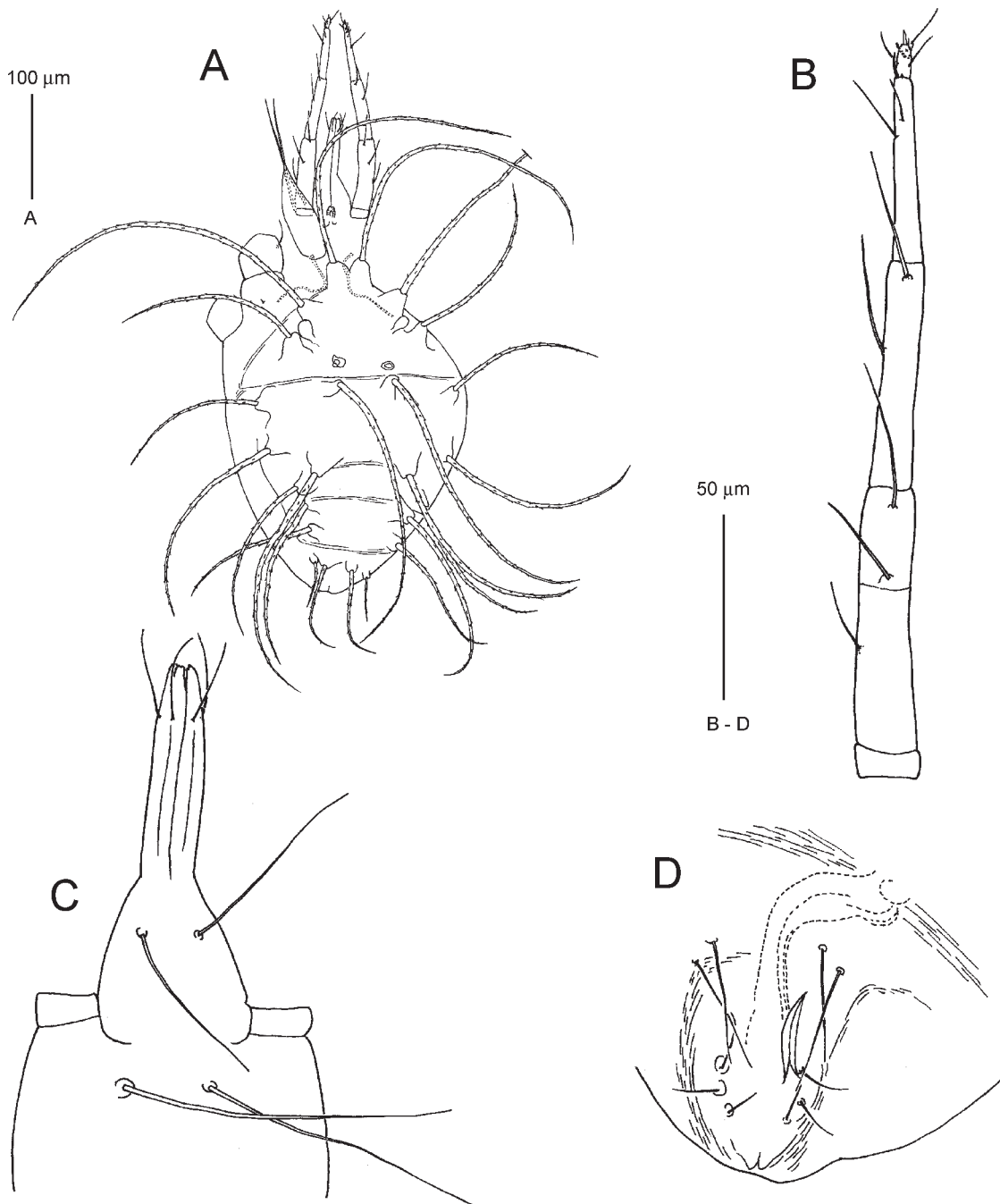


Fig. 20. *Mecognatha hirsuta* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 21.** *Mecognatha hirsuta* Wood, 1967 (male). A, dorsal view of idiosoma; B, palp; C, subcapitulum; D, genitoanal area.

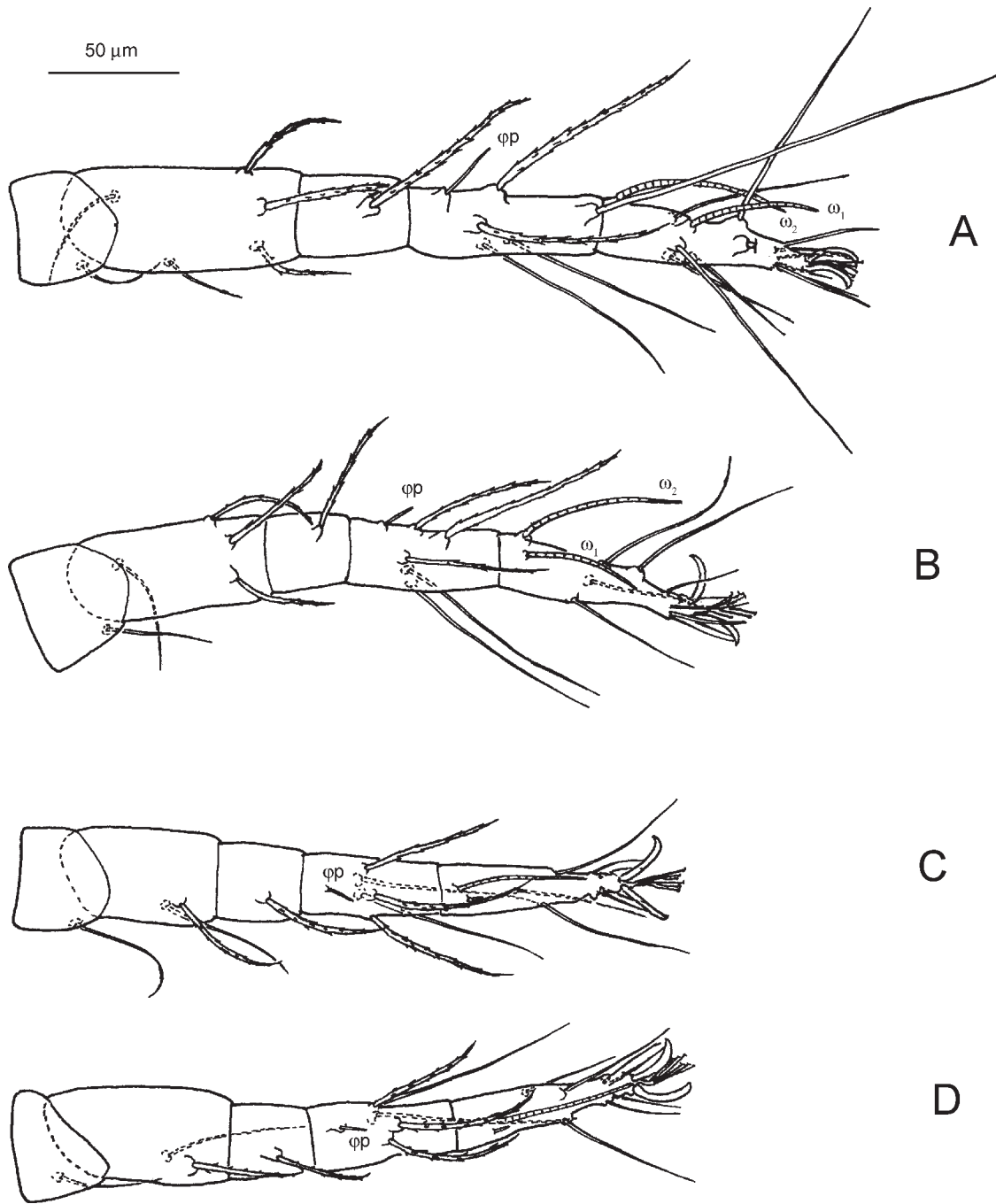
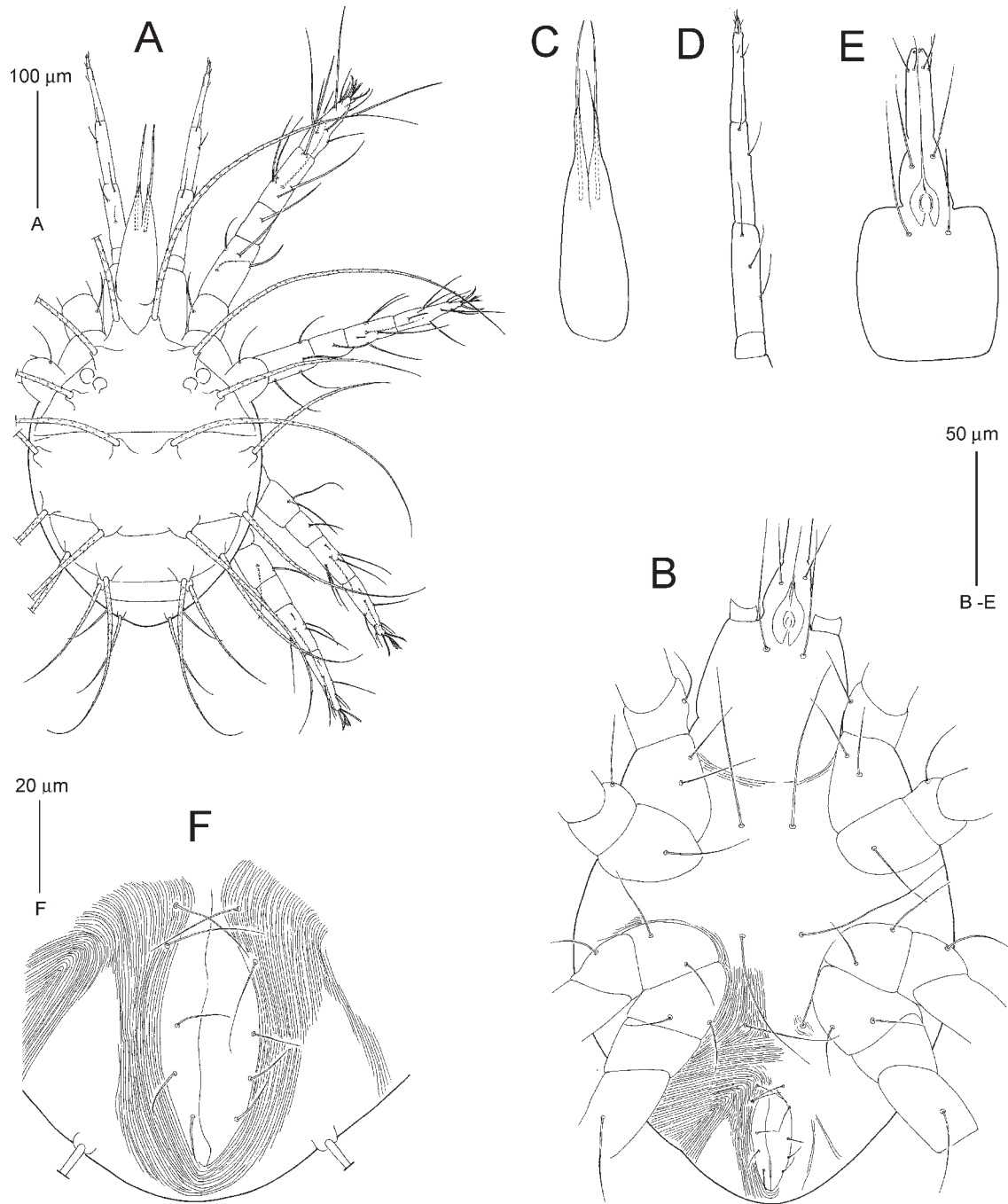
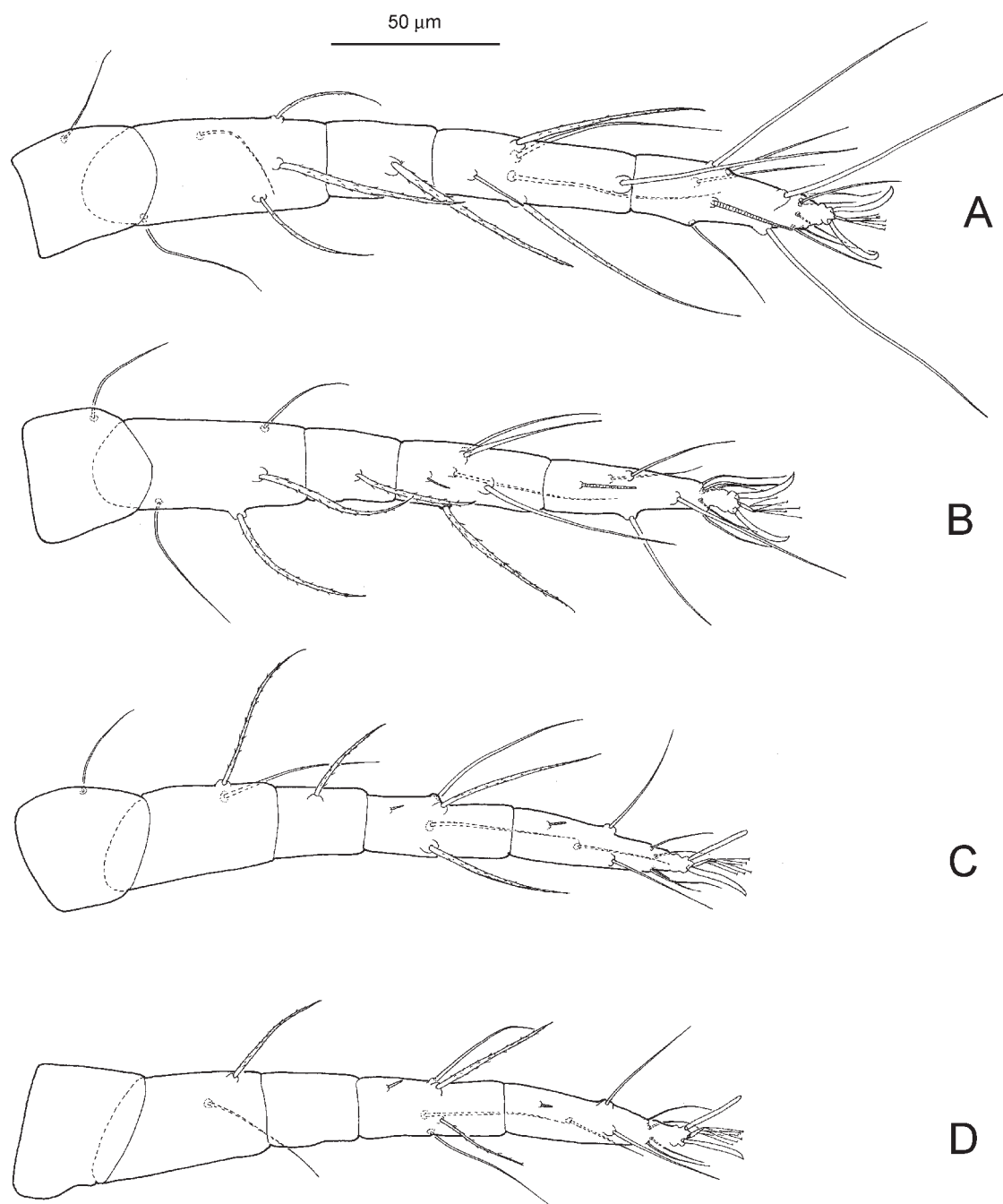


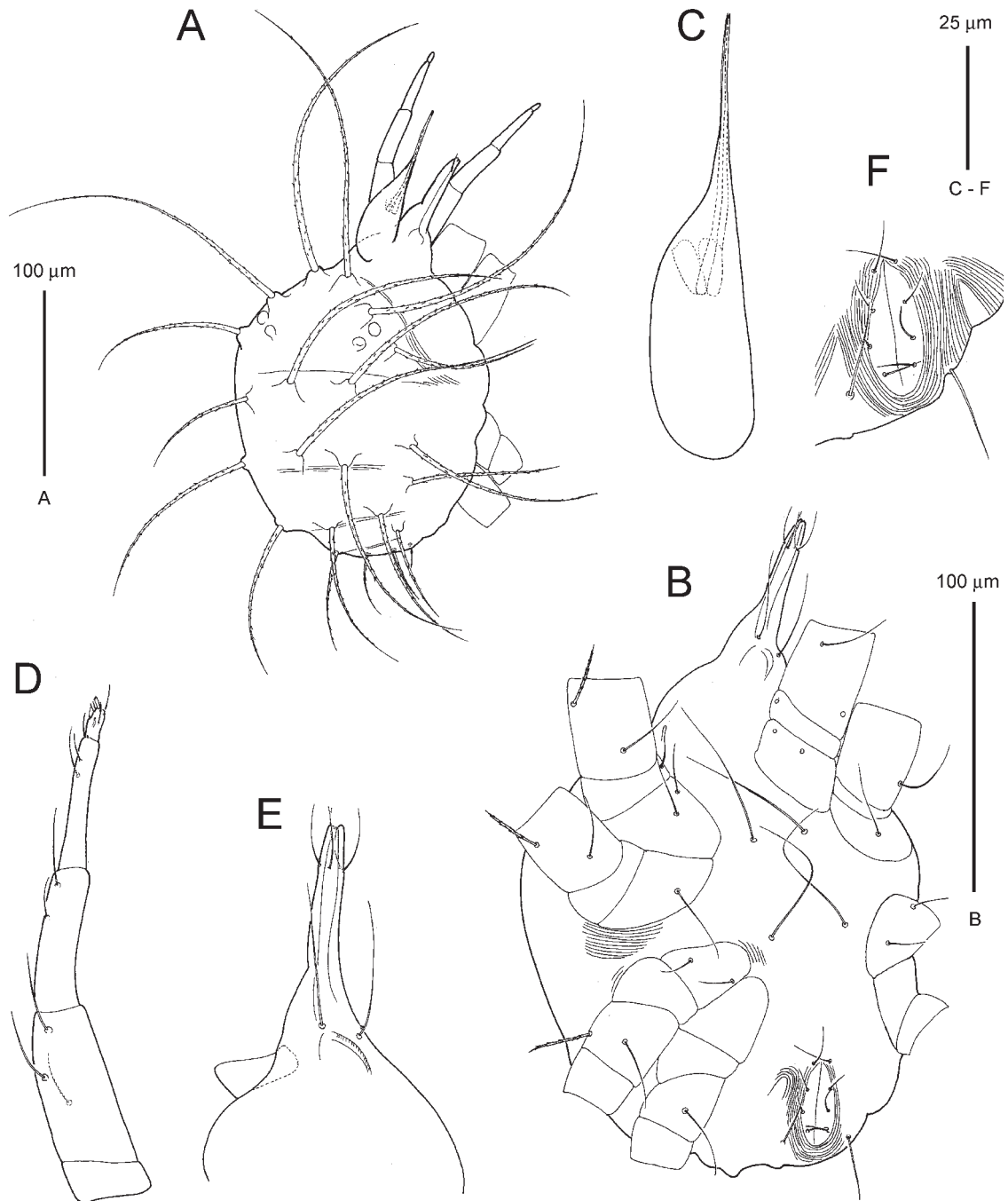
Fig. 22. *Mecognatha hirsuta* Wood, 1967 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 23.** *Mecognatha hirsuta* Wood, 1967 (deutonymph female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, genitoanal area.



**Fig. 24.** *Mecognatha hirsuta* Wood, 1967 (deutonymph female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 25.** *Mecognatha hirsuta* Wood, 1967 (protonymph). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, genitoanal area.

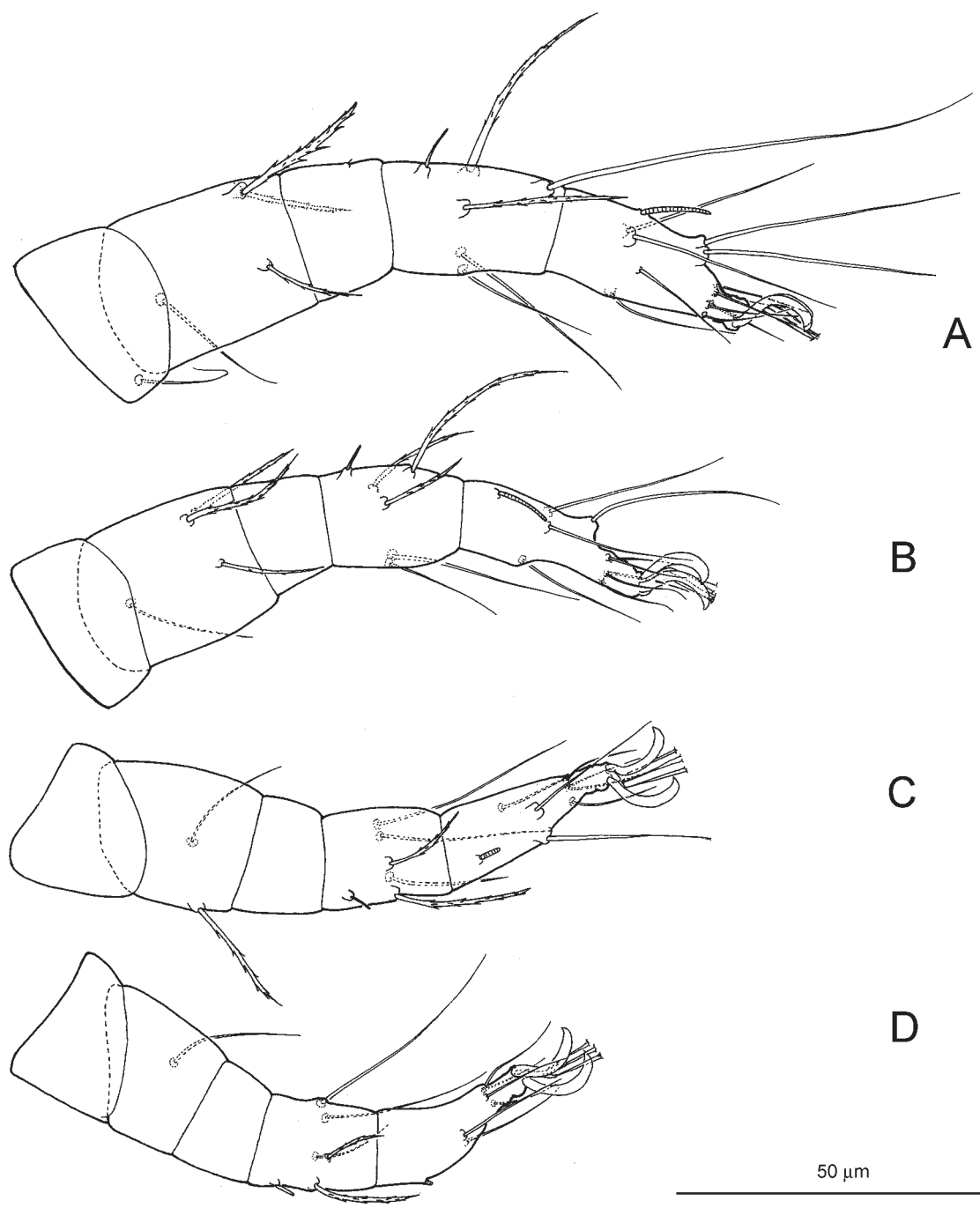
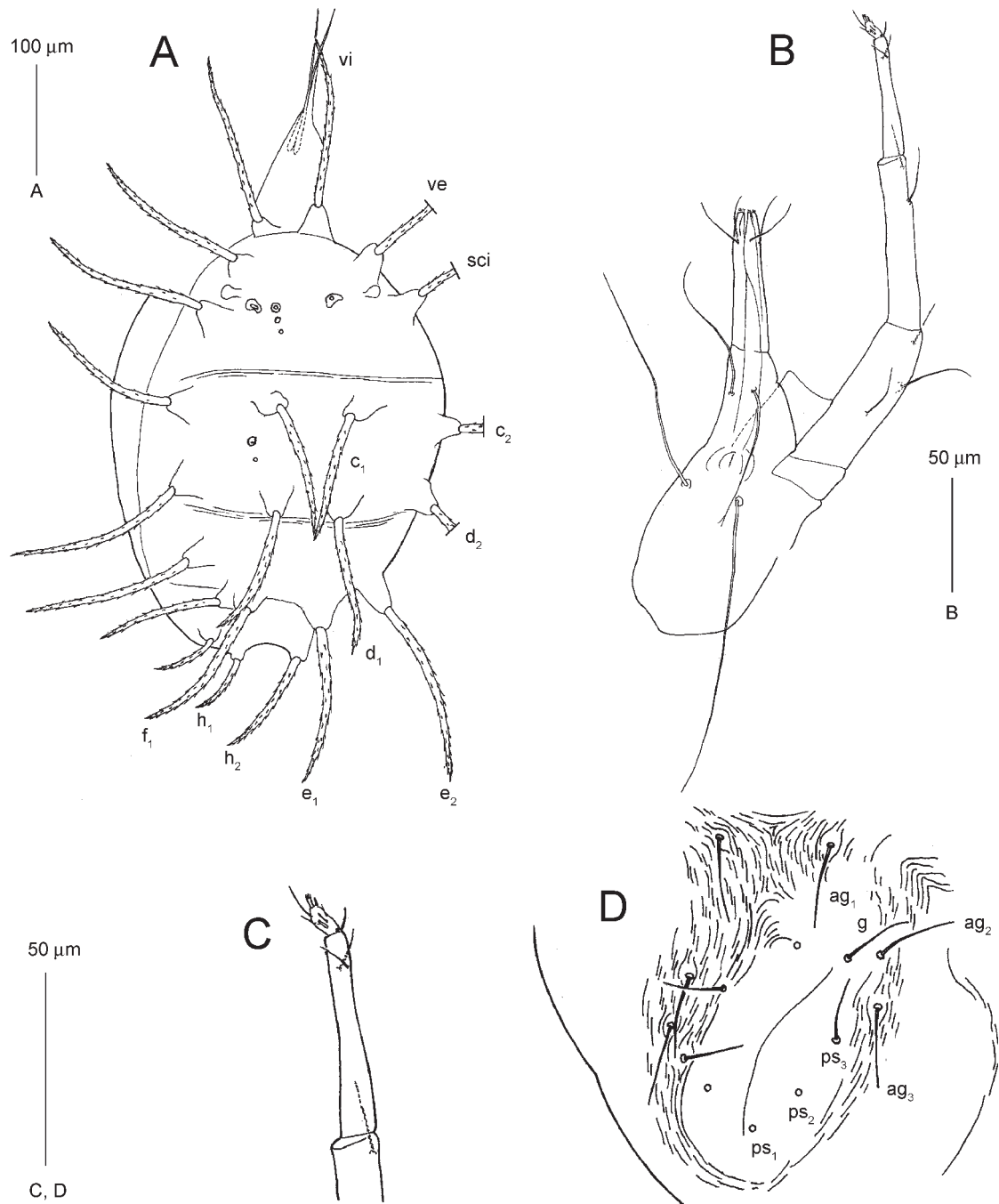


Fig. 26. *Mecognatha hirsuta* Wood, 1967 (protonymph). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 27.** *Mecognatha parilis* sp. n. (female). A, dorsal view of idiosoma; B, ventrolateral view of gnathosoma; C, palpal tibia and tarsus; D, genitoanal area.



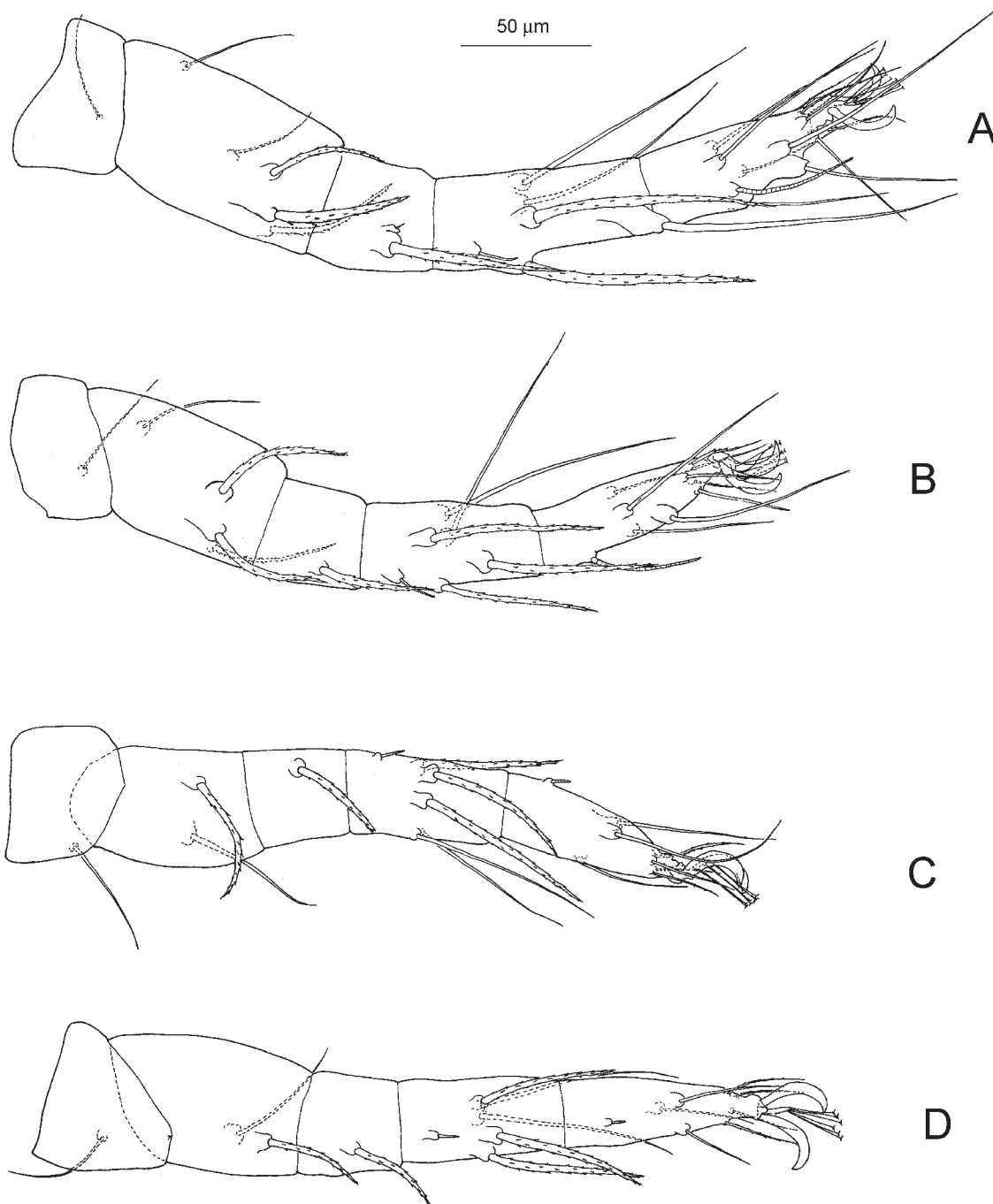
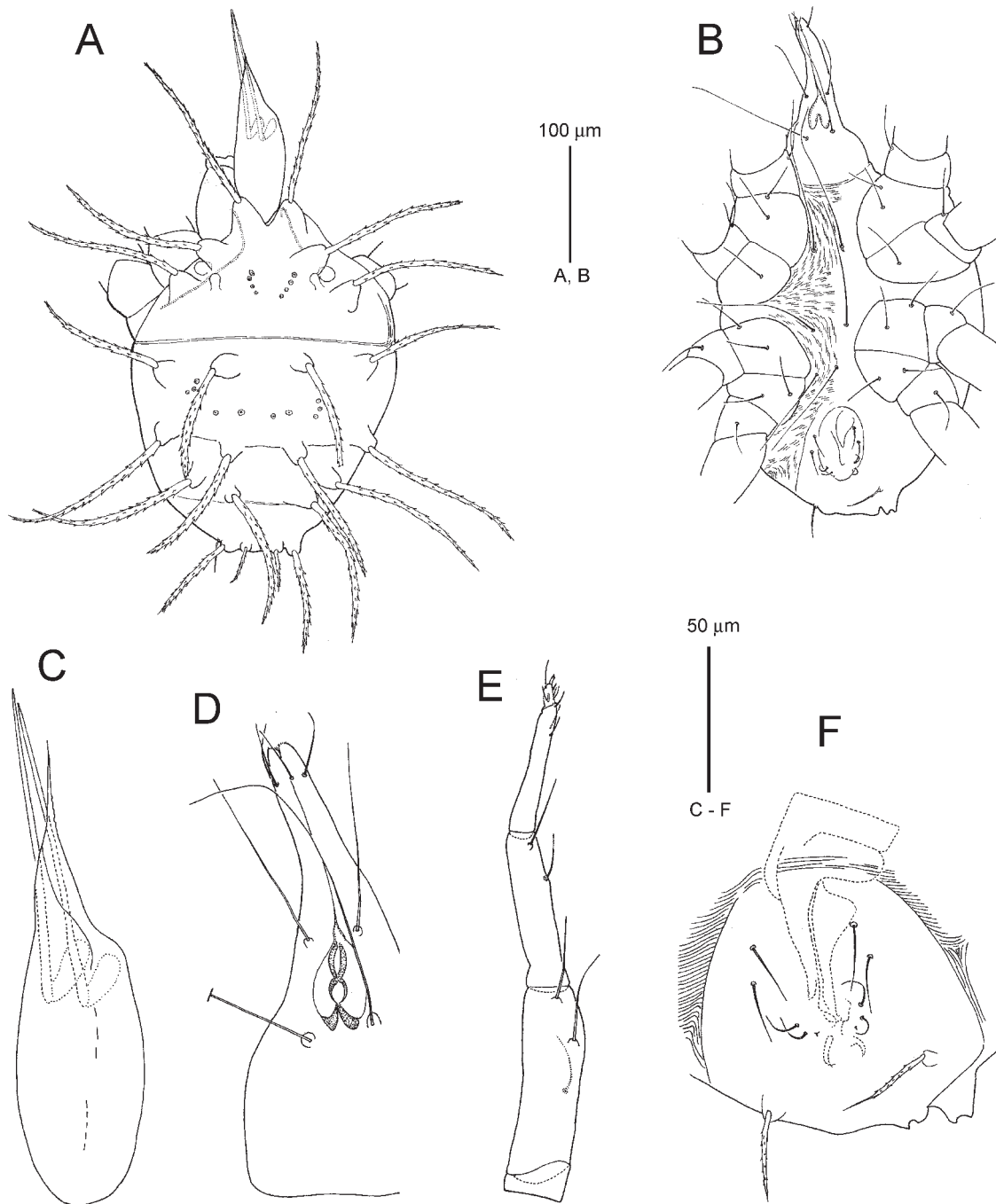


Fig. 28. *Mecognatha parilis* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 29.** *Mecognatha parilis* sp. n. (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, subcapitulum; E, palp; F, genitoanal area.

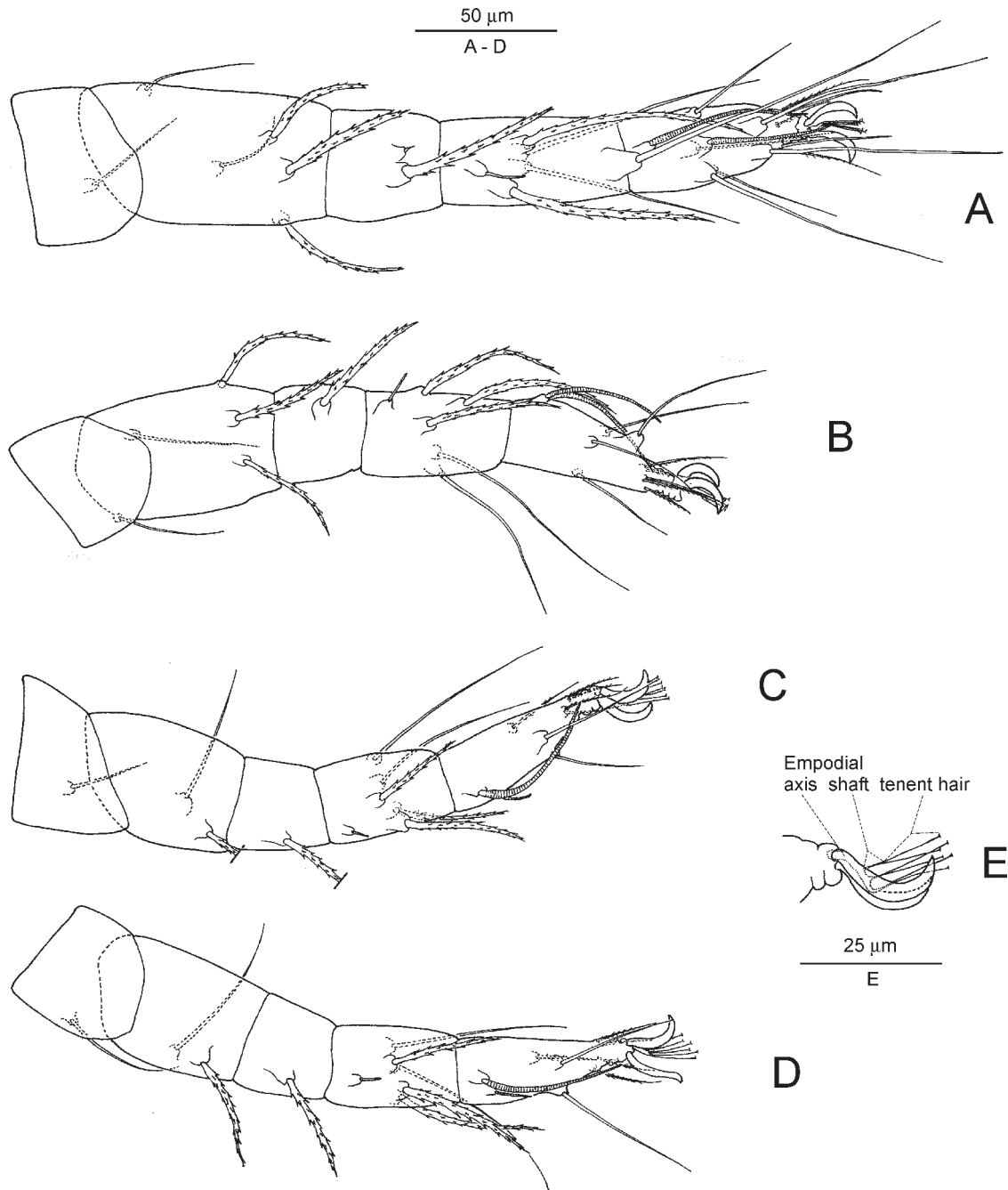
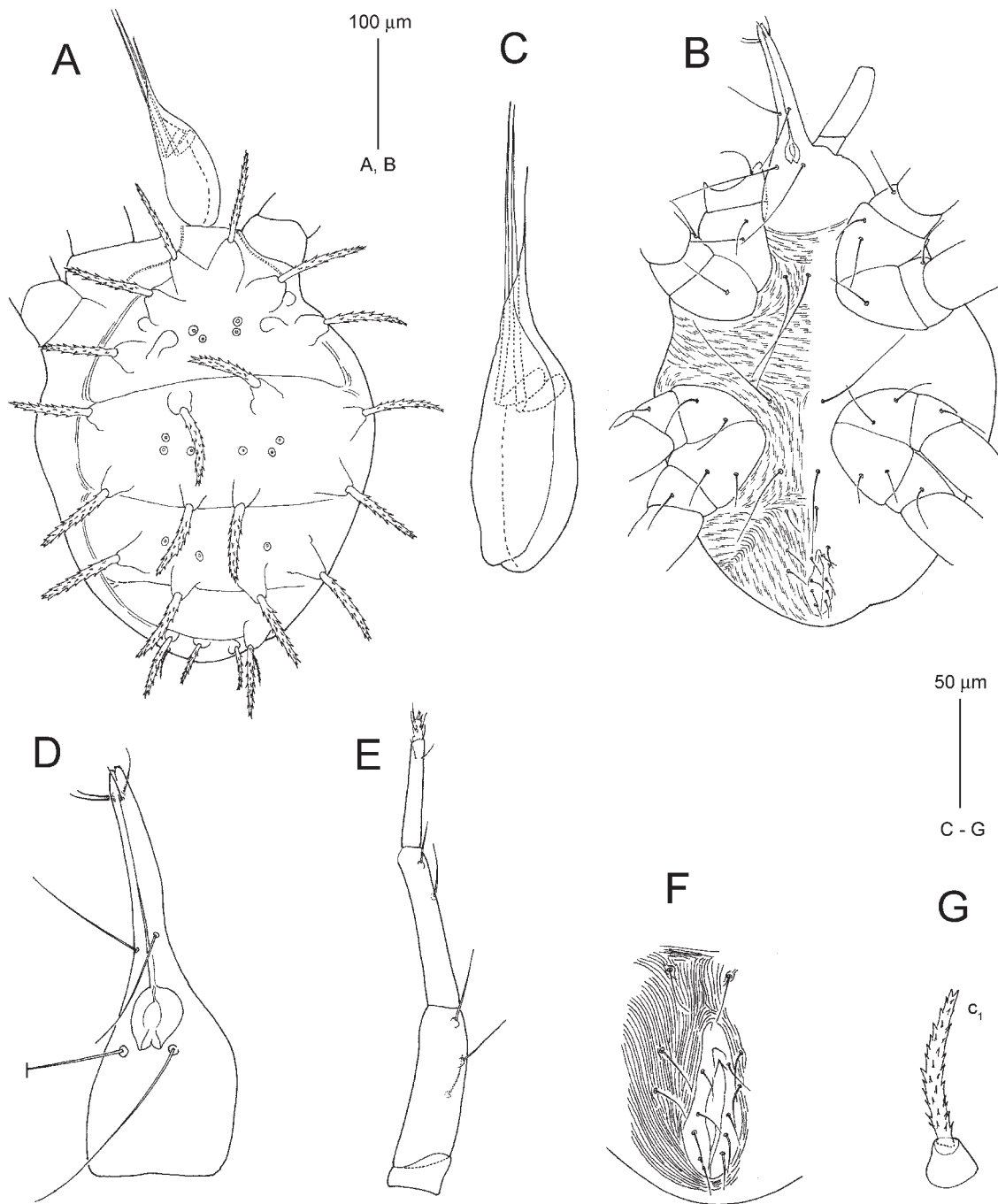


Fig. 30. *Mecognatha parilis* sp. n. (male). A, leg I; B, leg II; C, leg III; D, leg IV; E, pretarsus III.



**Fig. 31.** *Mecognatha rara* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, subcapitulum; E, palp; F, genitoanal area; G, dorsal idiosomal seta.

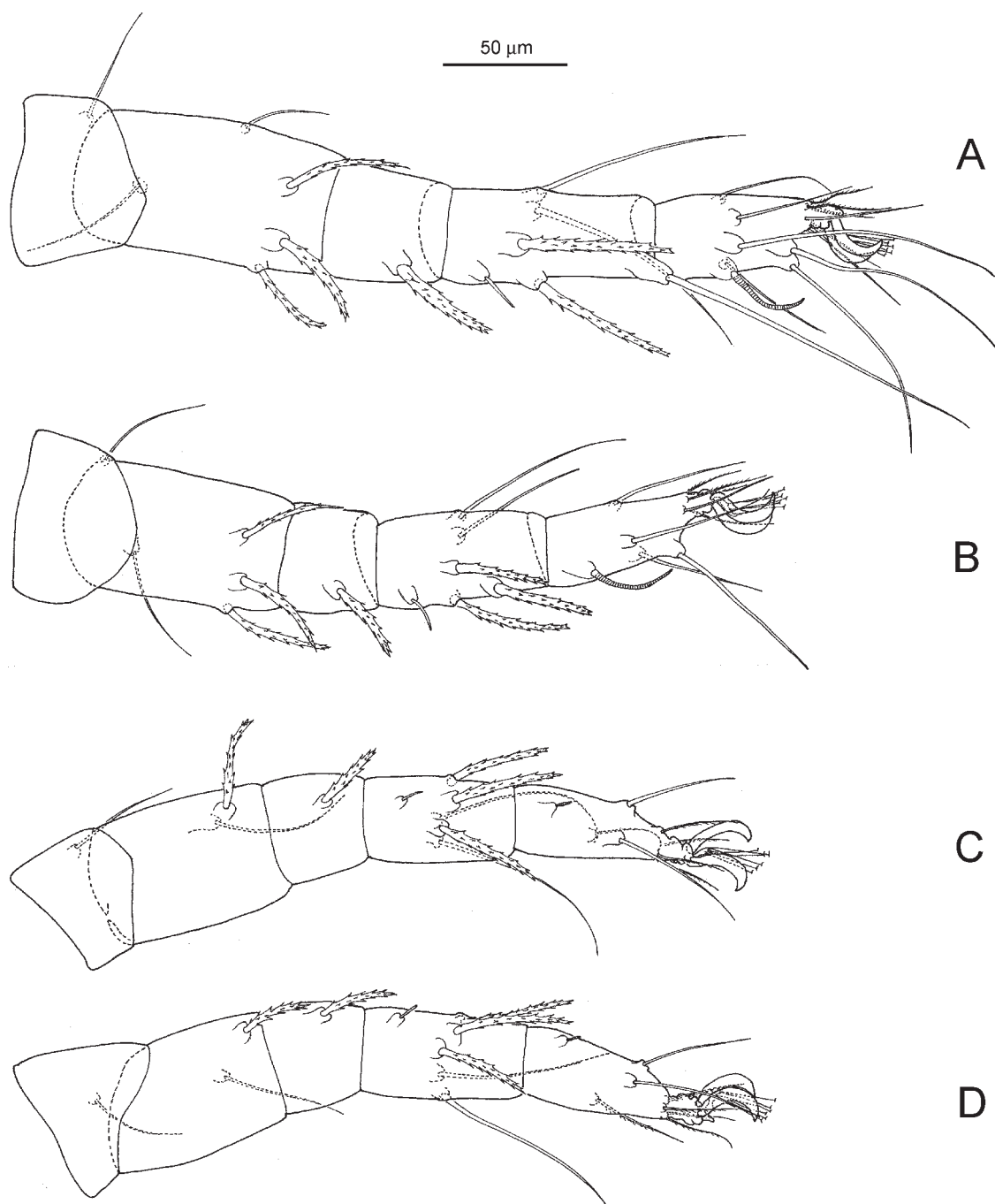
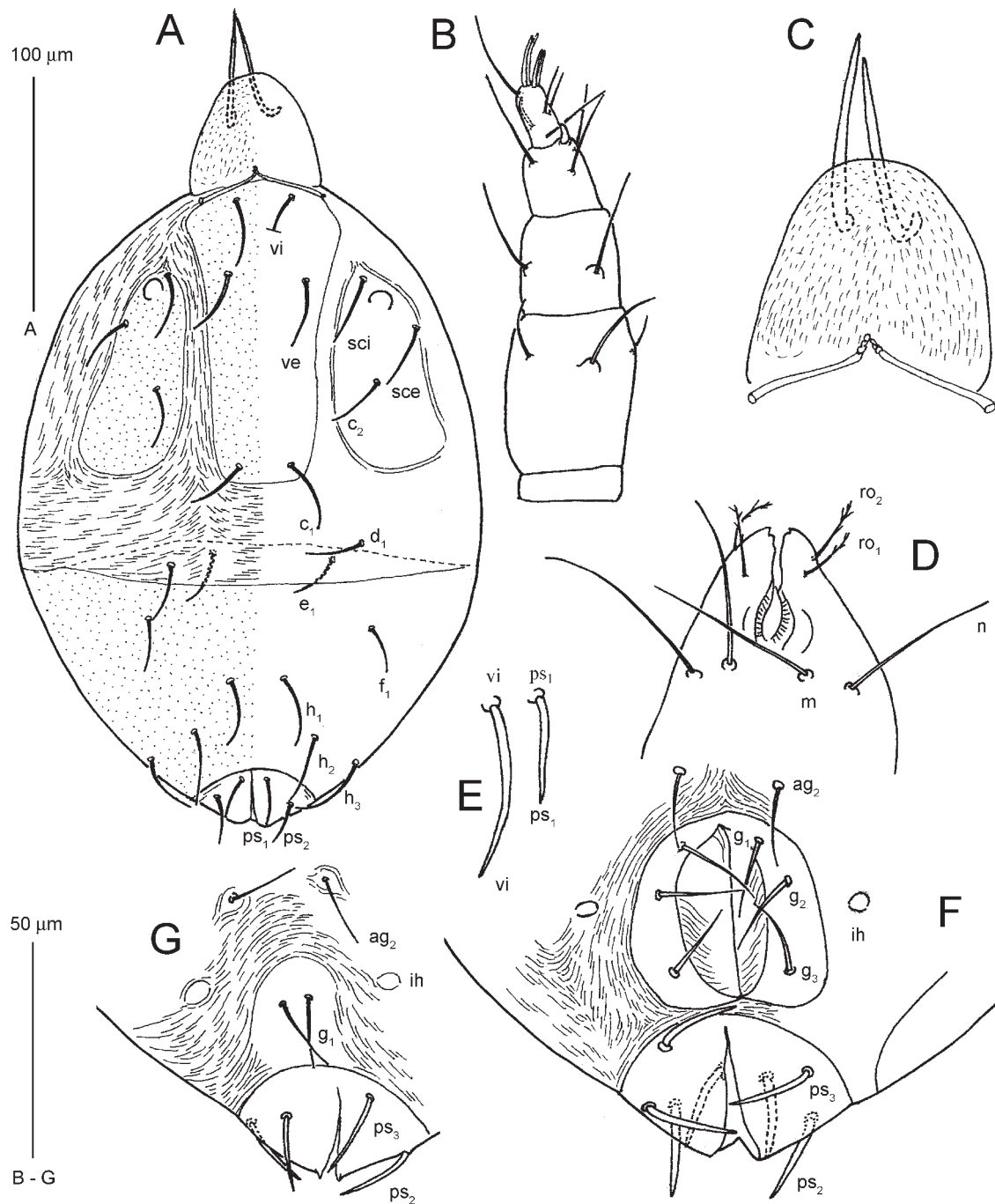


Fig. 32. *Mecognatha rara* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 33.** *Raphignathus atomatus* sp. n. (A–F, female; G, tritonymph female). A, dorsal view of idiosoma; B, palp; C, chelicerae; D, subcapitulum; E, dorsal idiosomal setae; F, genitoanal area; G, genitoanal area.

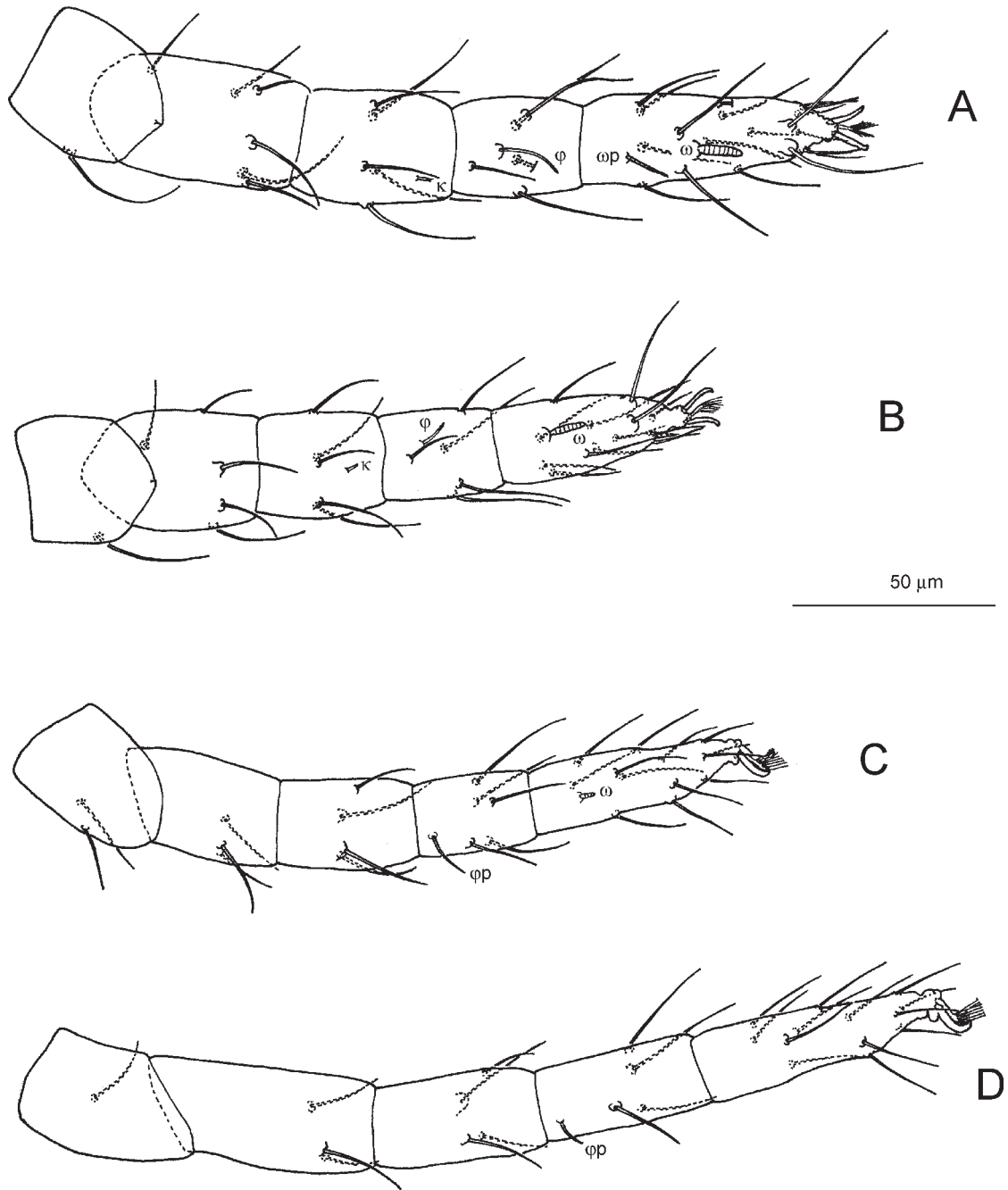
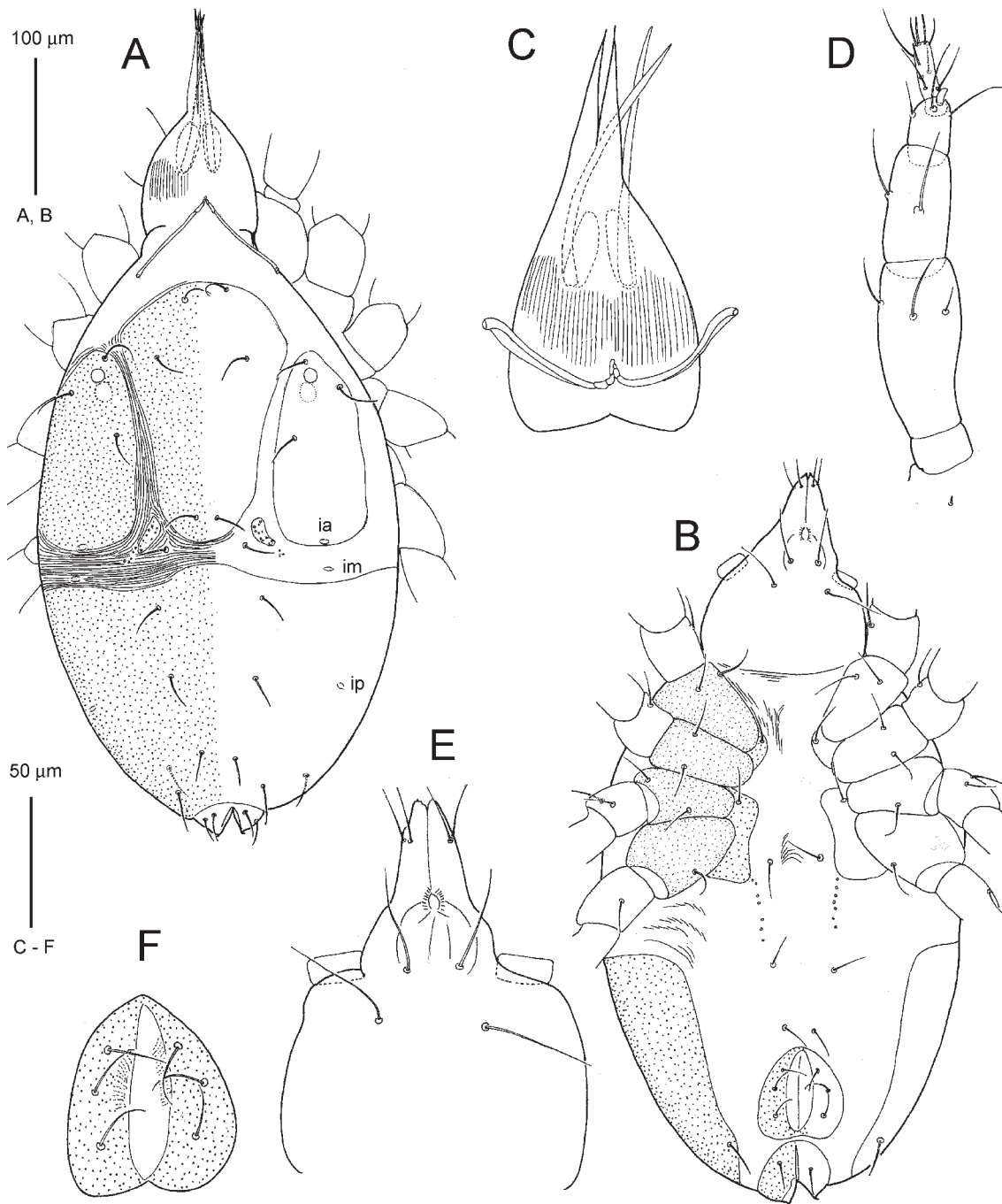


Fig. 34. *Raphignathus atomatus* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 35.** *Raphignathus collegiatus* Atyeo, Baker & Crossley (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, genital valves.



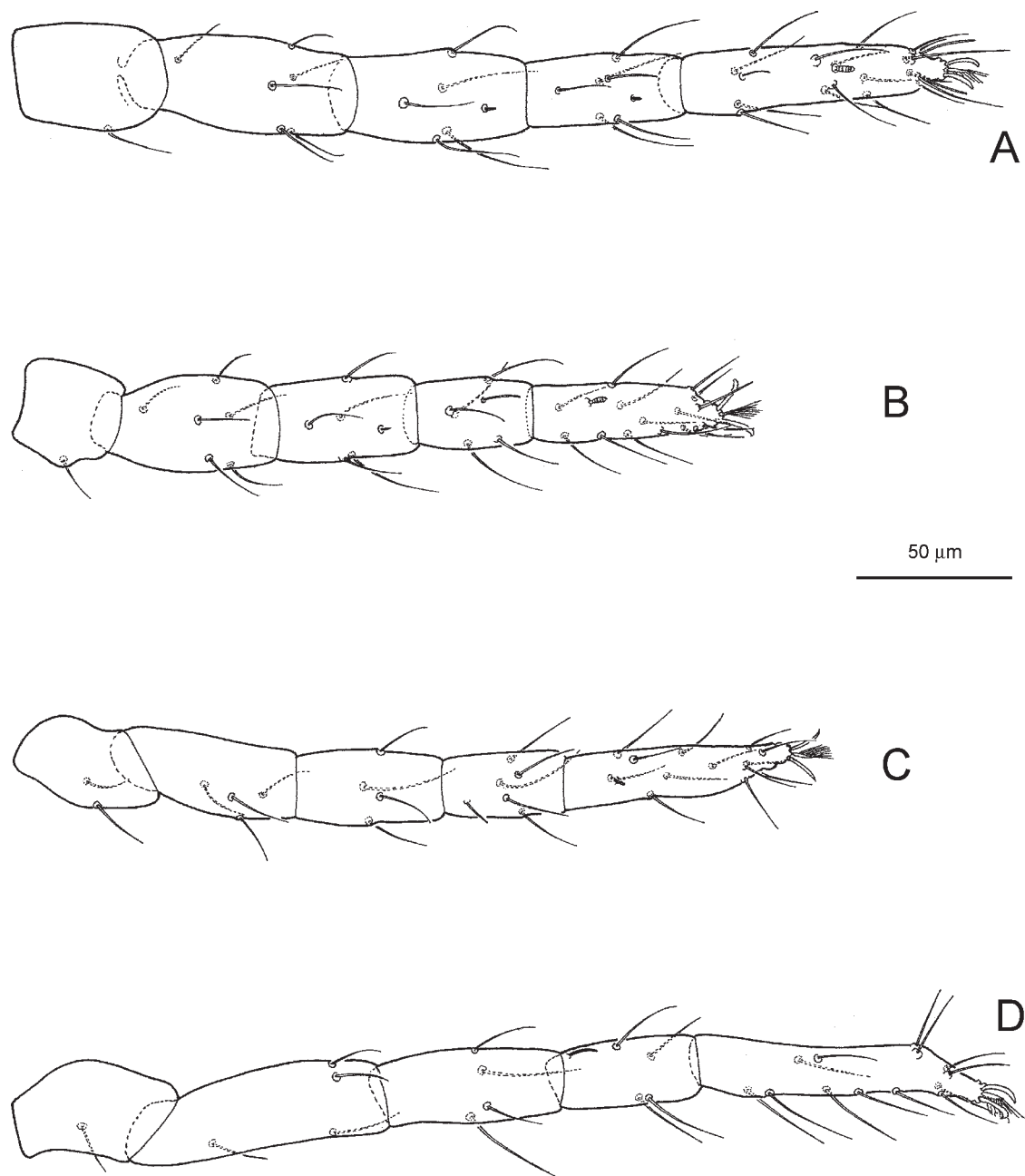
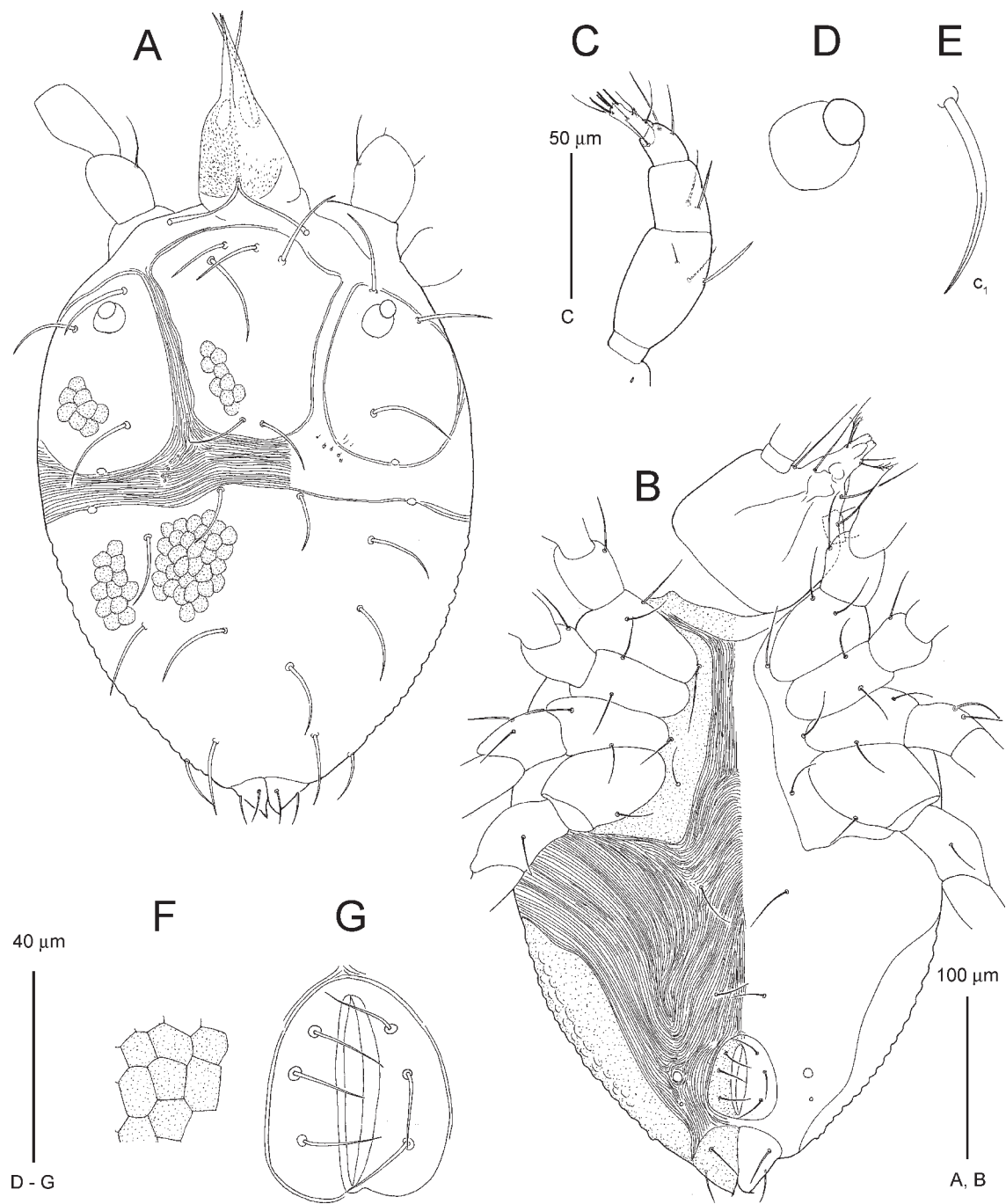


Fig. 36. *Raphignathus collegiatus* Atyeo, Baker & Crossley (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 37.** *Raphignathus crustus* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, eye; E, dorsal idiosomal seta; F, reticulate pattern of dorsal shield; G, genital valves.

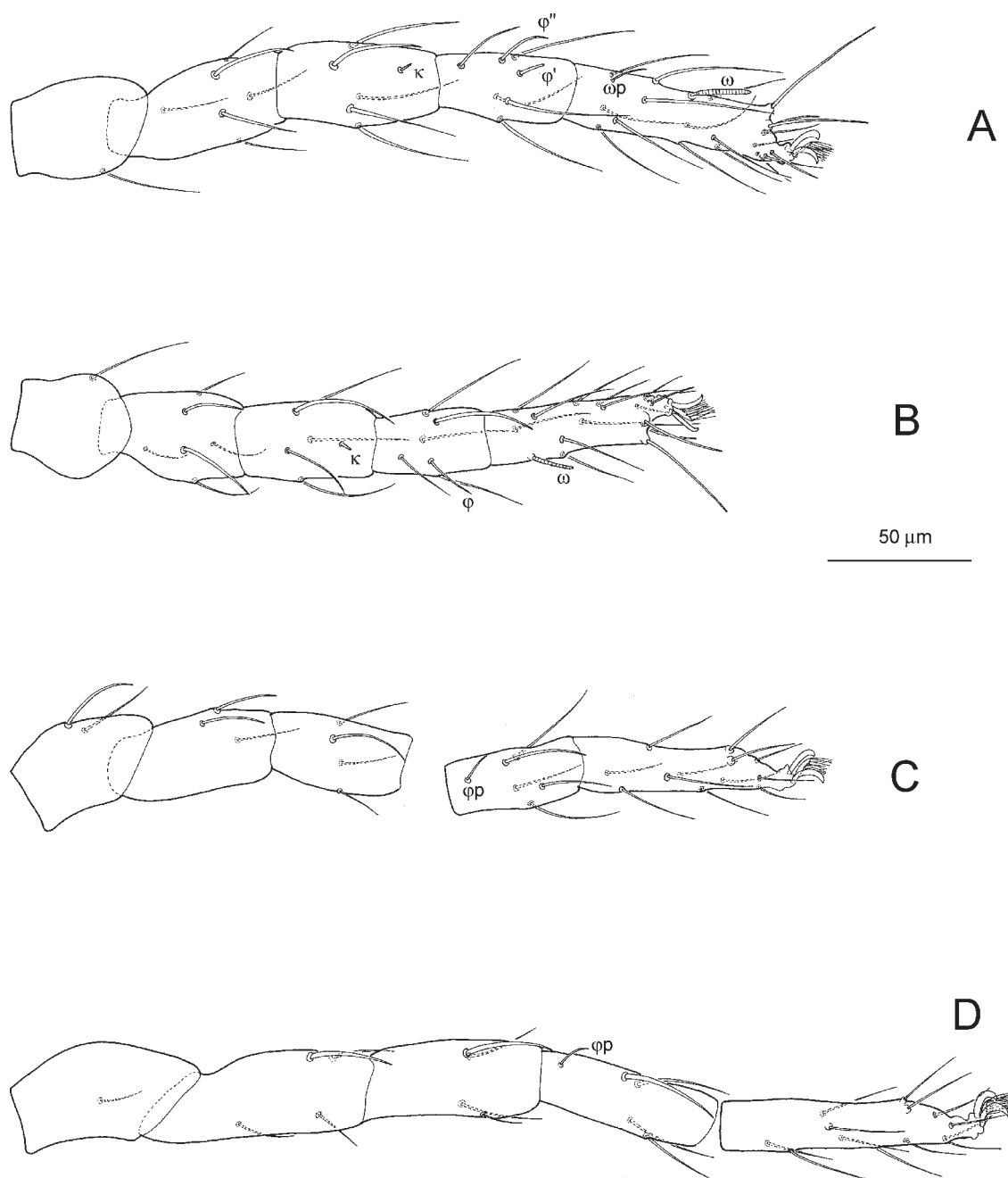
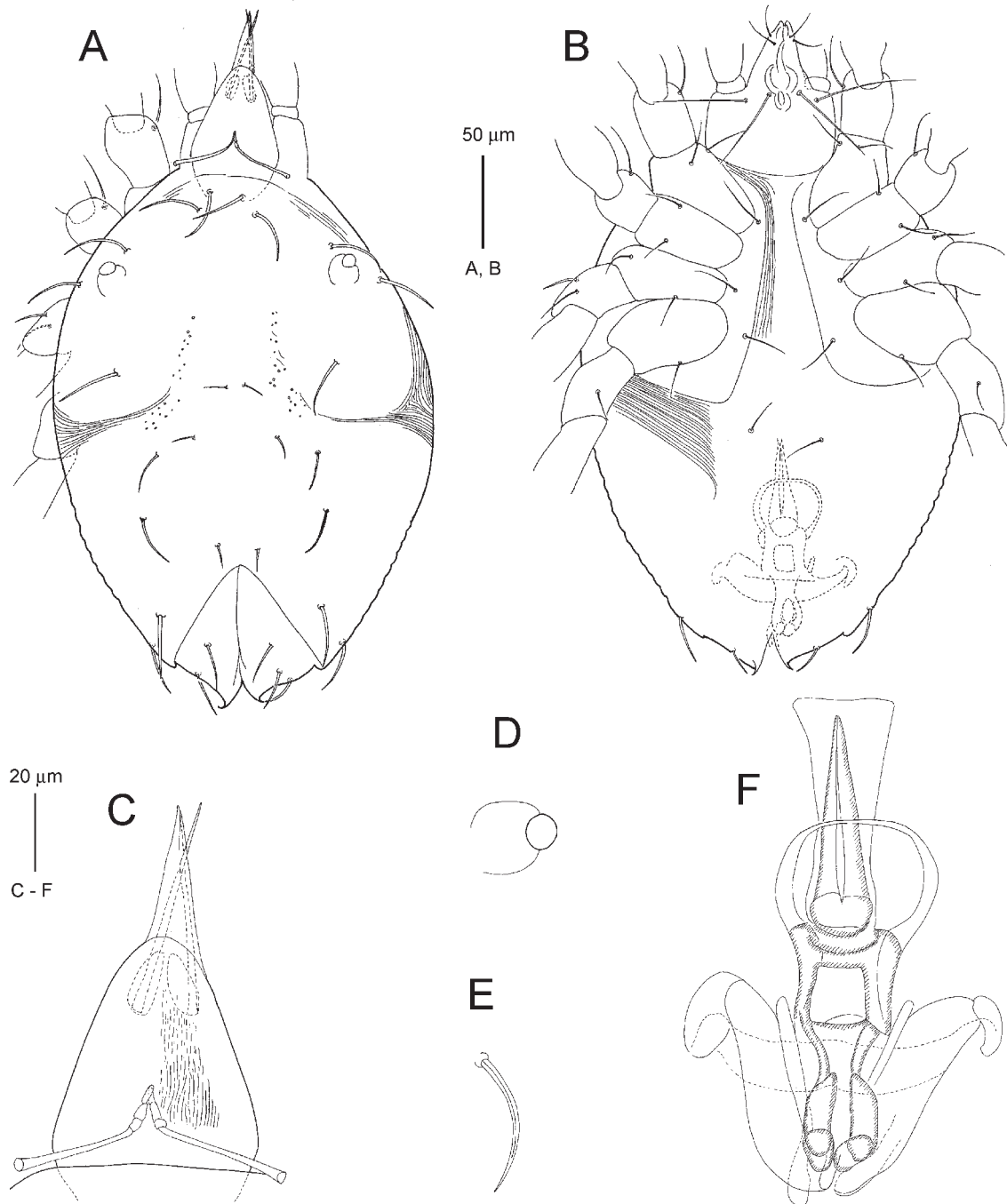
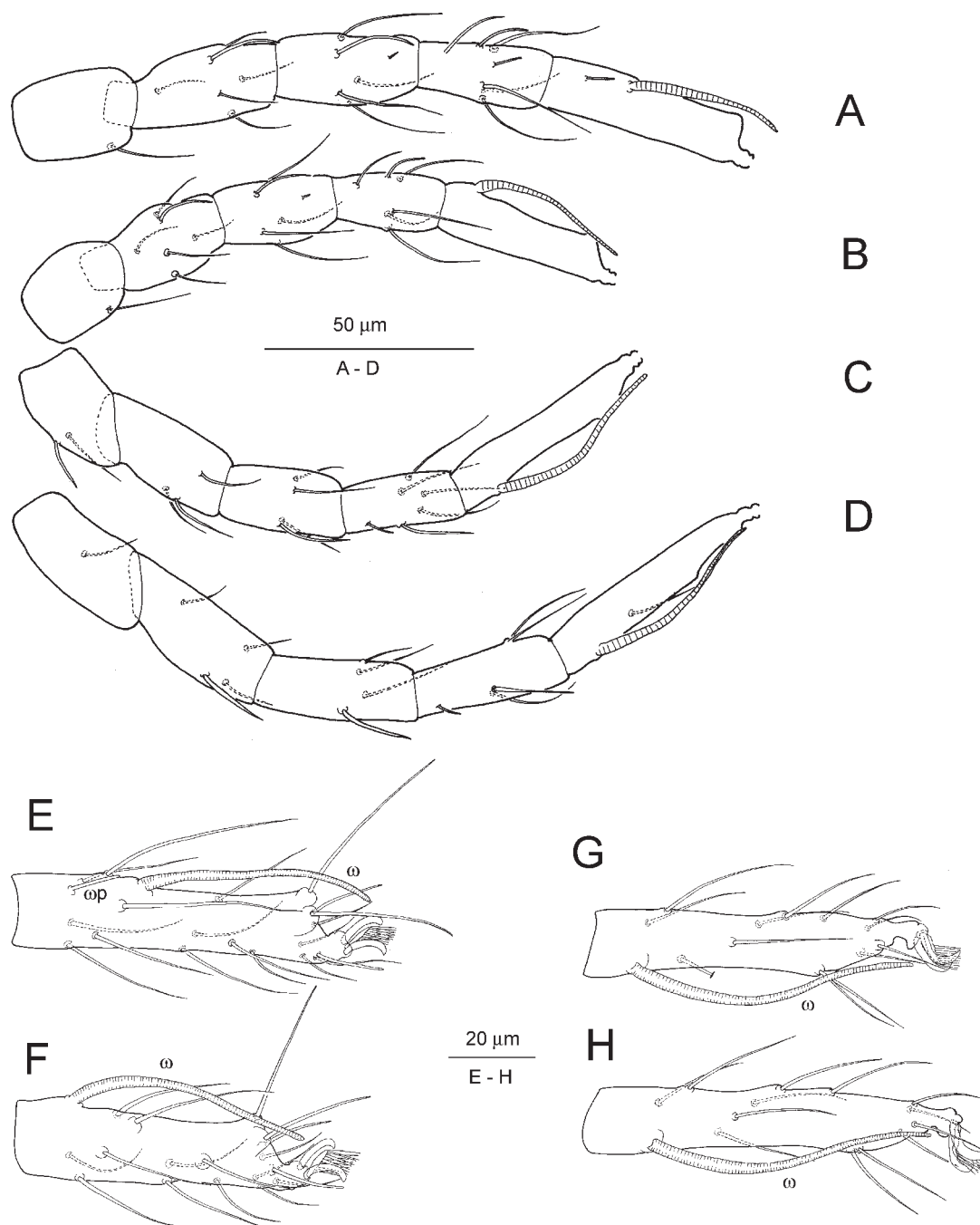


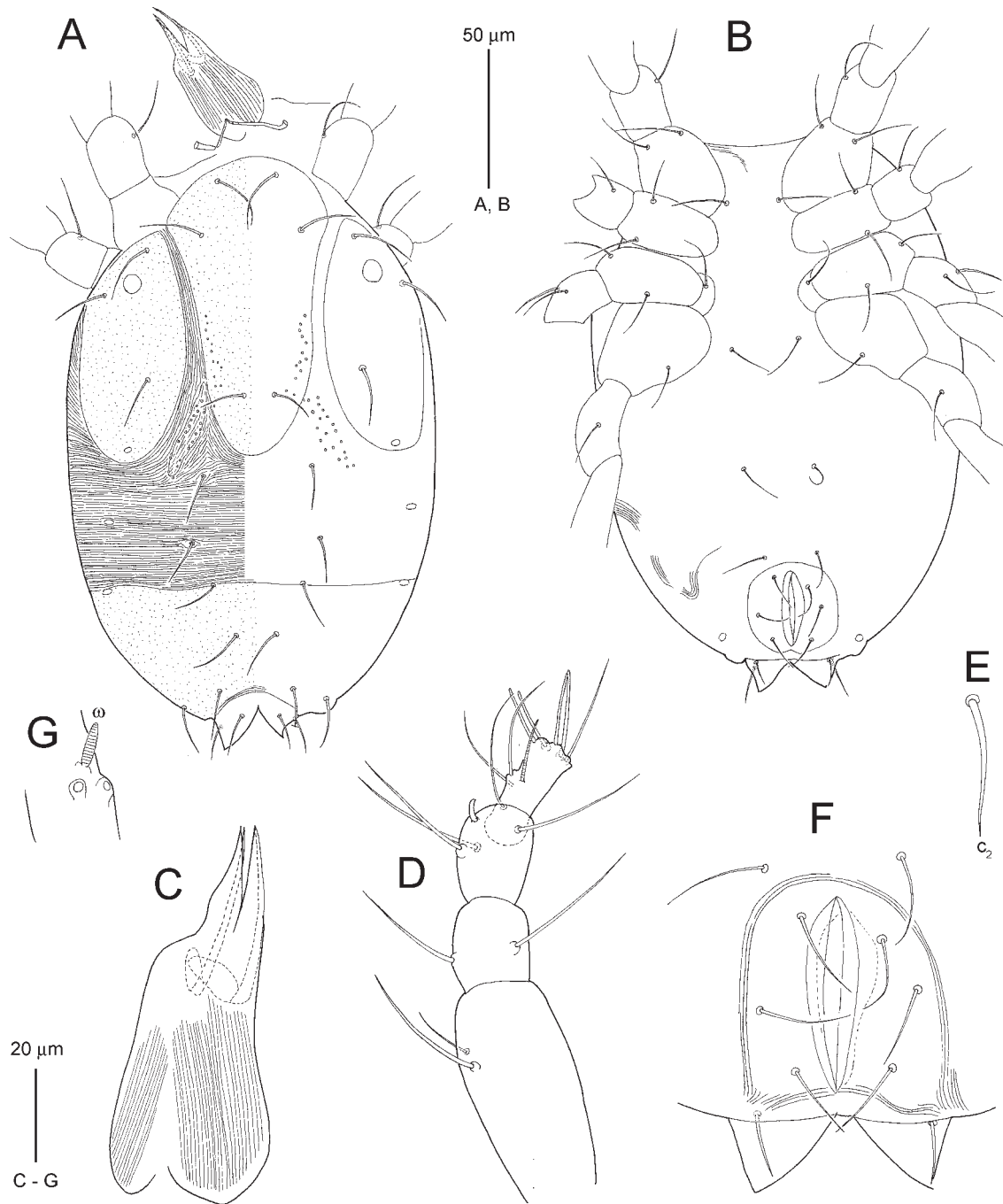
Fig. 38. *Raphignathus crustus* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 39.** *Raphignathus crustus* sp. n. (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, eye; E, dorsal idiosomal seta; F, aedeagus.



**Fig. 40.** *Raphignathus crustus* sp. n. (male). A, leg I; B, leg II; C, leg III; D, leg IV; E, tarsus I; F, tarsus II; G, tarsus III; H, tarsus IV.



**Fig. 41.** *Raphignathus gracilis* (Rack, 1962) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, dorsal idiosomal seta; F, genitoanal area; G, solenidion  $\omega$  on tarsus I.

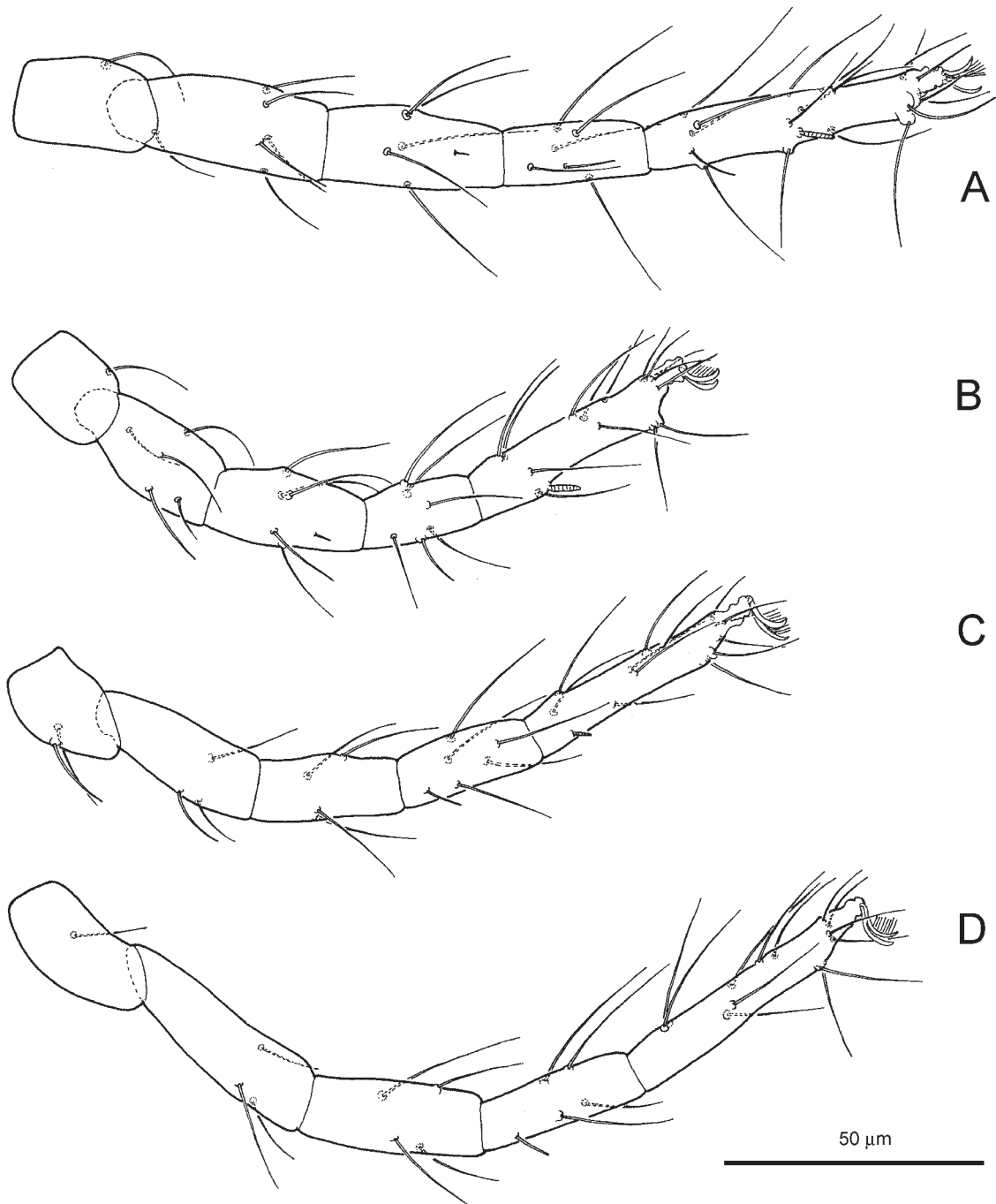
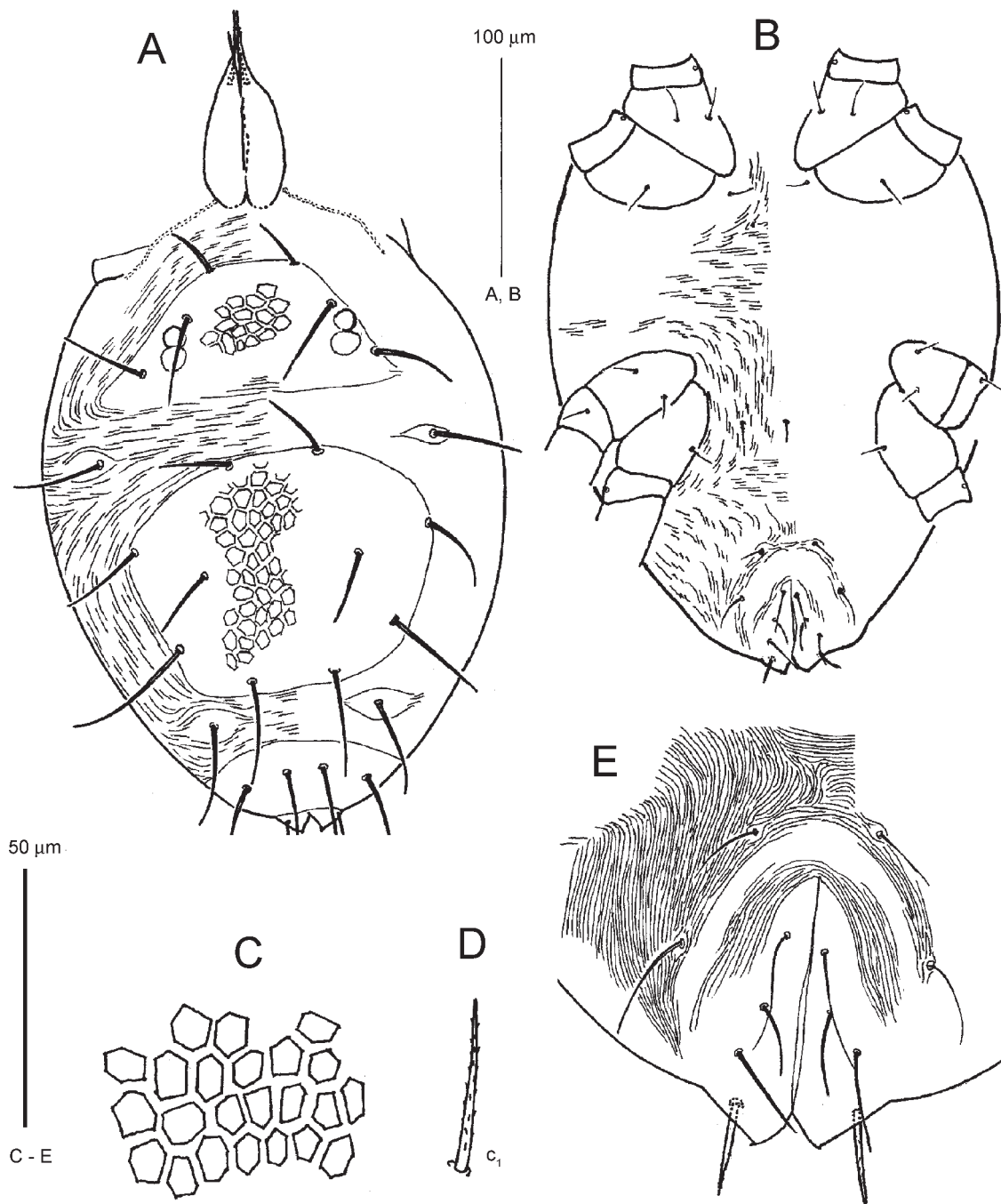


Fig. 42. *Raphignathus gracilis* (Rack, 1962) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 43.** *Agistemus collyerae* González-Rodríguez, 1963 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, reticulate pattern of dorsal shield; D, dorsal idiosomal seta; E, genitoanal area.



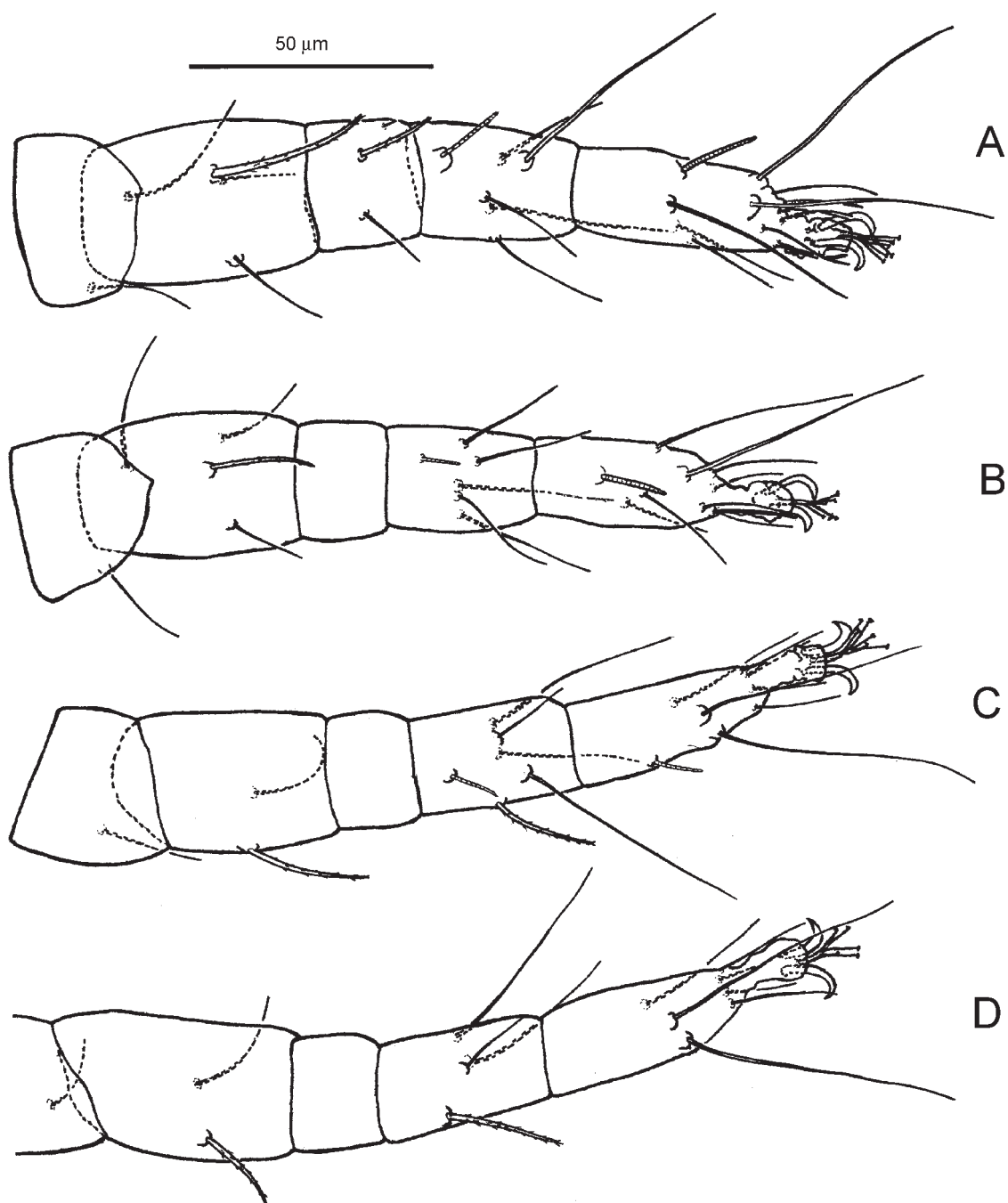
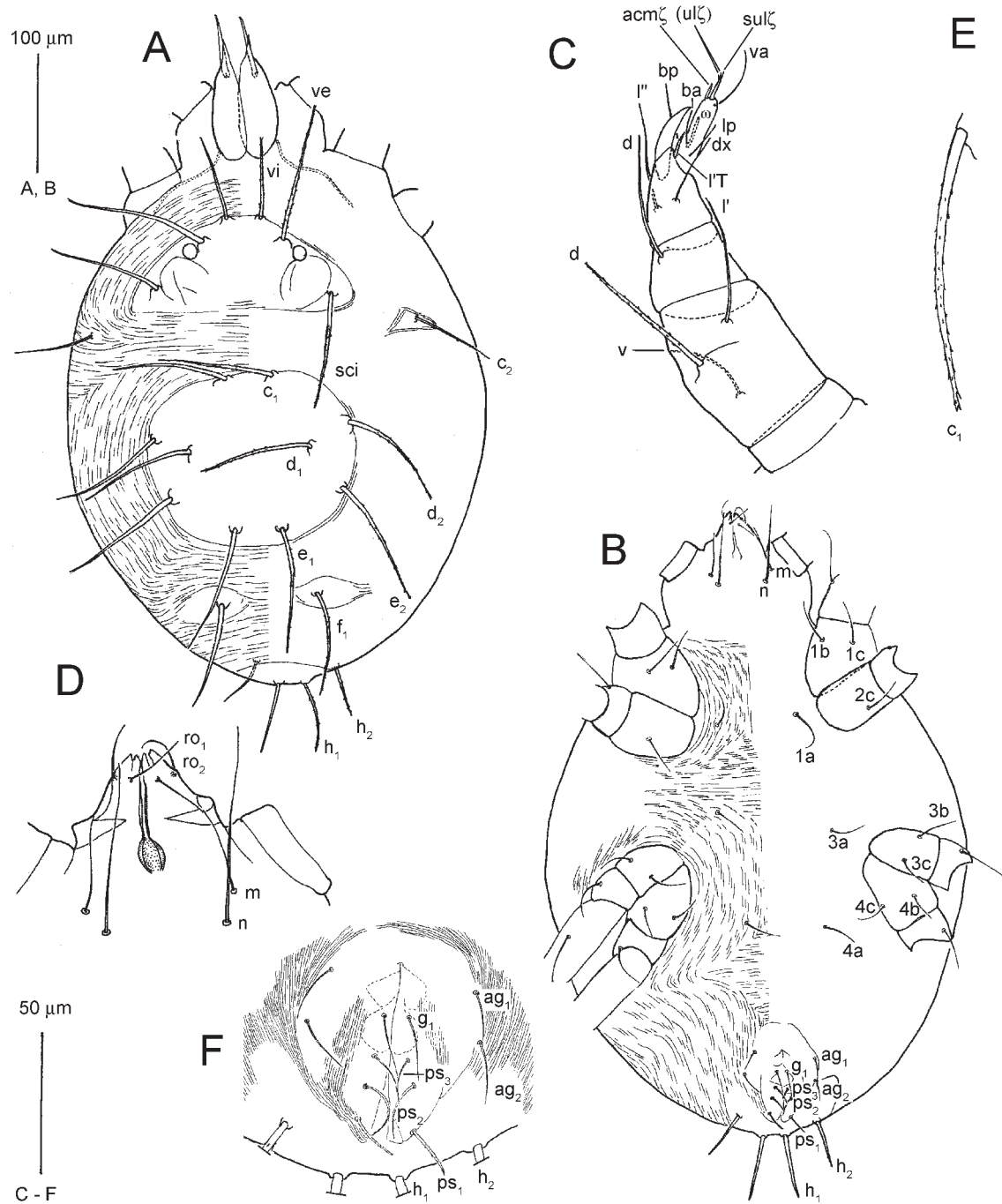


Fig. 44. *Agistemus collyerae* González-Rodríguez, 1963 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 45.** *Agistemus longisetus* González-Rodríguez, 1963 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, dorsal idiosomal seta; F, genitoanal area.

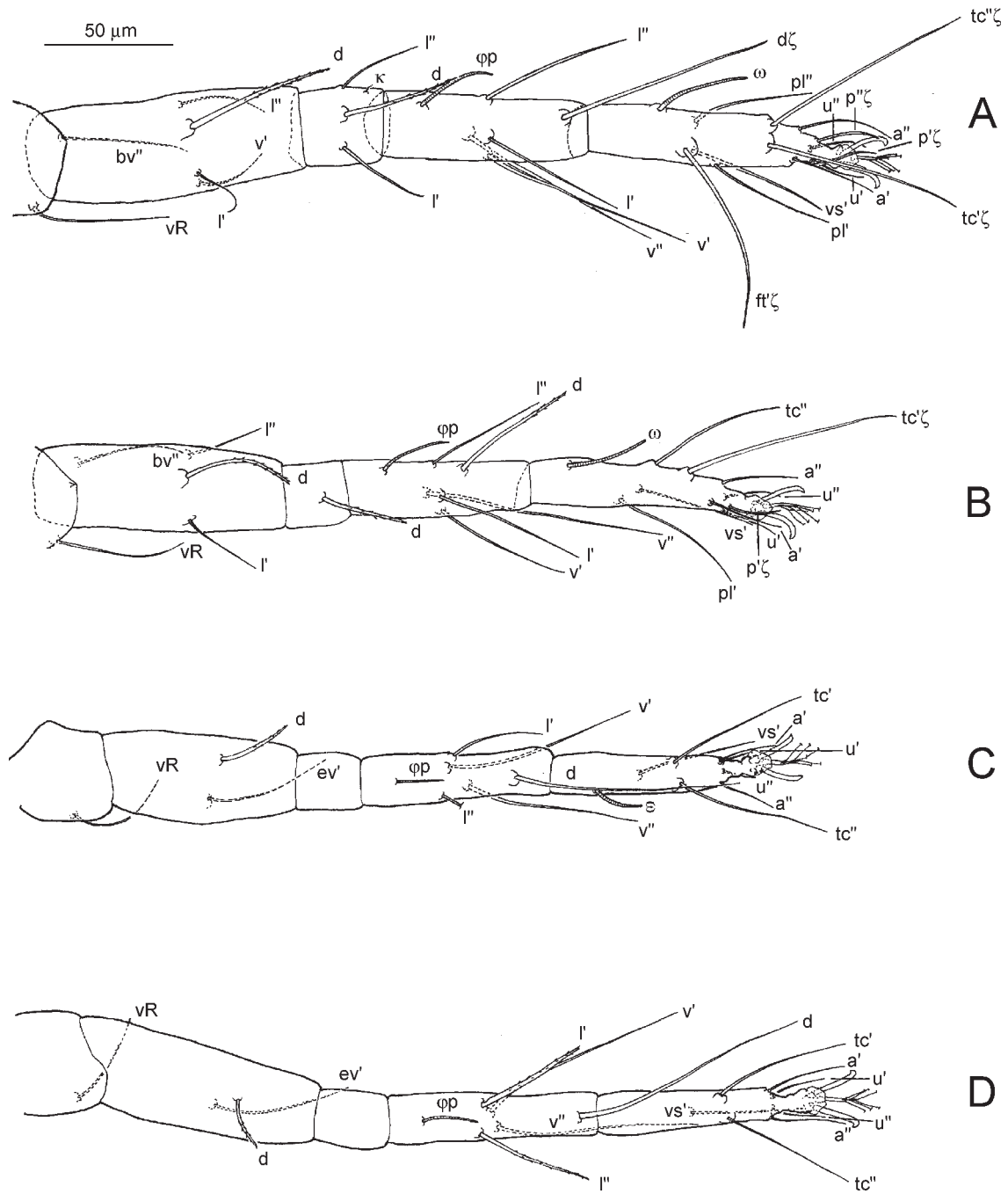
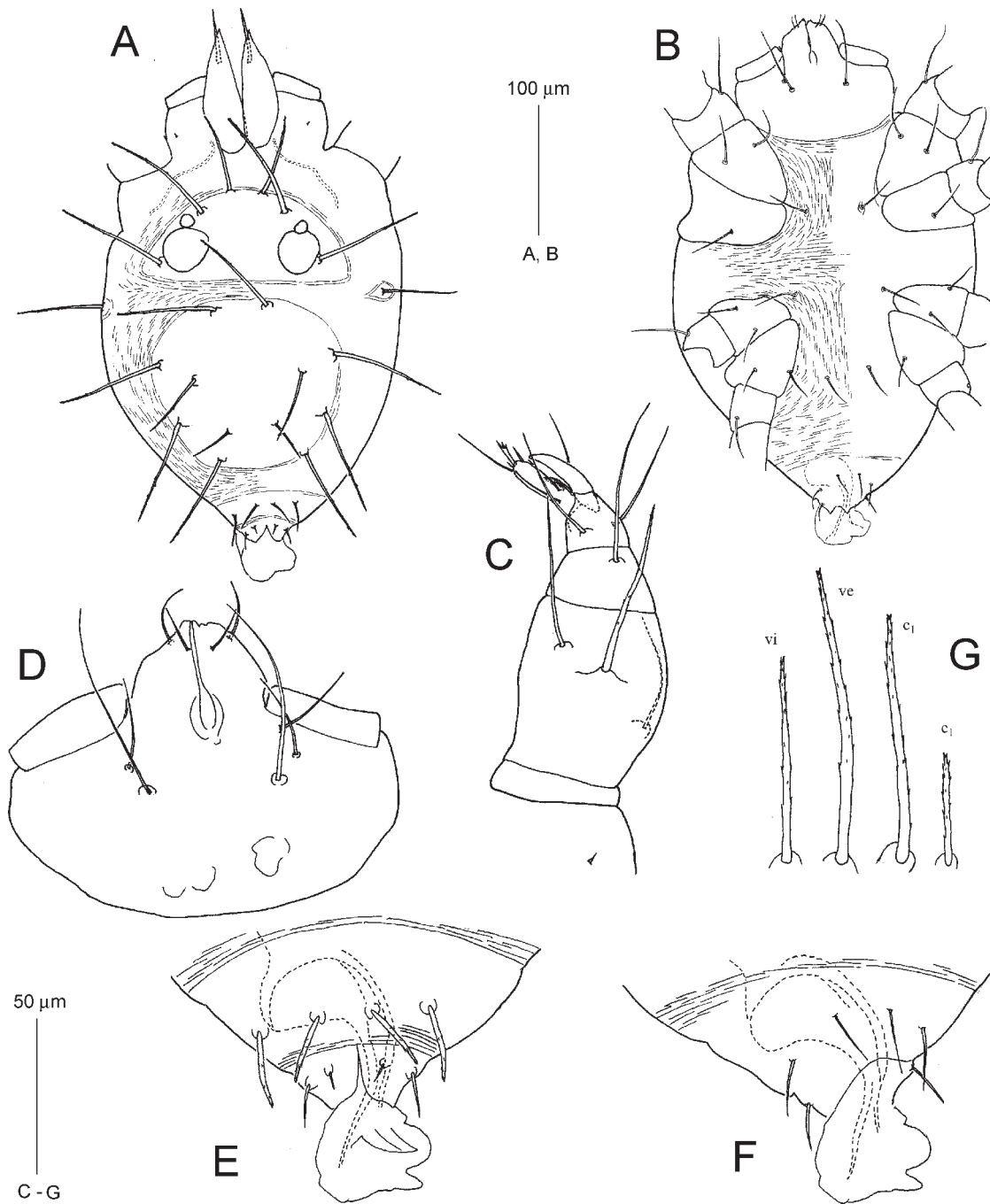
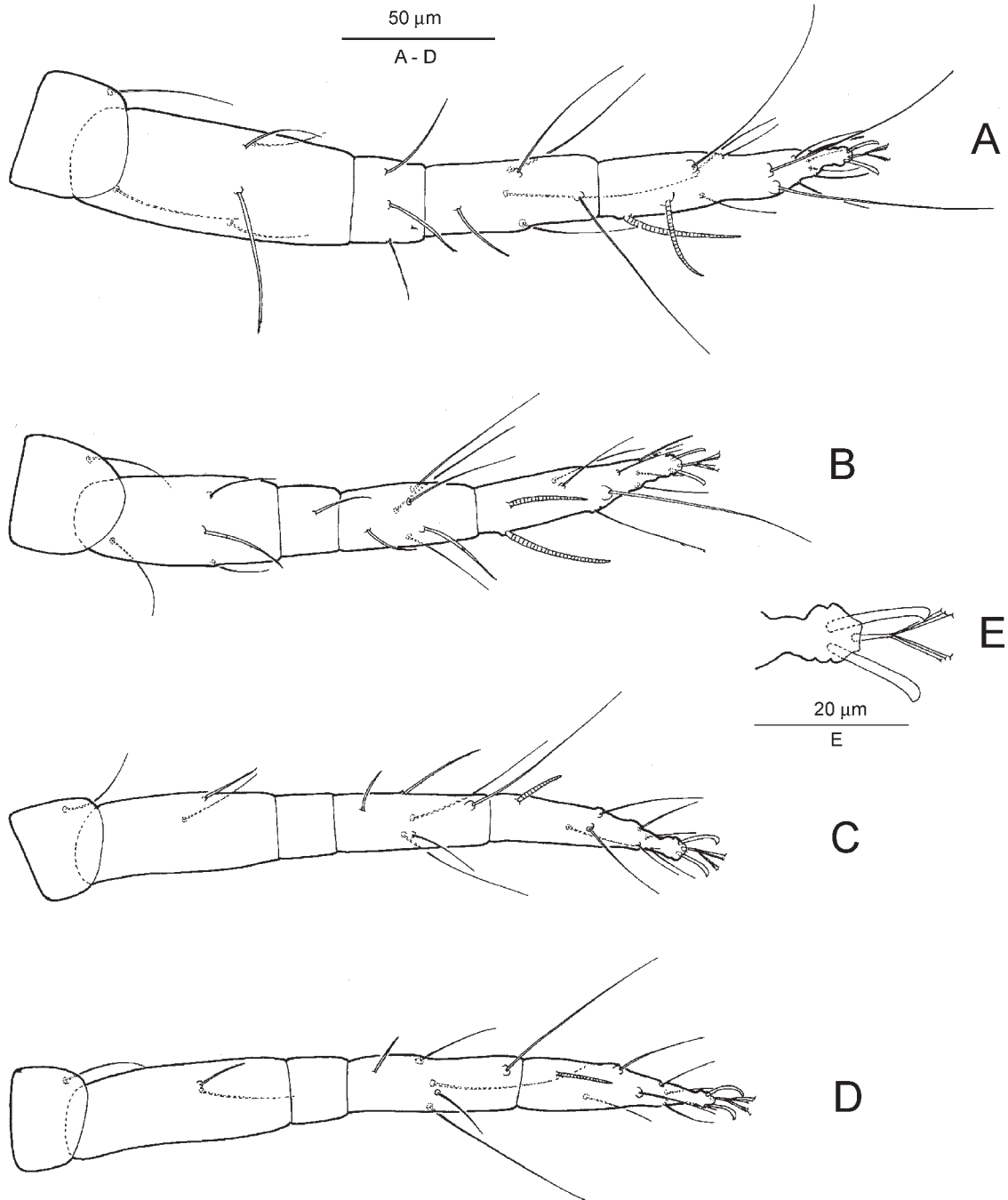


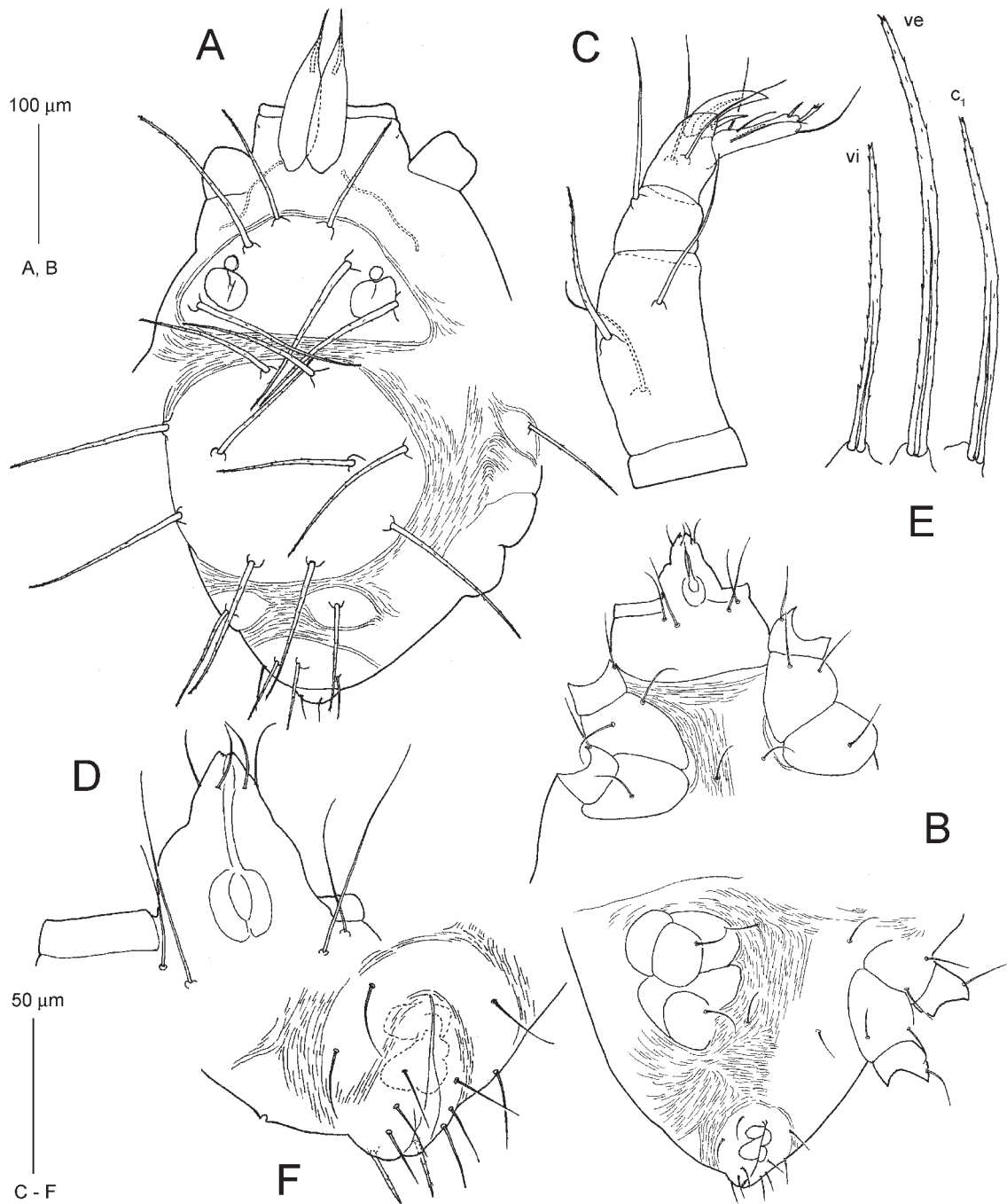
Fig. 46. *Agistemus longisetus* González-Rodríguez, 1963 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 47.** *Agistemus longisetus* González-Rodríguez, 1963 (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, dorsal view of opisthosoma; F, genitoanal area; G, dorsal idiosomal setae.



**Fig. 48.** *Agistemus longisetus* González-Rodríguez, 1963 (male). A, leg I; B, leg II; C, leg III; D, leg IV; E, pretarsus I.



**Fig. 49.** *Agistemus mecotrichus* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, dorsal idiosomal setae; F, genitoanal area.

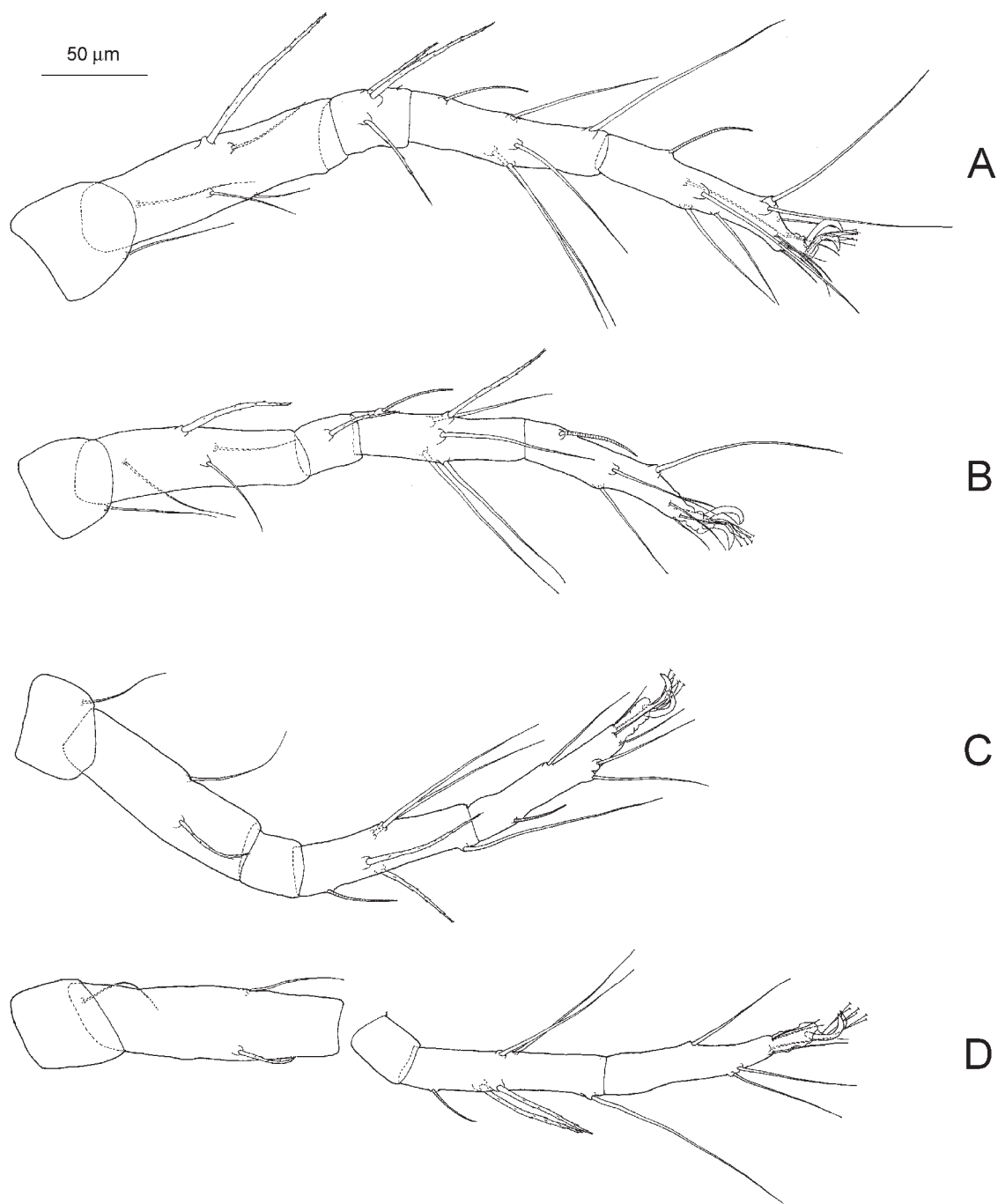
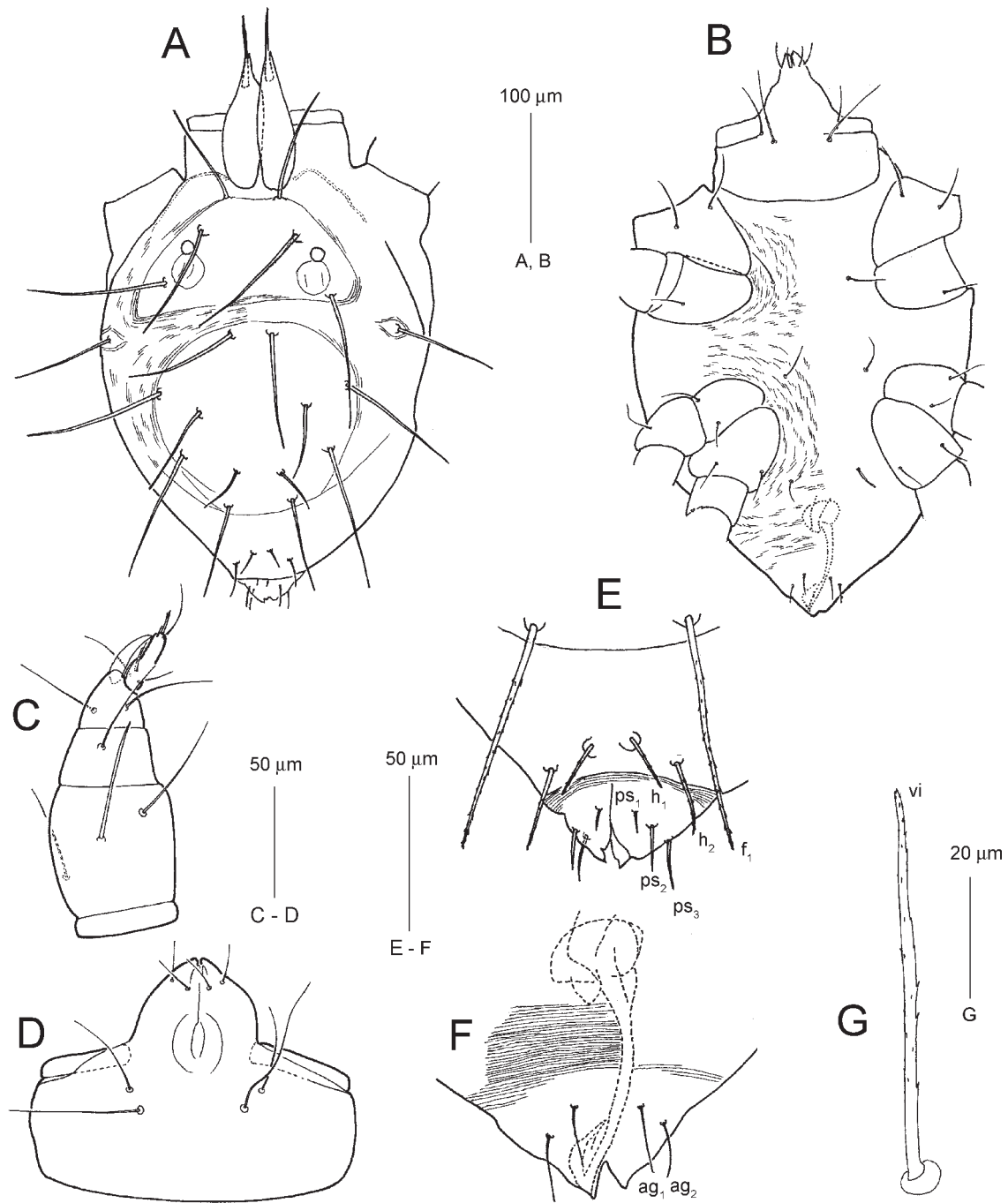


Fig. 50. *Agistemus mecotrichus* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 51.** *Agistemus mecotrichus* sp. n. (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, dorsal view of opisthosoma; F, genitoanal area; G, dorsal idiosomal seta.



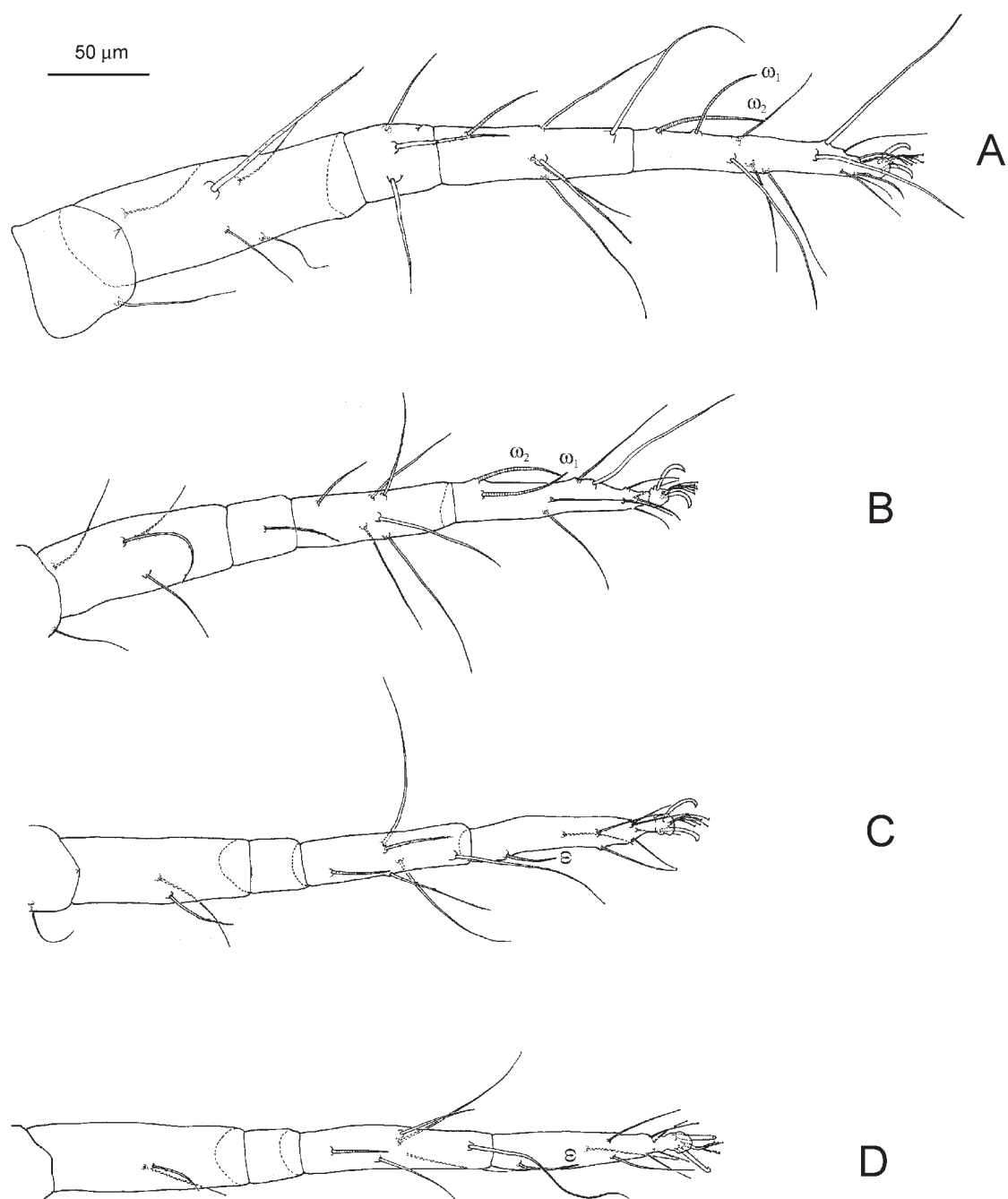
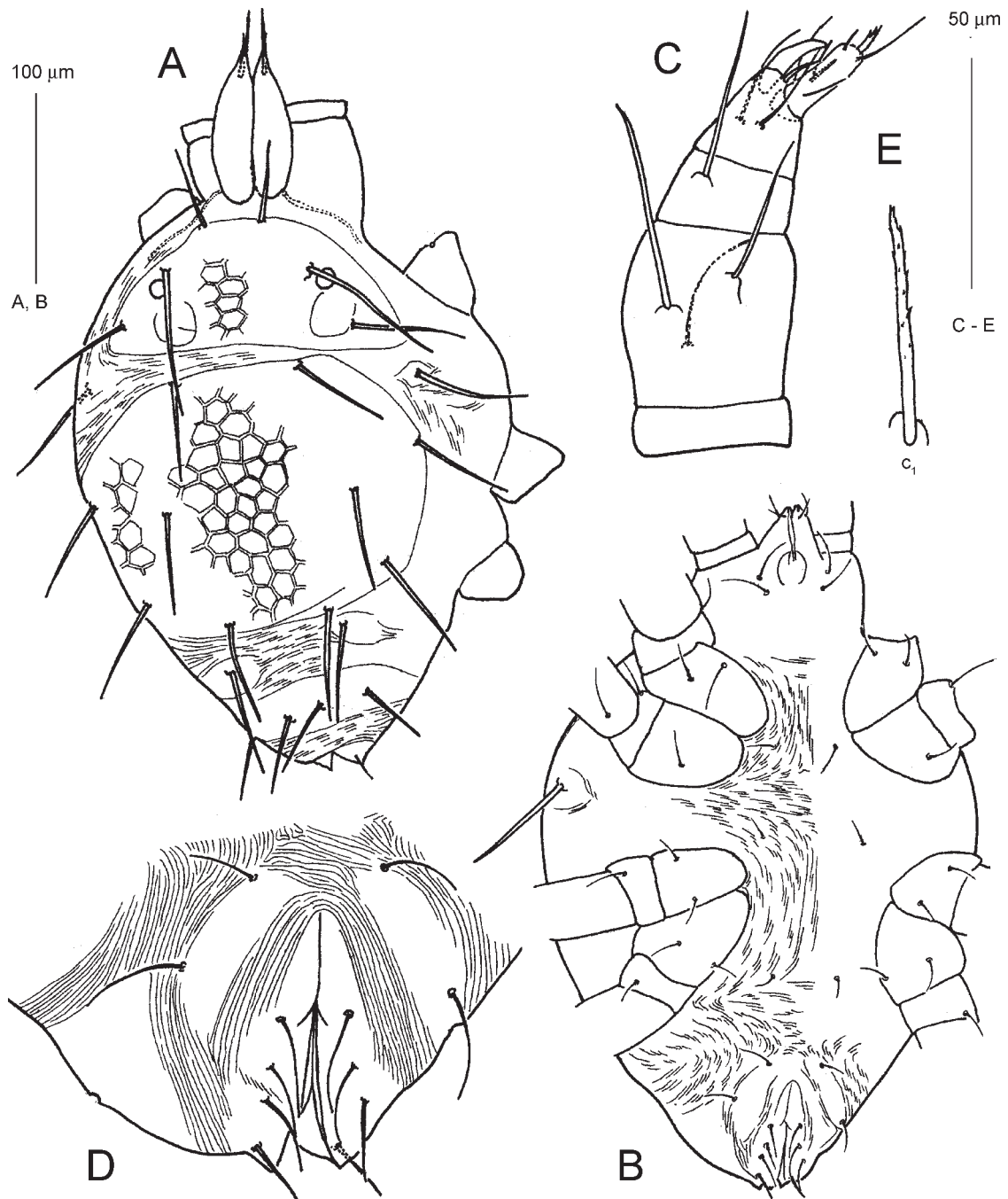


Fig. 52. *Agistemus mecotrichus* sp. n. (male). A, tarsus I; B, tarsus II; C, tarsus III; D, tarsus IV.



**Fig. 53.** *Agistemus novazelandicus* González-Rodríguez, 1963 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, genitoanal area; E, dorsal idiosomal seta .

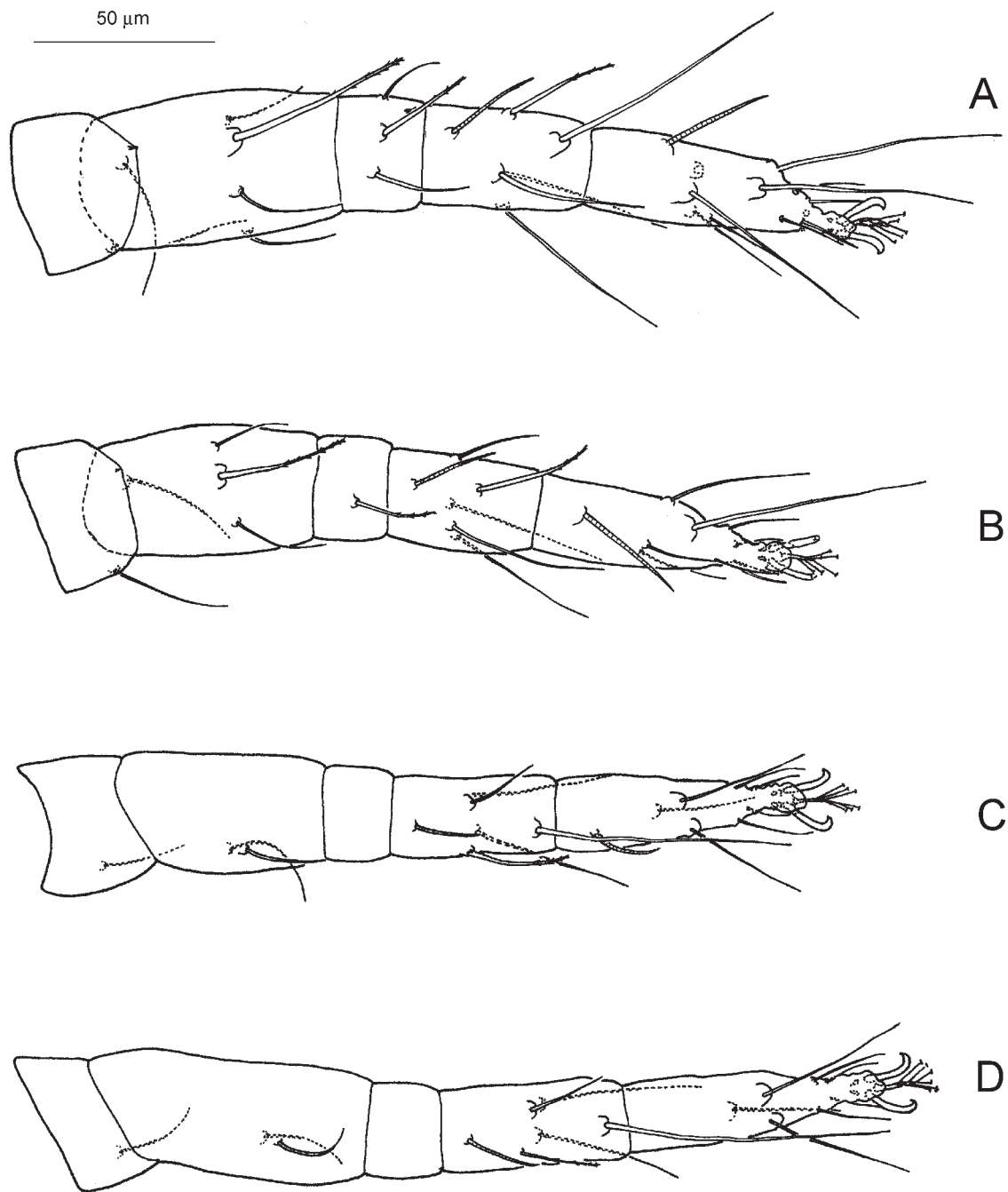


Fig. 54. *Agistemus novazelandicus* González-Rodríguez, 1963 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 55.** *Agistemus subreticulatus* (Wood, 1967) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal idiosomal seta; E, genitoanal area.

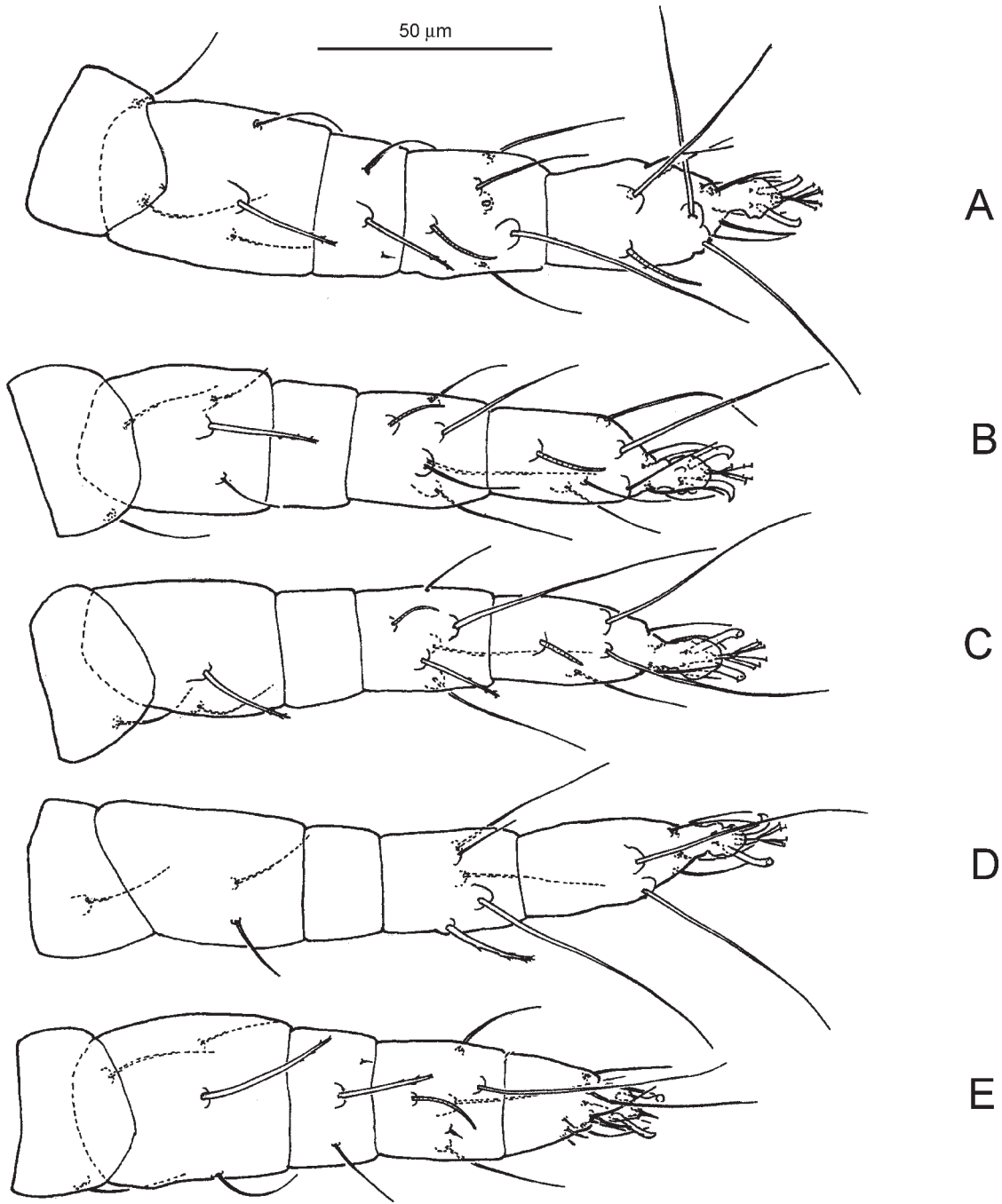
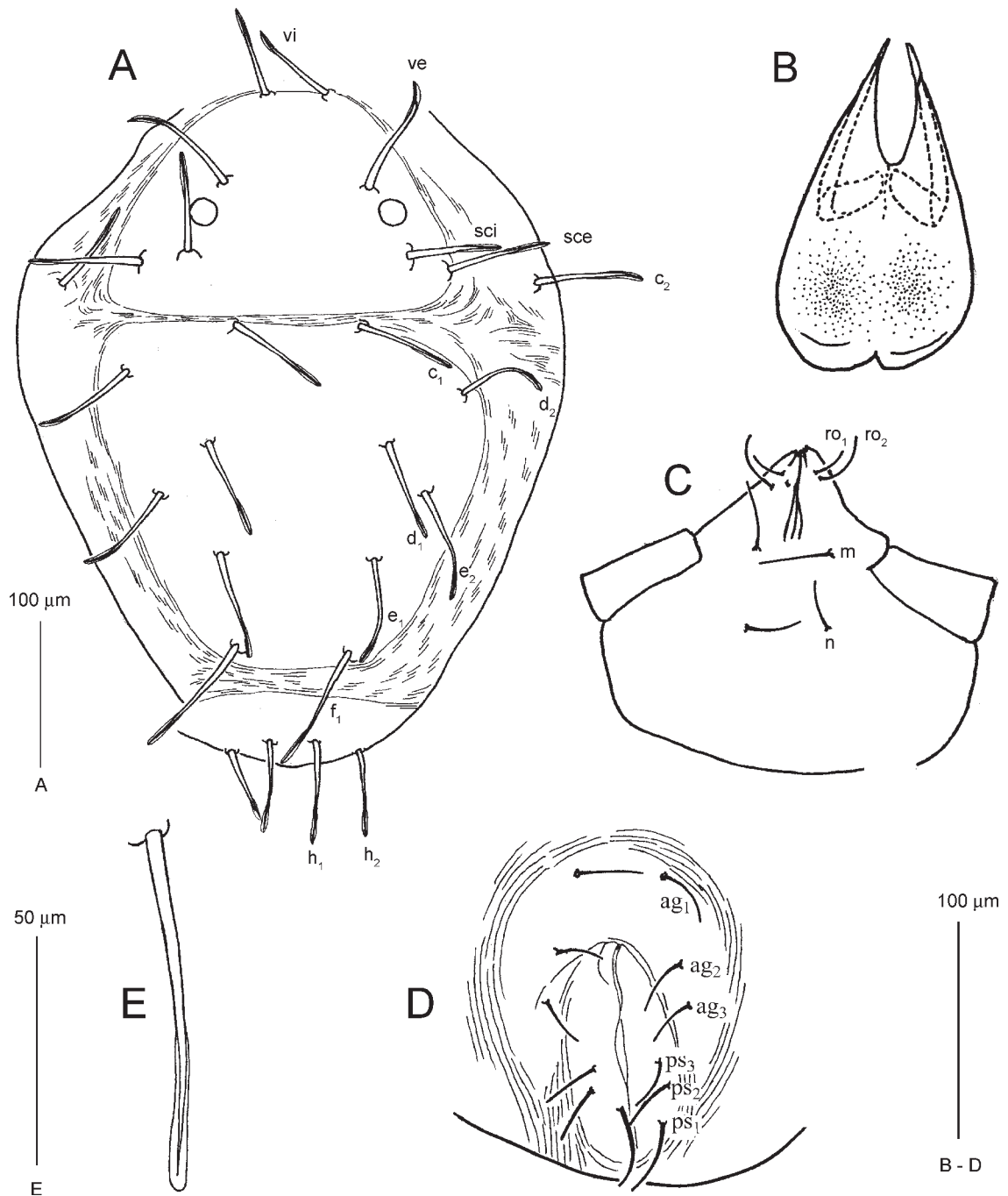


Fig. 56. *Agistemus subreticulatus* (Wood, 1967) (female). A, leg I; B, leg II; C, leg III; D, leg IV; E, abnormal leg I.



**Fig. 57.** *Cheylostigmaeus luxtoni* Wood, 1968 (female). A, dorsal view of idiosoma; B, chelicera; C, subcapitulum; D, genitoanal area; E, dorsal idiosomal seta.

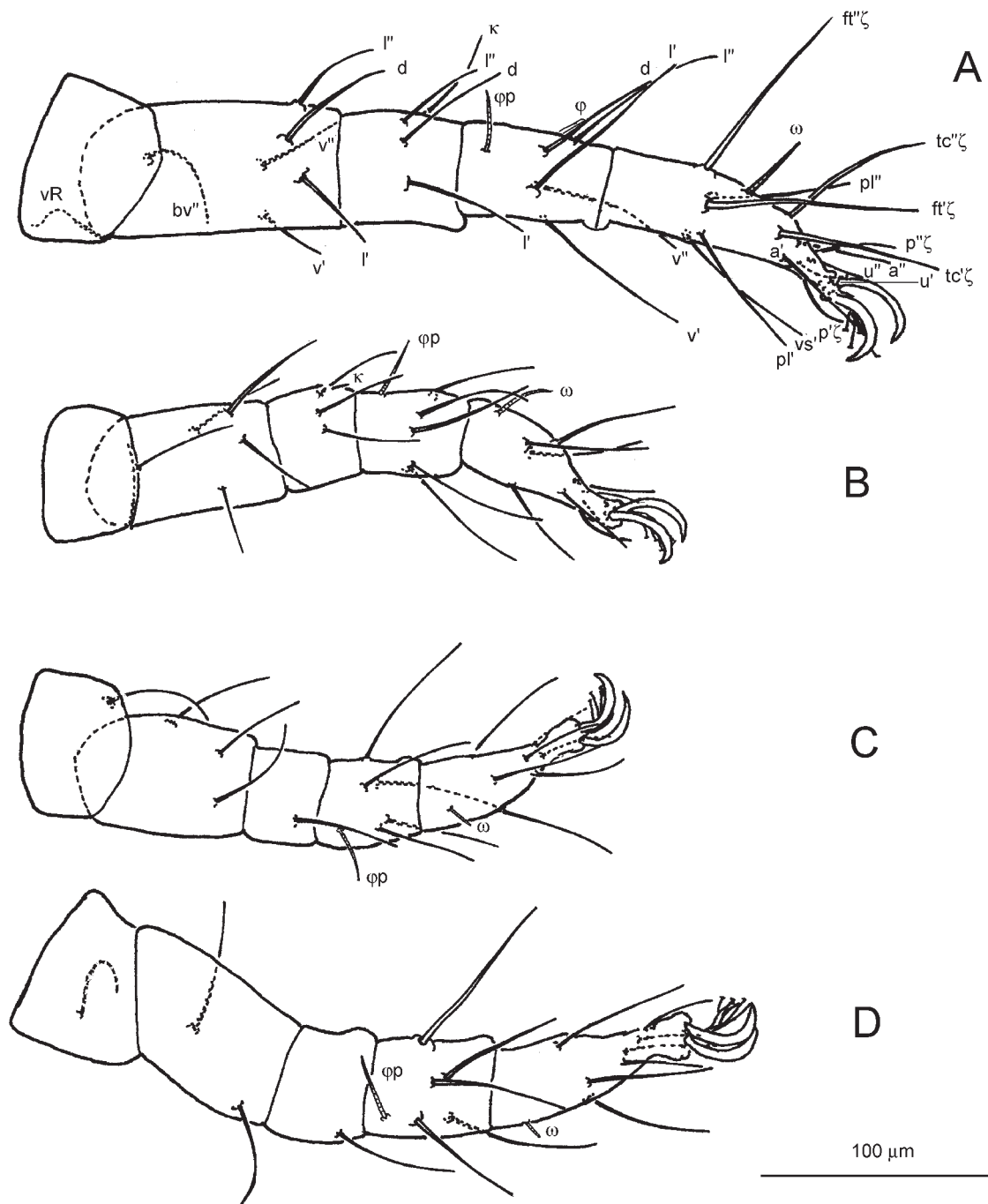
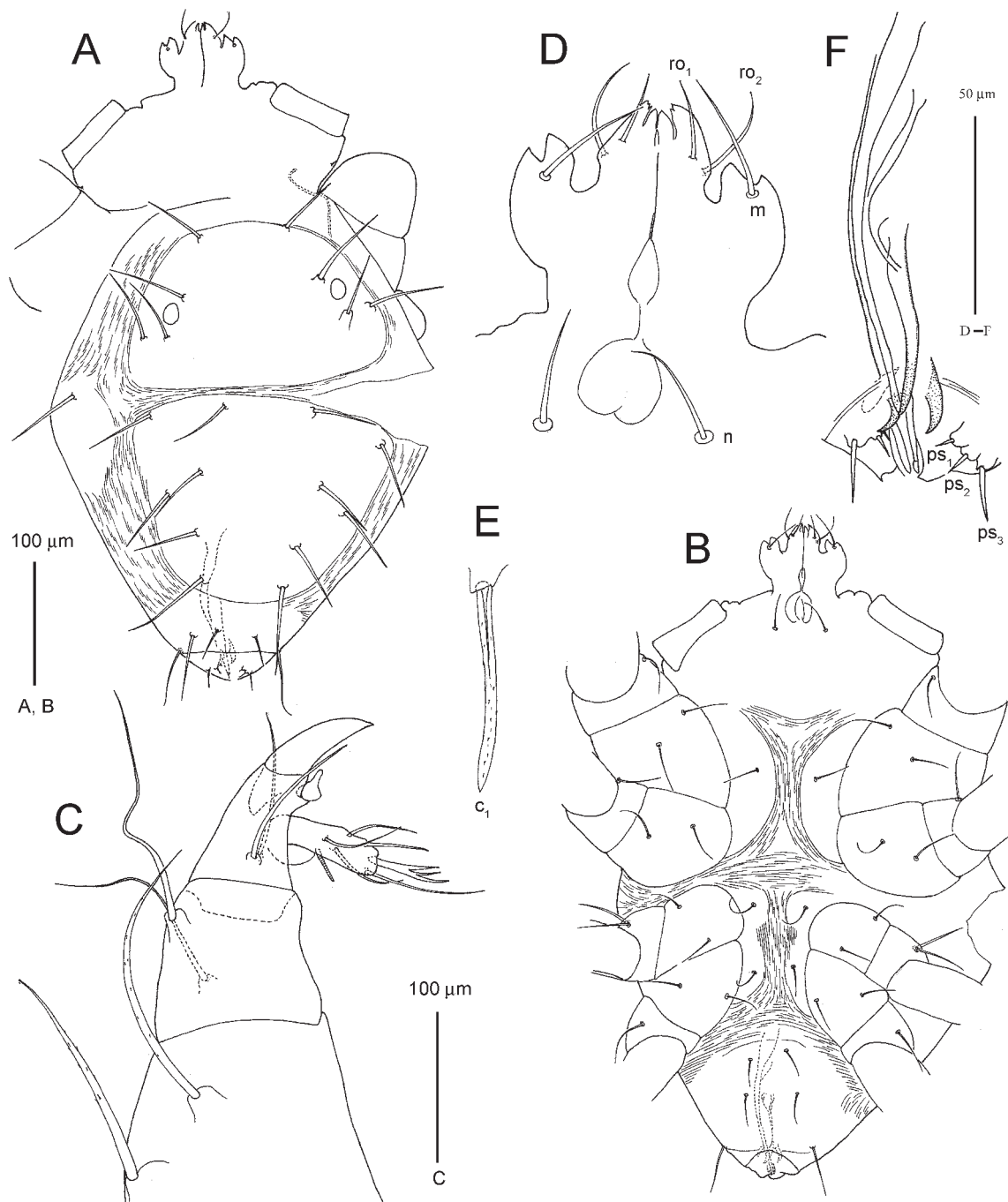


Fig. 58. *Cheylostigmaeus luxtoni* Wood, 1968 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 59.** *Cheylostigmaeus luxtoni* Wood, 1968 (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, dorsal idiosomal seta; F, aedeagus.



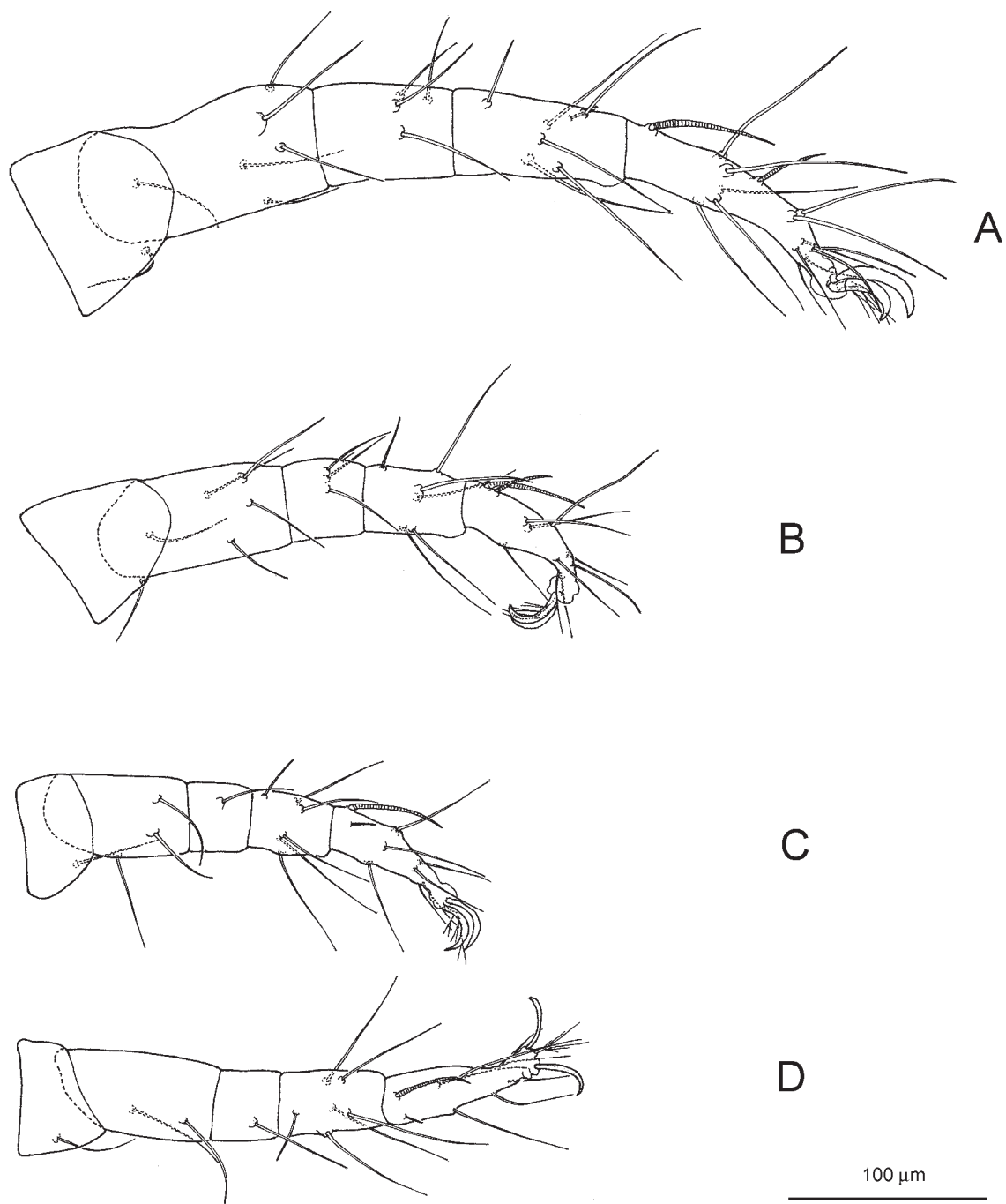
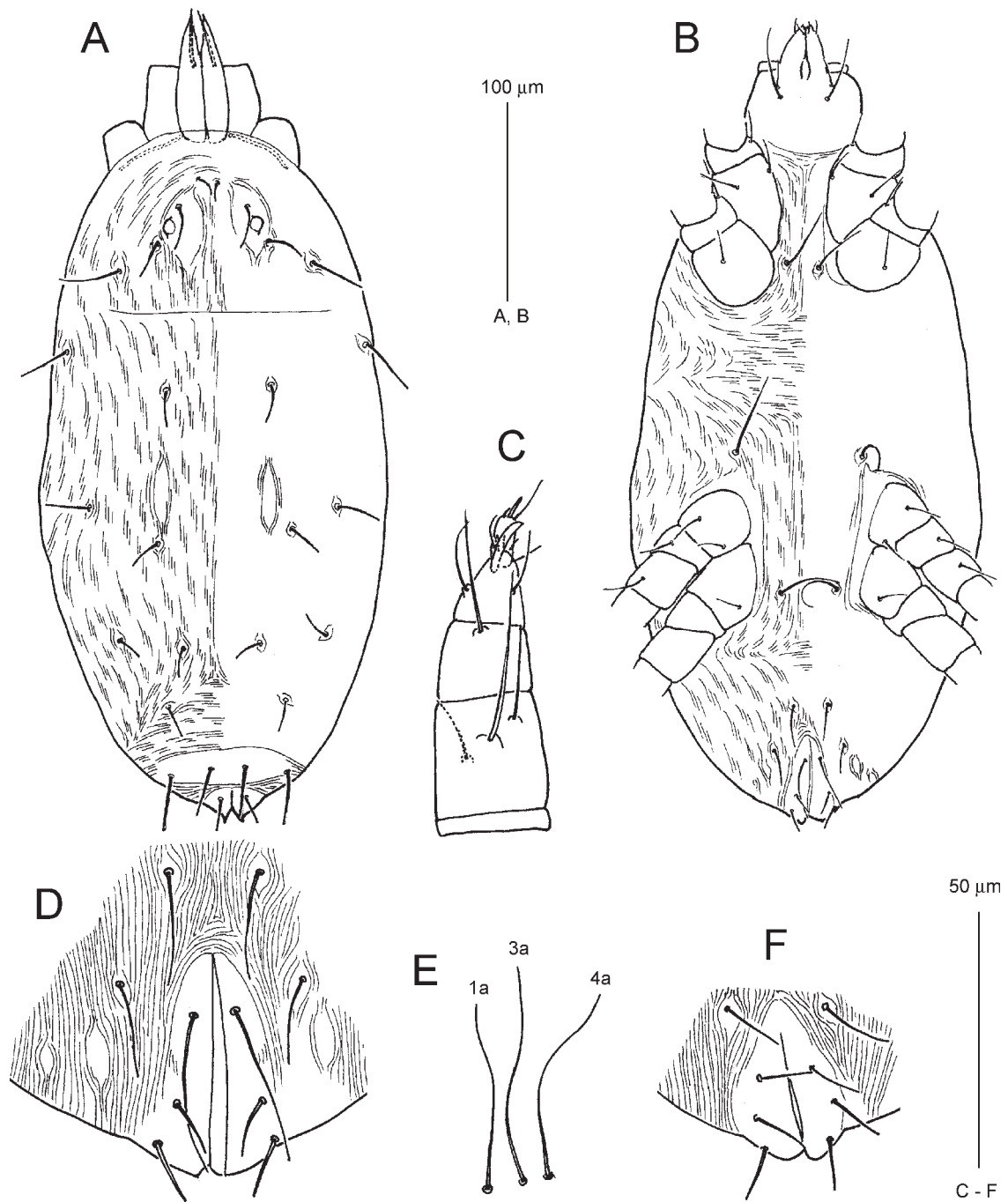


Fig. 60. *Cheylostigmaeus luxtoni* Wood, 1968 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 61.** *Eryngiopus arboreus* Wood, 1967 (A–E, female; F, protonymph). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, genitoanal area; E, ventral idiosomal setae; F, genitoanal area.

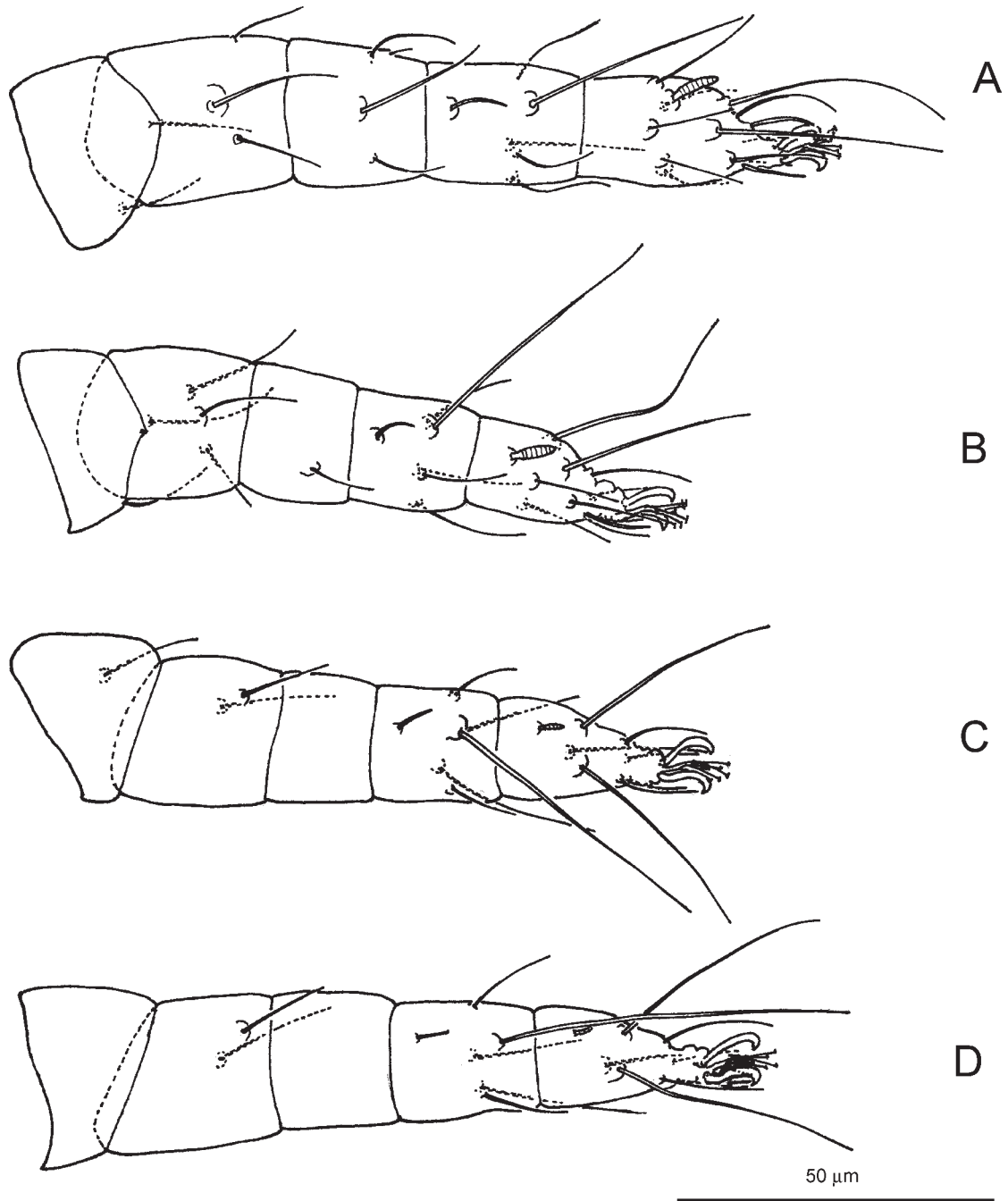
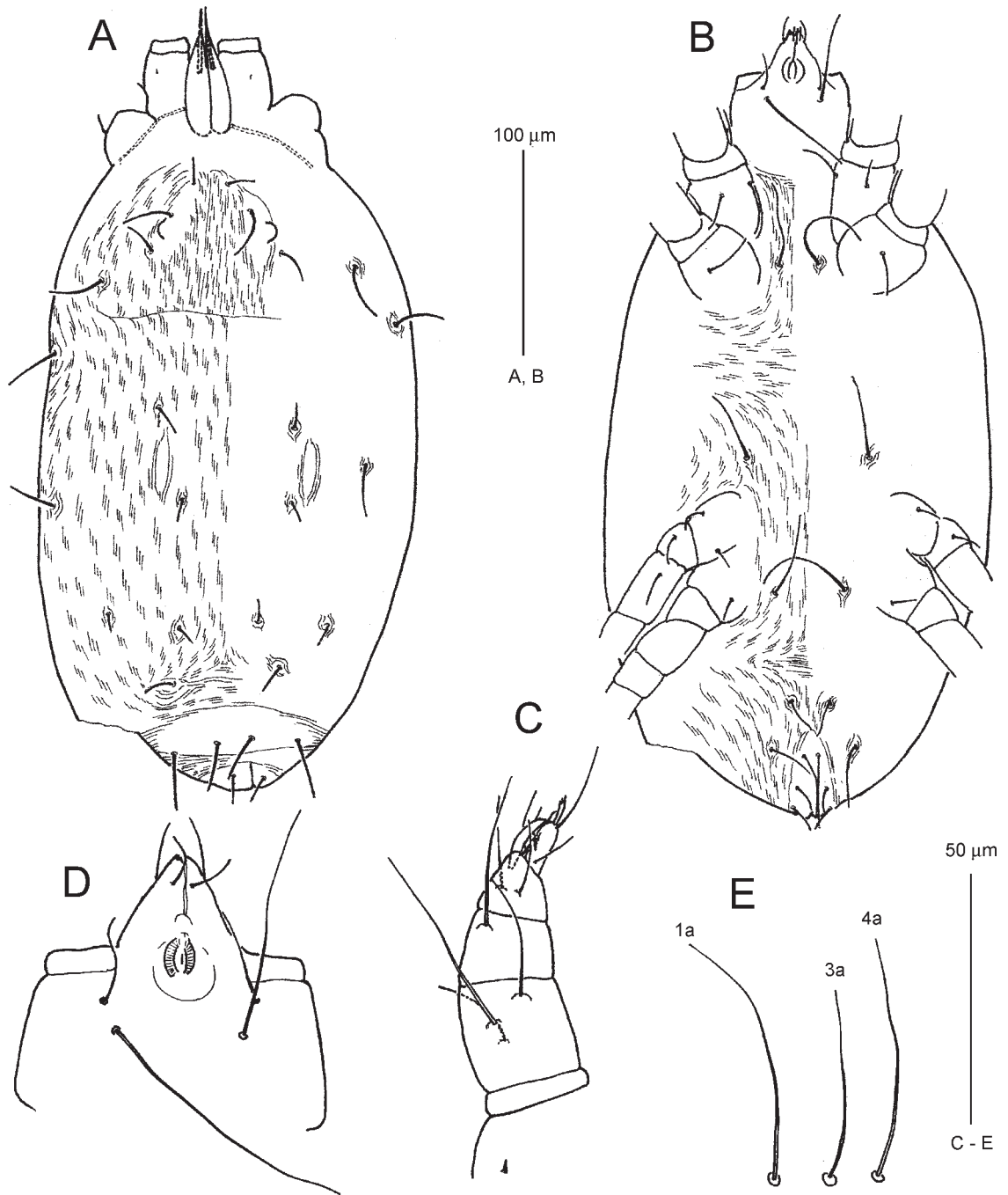


Fig. 62. *Eryngiopus arboreus* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 63.** *Eryngiopus bifidus* Wood, 1967 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, ventral idiosomal setae.

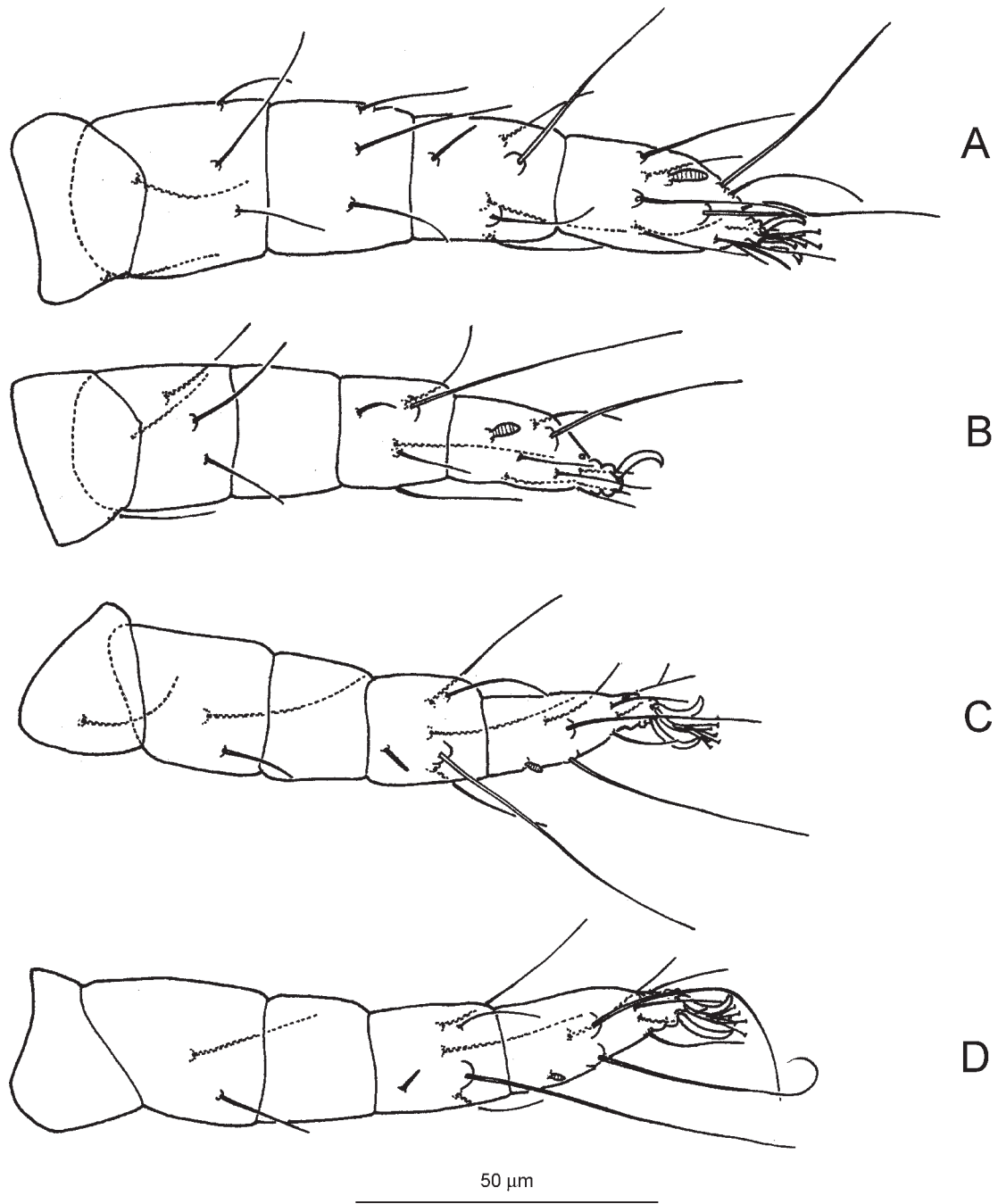
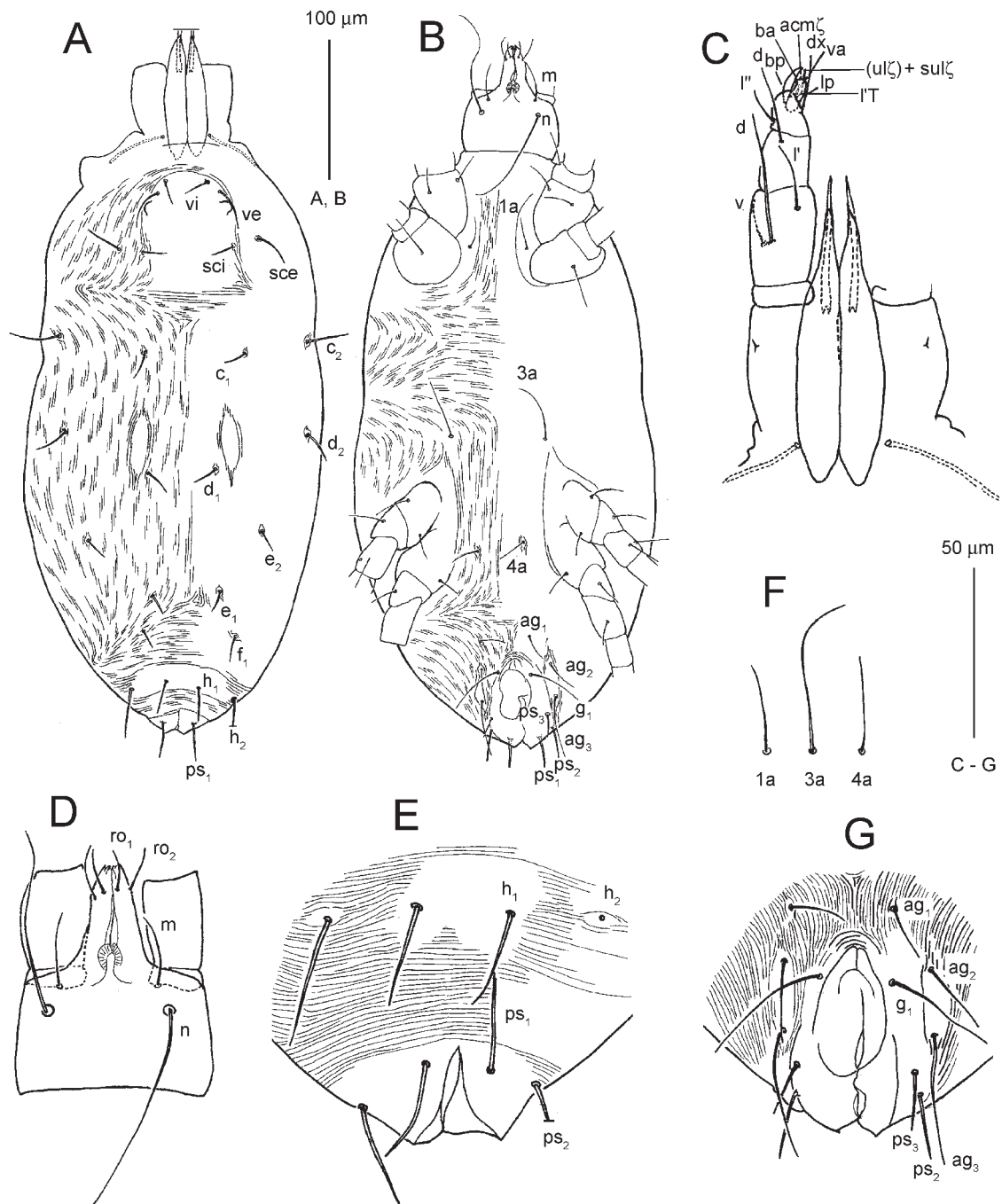


Fig. 64. *Eryngiopus bifidus* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 65.** *Eryngiopus nelsonensis* Wood, 1971 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, dorsal view of gnathosoma; D, subcapitulum; E, dorsal view of opisthosoma; F, ventral idiosomal setae; G, genitoanal area.

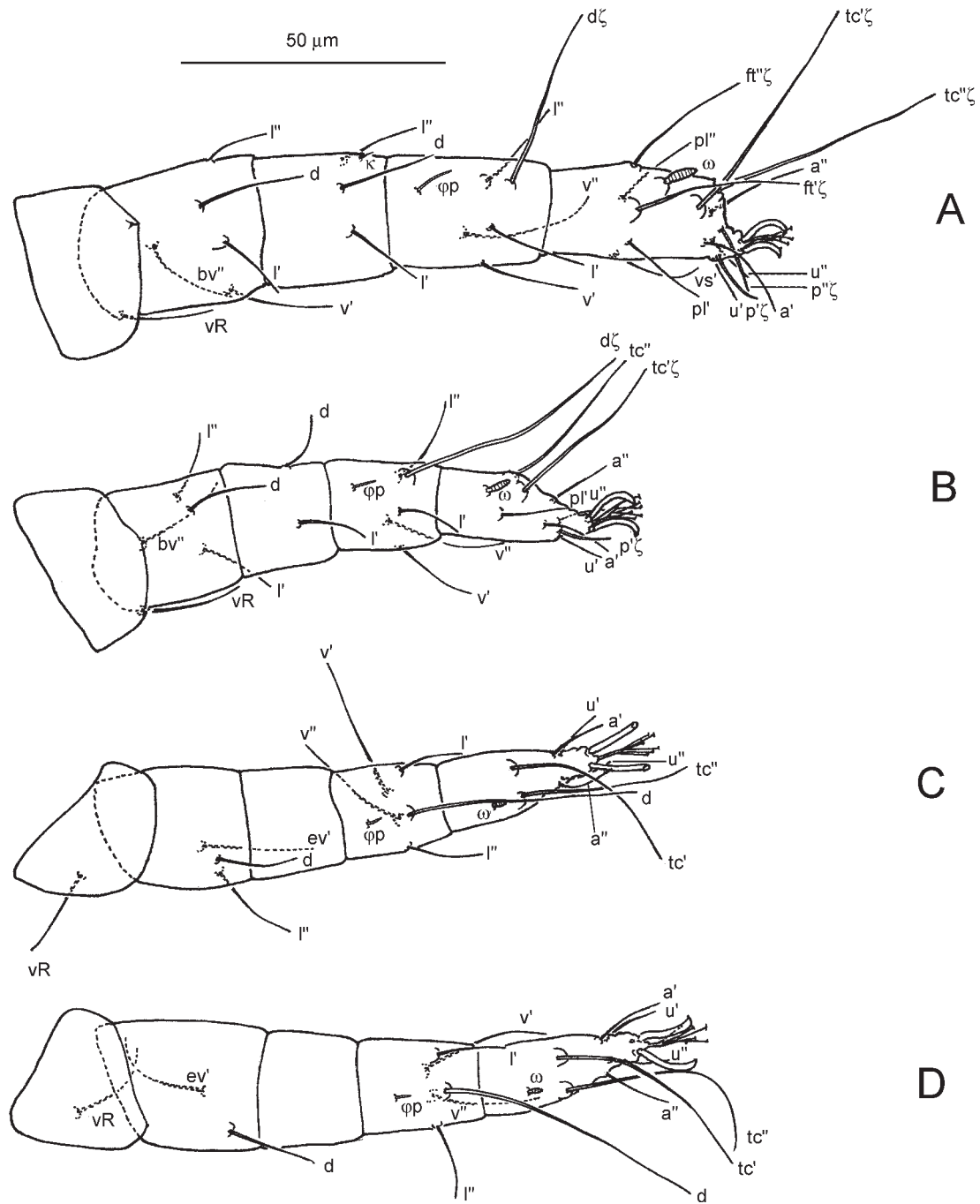
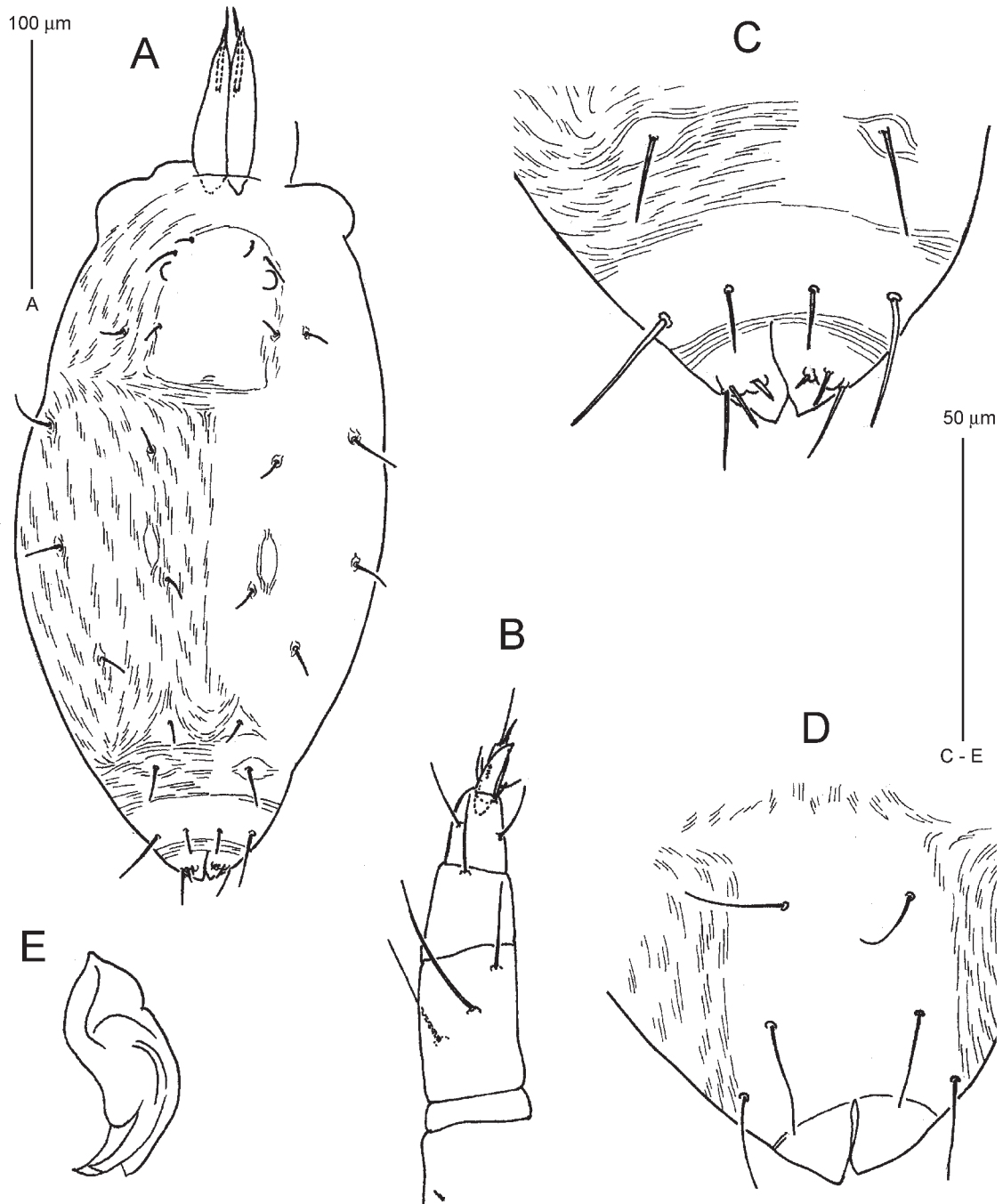


Fig. 66. *Eryngiopus nelsonensis* Wood, 1971 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 67.** *Eryngiopus nelsonensis* Wood, 1971 (male). A, dorsal view of idiosoma; B, palp; C, dorsal view of opisthosoma; D, genitoanal area; E, aedeagus.



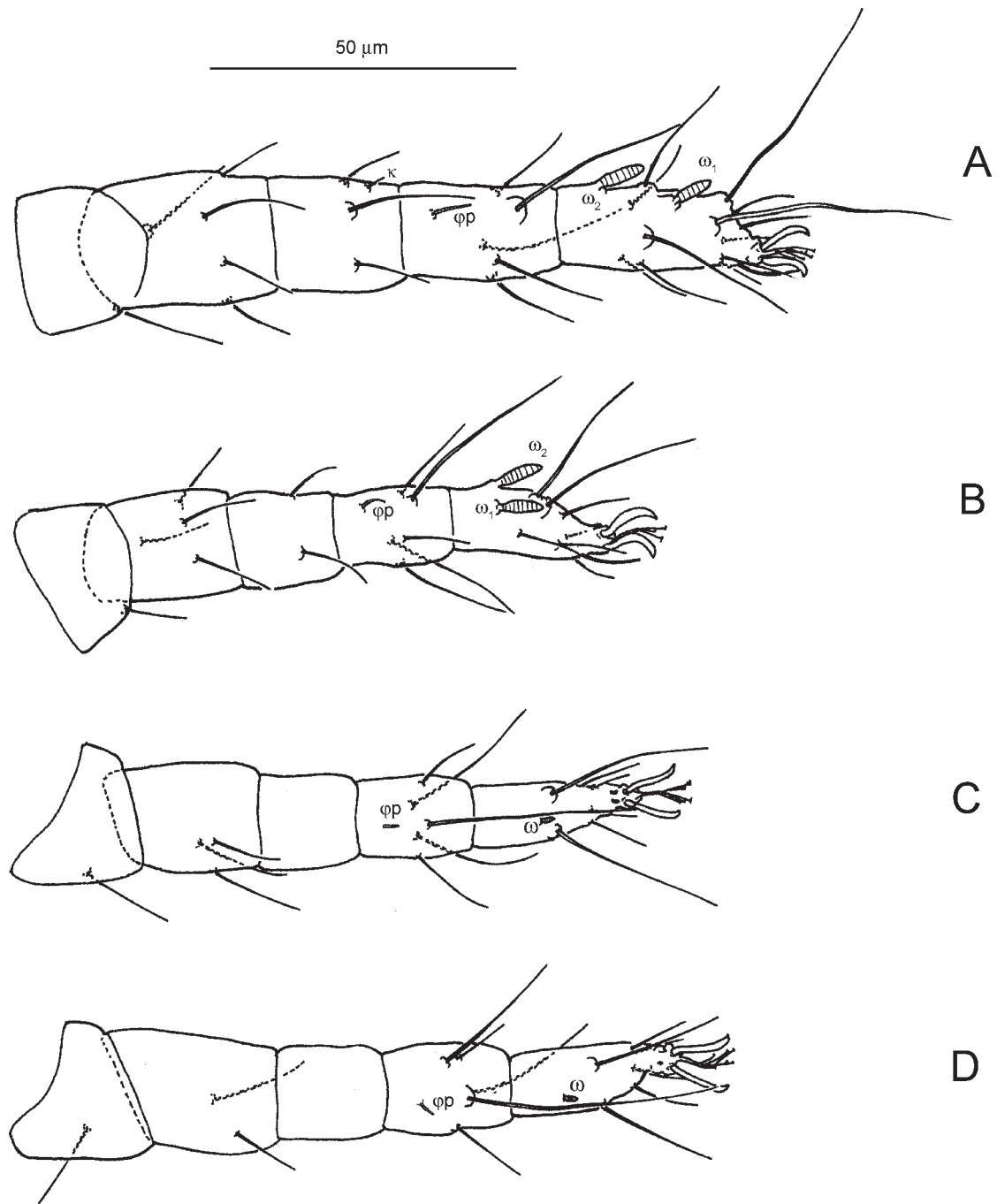


Fig. 68. *Eryngiopus nelsonensis* Wood, 1971 (male). A, leg I; B, leg II; C, leg III; D, leg IV.

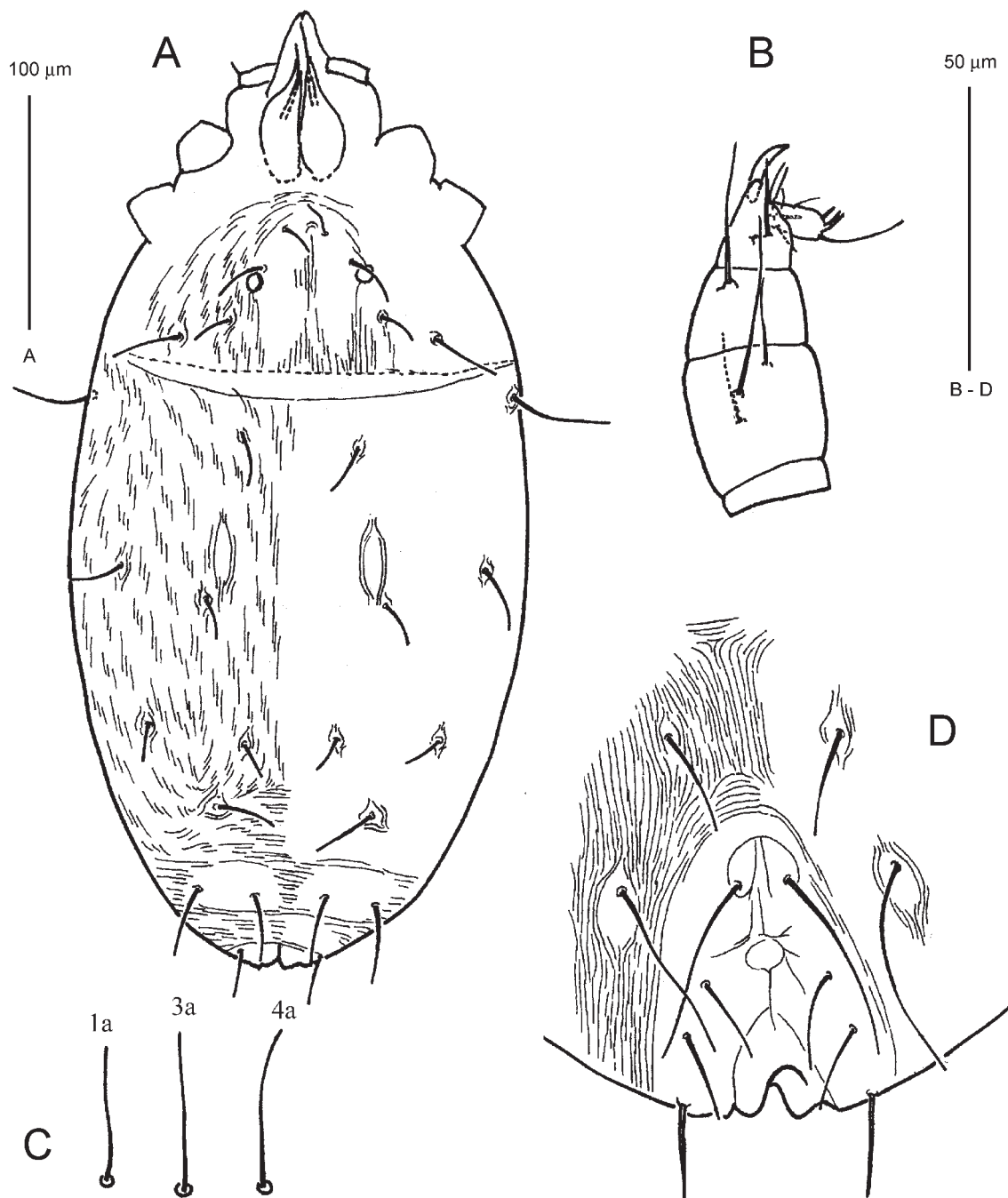


Fig. 69. *Eryngiopus similis* Wood, 1967 (female). A, dorsal view of idiosoma; B, palp; C, ventral idiosomal setae; D, genitoanal area.

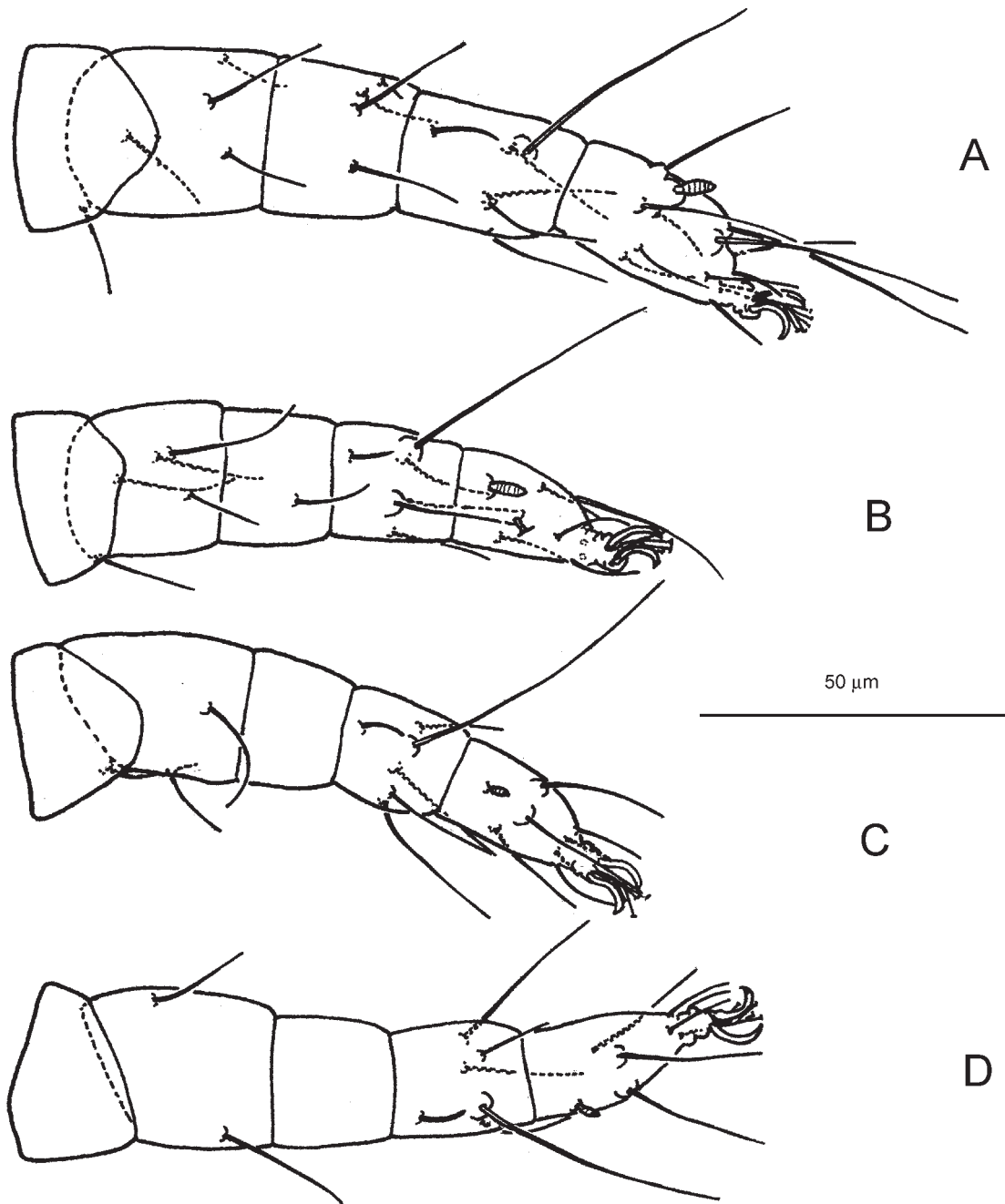
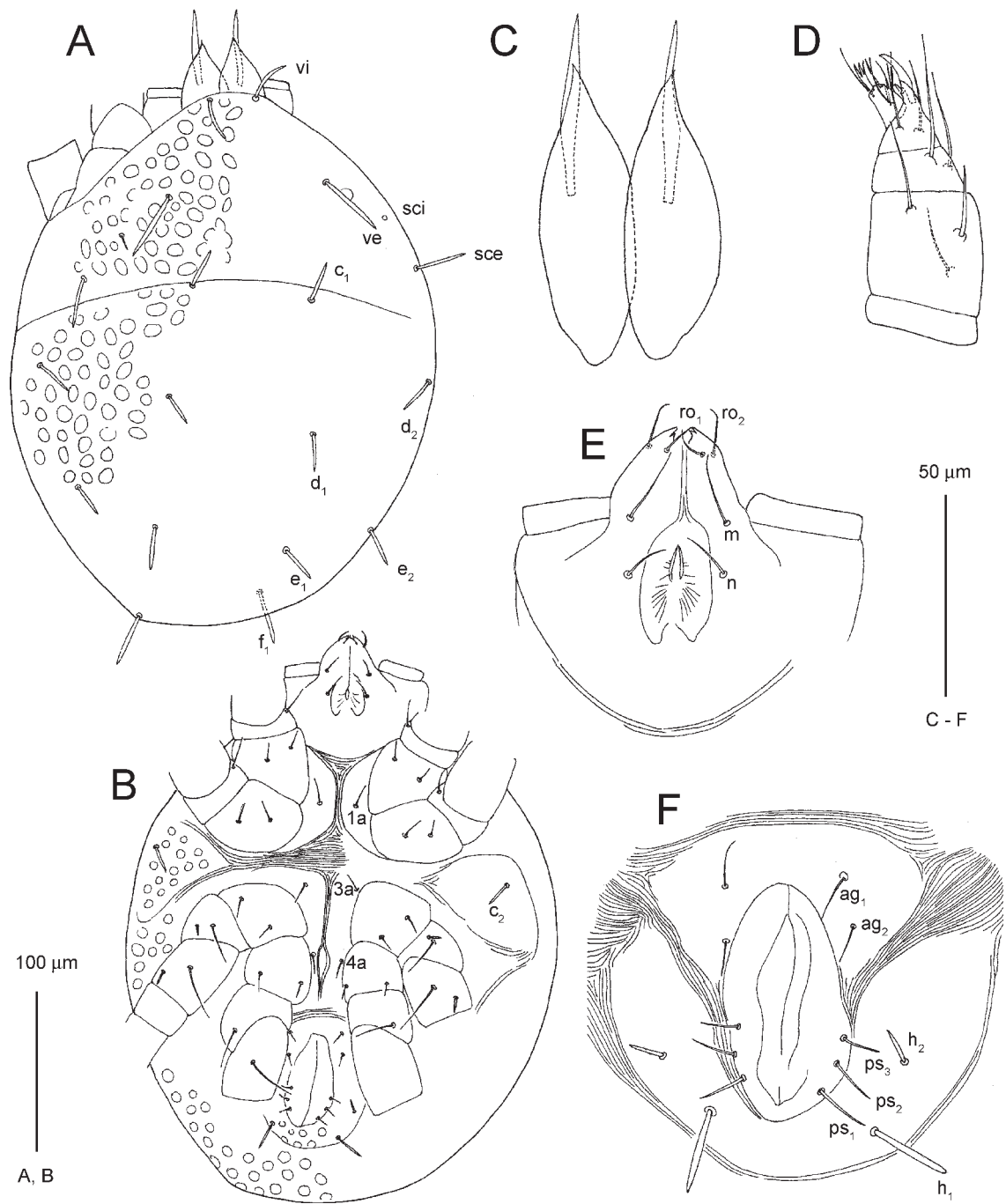


Fig. 70. *Eryngiopus similis* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 71.** *Eustigmaeus brevisetosus* (Wood, 1966) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, genitoanal area.

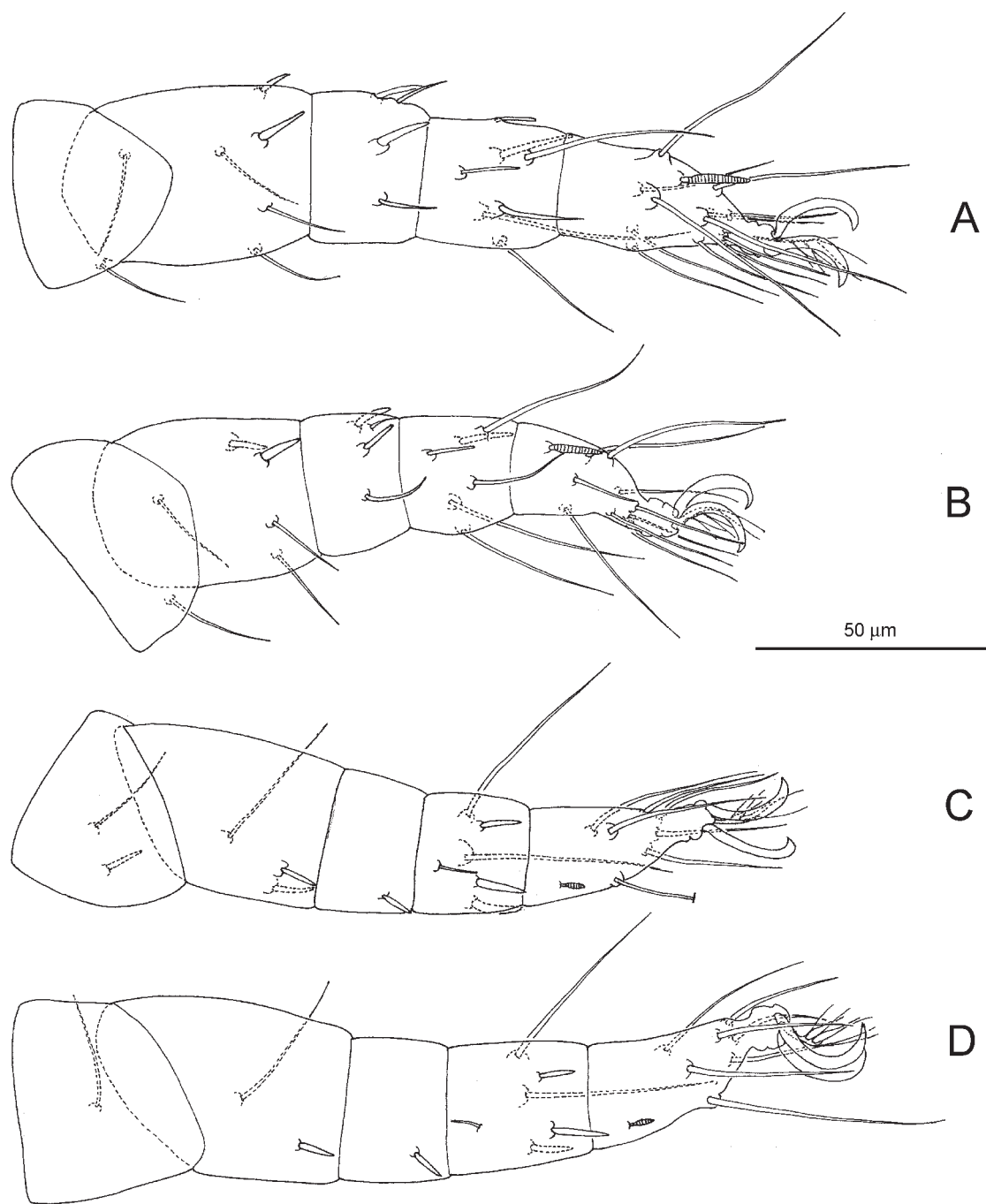
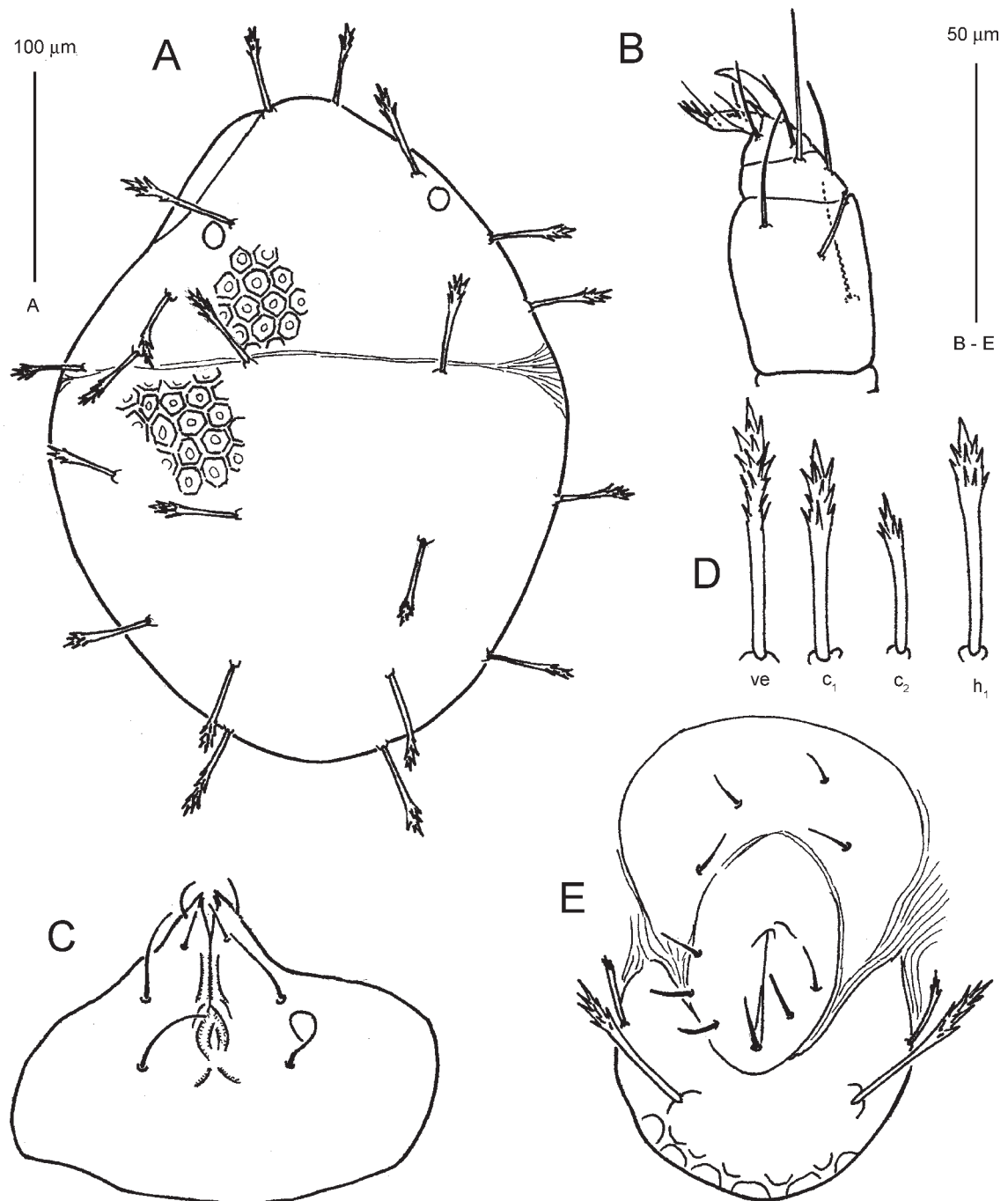


Fig. 72. *Eustigmaeus brevisetosus* (Wood, 1966) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 73.** *Eustigmaeus clavigerus* (Wood, 1966) (female). A, dorsal view of idiosoma; B, palp; C, subcapitulum; D, dorsal idiosomal seta; E, genitoanal area.

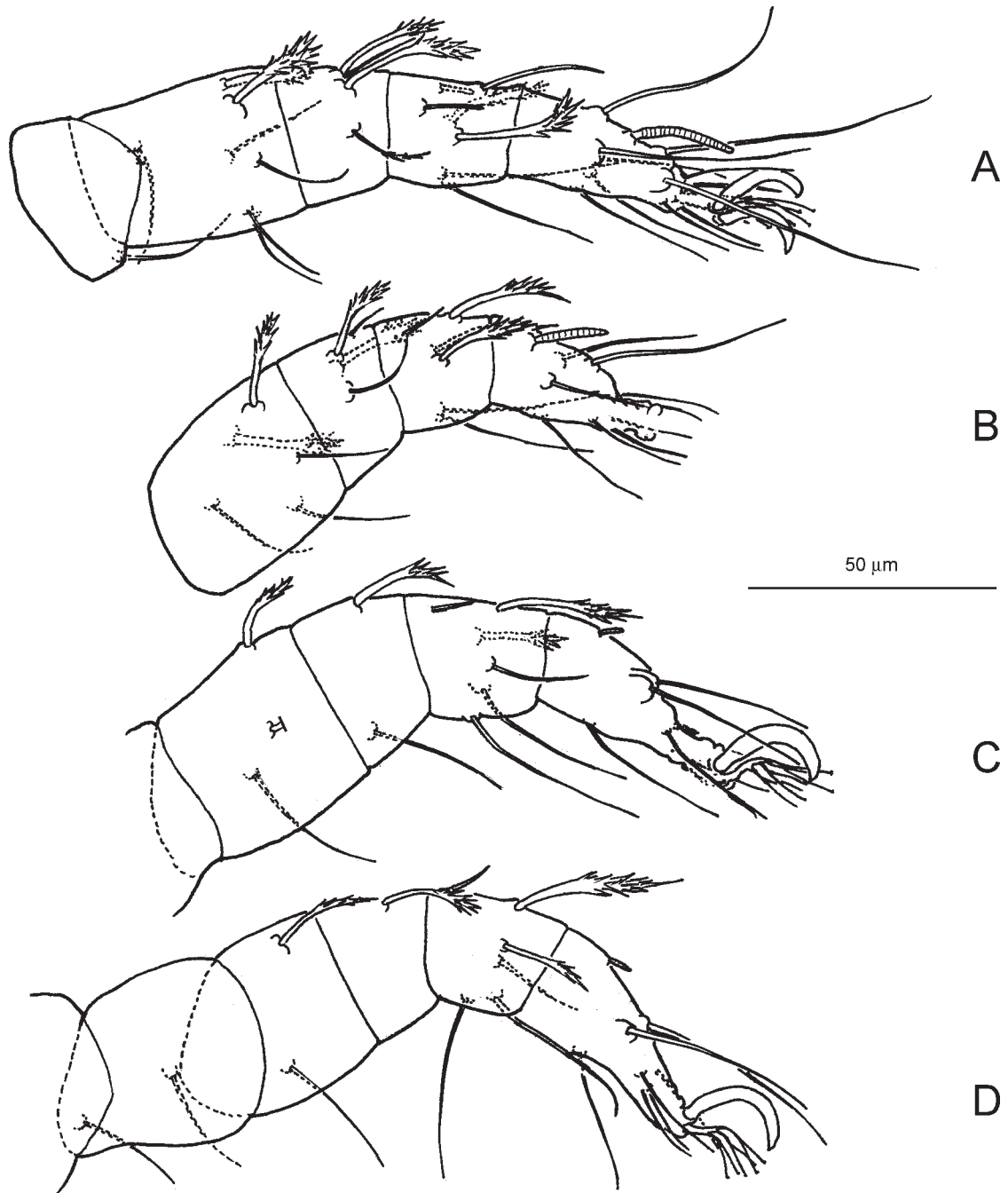
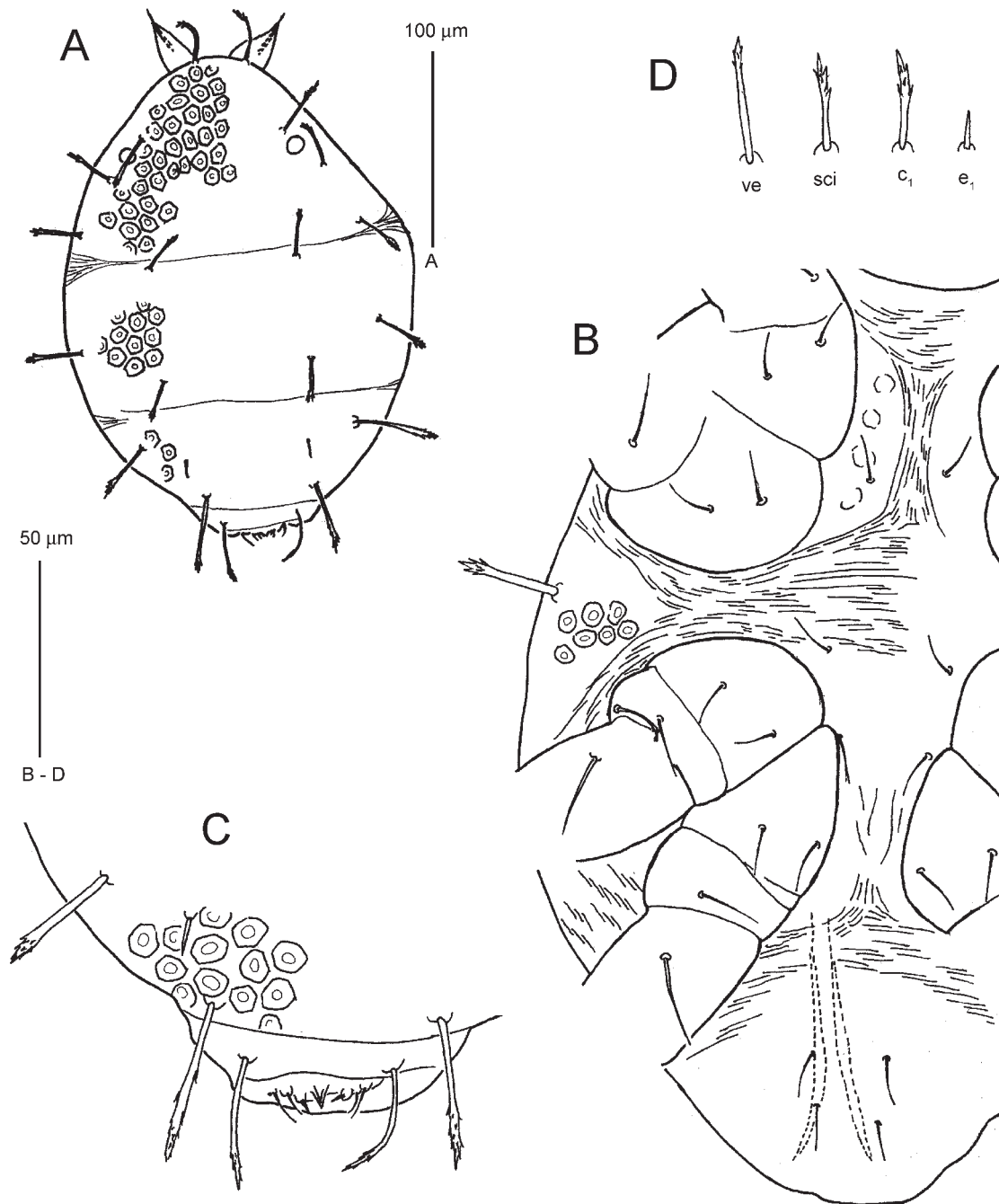


Fig. 74. *Eustigmaeus clavigerus* (Wood, 1966) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 75.** *Eustigmaeus clavigerus* (Wood, 1966) (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, dorsal view of opisthosoma; D, dorsal idiosomal seta.



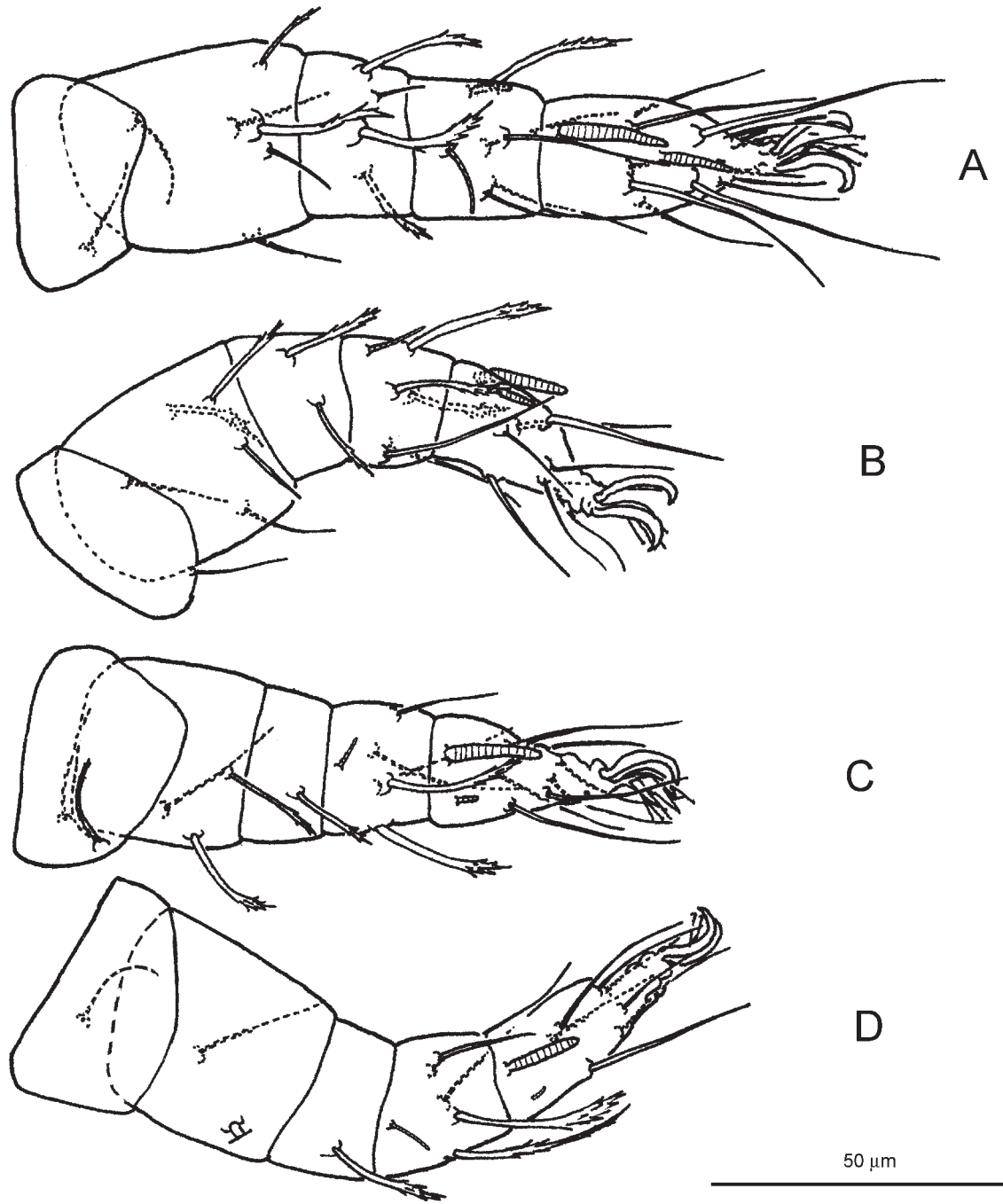
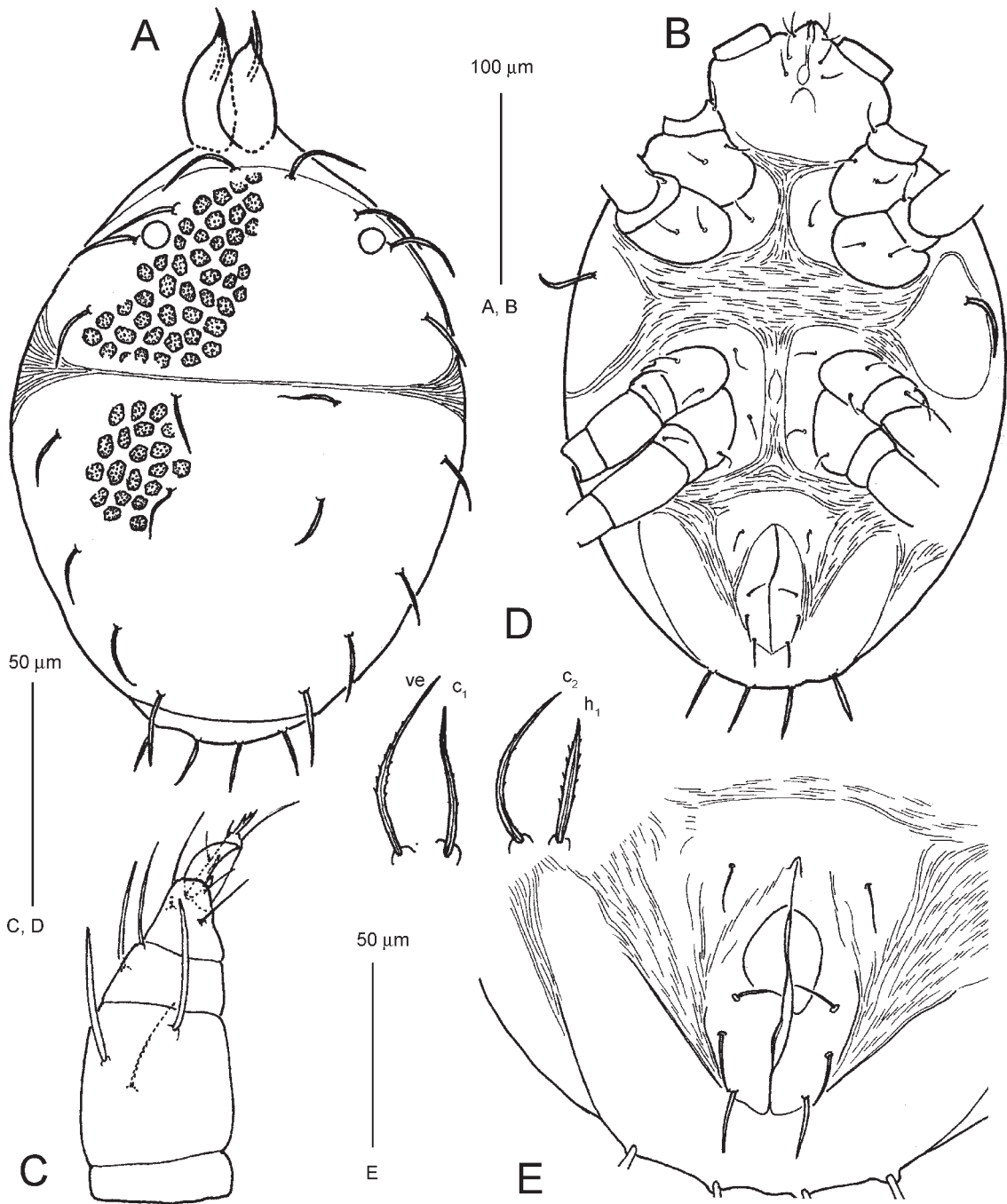


Fig. 76. *Eustigmaeus clavigerus* (Wood, 1966) (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 77.** *Eustigmaeus corticolus* (Wood, 1966) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal idiosomal seta; E, genitoanal area.

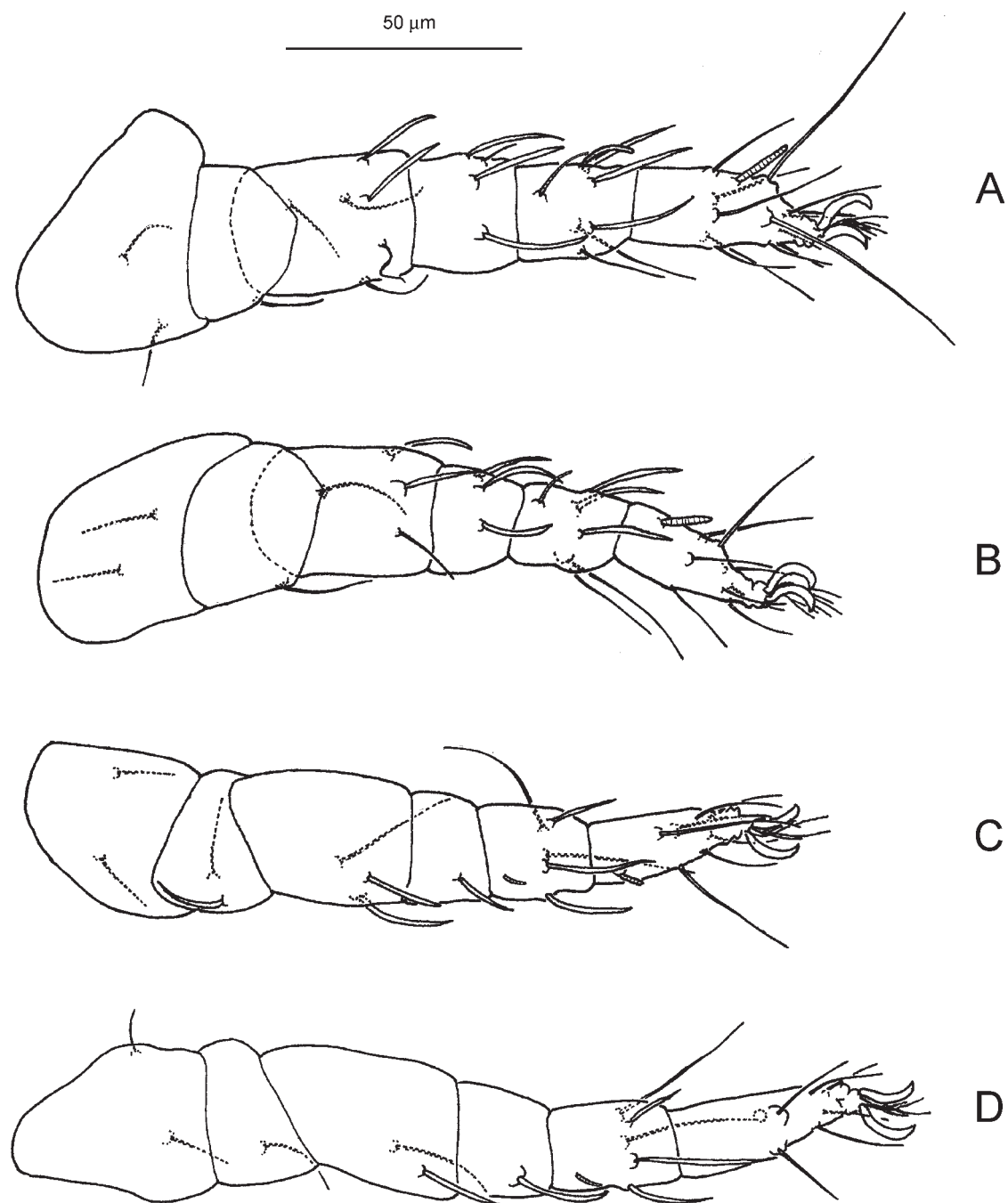
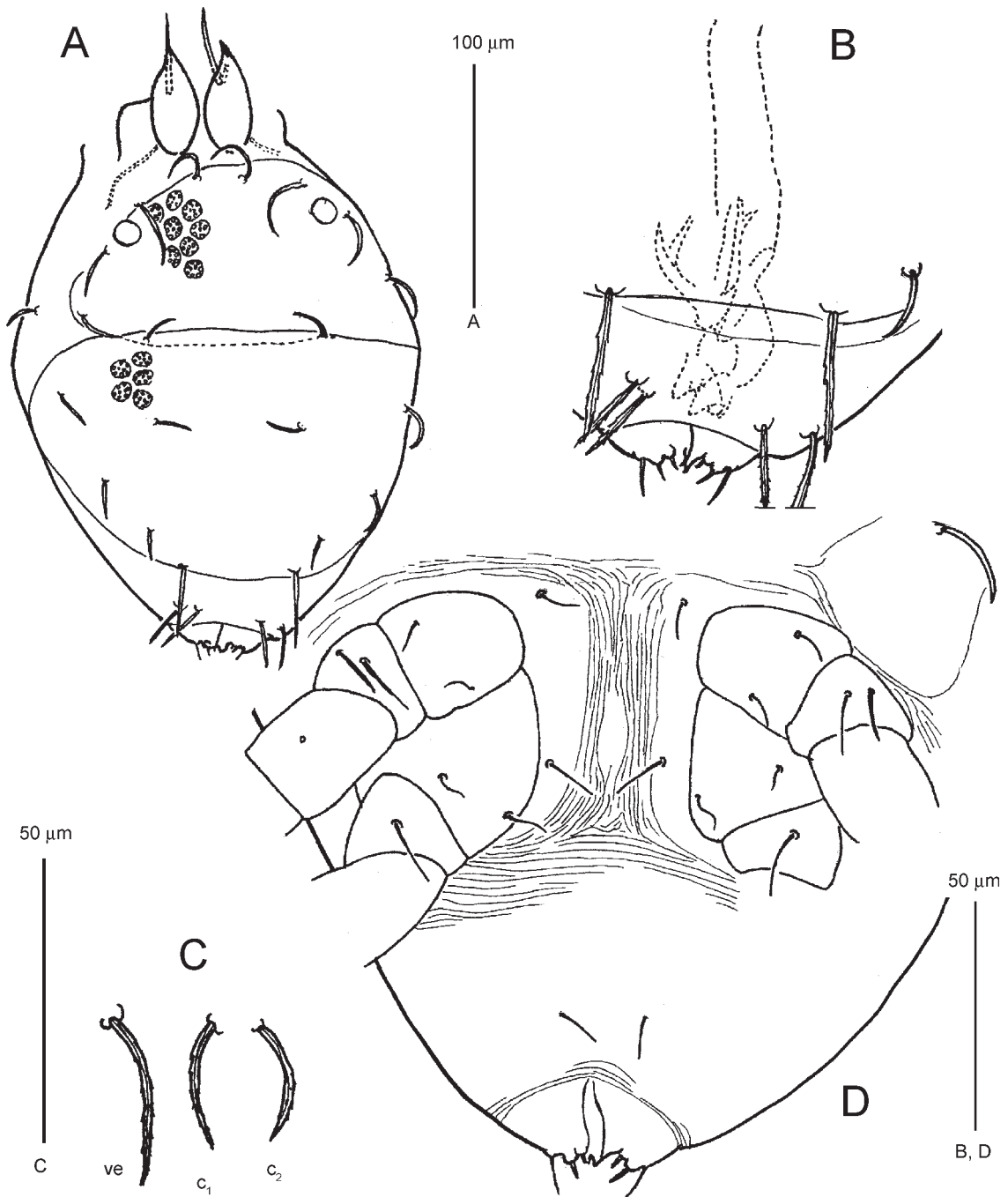


Fig. 78. *Eustigmaeus corticolus* (Wood, 1966) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 79.** *Eustigmaeus corticolus* (Wood, 1966) (male). A, dorsal view of idiosoma; B, dorsal view of opisthosoma; C, dorsal idiosomal setae; D, ventral view of hysterosoma.

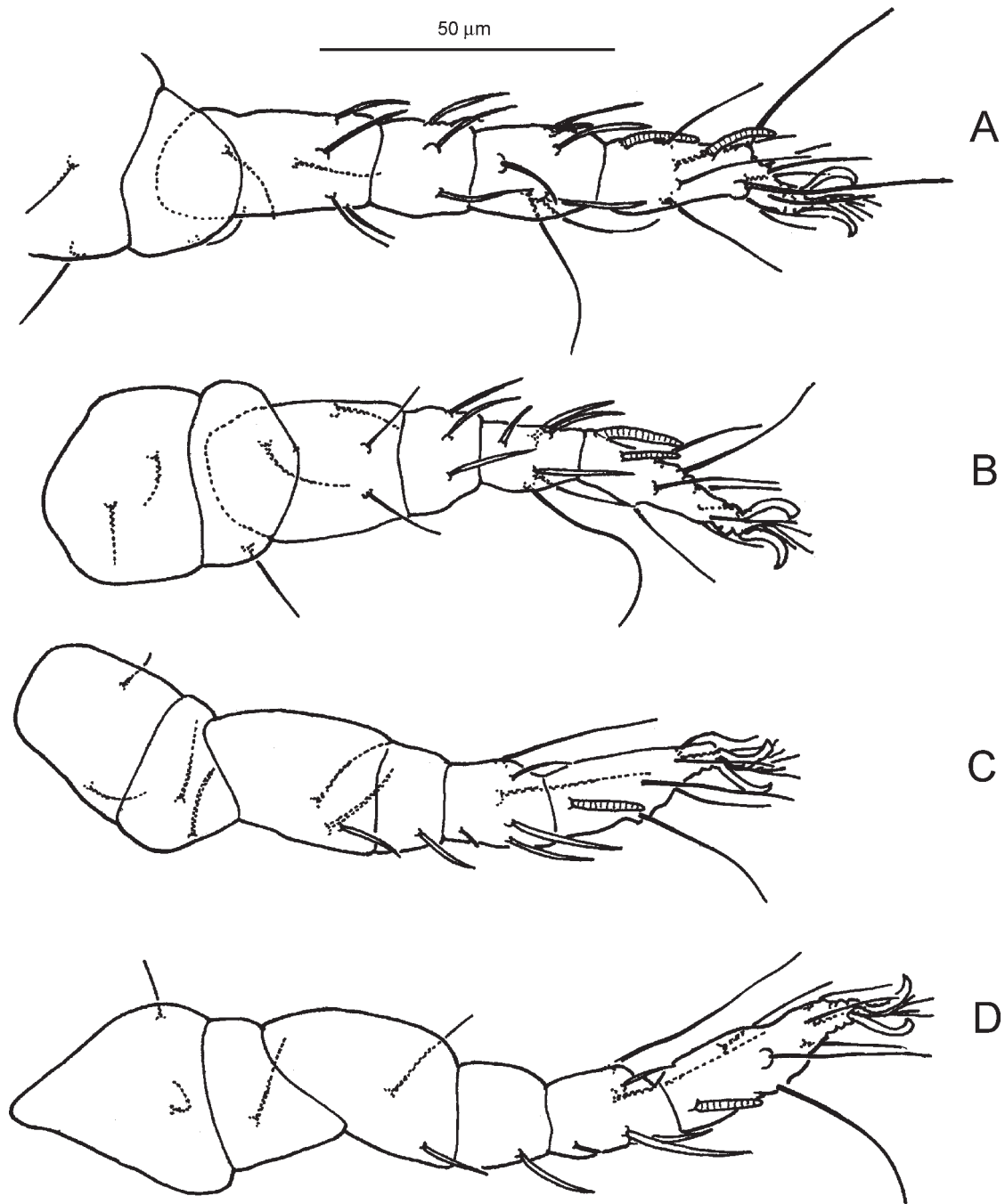
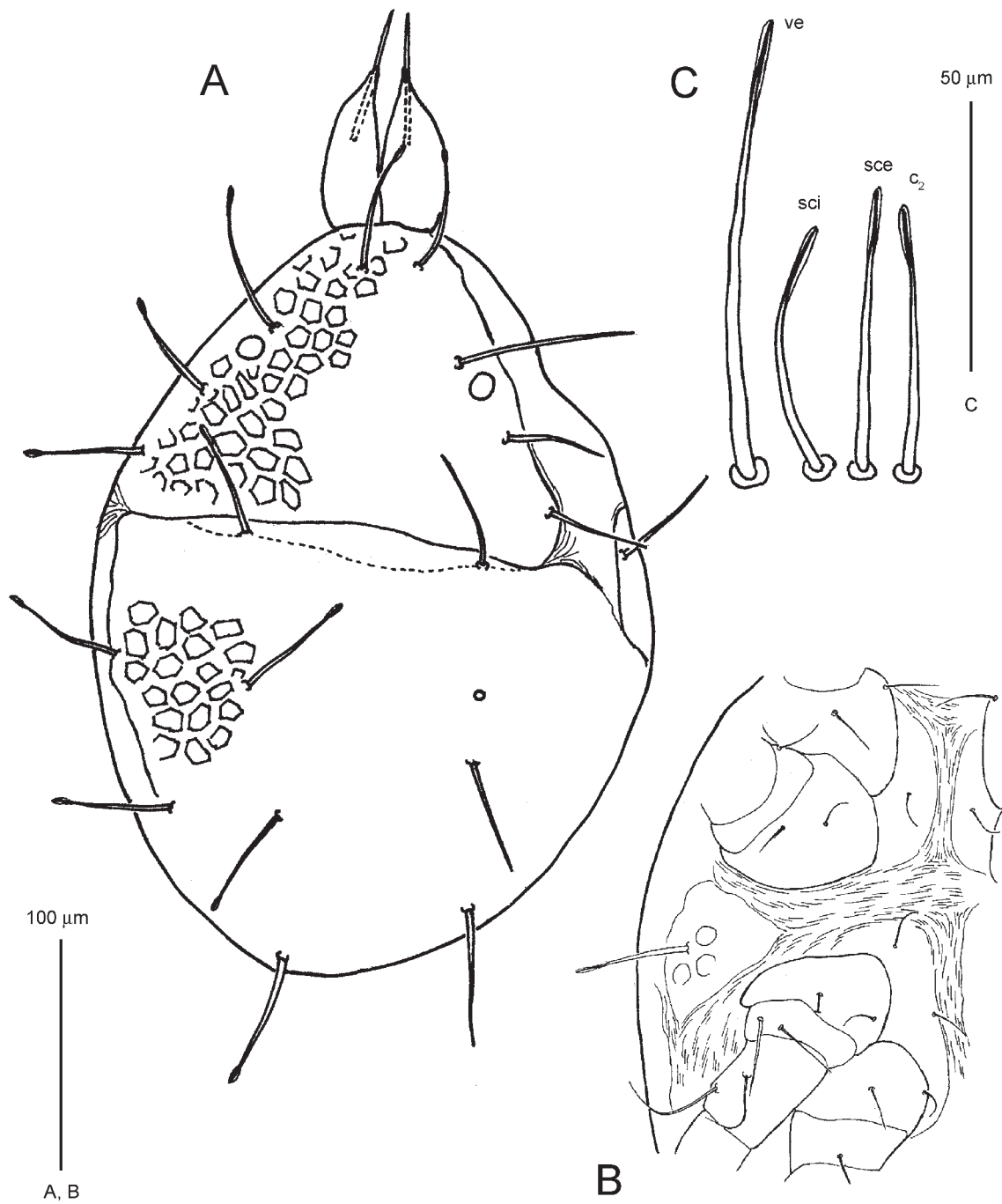


Fig. 80. *Eustigmaeus corticolus* (Wood, 1966) (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 81.** *Eustigmaeus distinctus* (Wood, 1966) (female). A, dorsal view of idiosoma; B, ventral view coxal area; C, dorsal idiosomal setae.

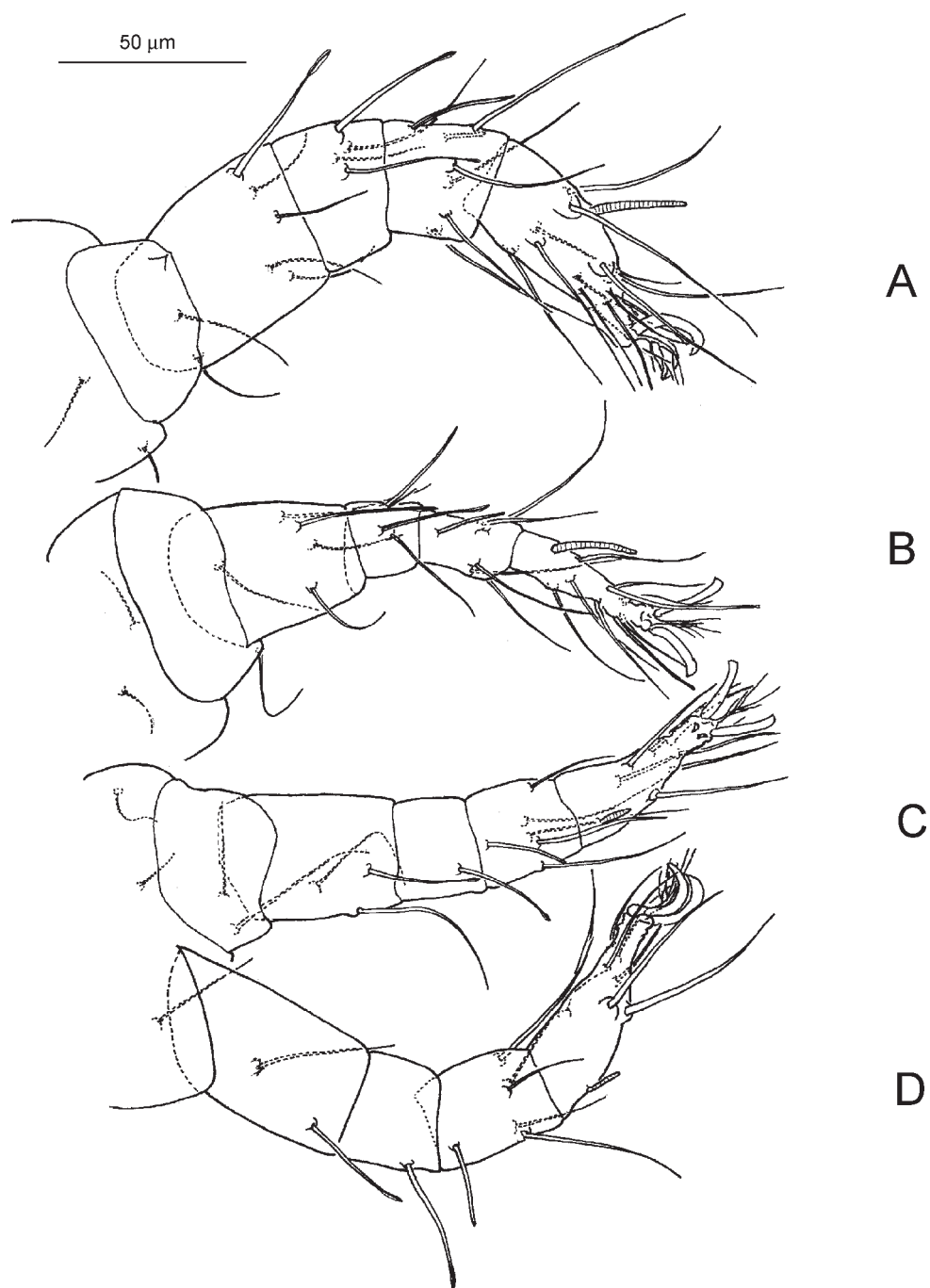
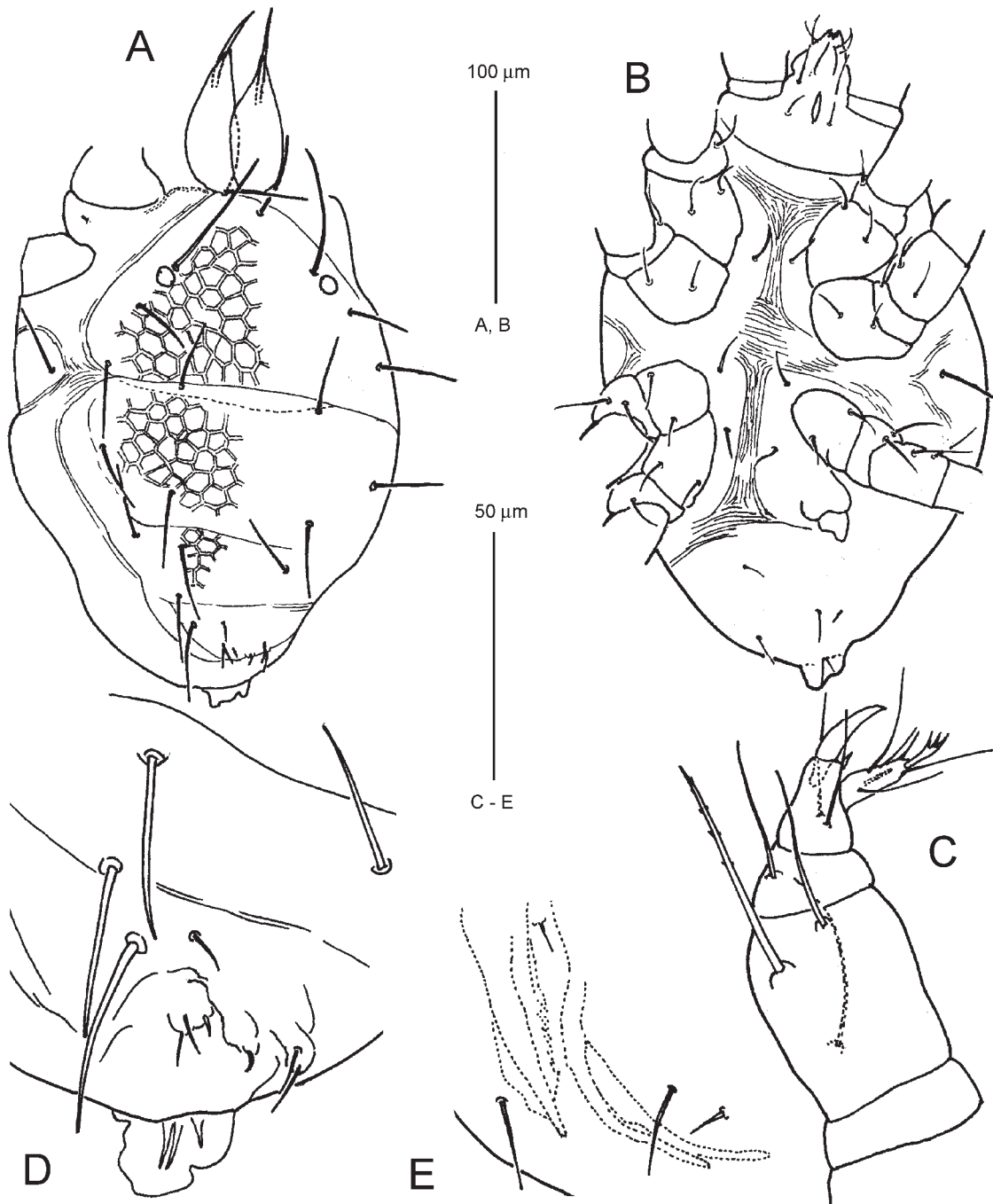


Fig. 82. *Eustigmaeus distinctus* (Wood, 1966) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 83.** *Eustigmaeus distinctus* (Wood, 1966) (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal view of opisthosoma; E, aedeagus.



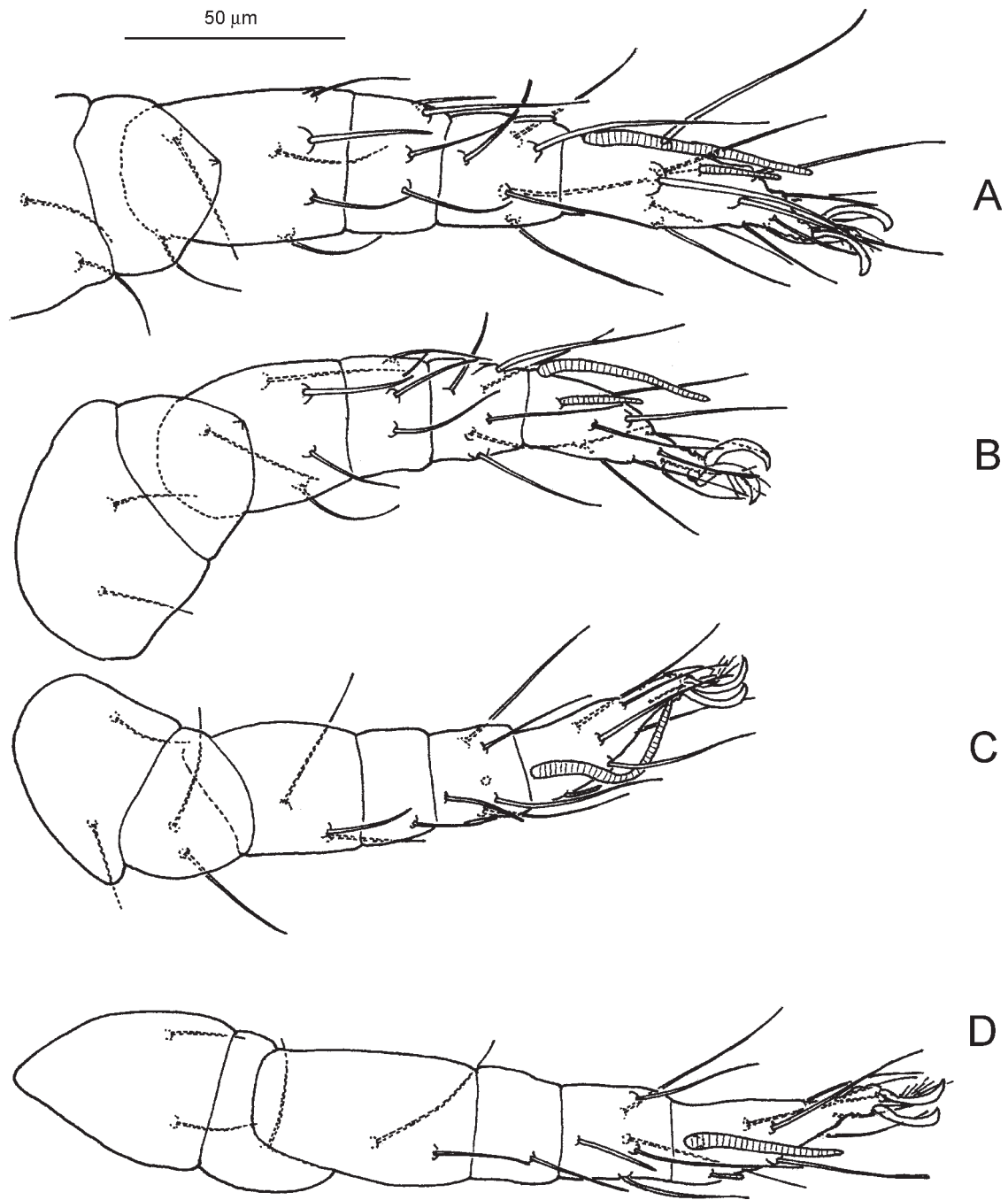
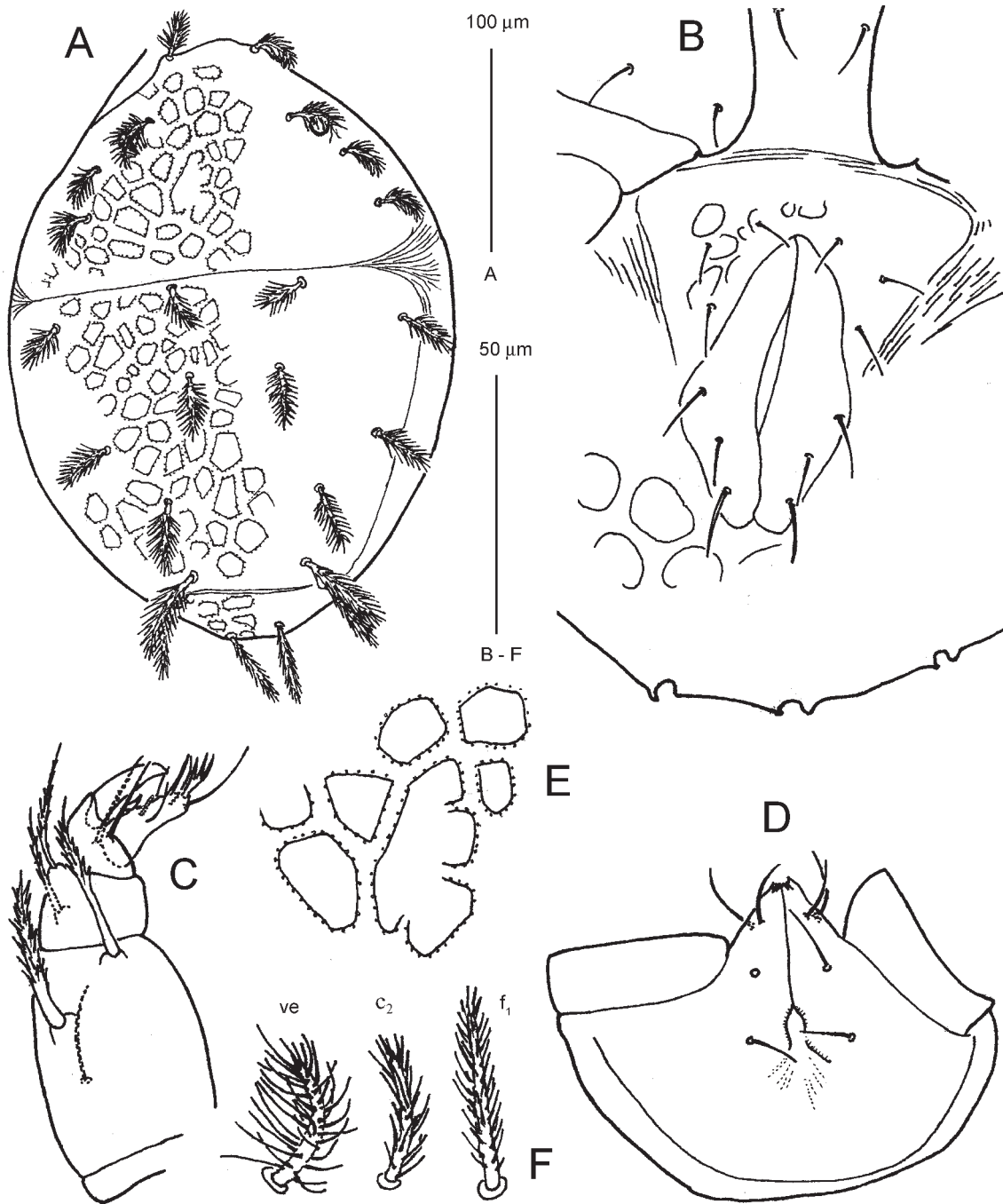


Fig. 84. *Eustigmaeus distinctus* (Wood, 1966) (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 85.** *Eustigmaeus dumosus* (Wood, 1966) (female). A, dorsal view of idiosoma; B, ventral view of coxa IV and genitoanal area; C, palp; D, subcapitulum; E, reticulate pattern of dorsal shield; F, dorsal idiosomal setae.

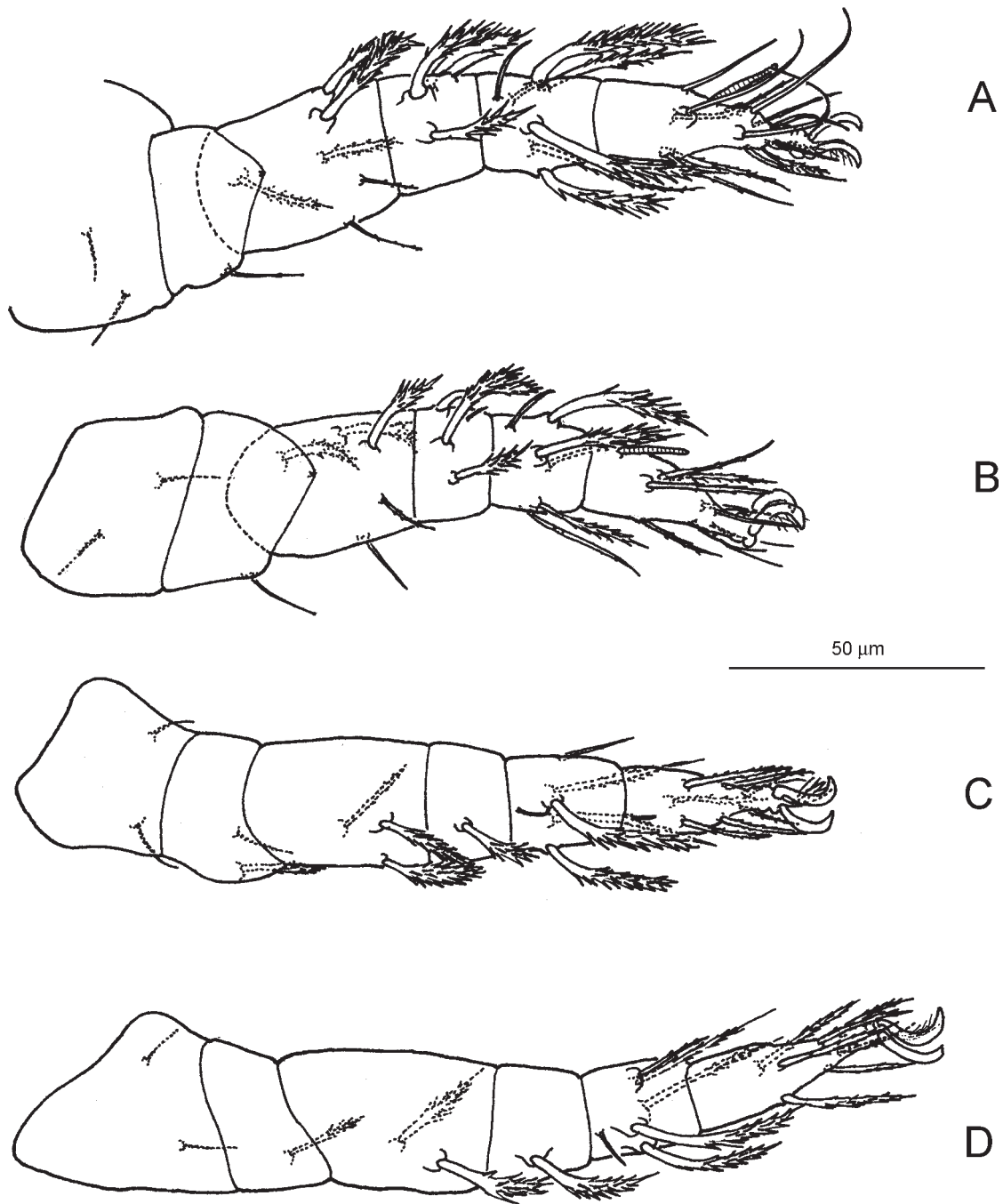
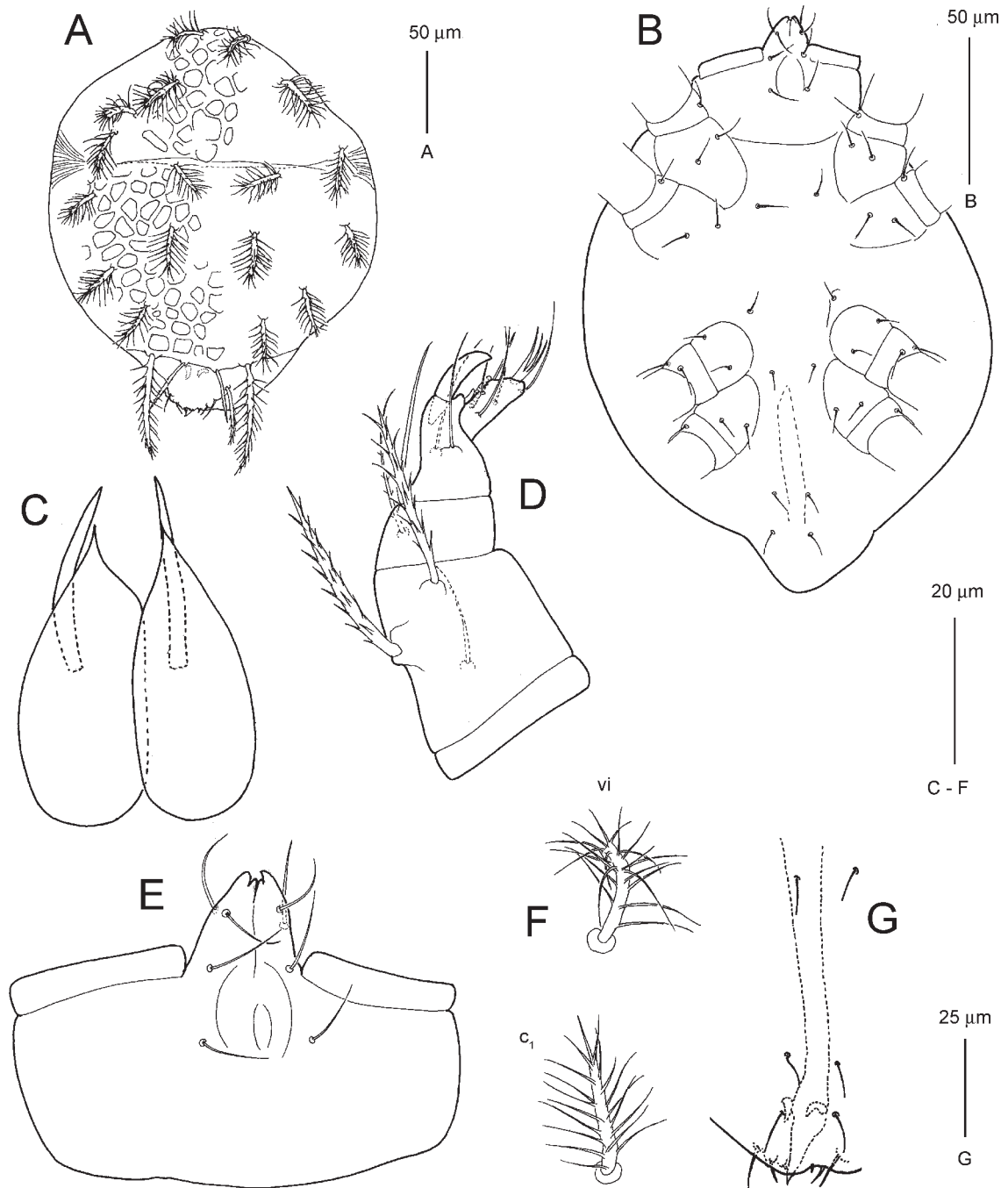


Fig. 86. *Eustigmaeus dumosus* (Wood, 1966) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 87.** *Eustigmaeus dumosus* (Wood, 1966) (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal idiosomal setae; G, aedeagus.

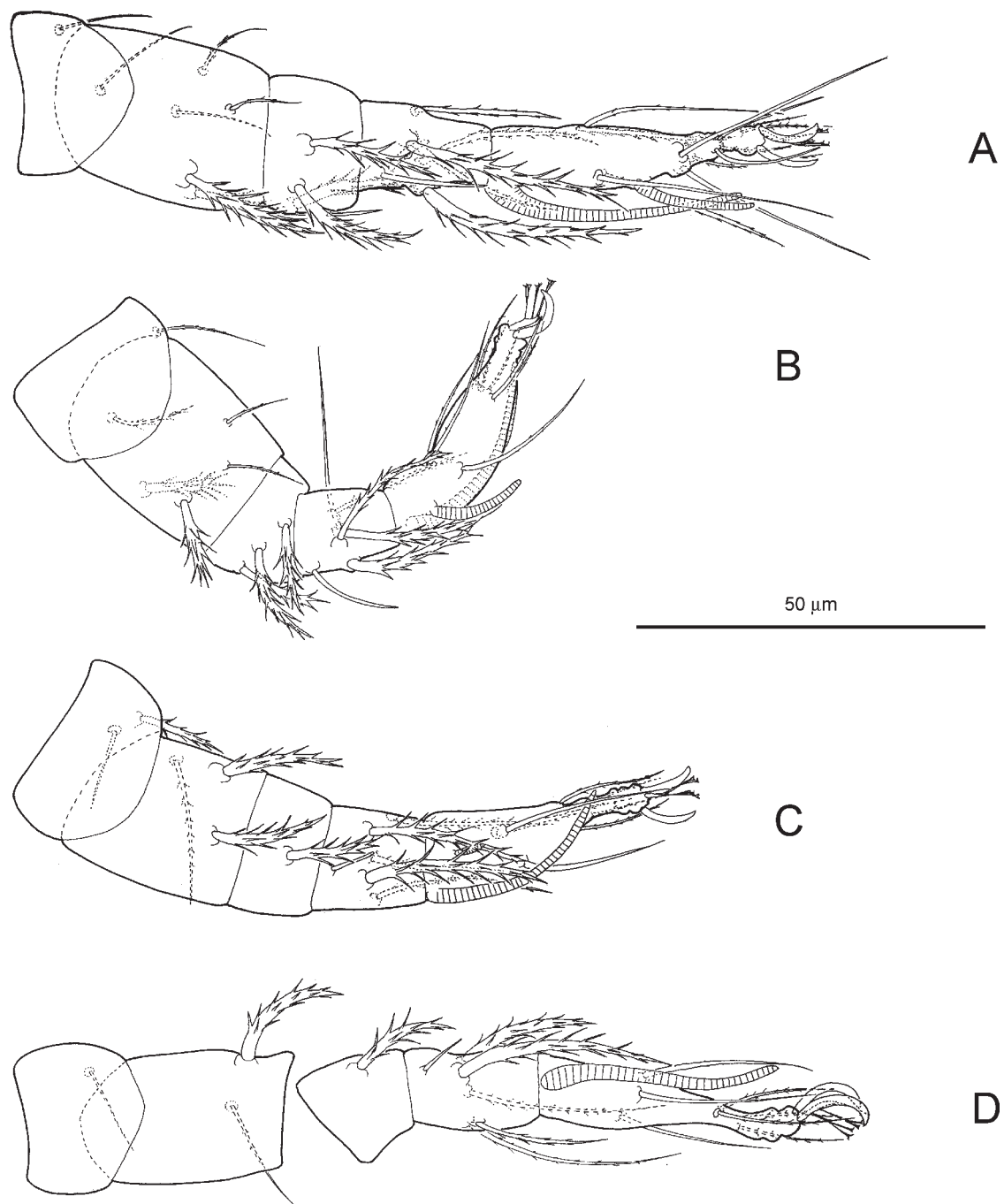
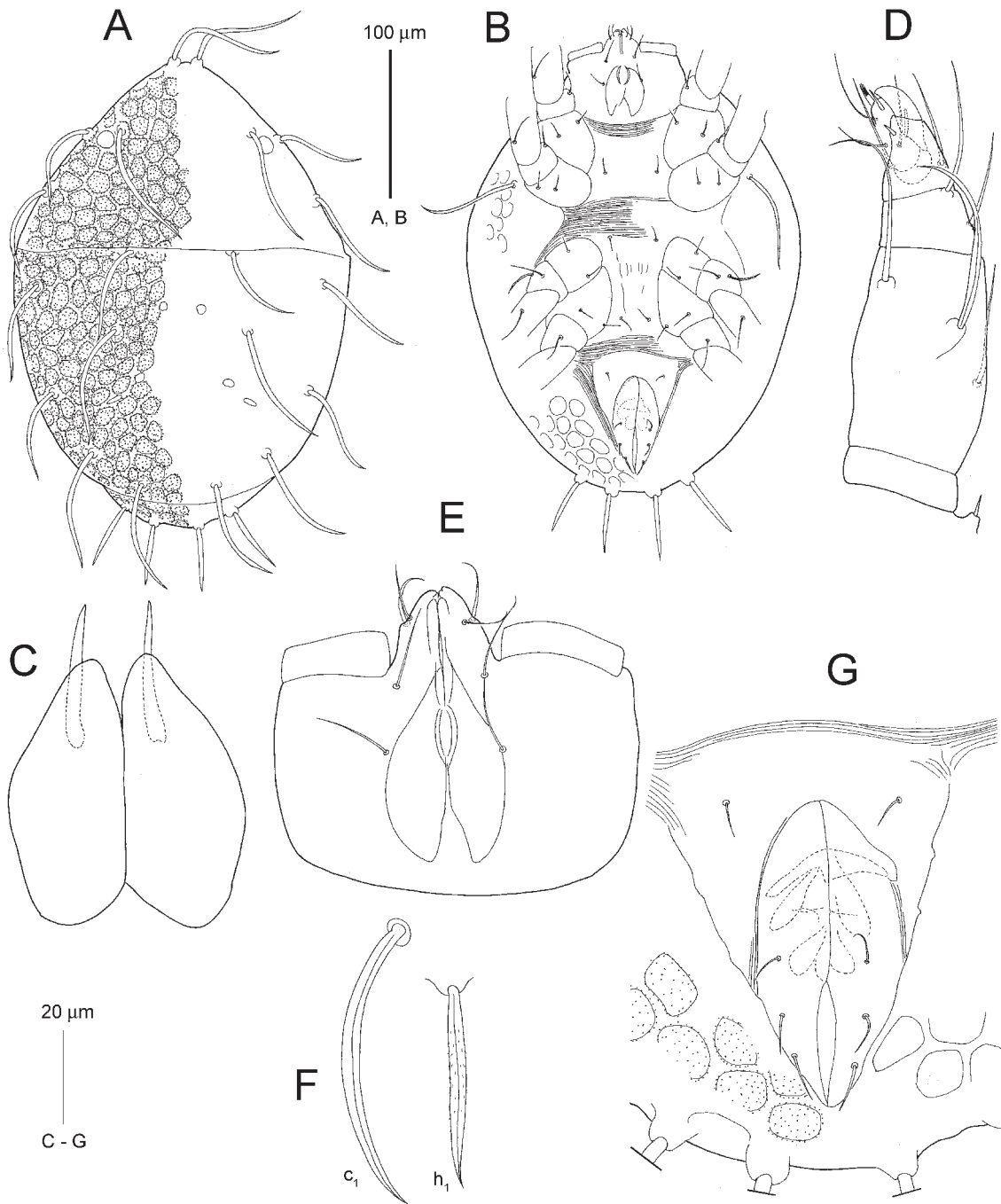


Fig. 88. *Eustigmaeus dumosus* (Wood, 1966) (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 89.** *Eustigmaeus eburneus* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal idiosomal setae; G, genitoanal area.

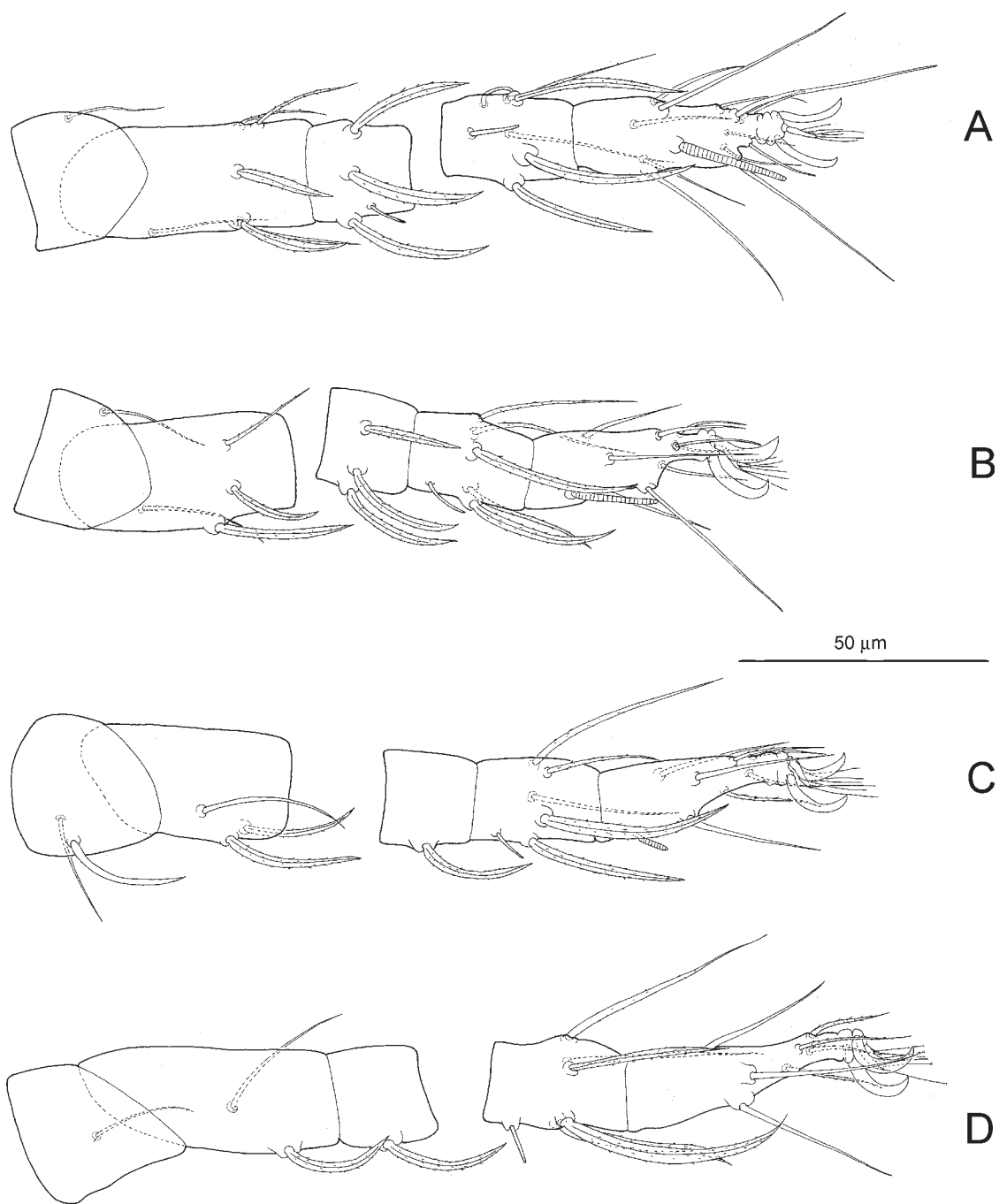
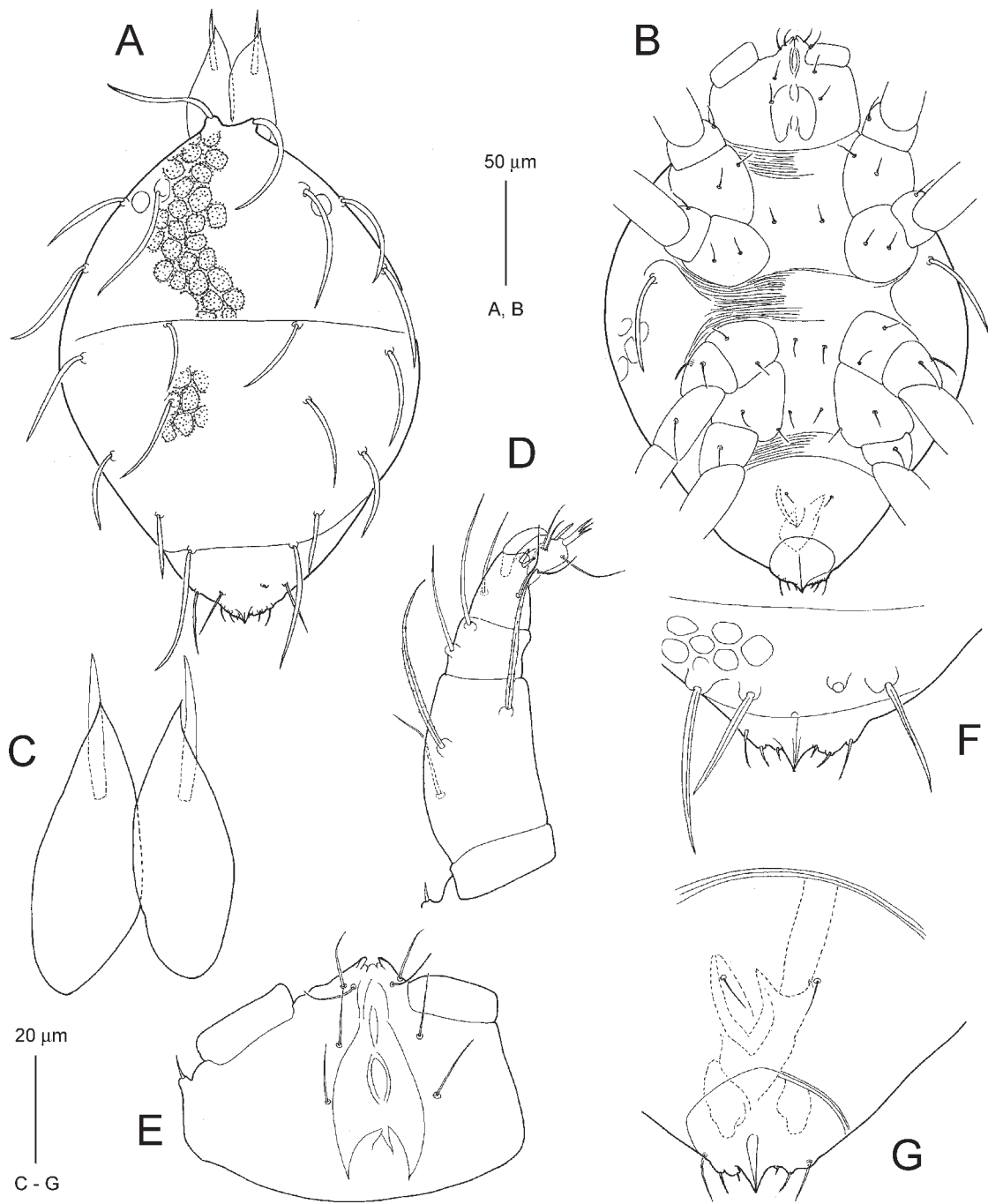


Fig. 90. *Eustigmaeus eburneus* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 91.** *Eustigmaeus eburneus* sp. n. (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal view of opisthosoma; G, genitoanal area.



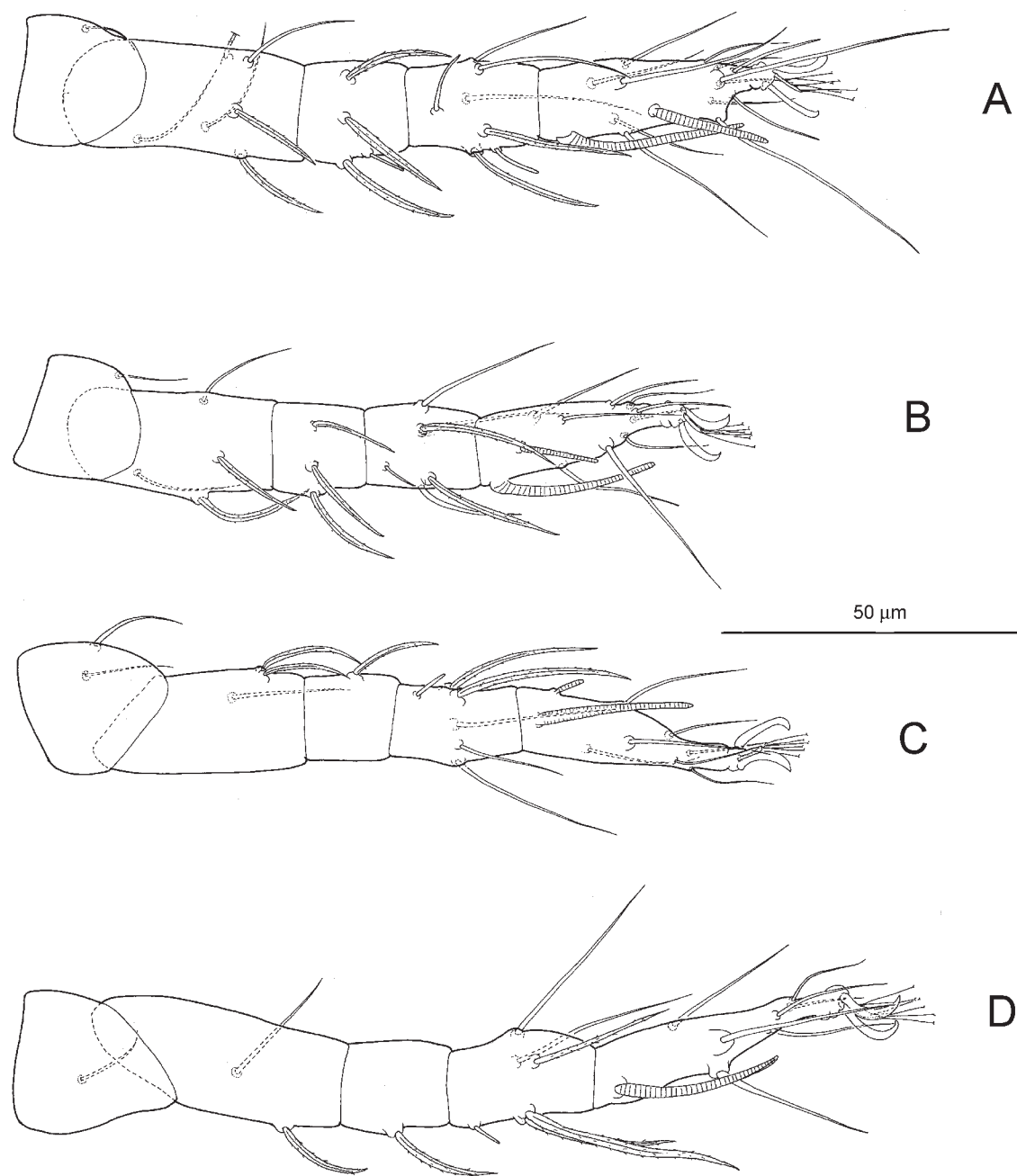
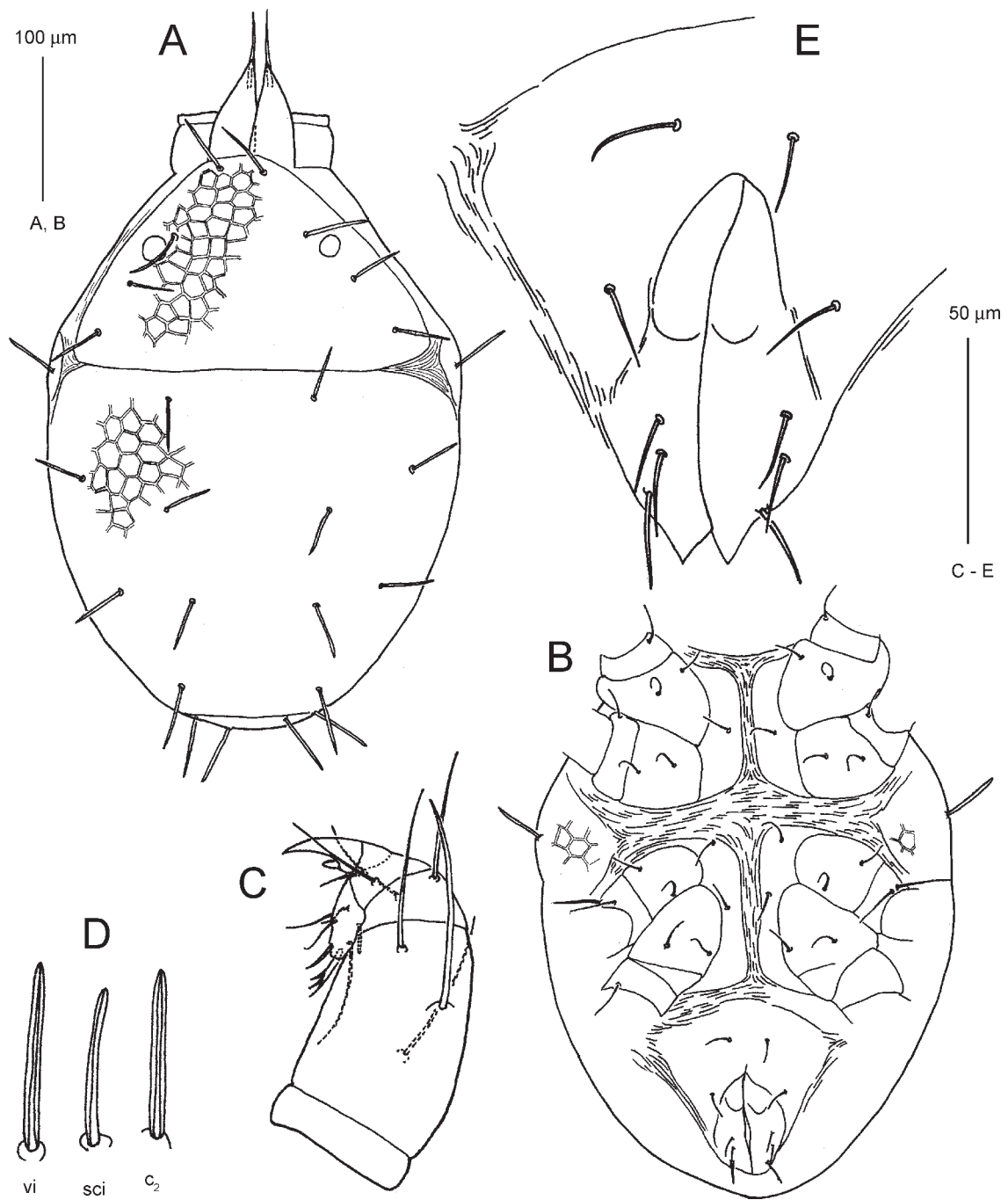


Fig. 92. *Eustigmaeus eburneus* sp. n. (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 93.** *Eustigmaeus edentatus* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal idiosomal setae; E, genitoanal area.

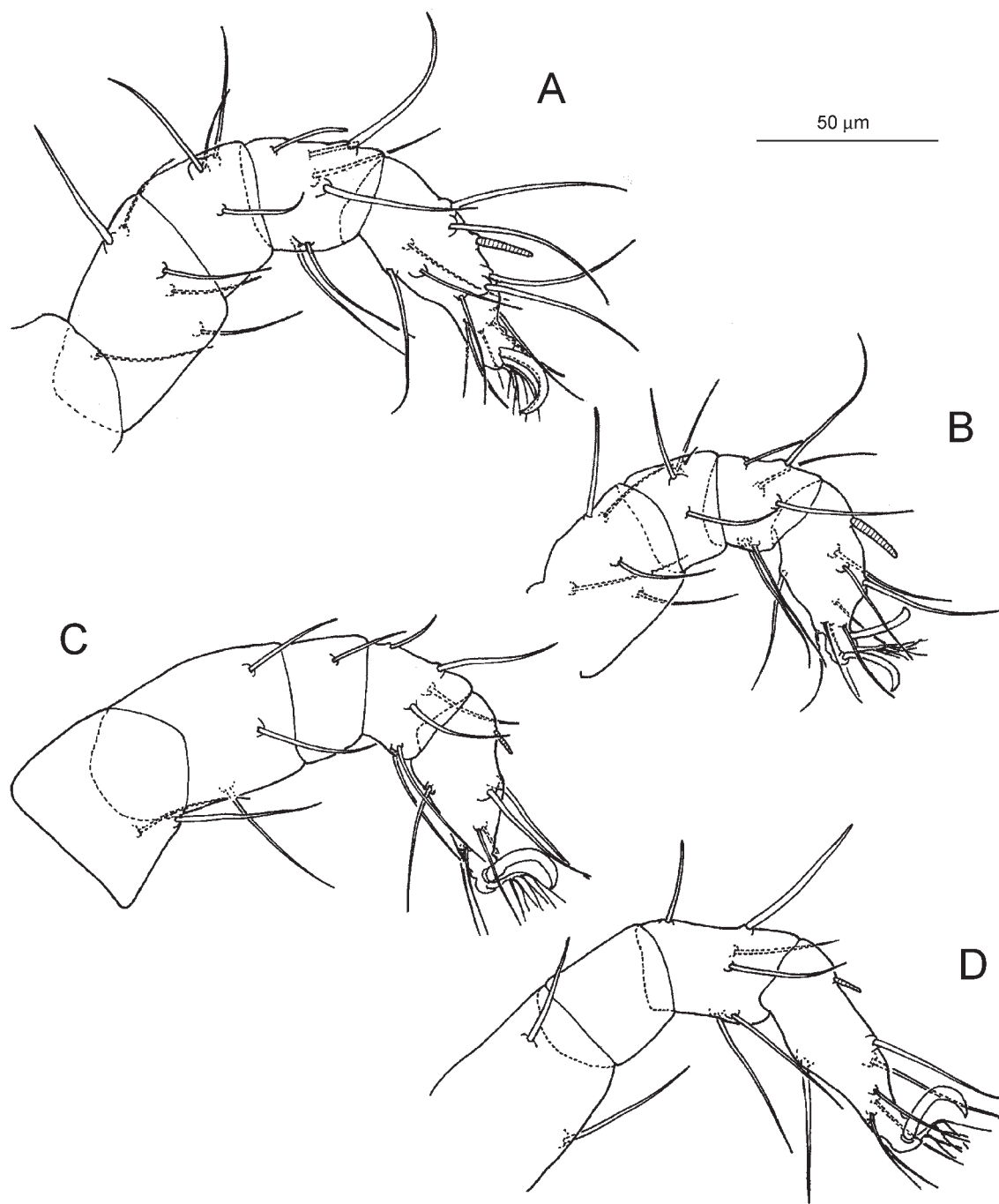
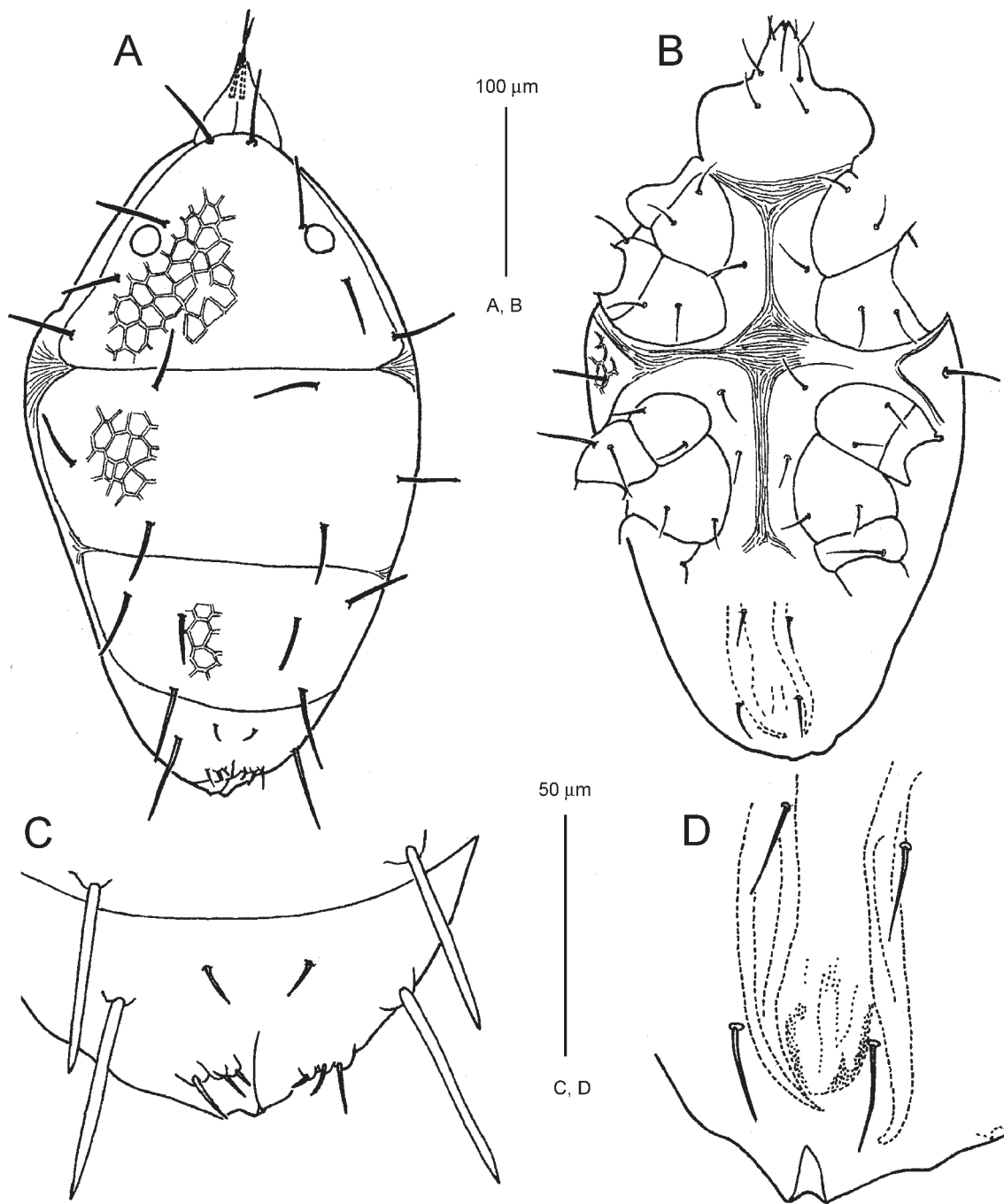


Fig. 94. *Eustigmaeus edentatus* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 95.** *Eustigmaeus edentatus* sp. n. (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, dorsal view of opisthosoma; D, genitoanal area.

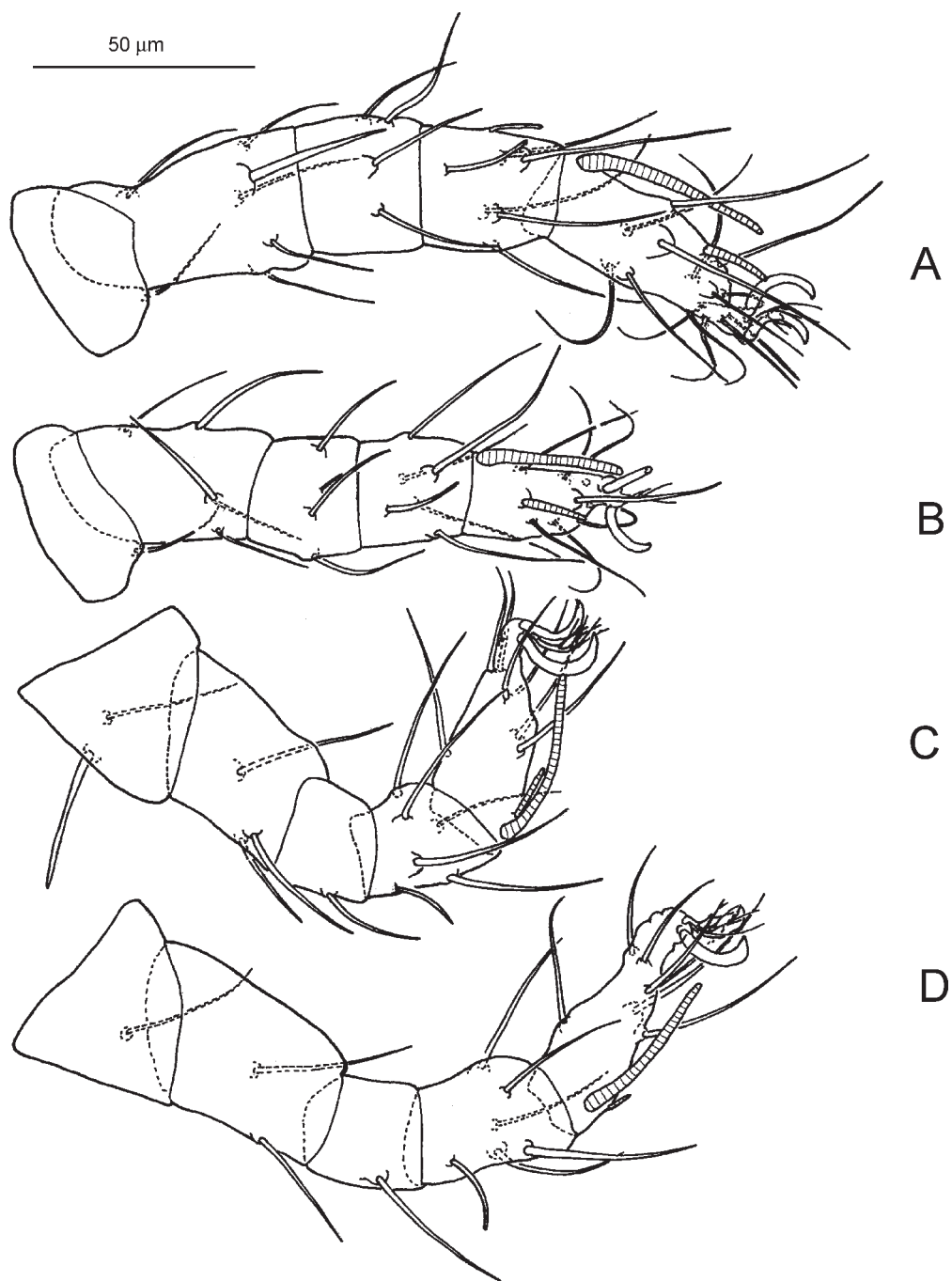
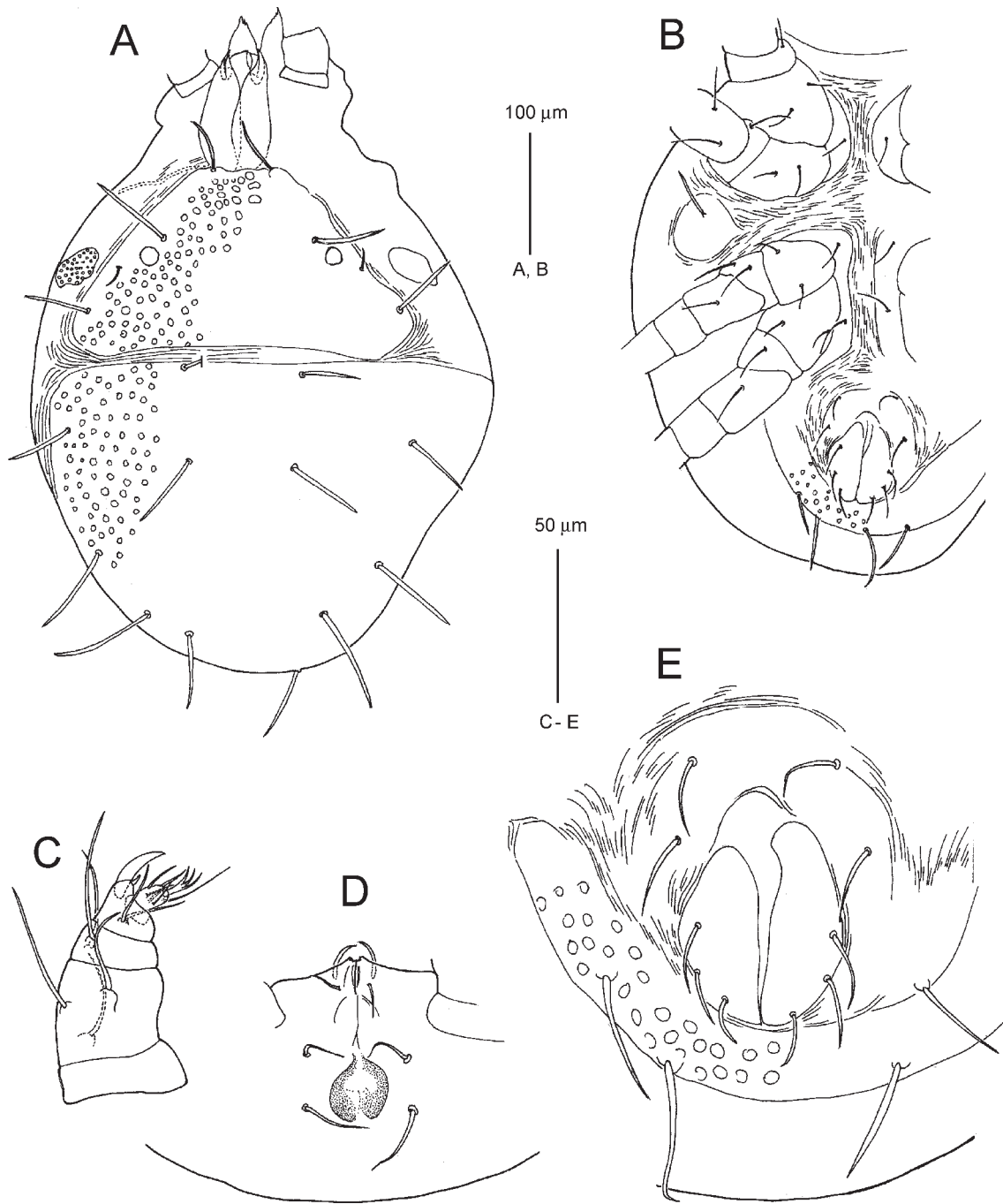


Fig. 96. *Eustigmaeus edentatus* sp. n. (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 97.** *Eustigmaeus granulosis* (Wood, 1966) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, genitoanal area.

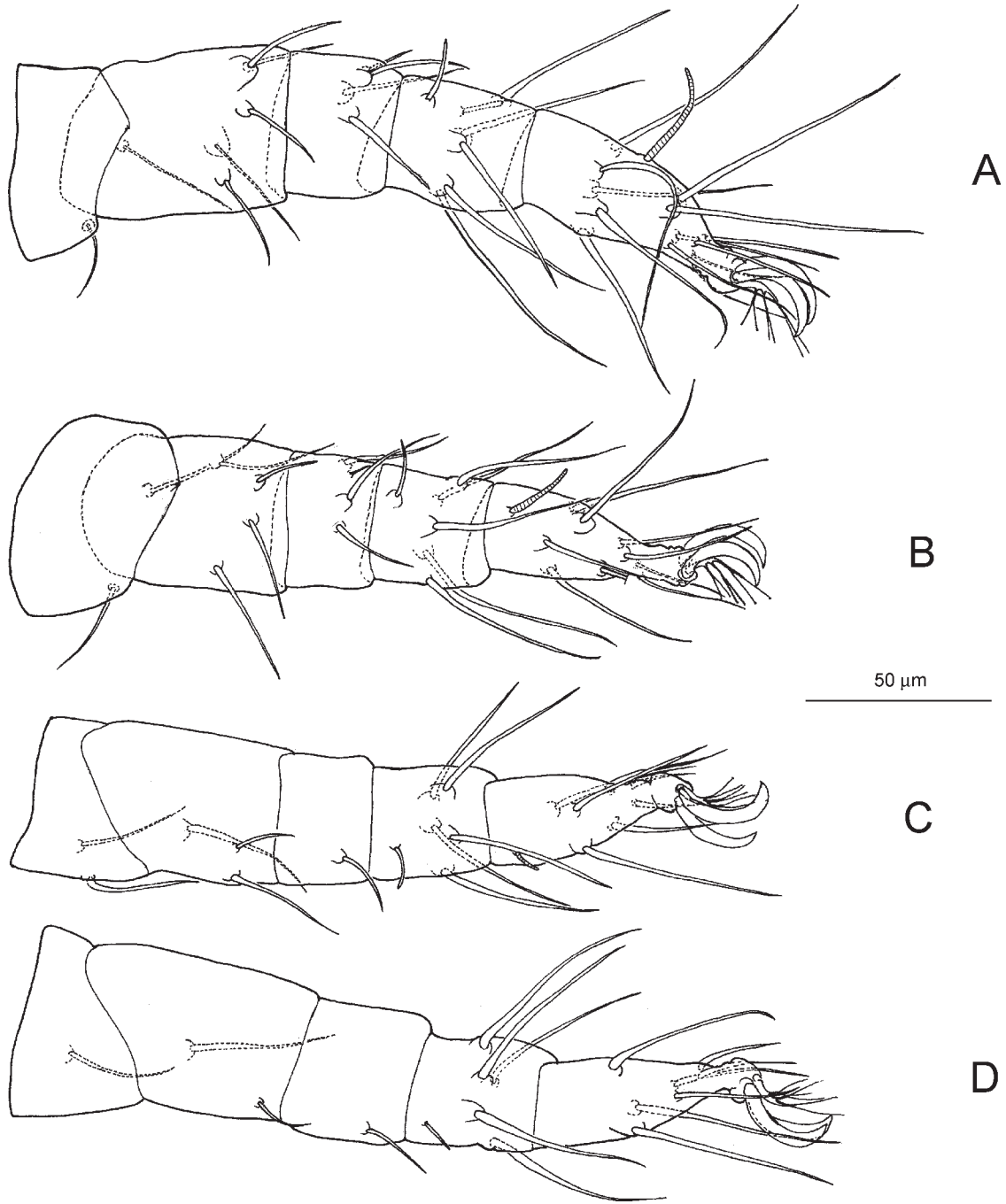
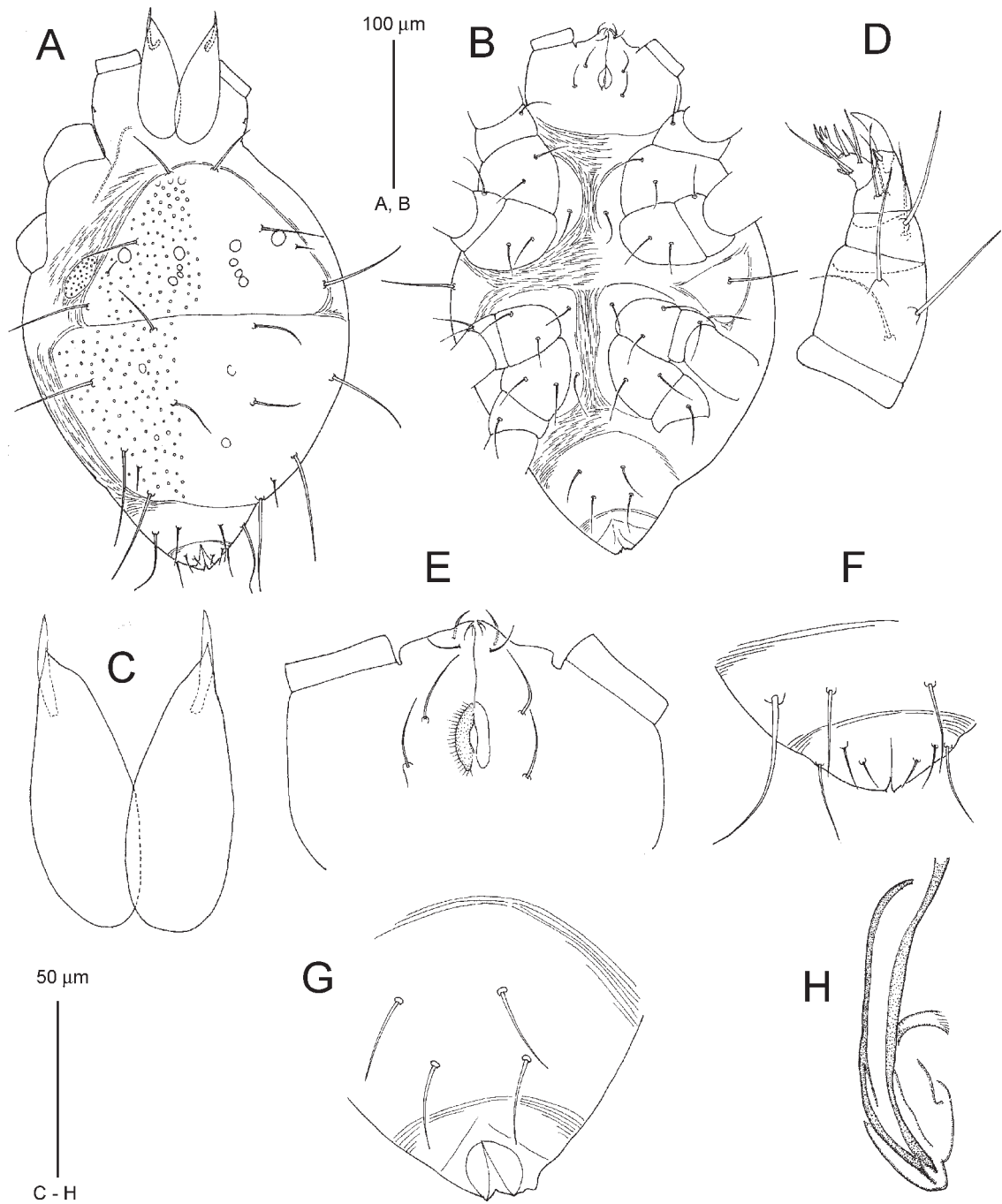


Fig. 98. *Eustigmaeus granulosus* (Wood, 1966) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 99.** *Eustigmaeus granulatus* (Wood, 1966) (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal view of opisthosoma; G, genitoanal region; H, aedeagus.



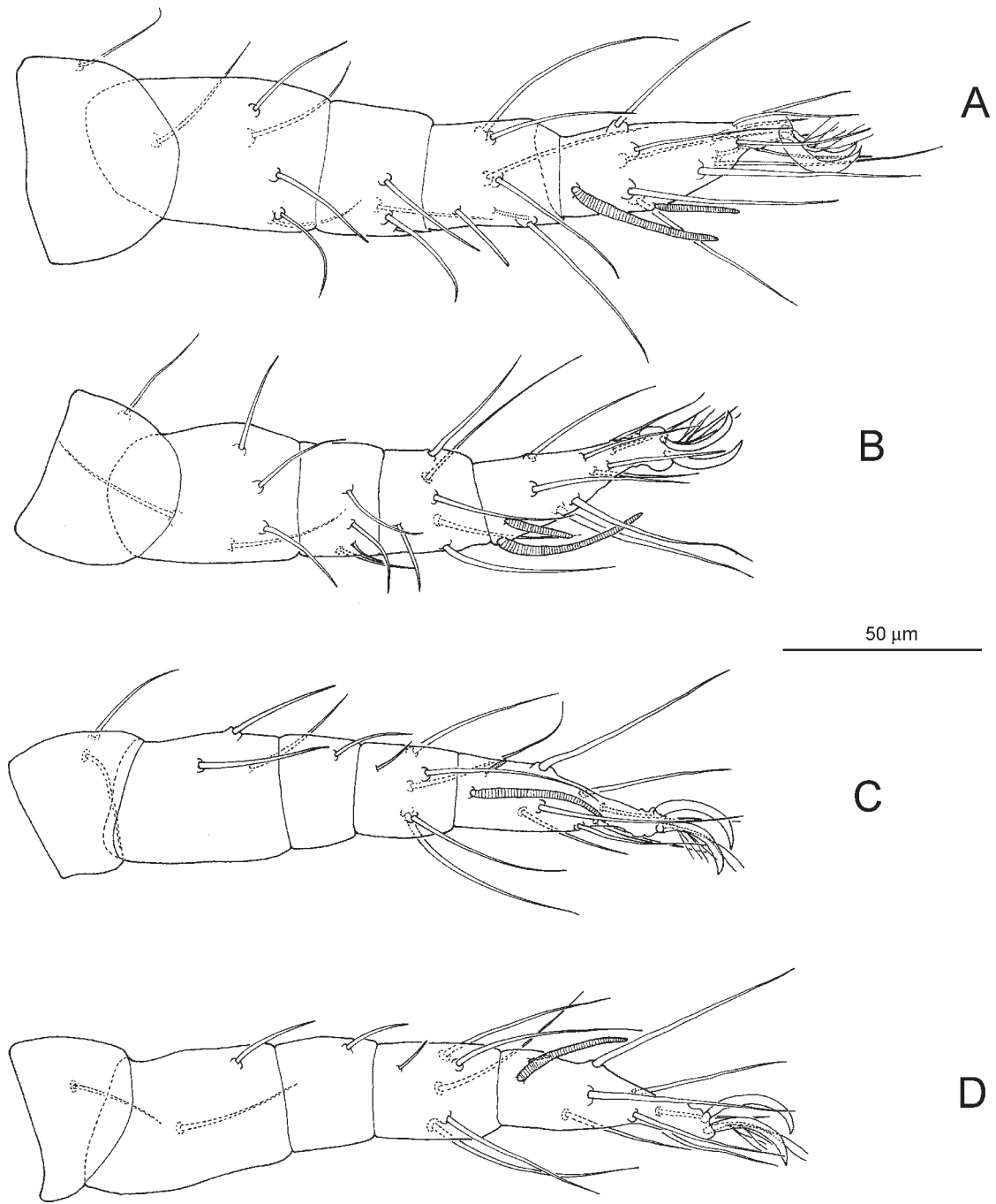
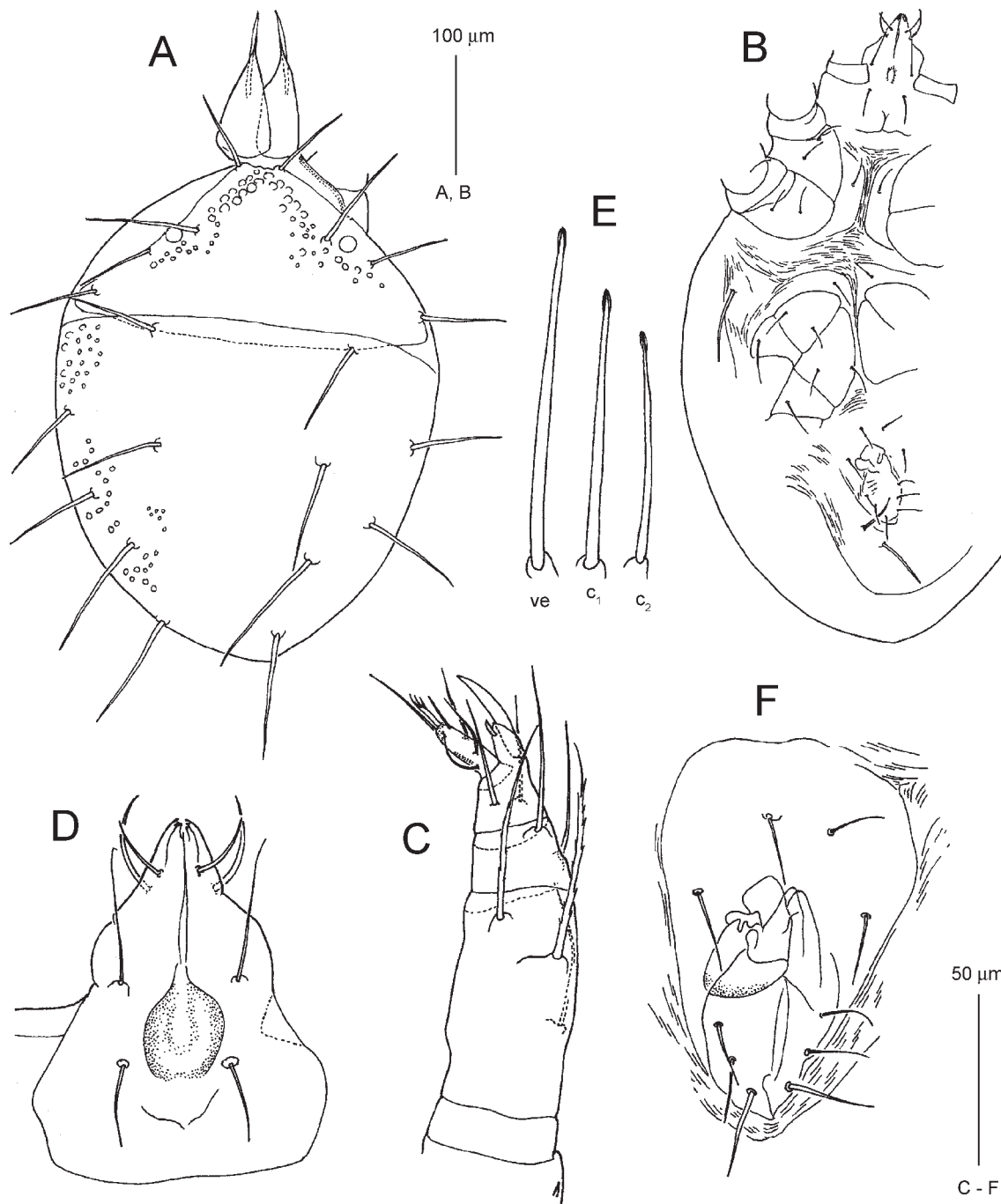


Fig. 100. *Eustigmaeus granulosis* (Wood, 1966) (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 101.** *Eustigmaeus manapouriensis* (Wood, 1966) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, dorsal idiosomal setae; F, genitoanal area.

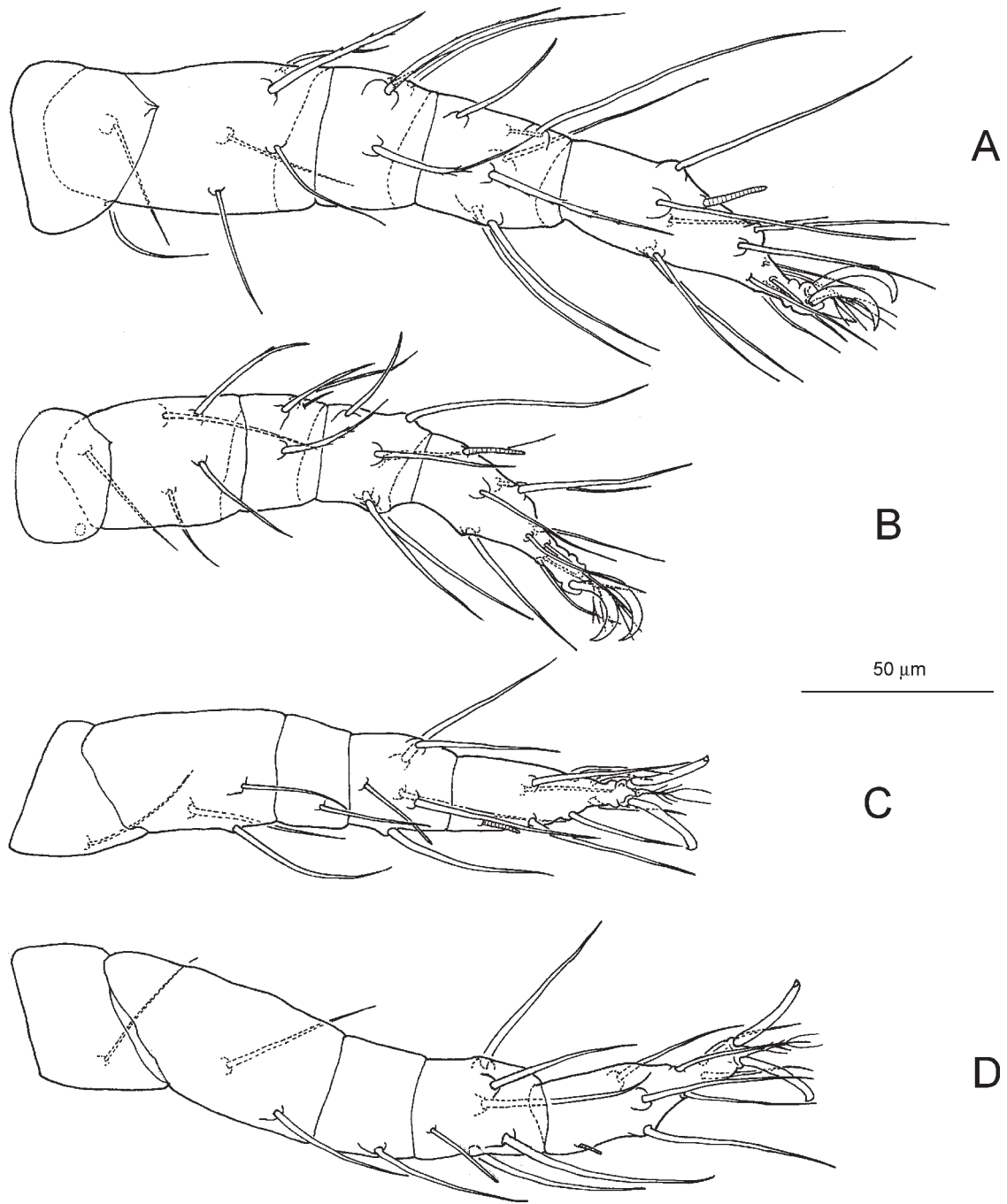
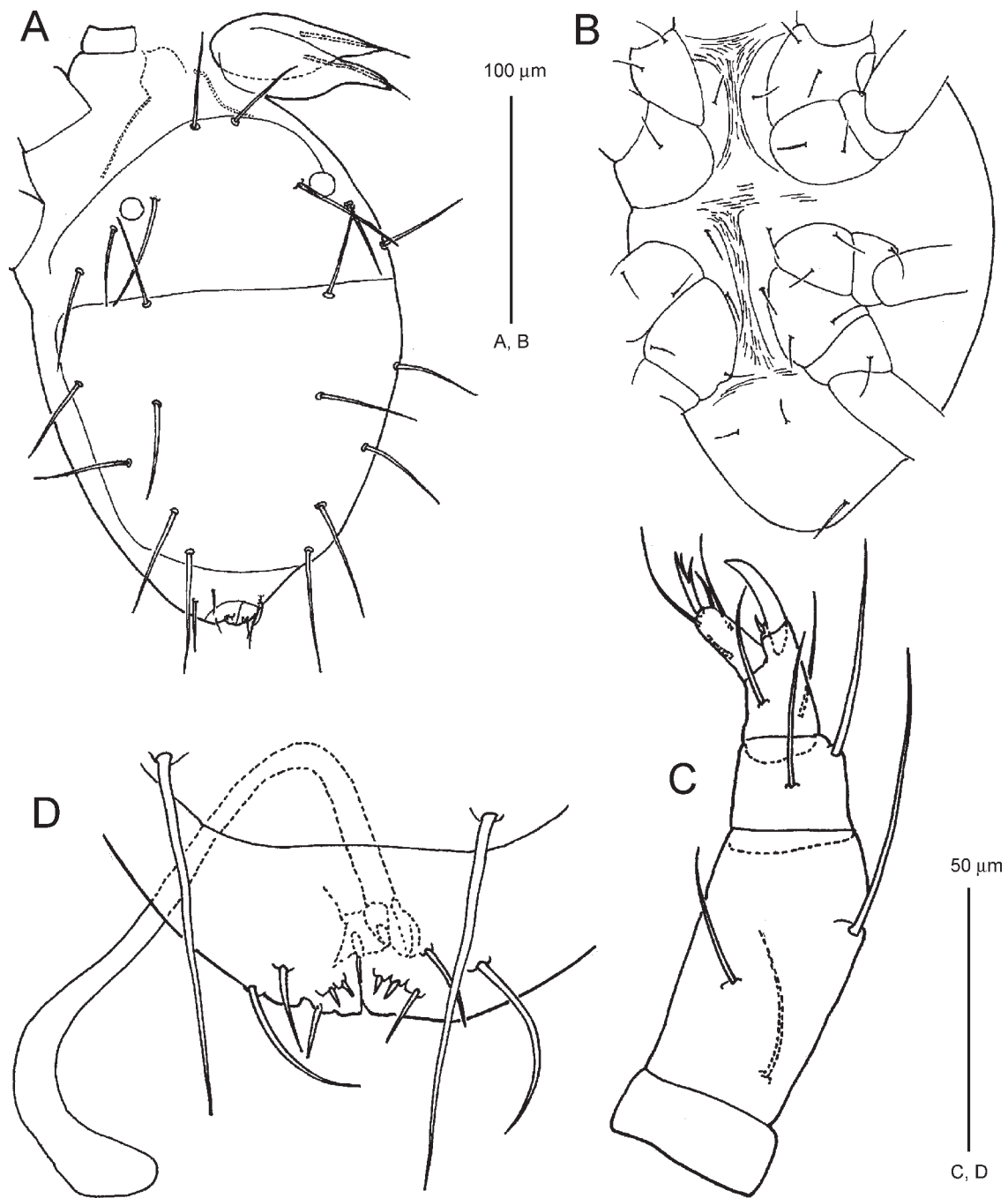


Fig. 102. *Eustigmaeus manapouriensis* (Wood, 1966) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 103.** *Eustigmaeus manapouriensis* (Wood, 1966) (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal view of opisthosoma.

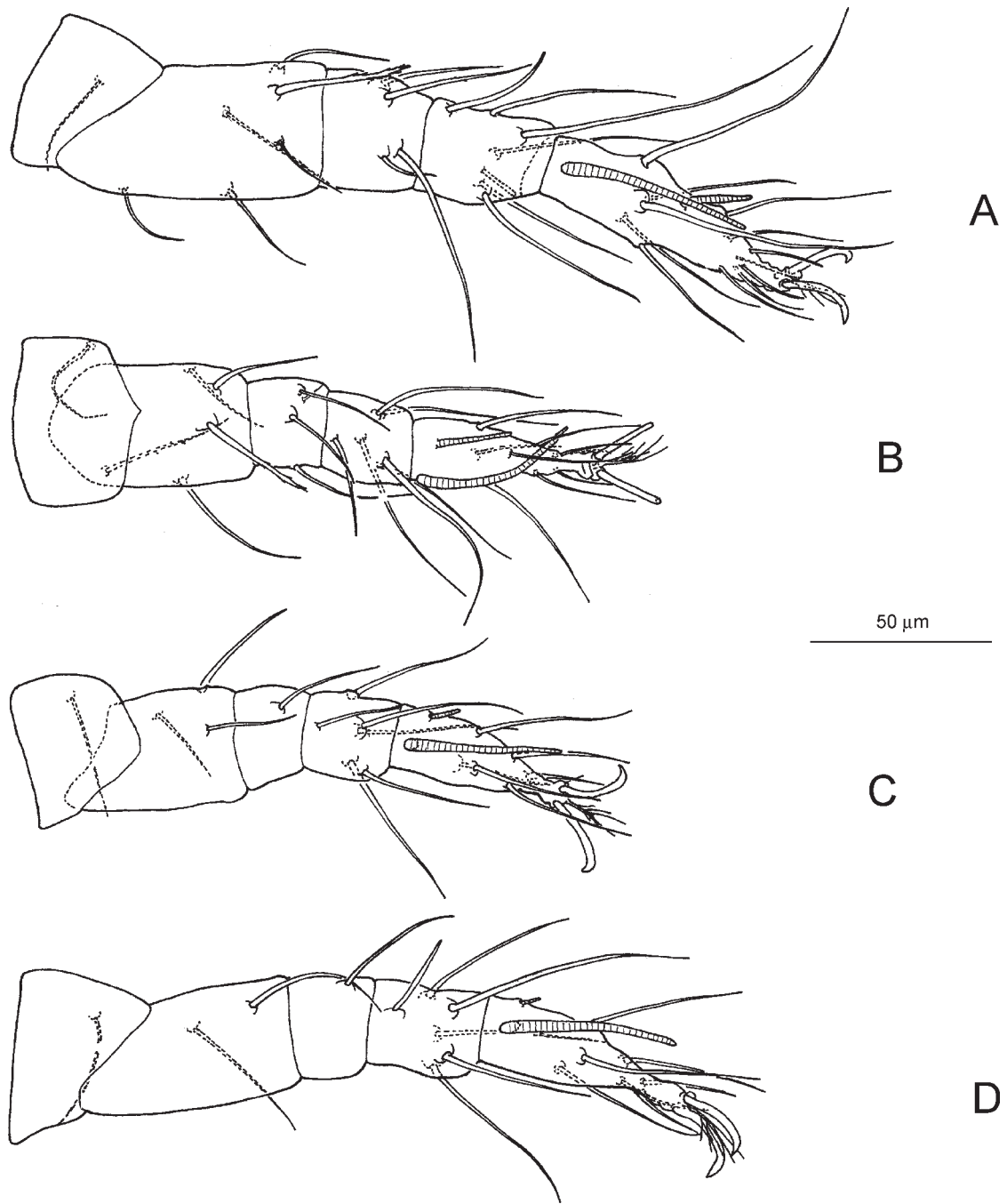
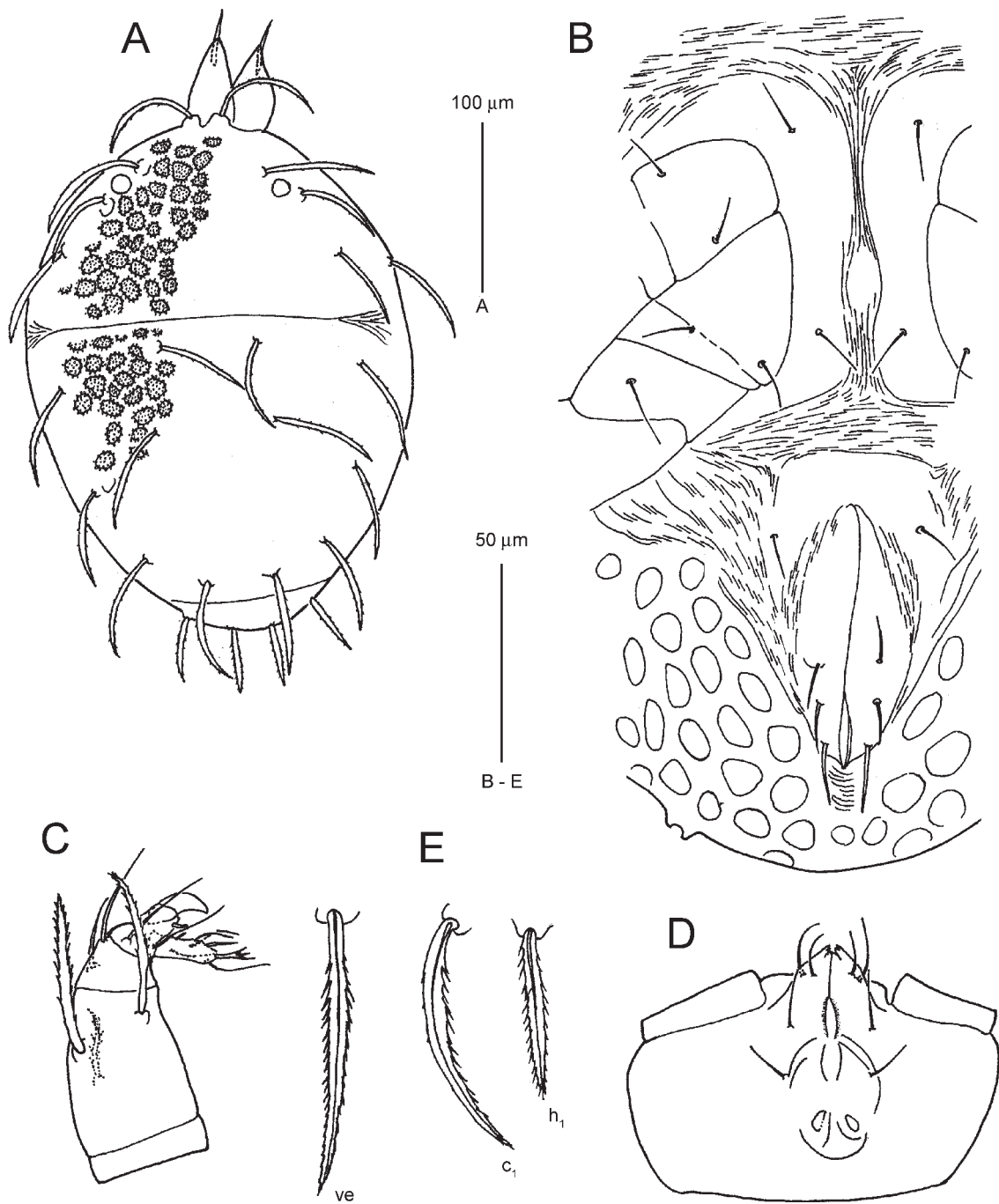


Fig. 104. *Eustigmaeus manapouriensis* (Wood, 1966) (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 105.** *Eustigmaeus mixtus* (Wood, 1966) (female). A, dorsal view of idiosoma; B, ventral view of hysterosoma; C, palp; D, subcapitulum; E, dorsal idiosomal setae.

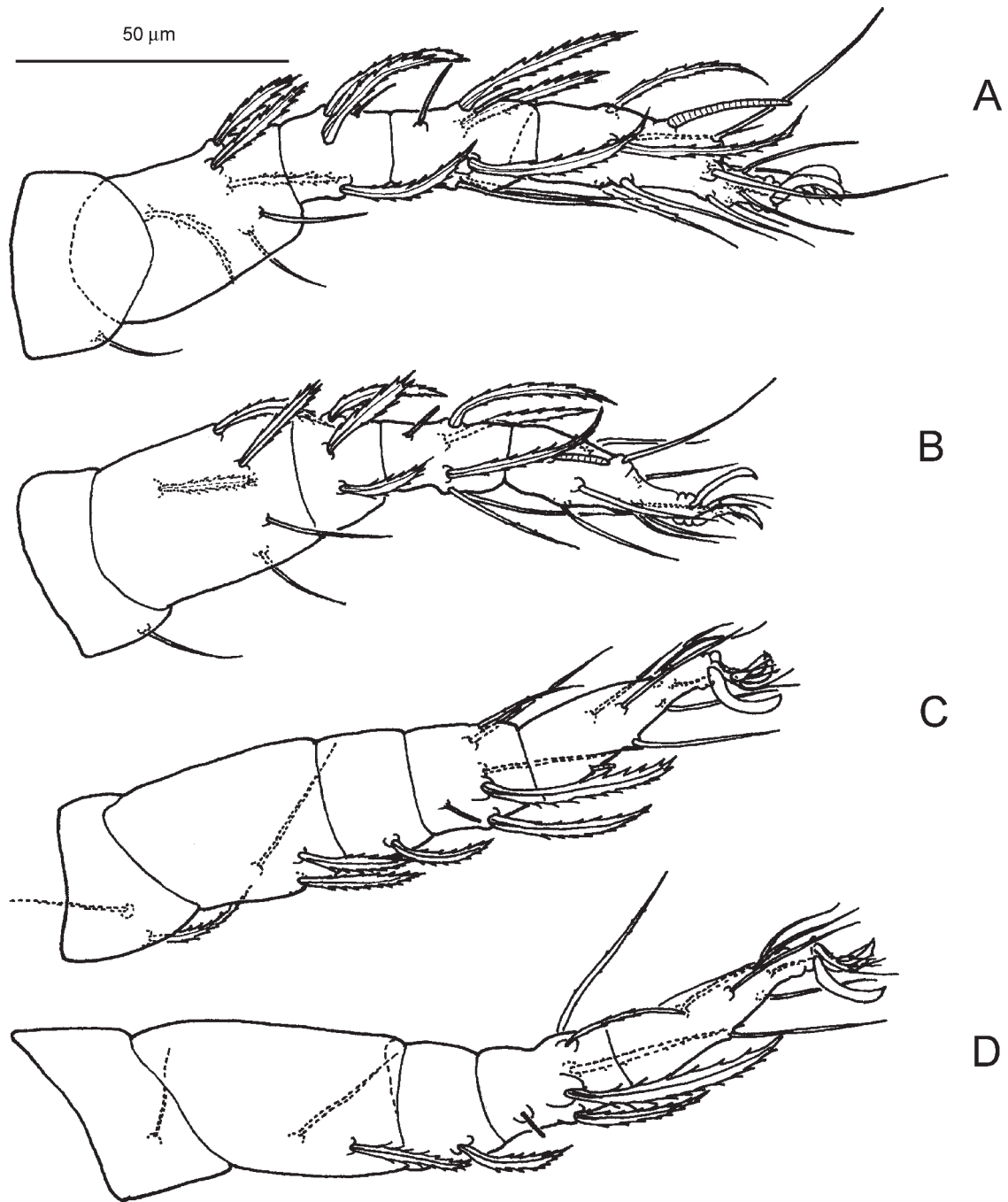
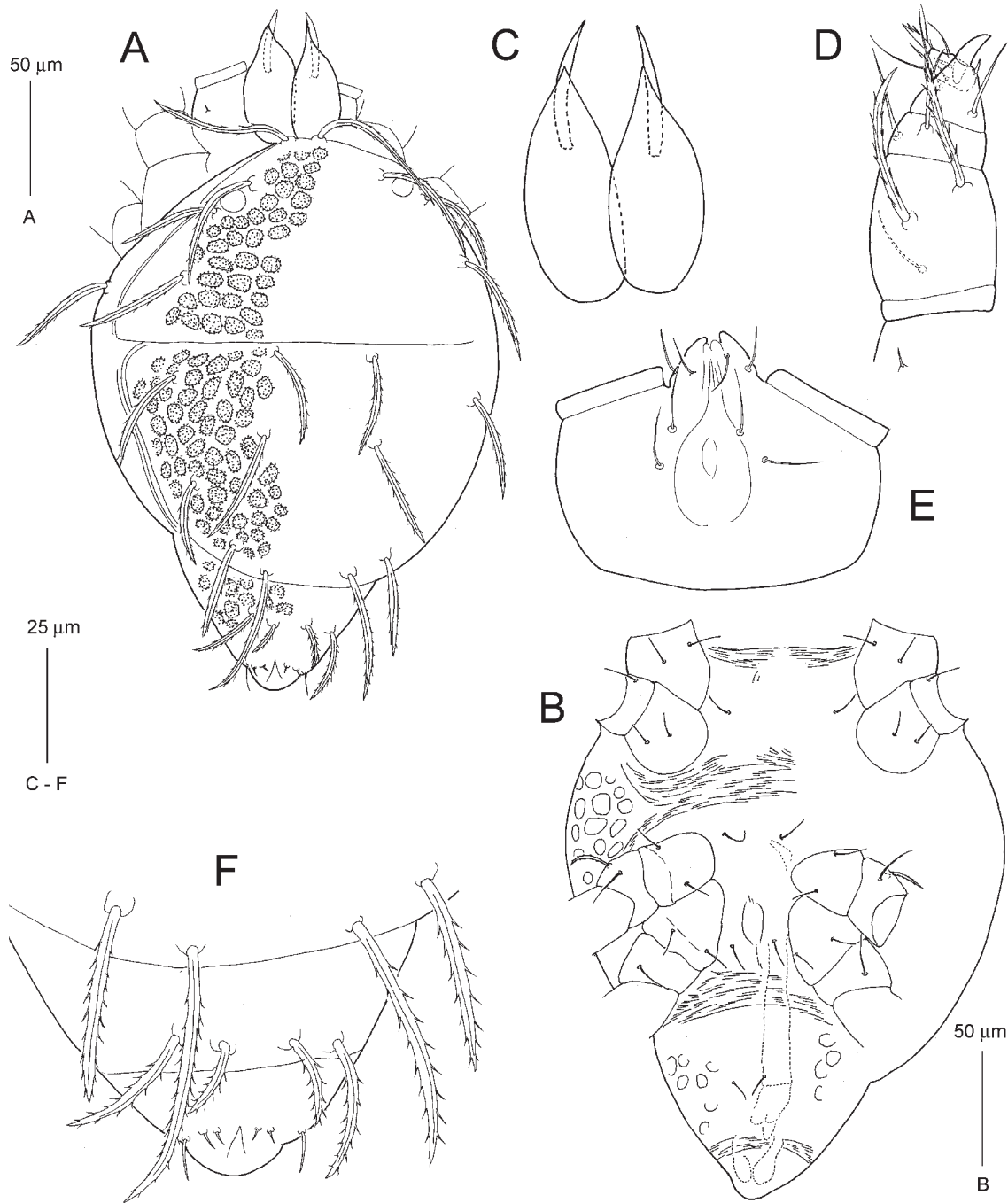


Fig. 106. *Eustigmaeus mixtus* (Wood, 1966) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 107.** *Eustigmaeus mixtus* (Wood, 1966) (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal view of opisthosoma.



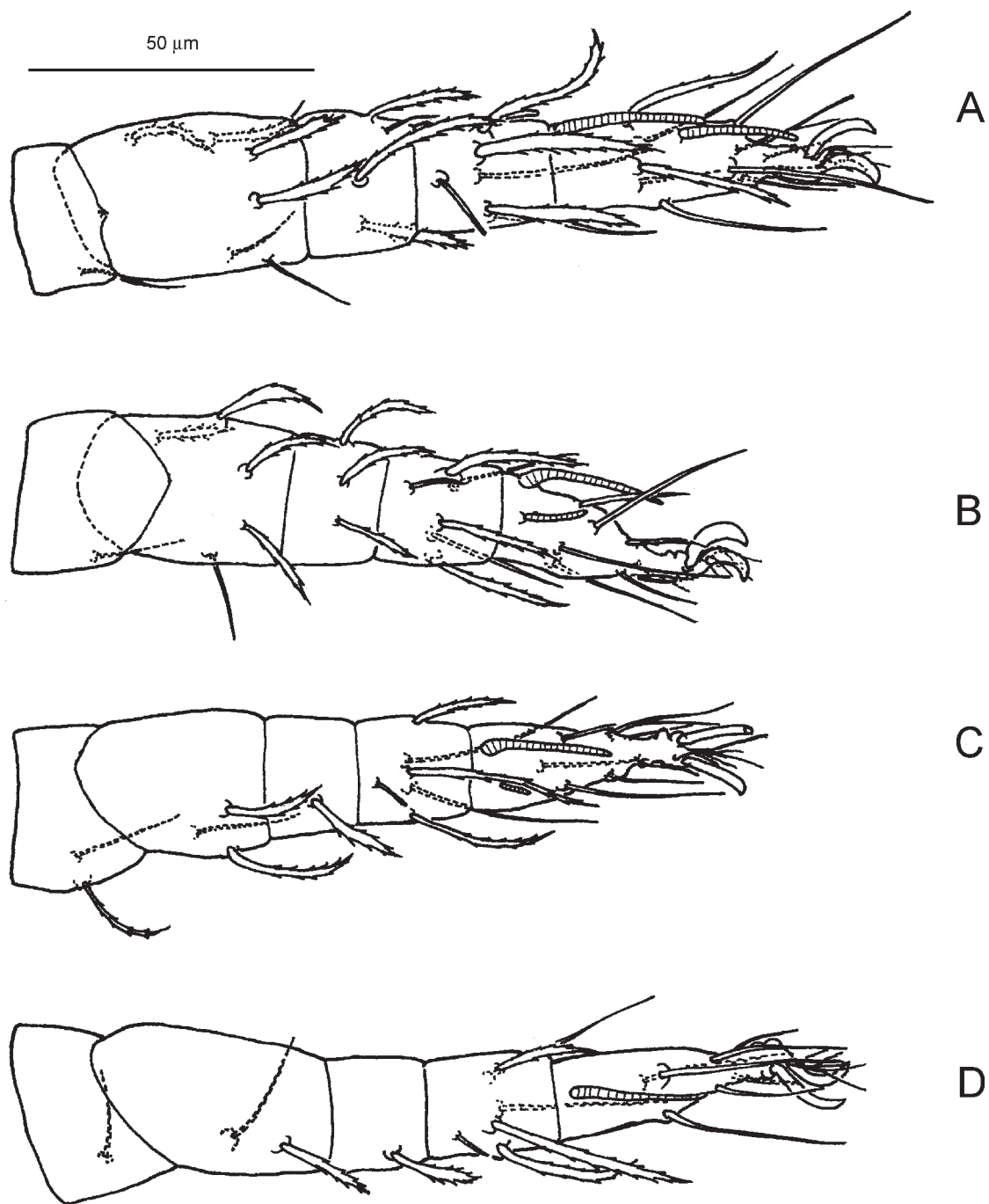
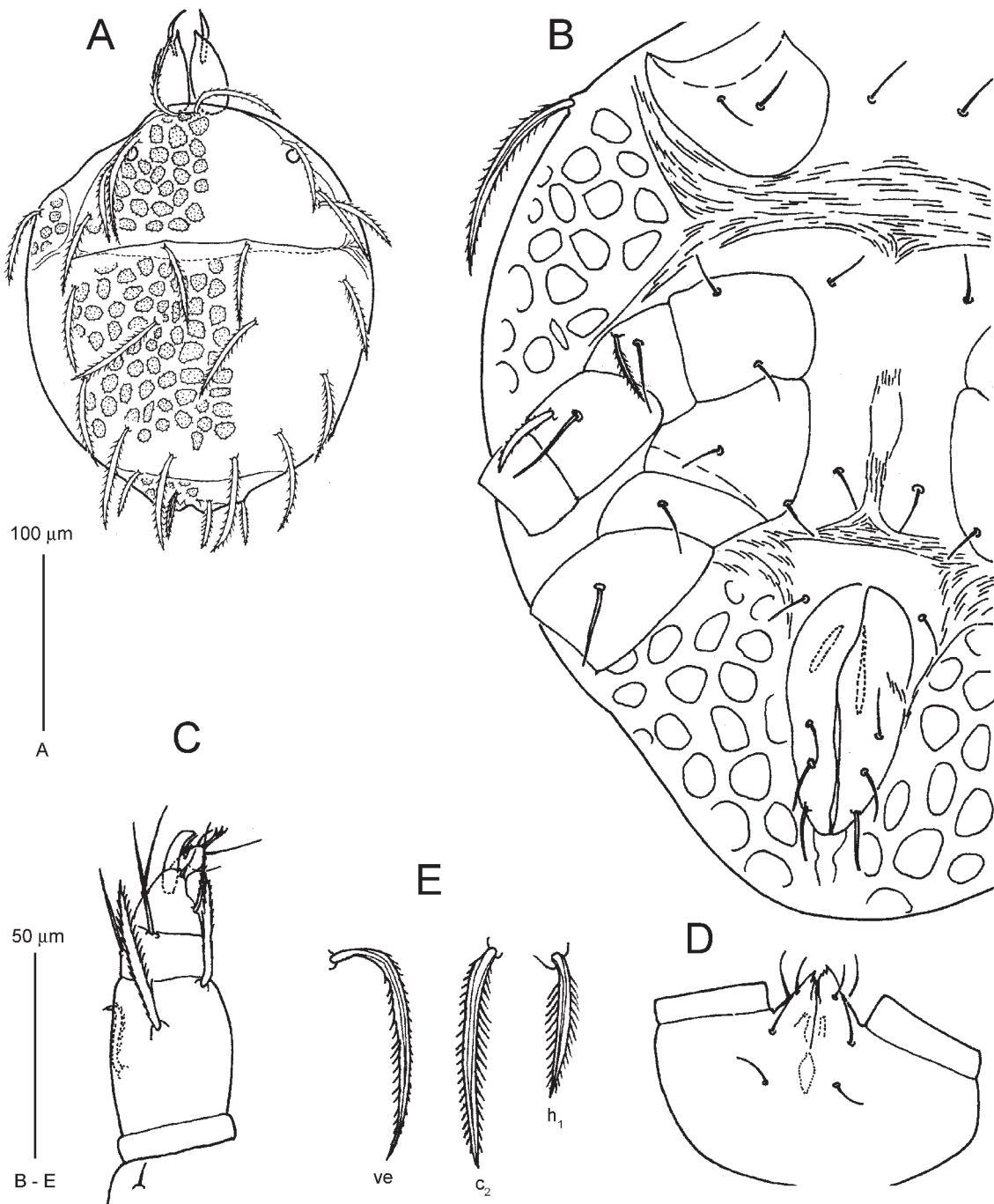


Fig. 108. *Eustigmaeus mixtus* (Wood, 1966) (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 109.** *Eustigmaeus ptilosetus* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, dorsal idiosomal setae.

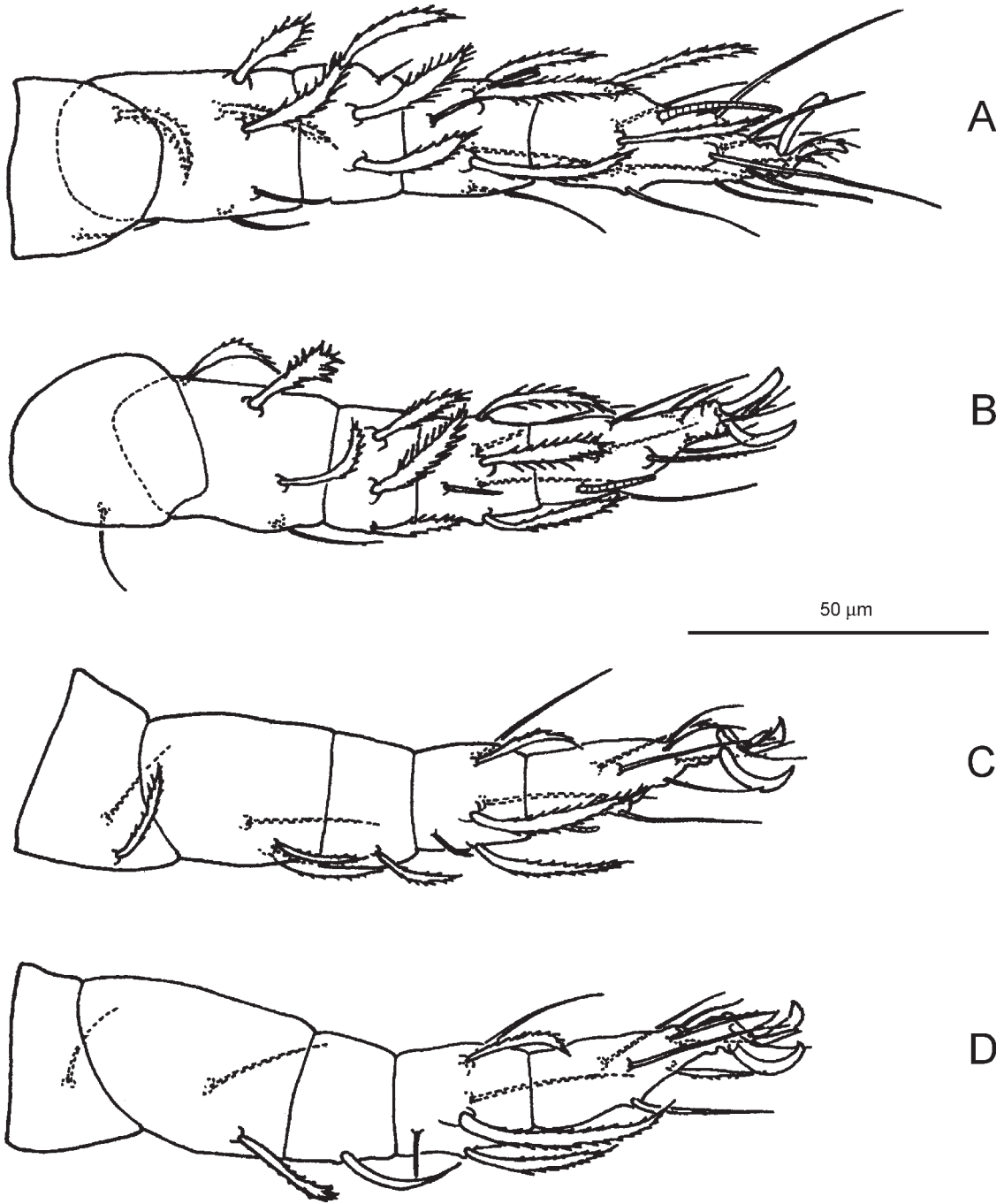
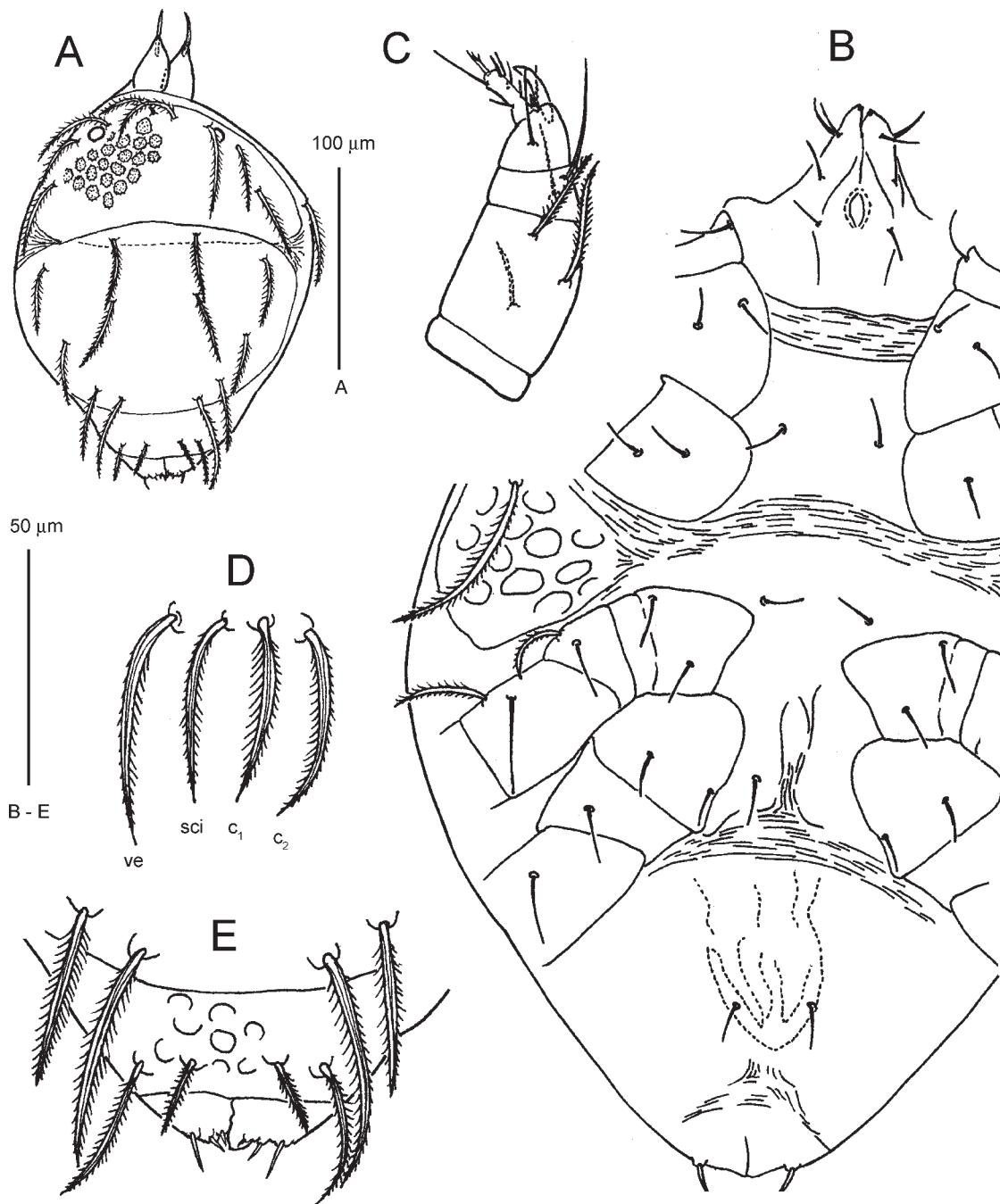


Fig. 110. *Eustigmaeus ptilosetus* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 111.** *Eustigmaeus ptilosetus* sp. n. (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal idiosomal setae; E, dorsal view of opisthosoma .

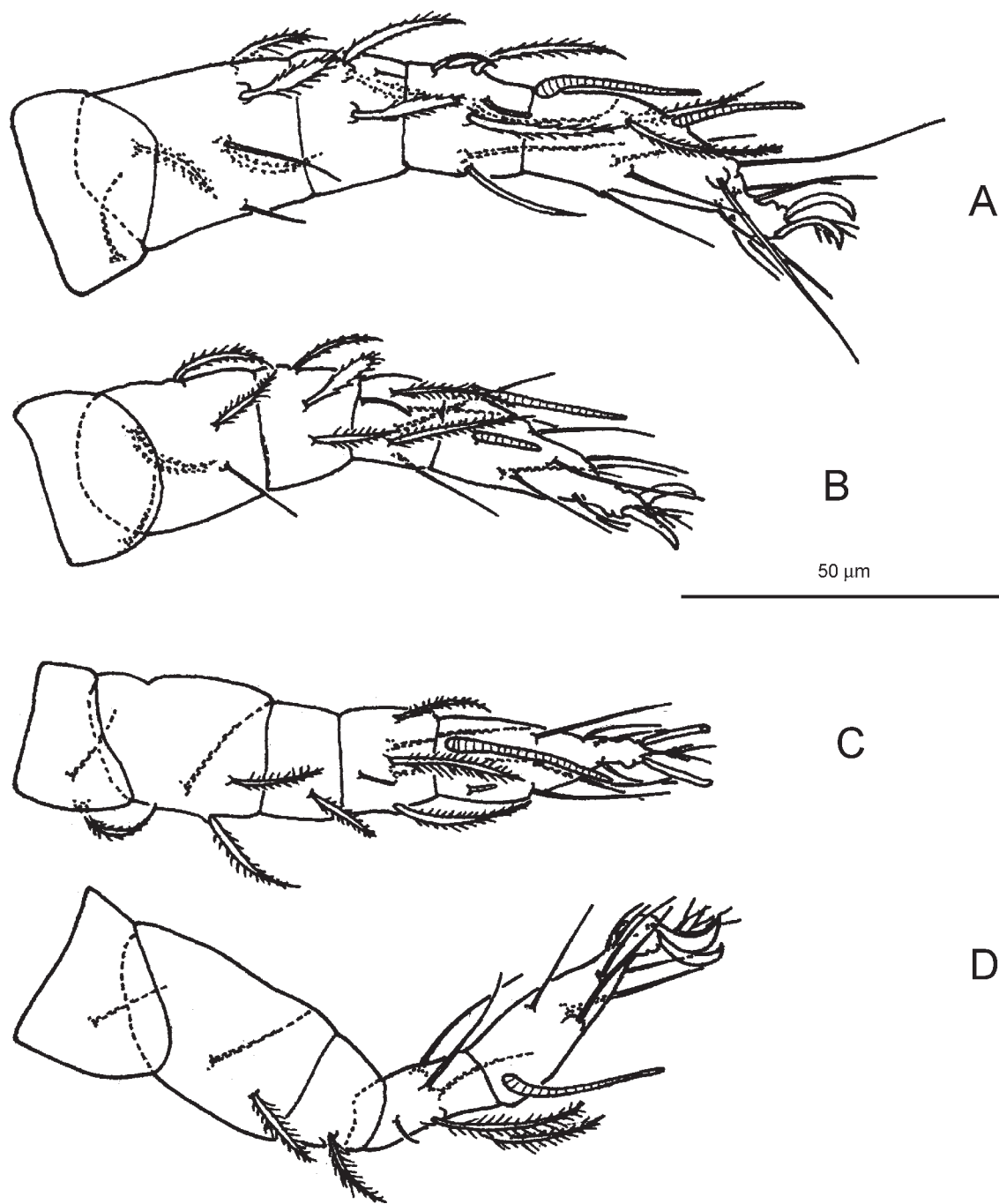
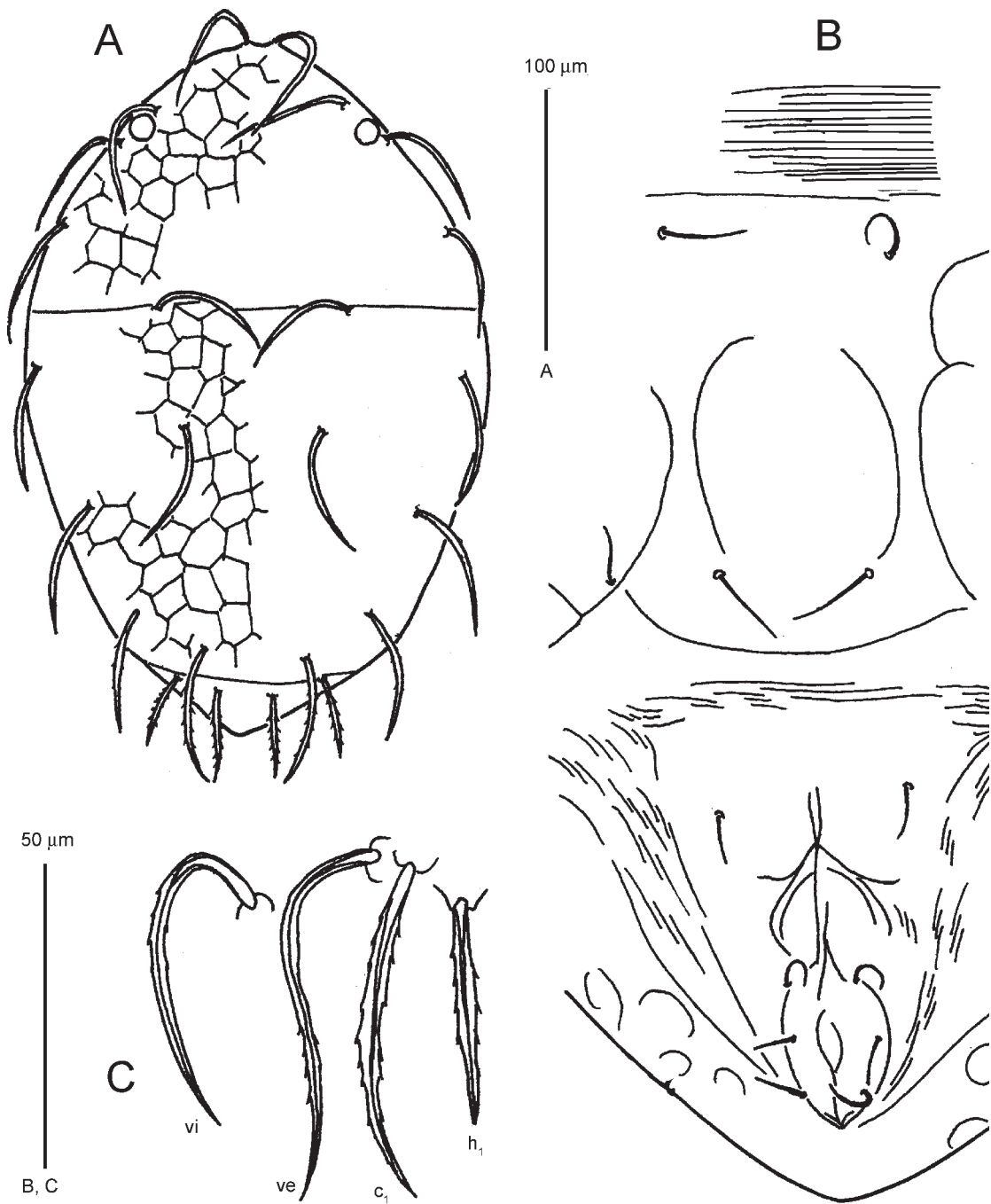


Fig. 112. *Eustigmaeus ptilosetus* sp. n. (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 113.** *Eustigmaeus simplex* (Wood, 1966) (female). A, dorsal view of idiosoma; B, ventral view of hysterosoma; C, dorsal idiosomal setae.

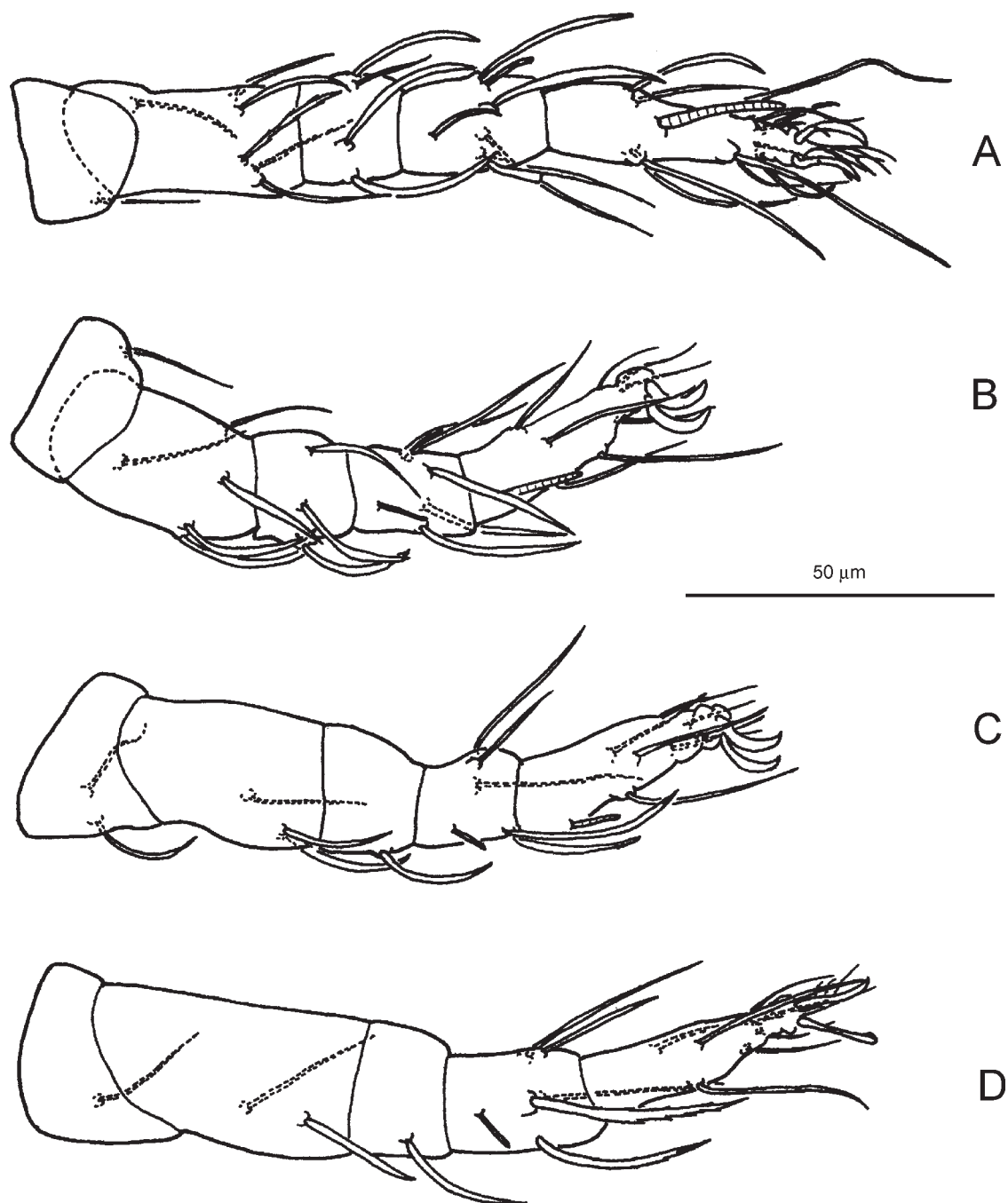
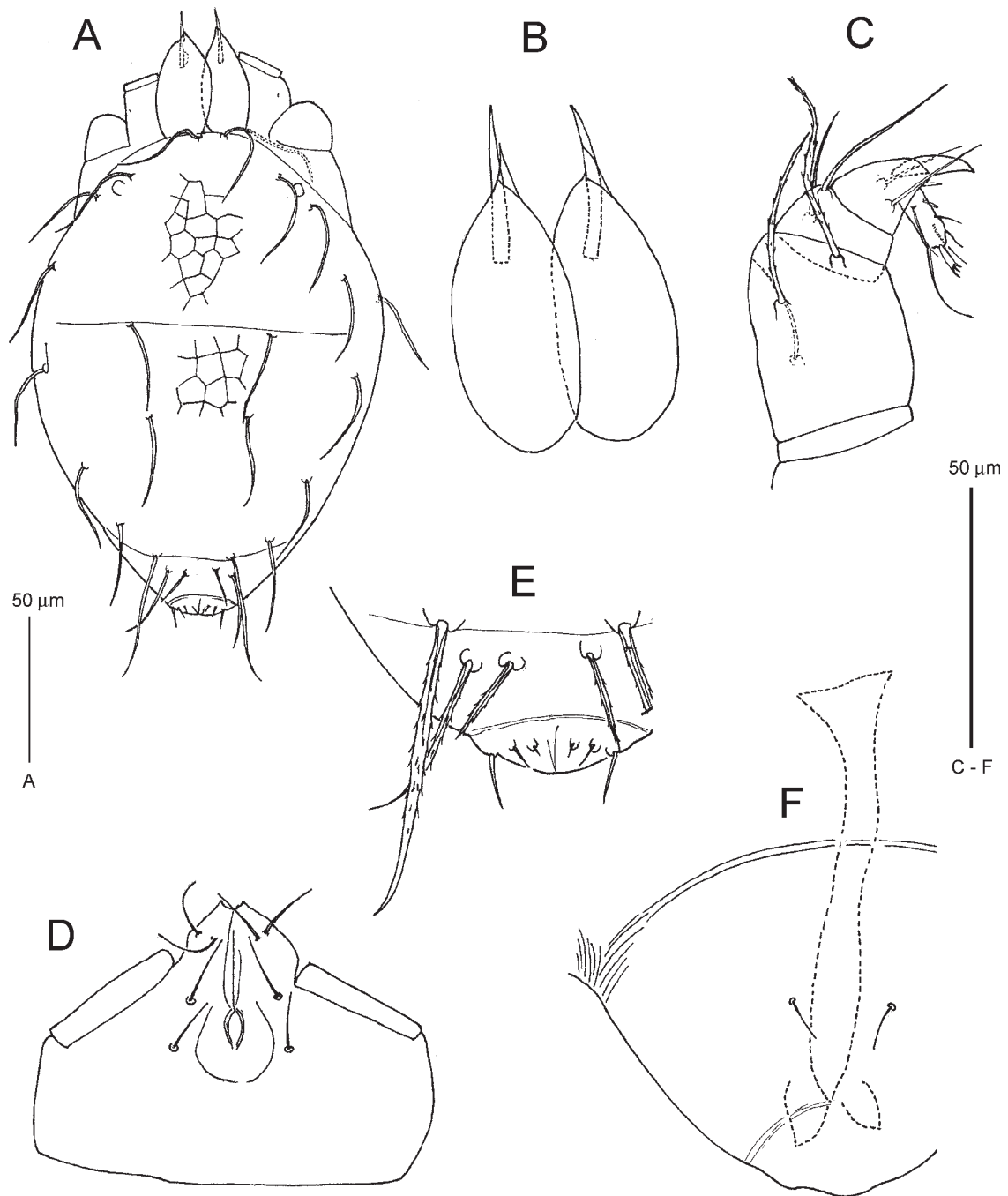


Fig. 114. *Eustigmaeus simplex* (Wood, 1966) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 115.** *Eustigmaeus simplex* (Wood, 1966) (male). A, dorsal view of idiosoma; B, chelicerae; C, palp; D, subcapitulum; E, dorsal view of opisthosoma; F, genitoanal region.



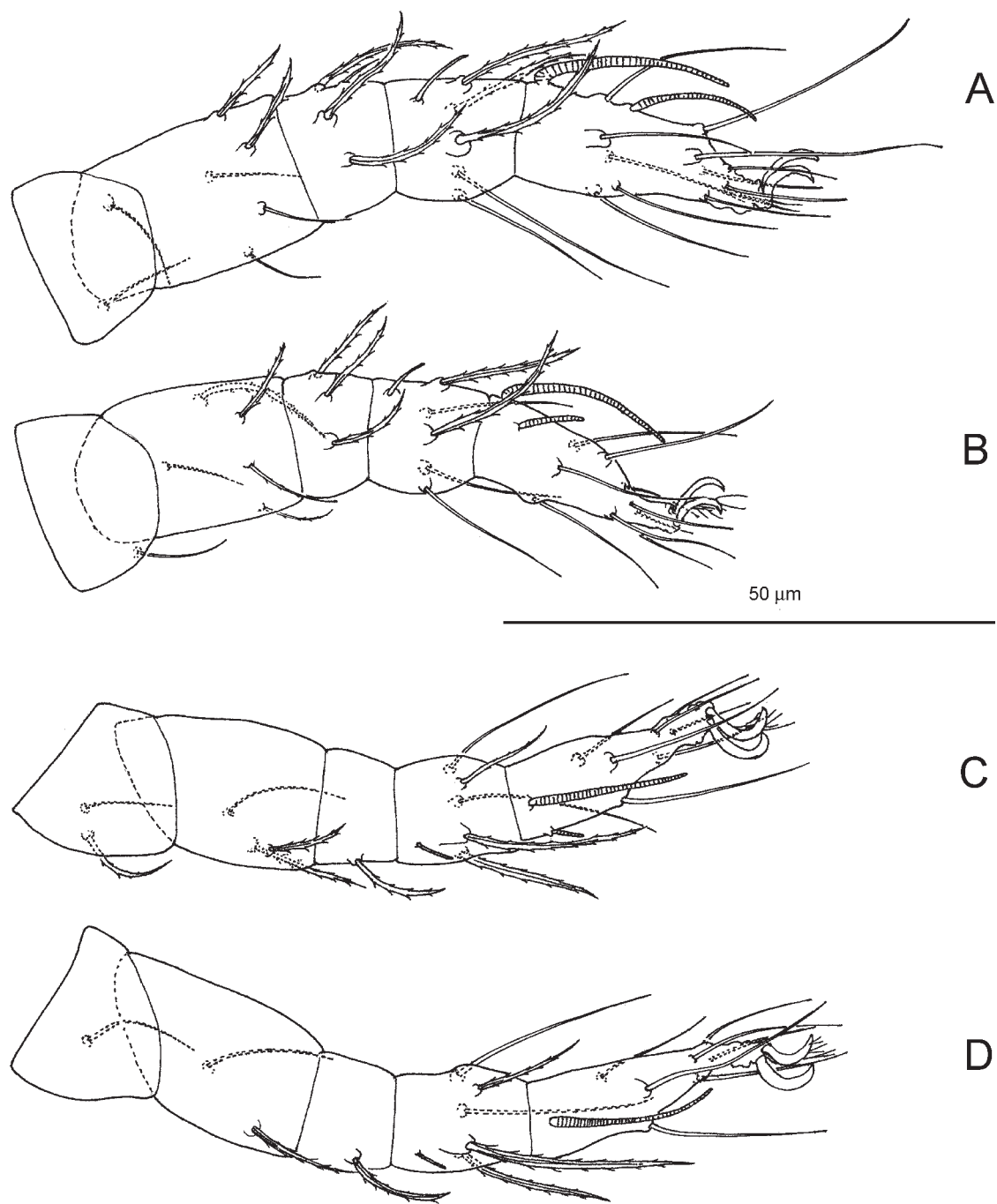
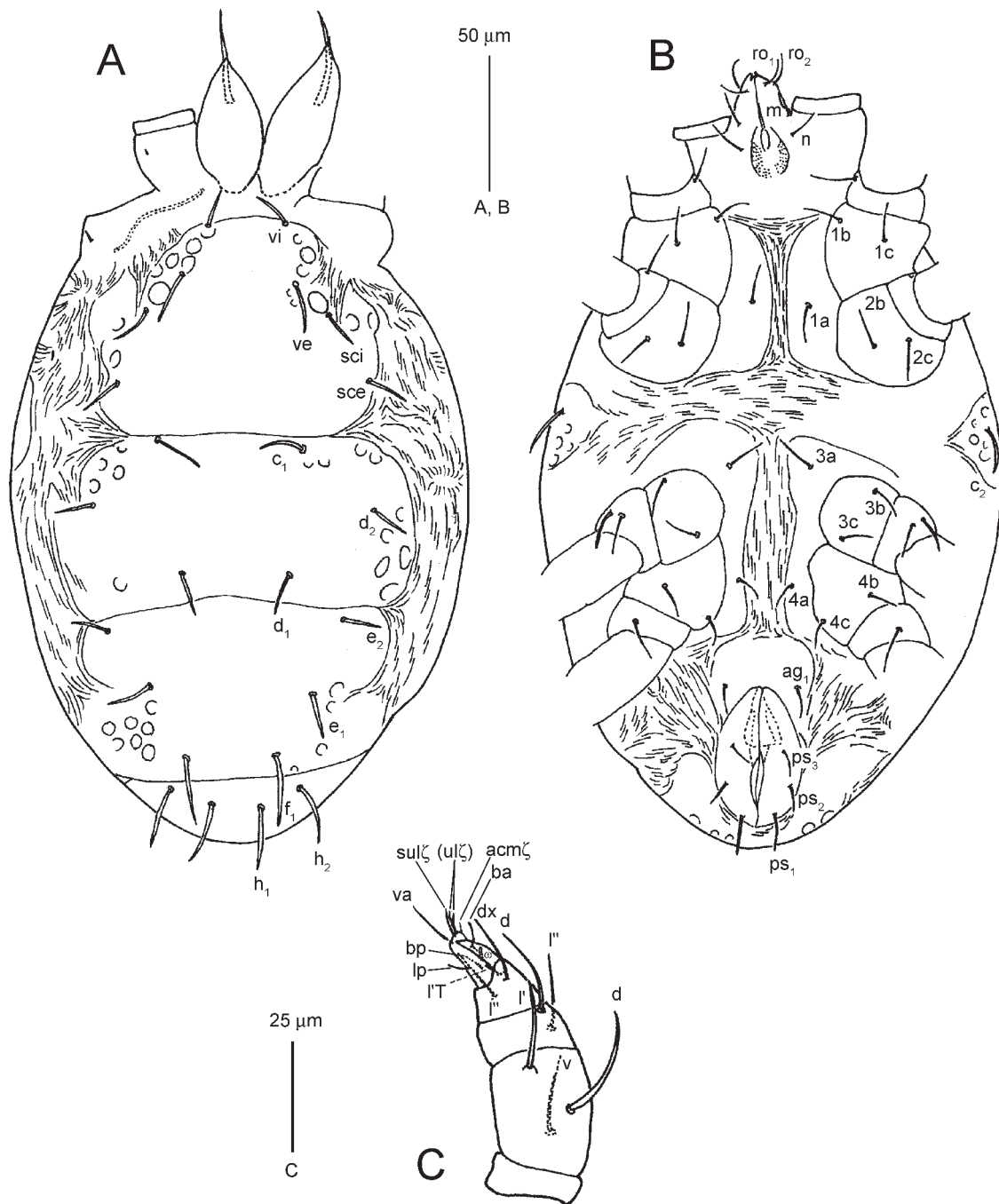


Fig. 116. *Eustigmaeus simplex* (Wood, 1966) (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 117.** *Ledermulleriopsis insica* Wood, 1967 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp.

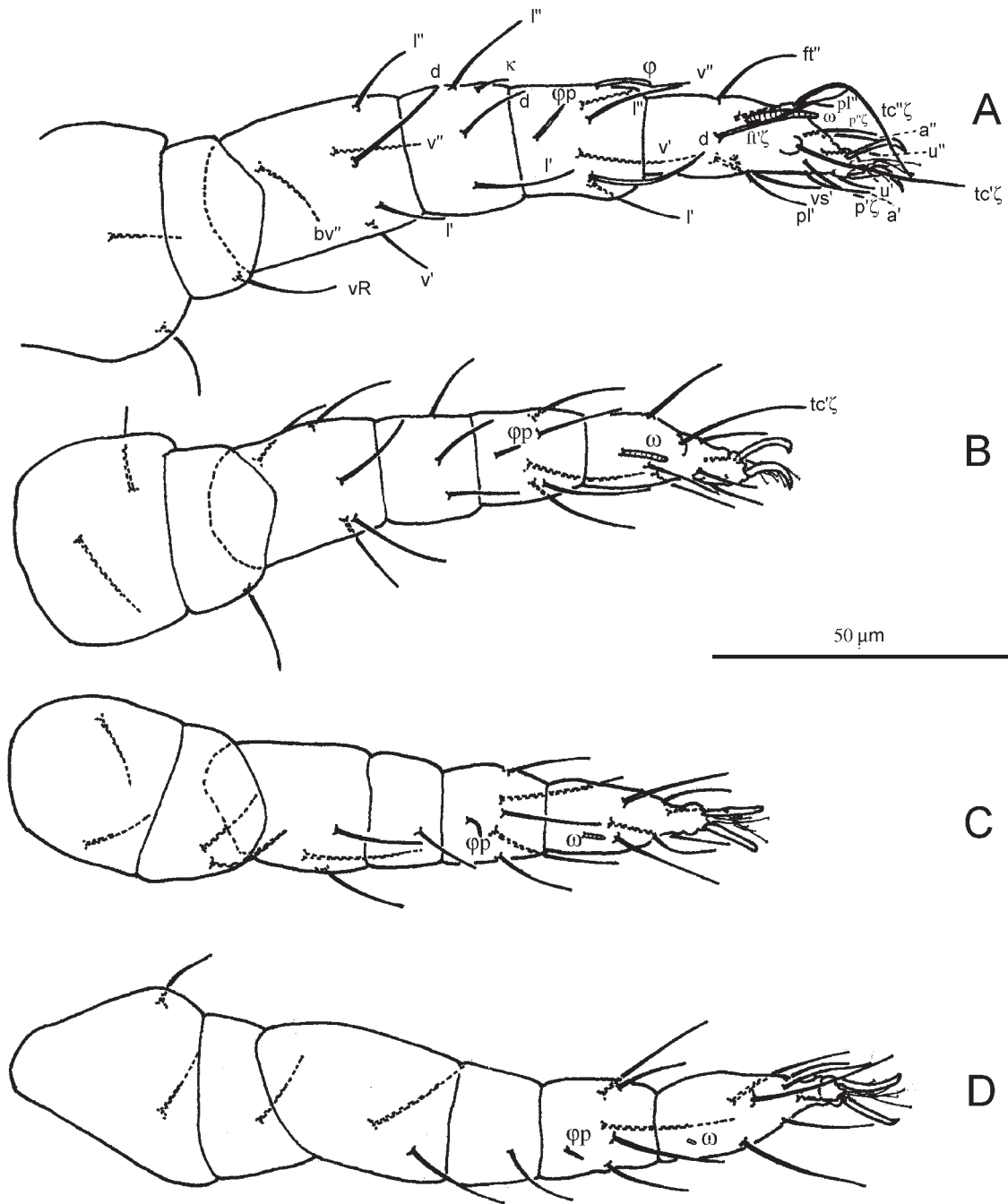
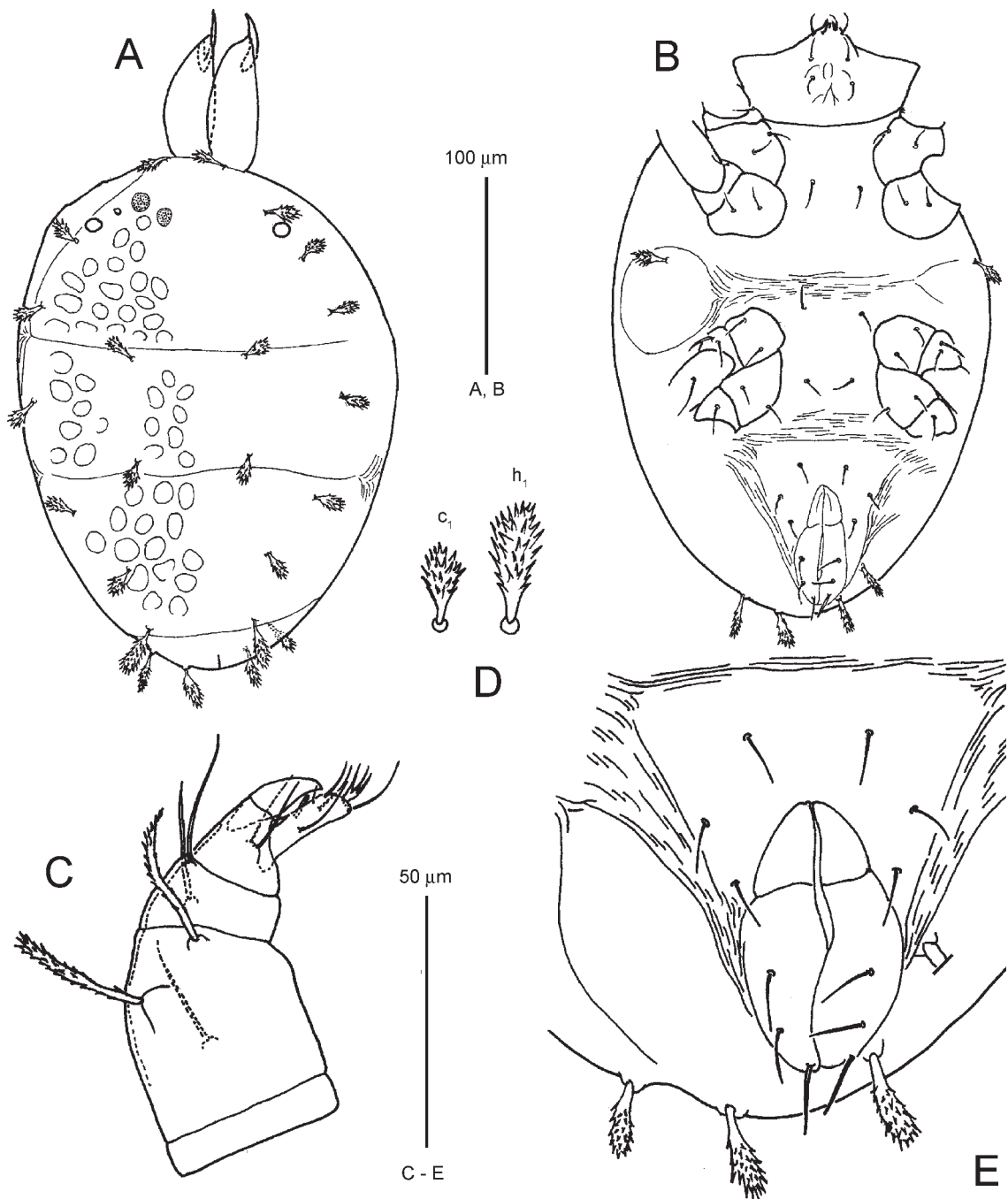


Fig. 118. *Ledermulleriopsis insica* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 119.** *Ledermulleriopsis spinosa* Wood, 1967 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal idiosomal setae; E, genitoanal area.

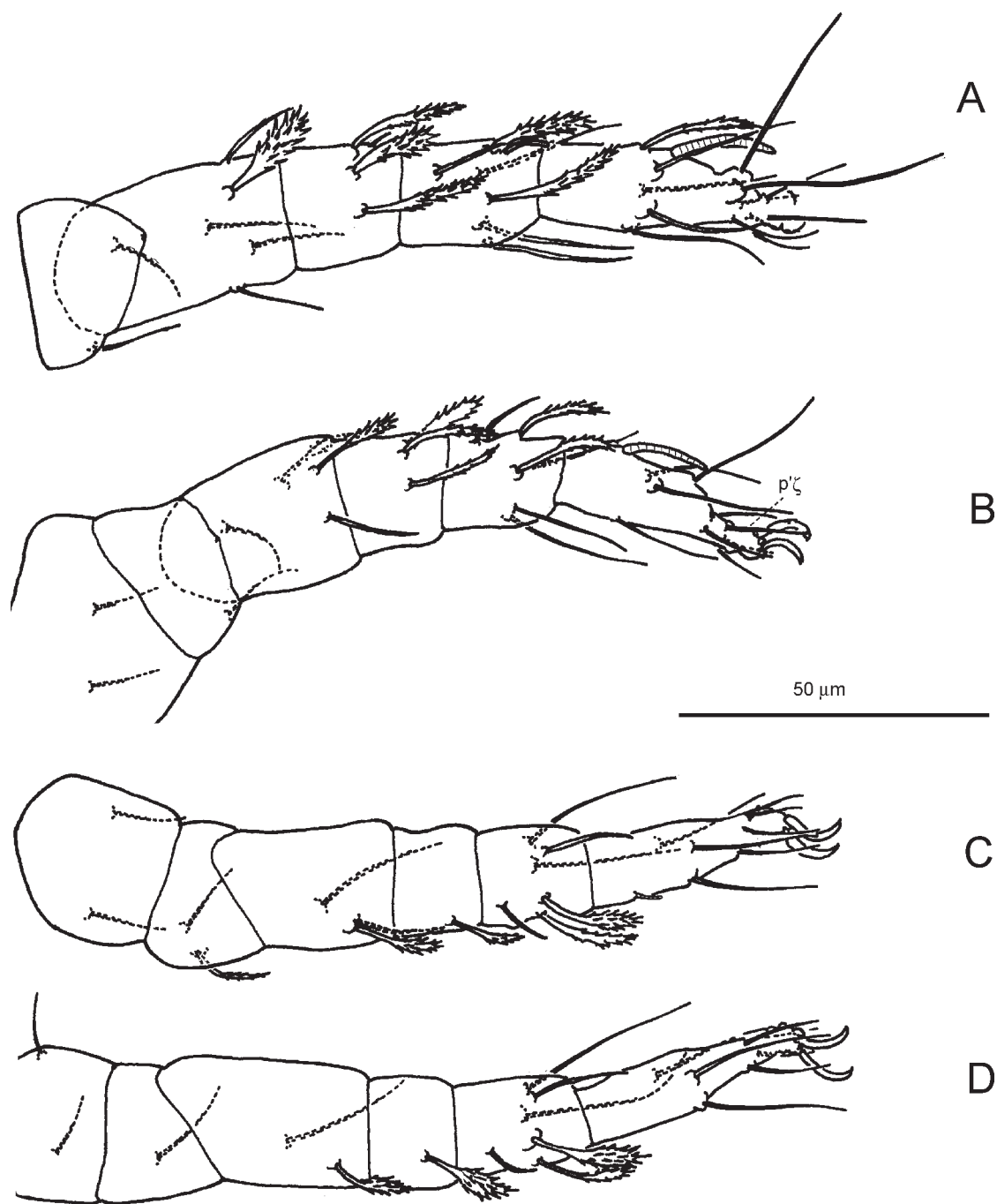
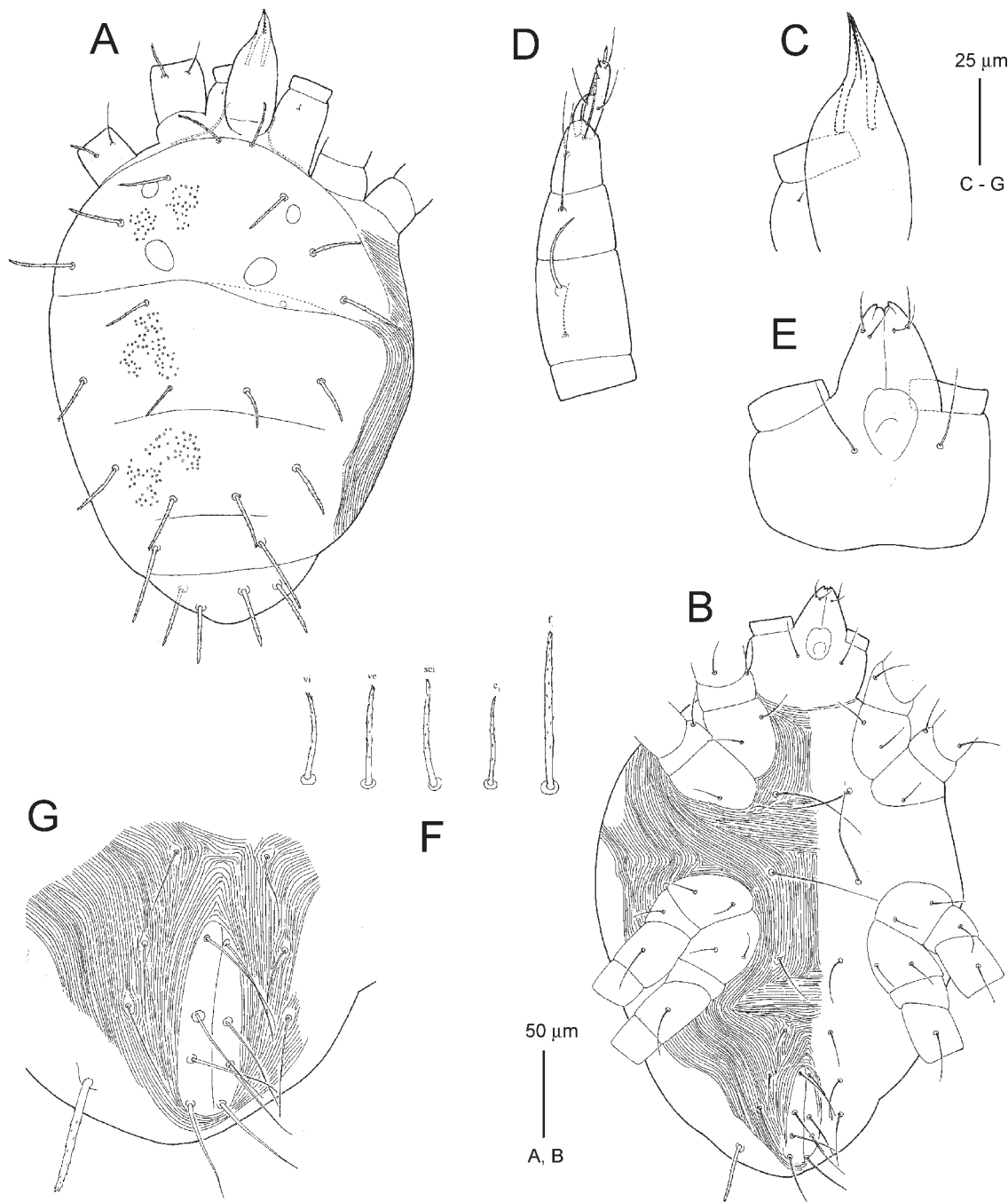


Fig. 120. *Ledermulleriopsis spinosa* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 121.** *Mediolata brevistis* Wood, 1967 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal idiosomal setae; G, genitoanal area.

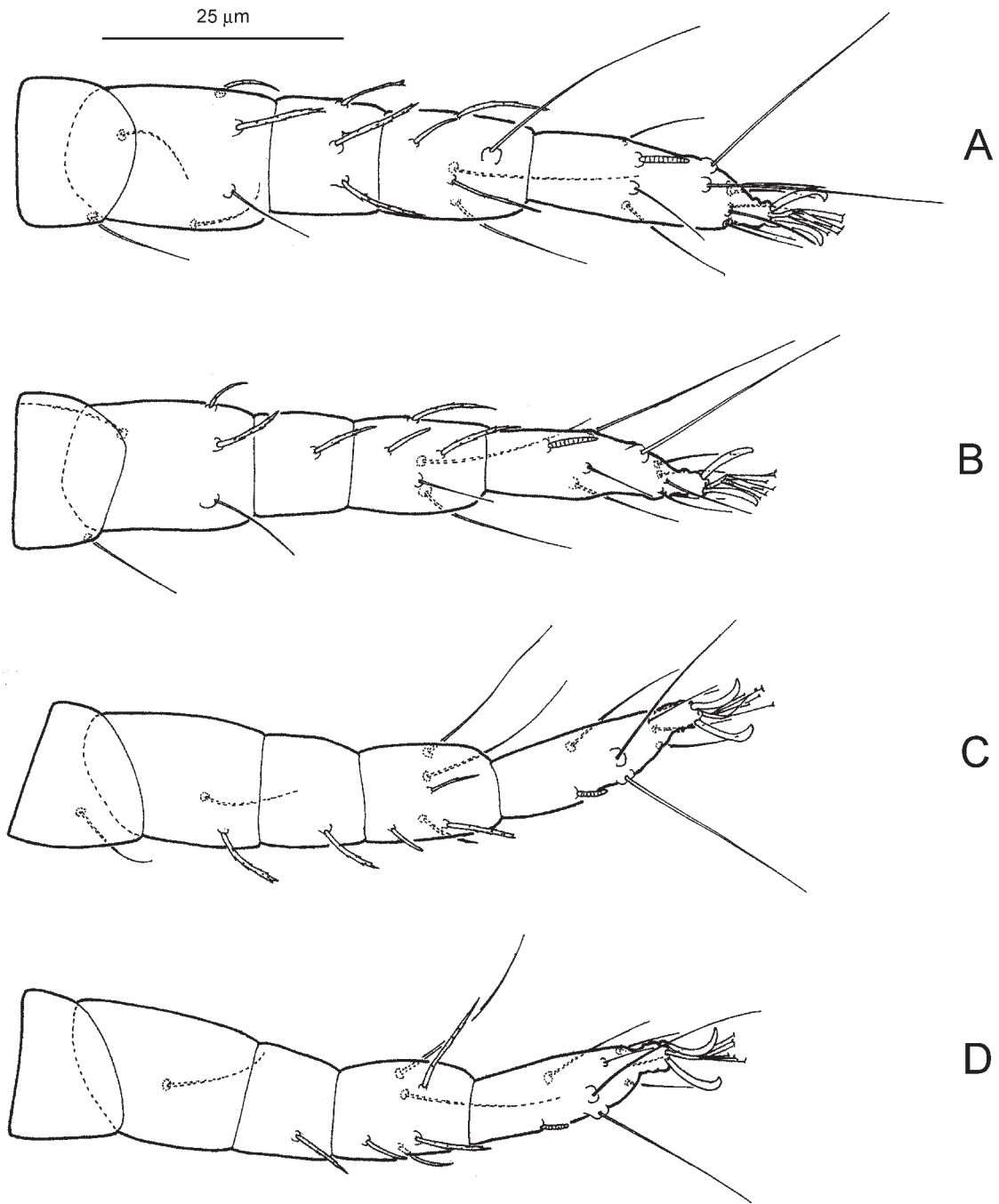
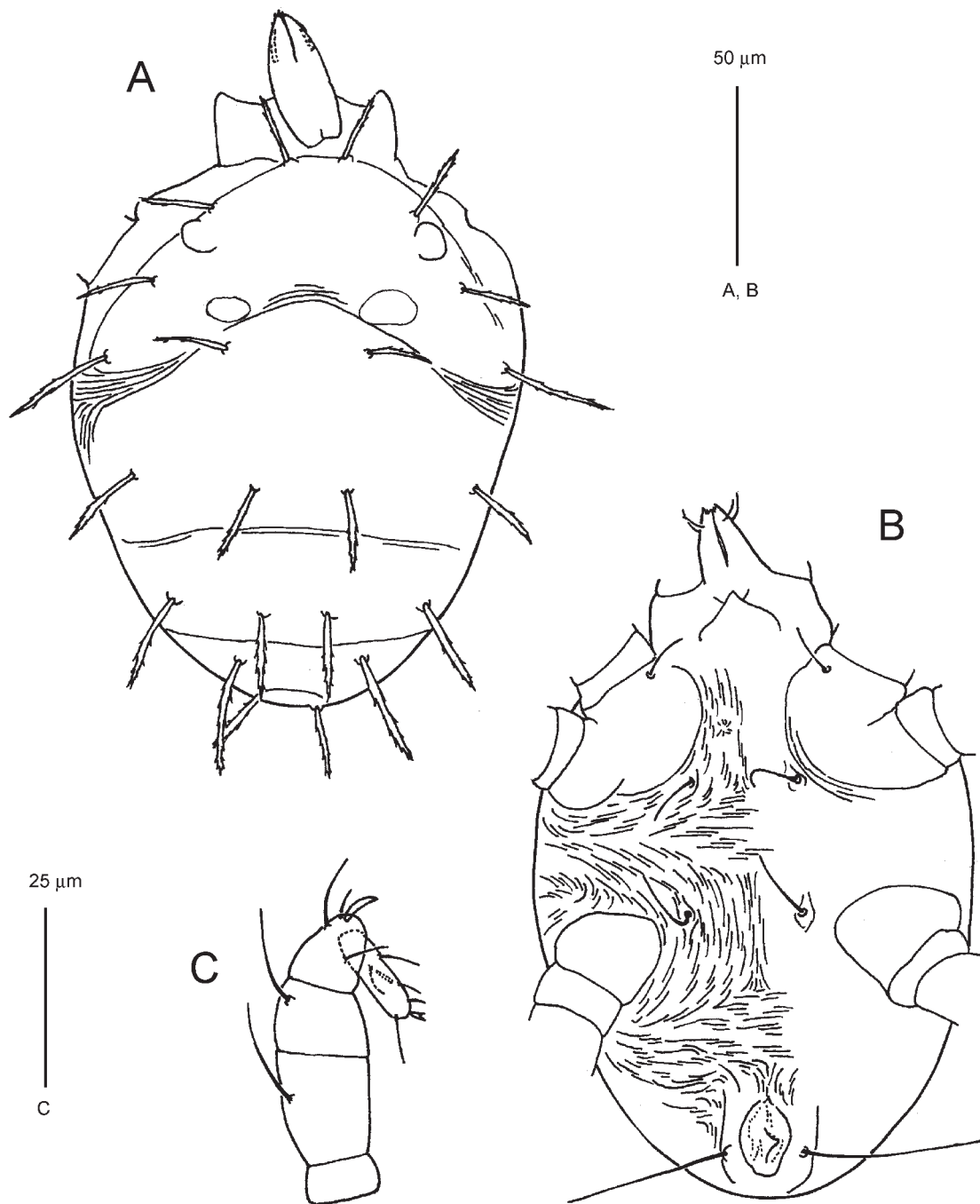


Fig. 122. *Mediolata brevistis* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 123.** *Mediolata brevistis* Wood, 1967 (larva). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp.



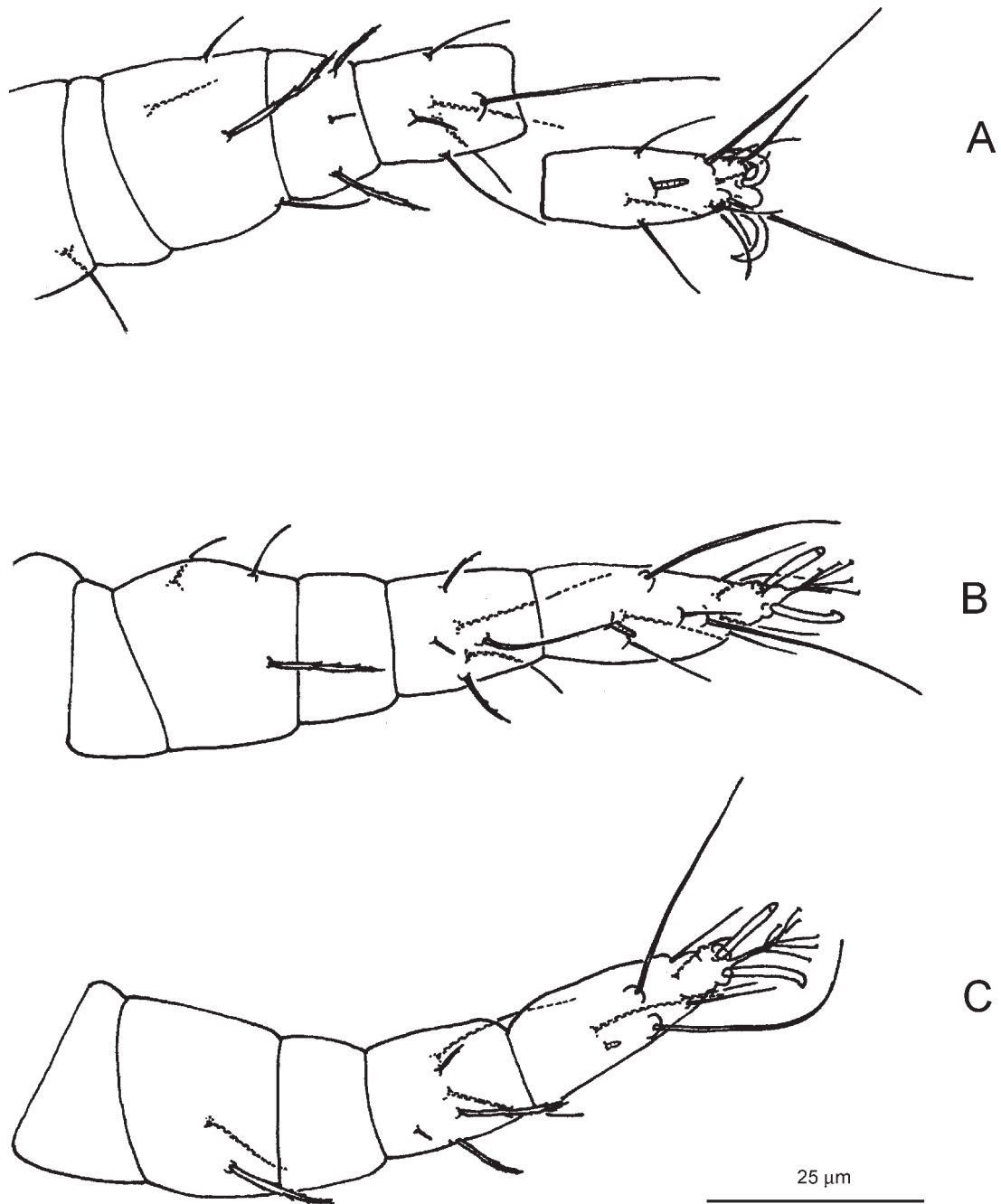
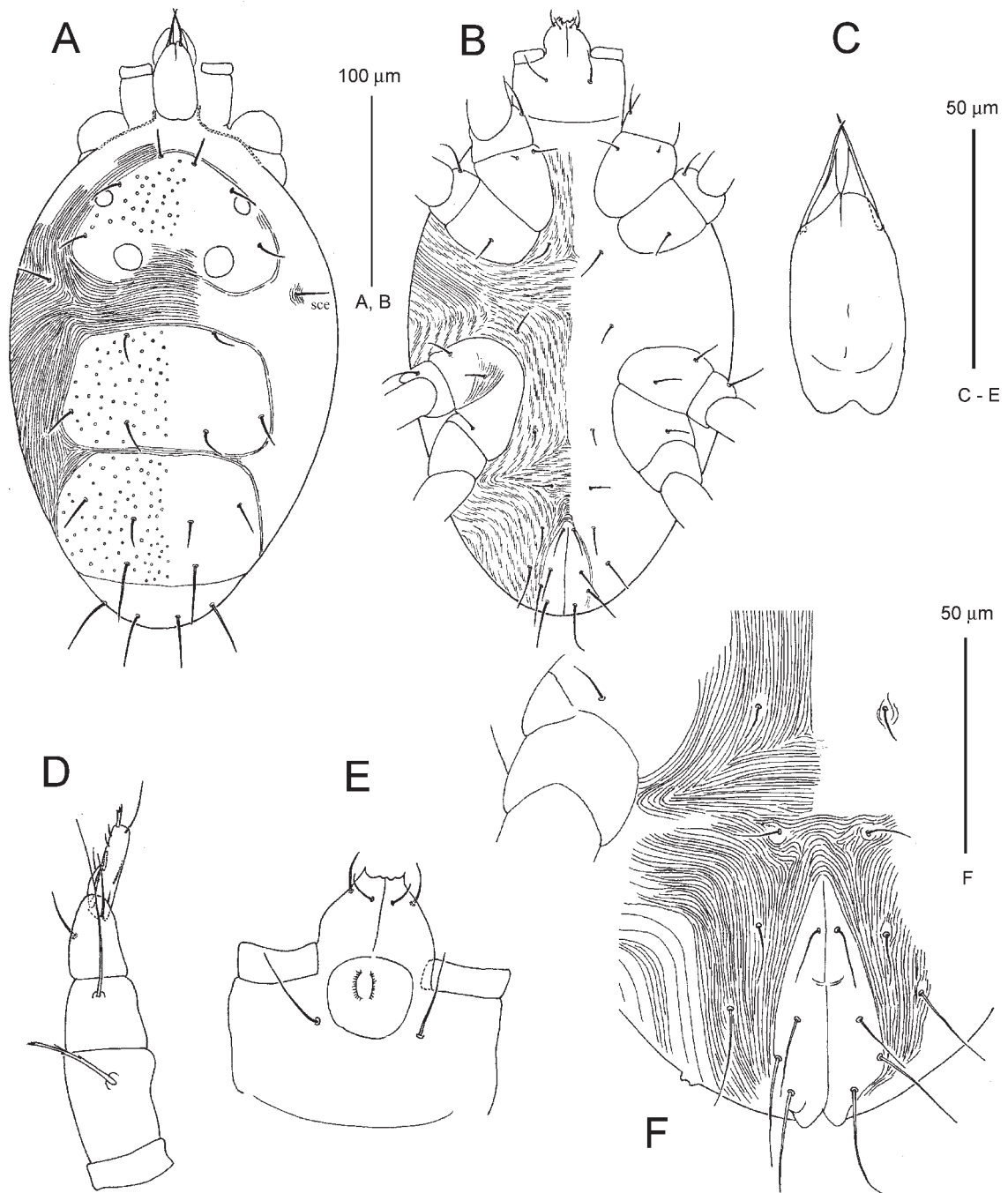


Fig. 124. *Mediolata brevistis* Wood, 1967 (larva). A, leg I; B, leg II; C, leg III.



**Fig. 125.** *Mediolata delicata* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, ventral view hysterosoma.

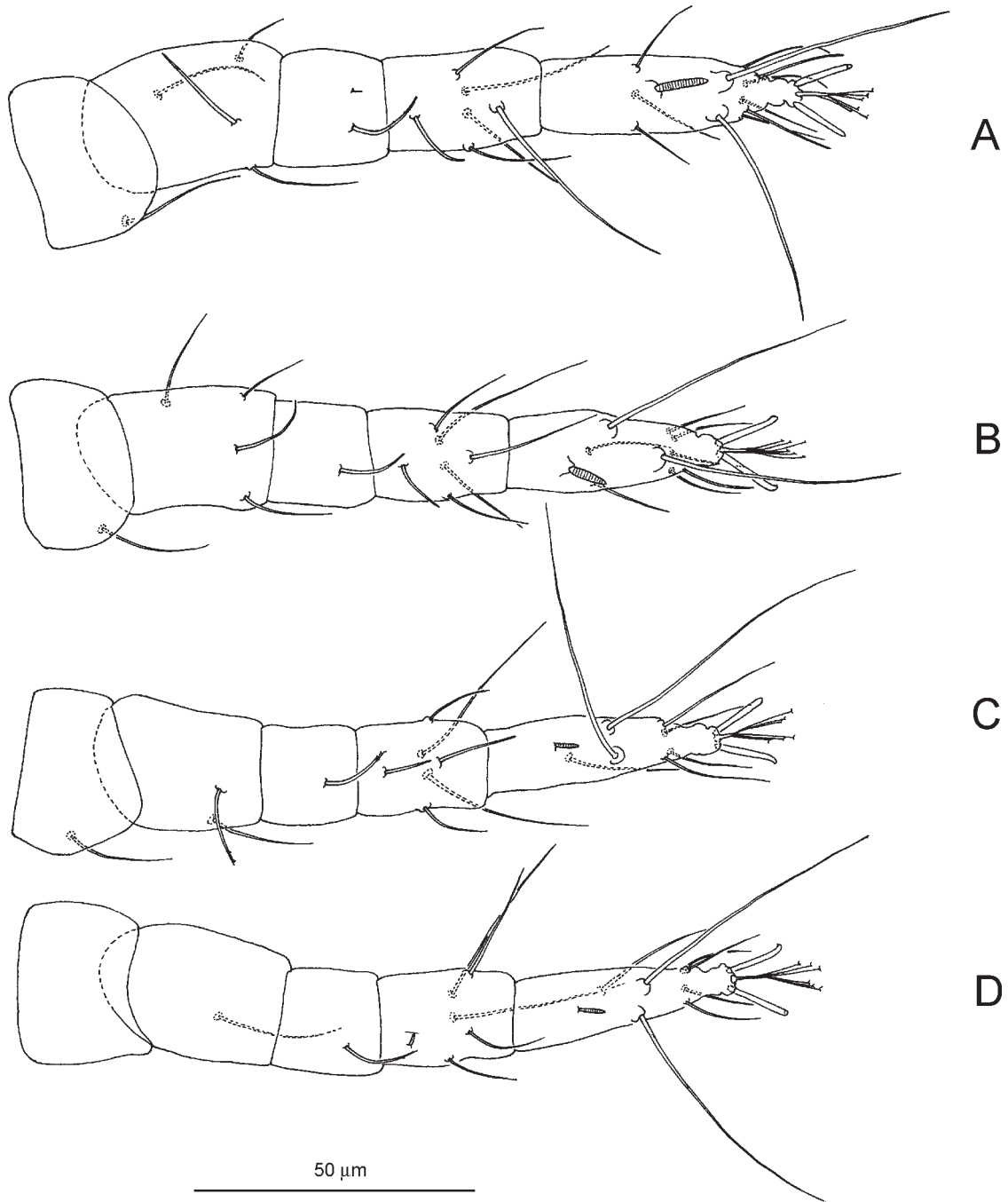
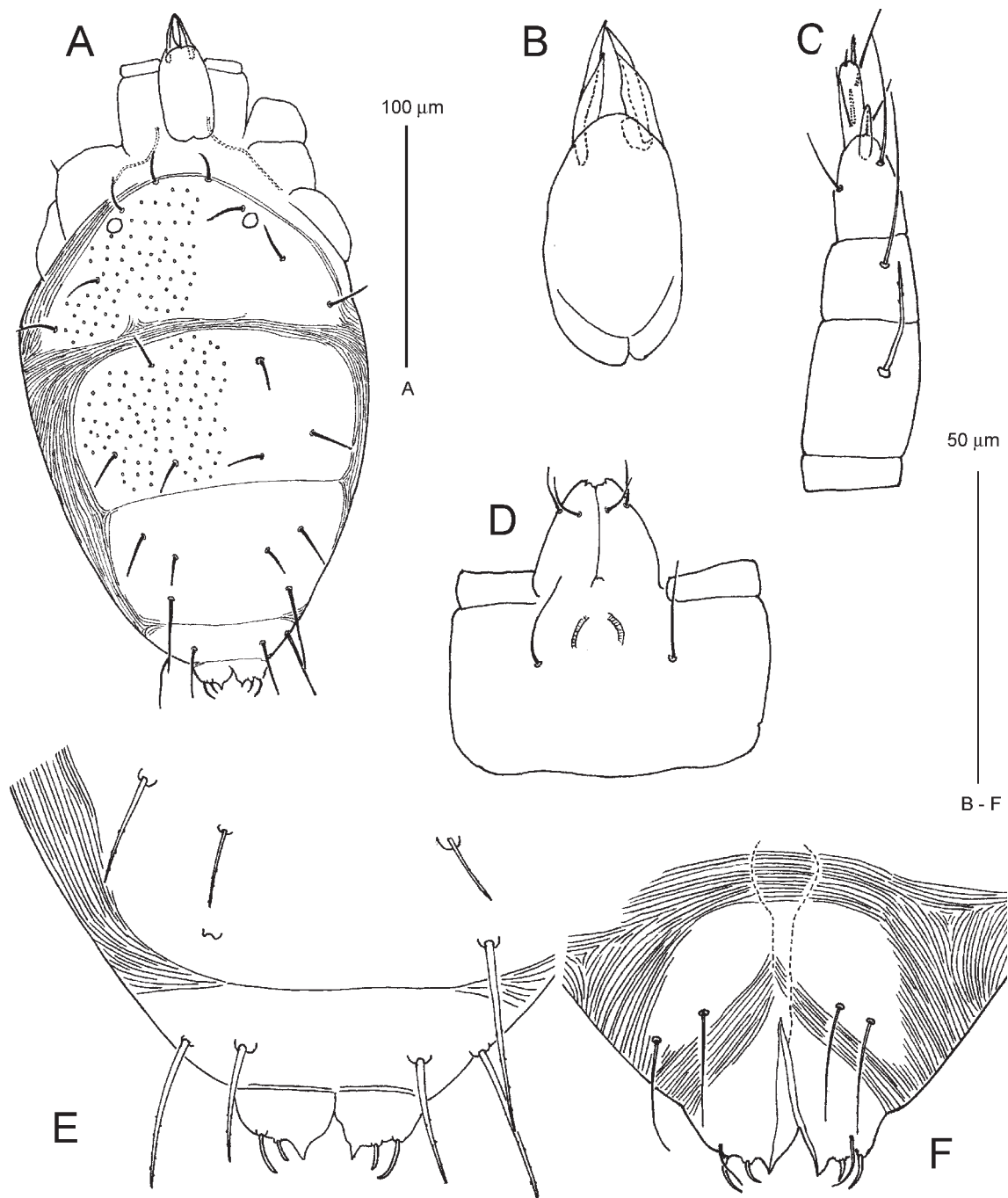


Fig. 126. *Mediolata delicata* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 127.** *Mediolata delicata* sp. n. (male). A, dorsal view of idiosoma; B, chelicerae; C, palp; D, subcapitulum; E, dorsal view of opisthosoma; F, genitoanal region.

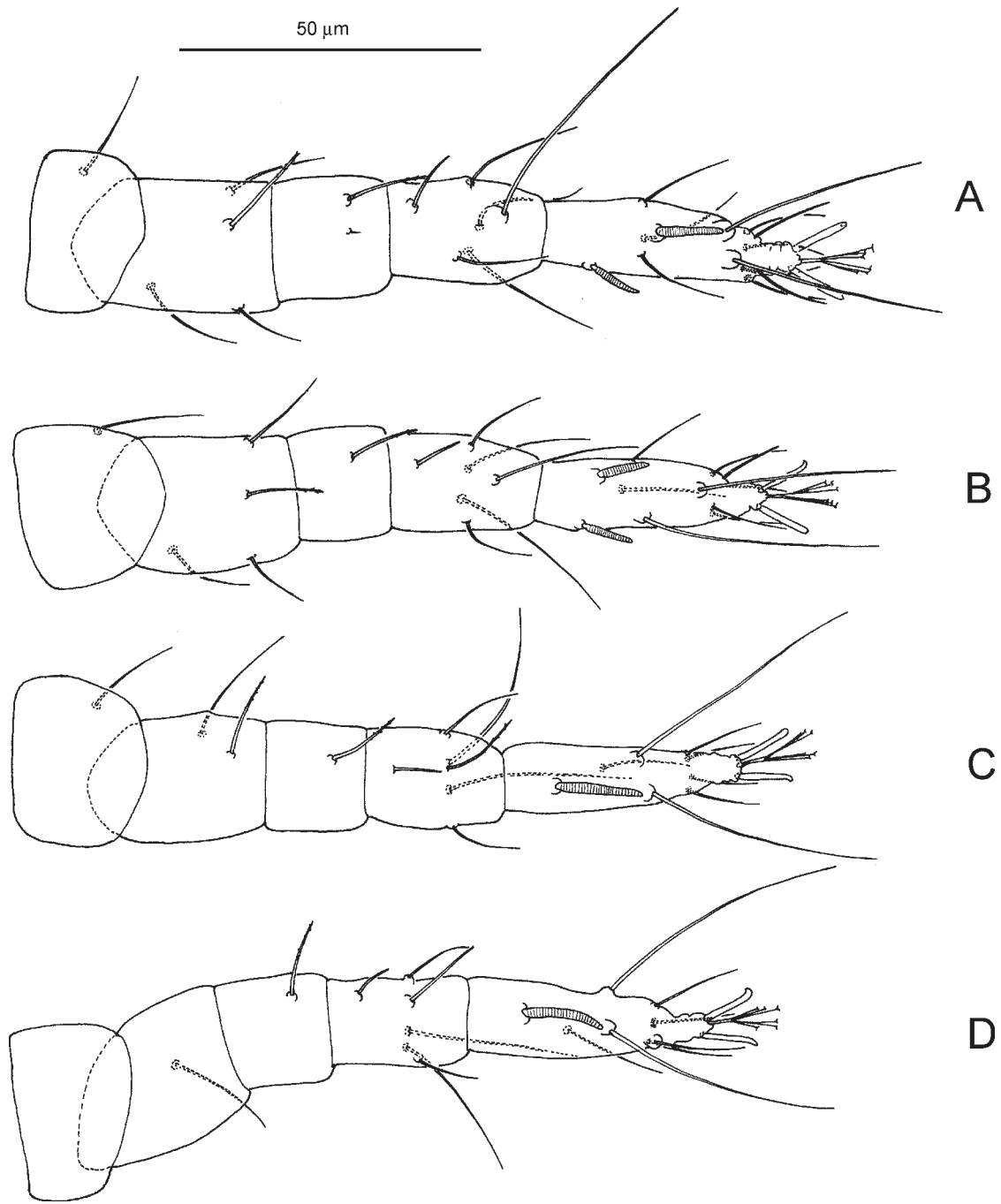
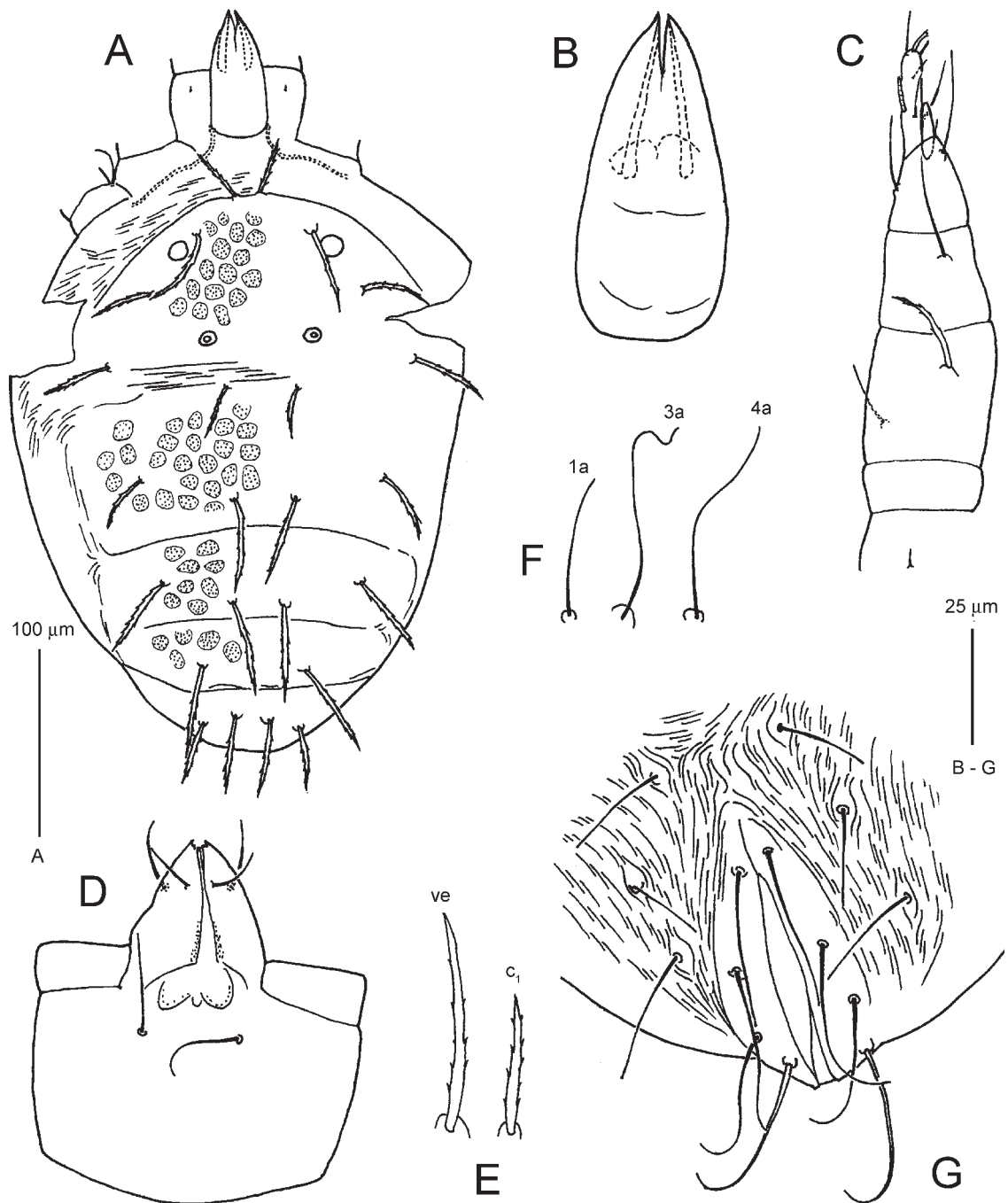


Fig. 128. *Mediolata delicata* sp. n. (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 129.** *Mediolata favulosa* Wood, 1967 (female). A, dorsal view of idiosoma; B, chelicerae; C, palp; D, subcapitulum; E, dorsal idiosomal setae; F, ventral idiosomal setae; G, genitoanal area.

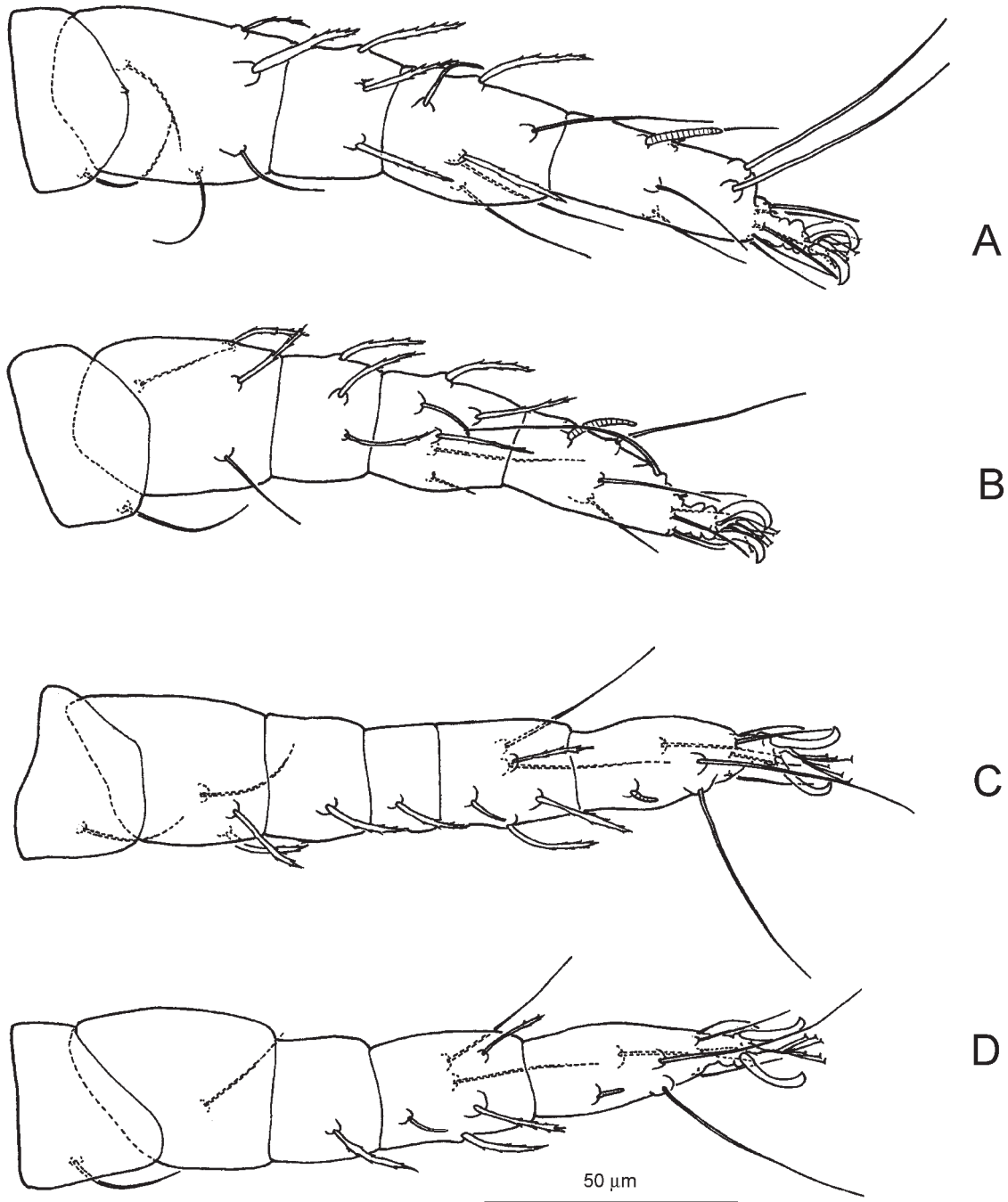
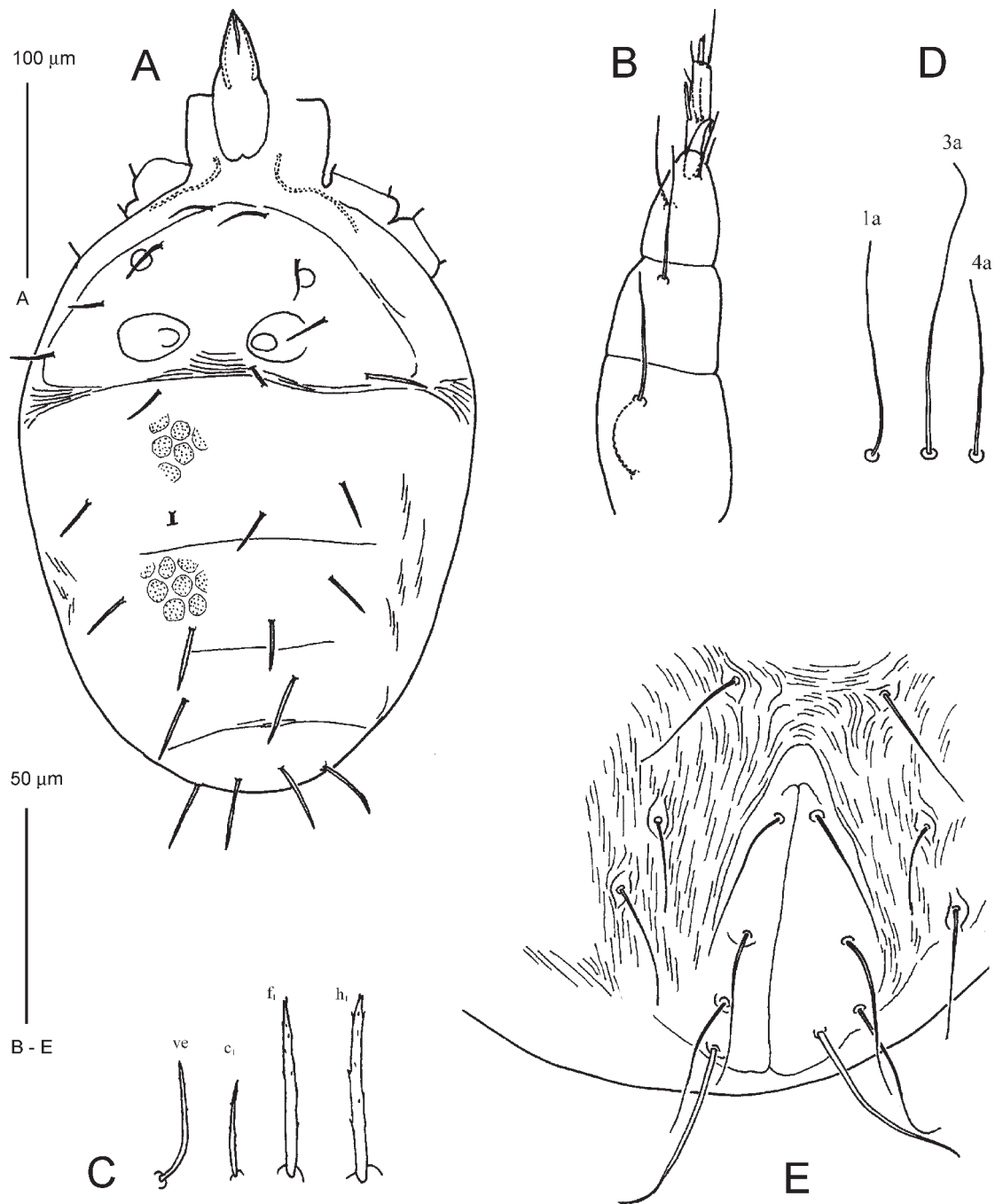


Fig. 130. *Mediolata favulosa* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 131.** *Mediolata mollis* Wood, 1971 (female). A, dorsal view of idiosoma; B, palp; C, dorsal idiosomal setae; D, ventral idiosomal setae; E, genitoanal area.



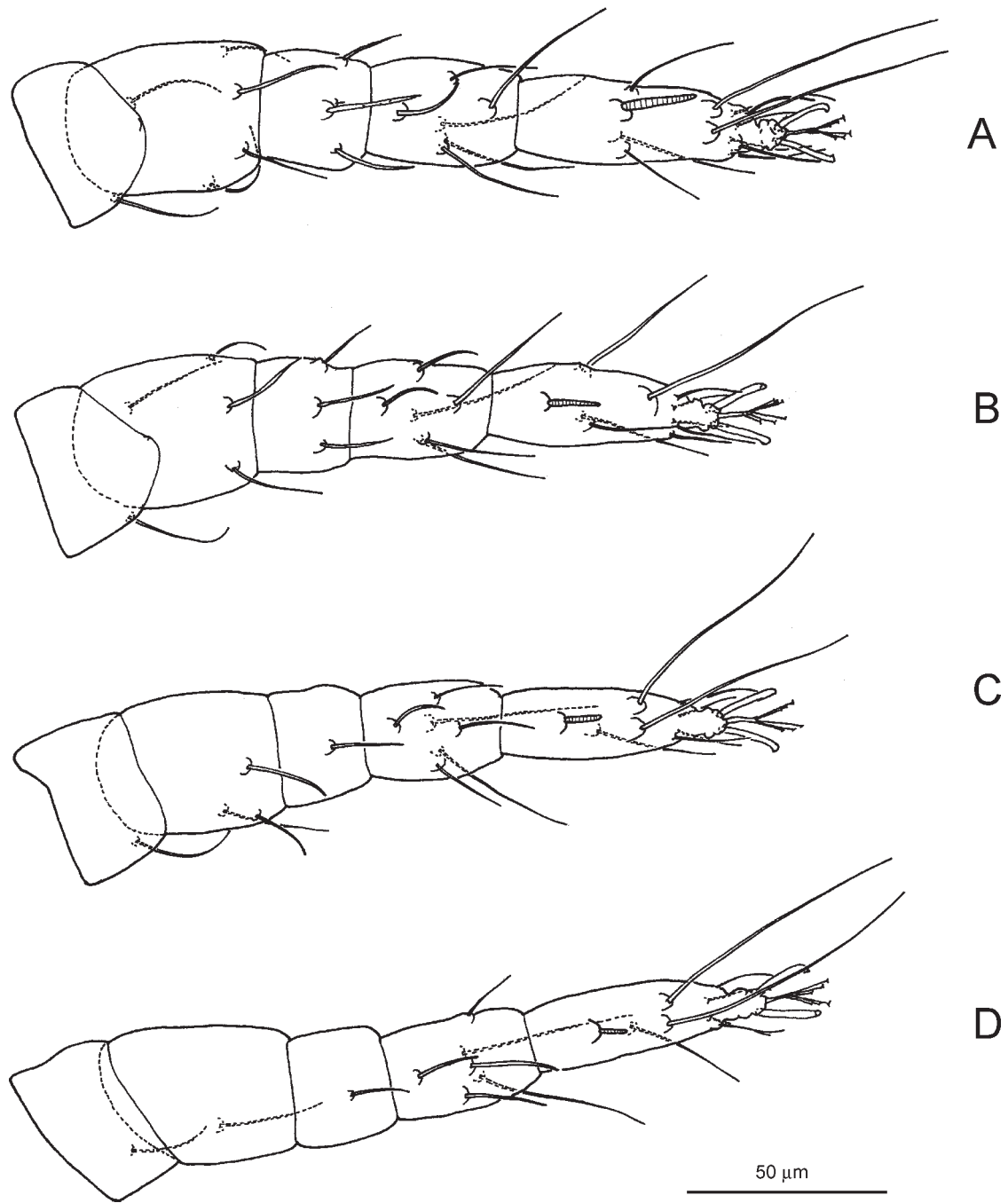
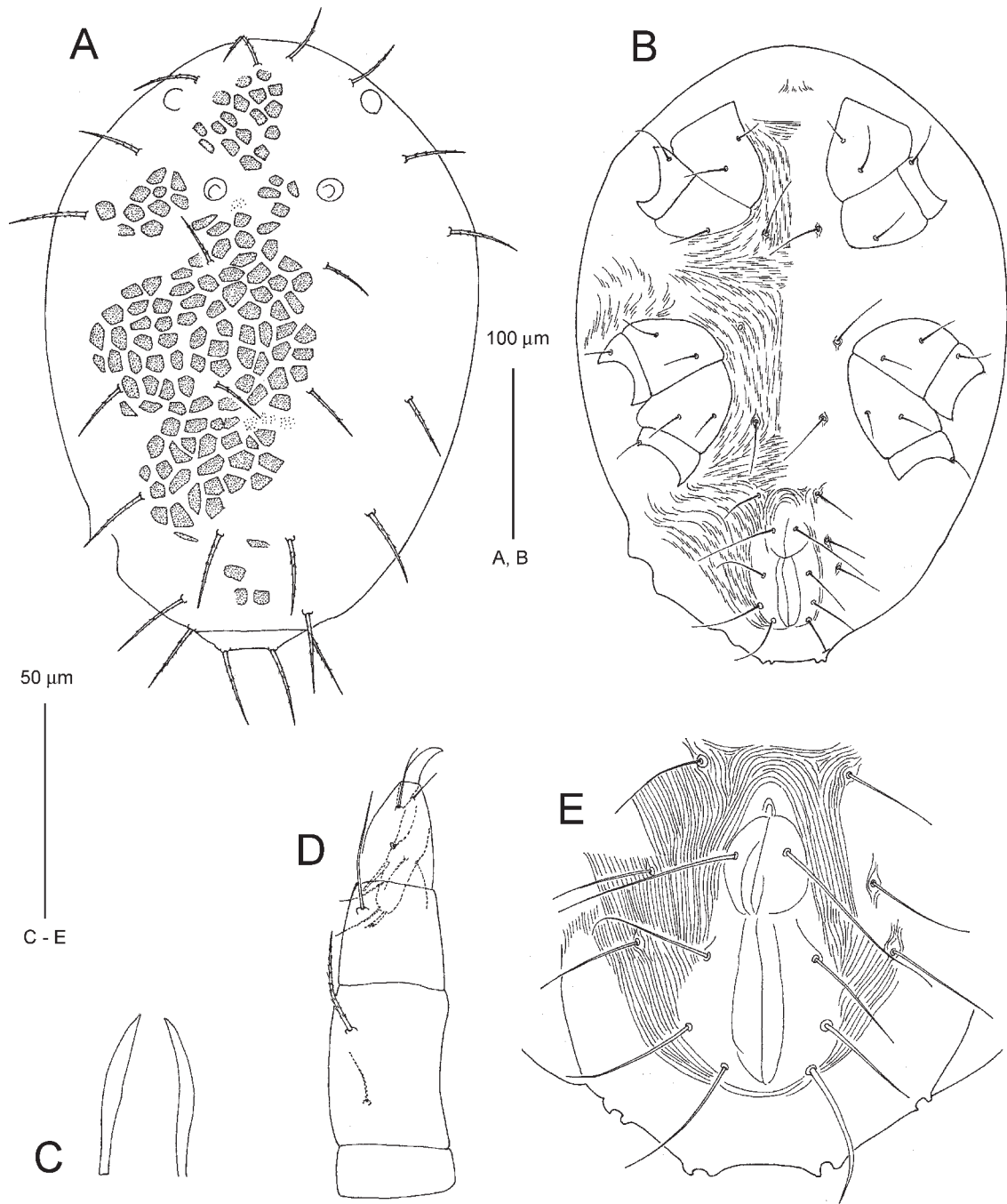


Fig. 132. *Mediolata mollis* Wood, 1971 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 133.** *Mediolata oleariae* Wood, 1971 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, movable digits; D, palp; E, genitoanal area.

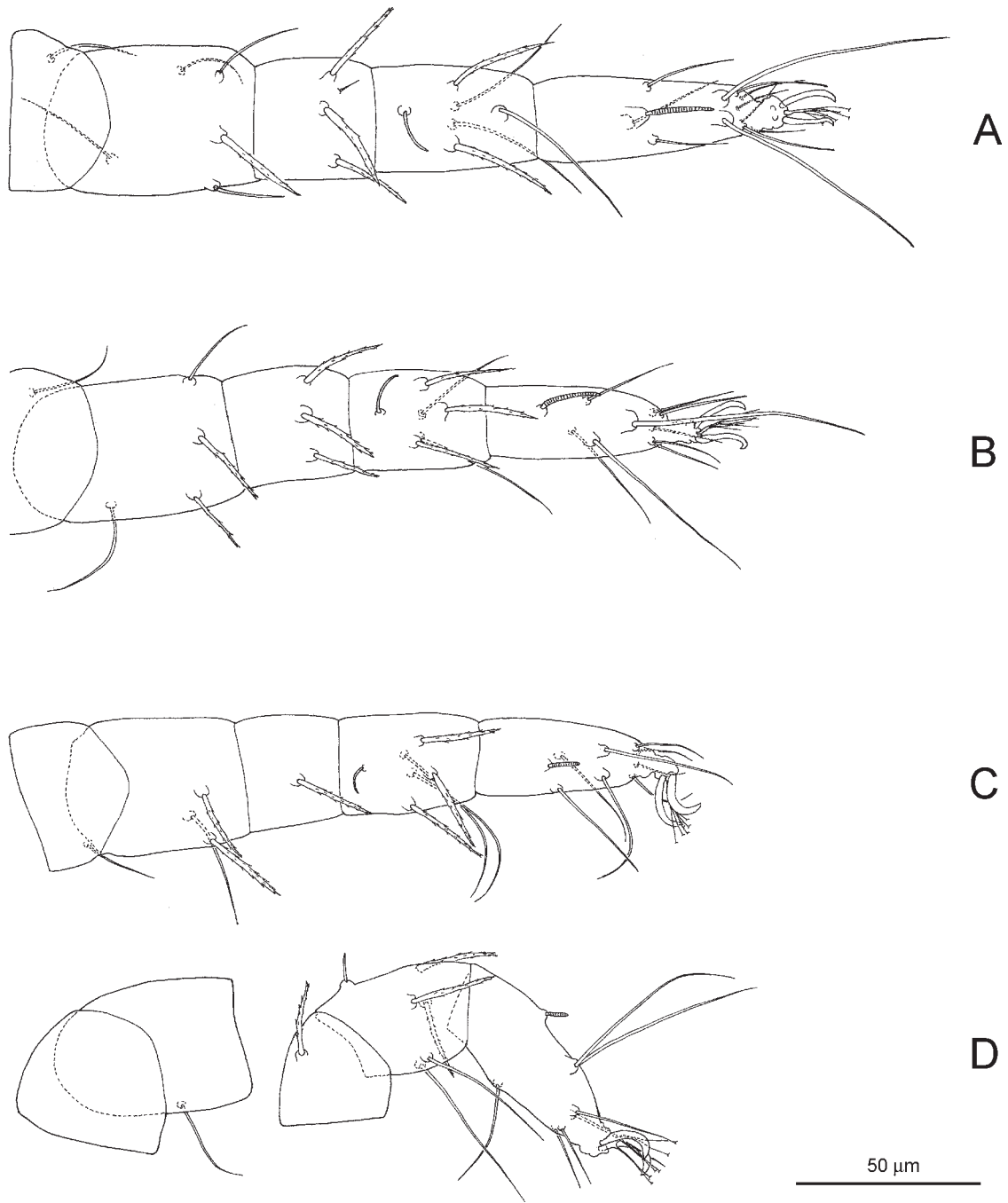
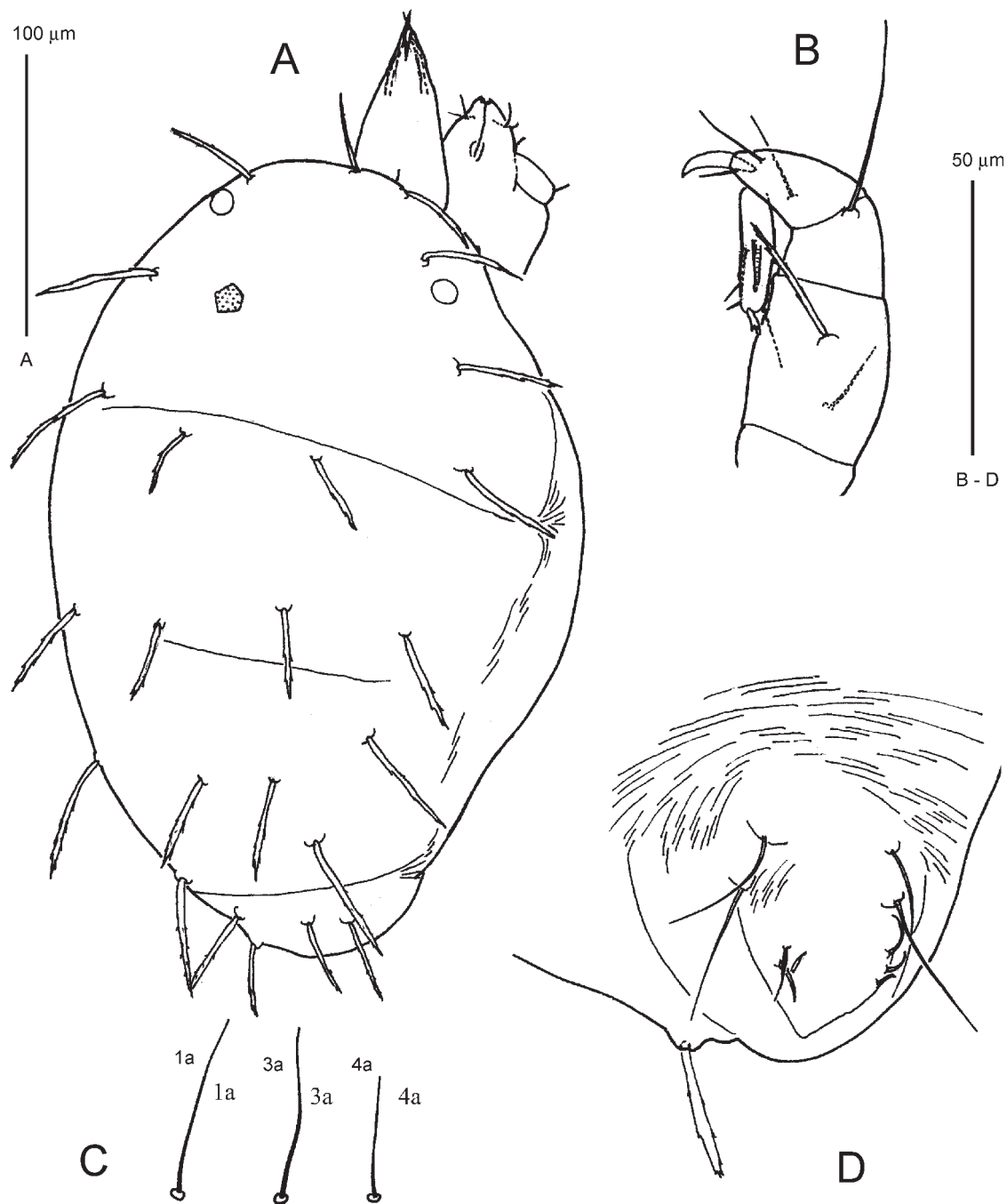


Fig. 134. *Mediolata oleariae* Wood, 1971 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 135.** *Mediolata oleariae* Wood, 1971 (male). A, dorsal view of idiosoma; B, palp; C, ventral idiosomal setae; D, genitoanal area.

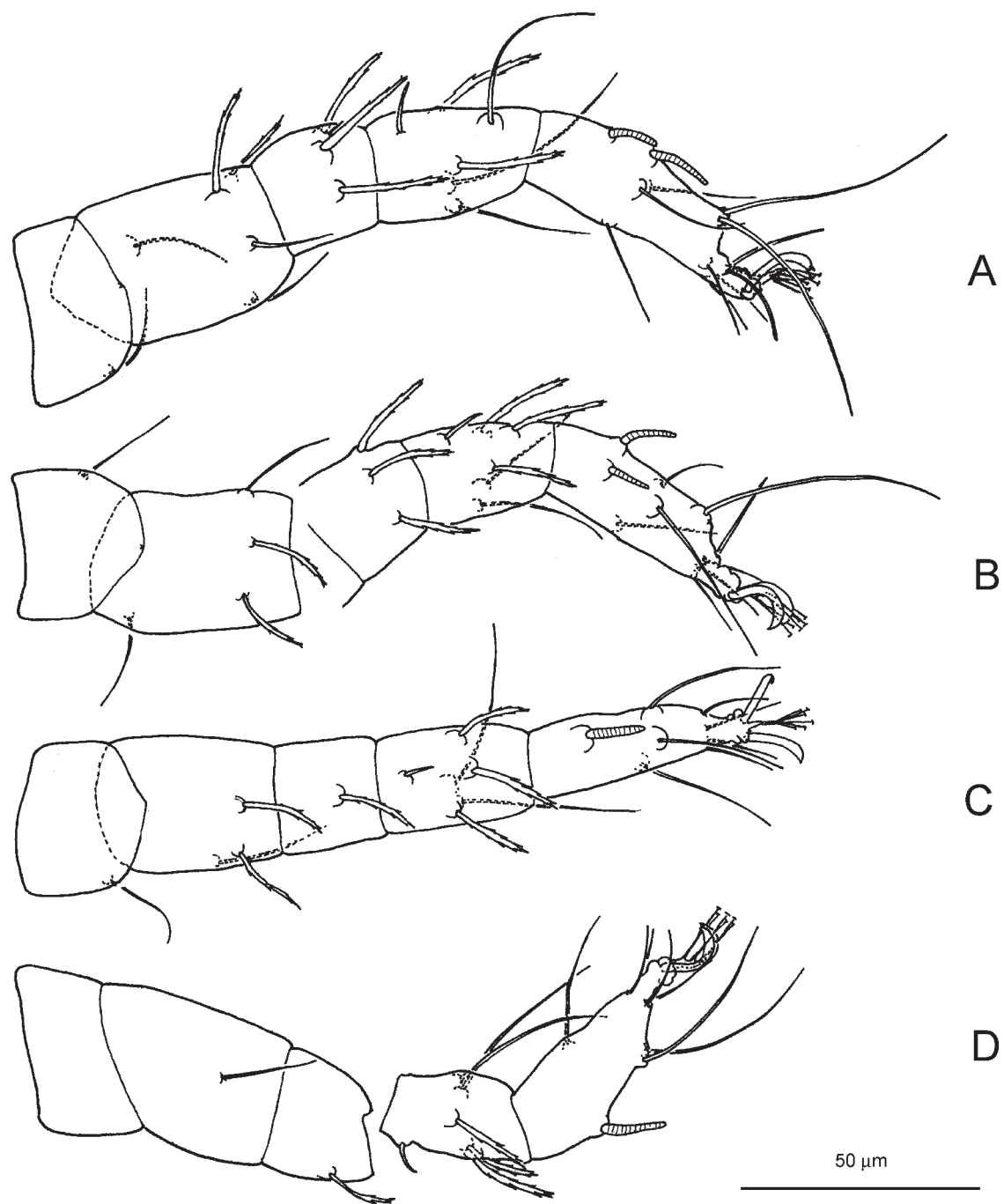
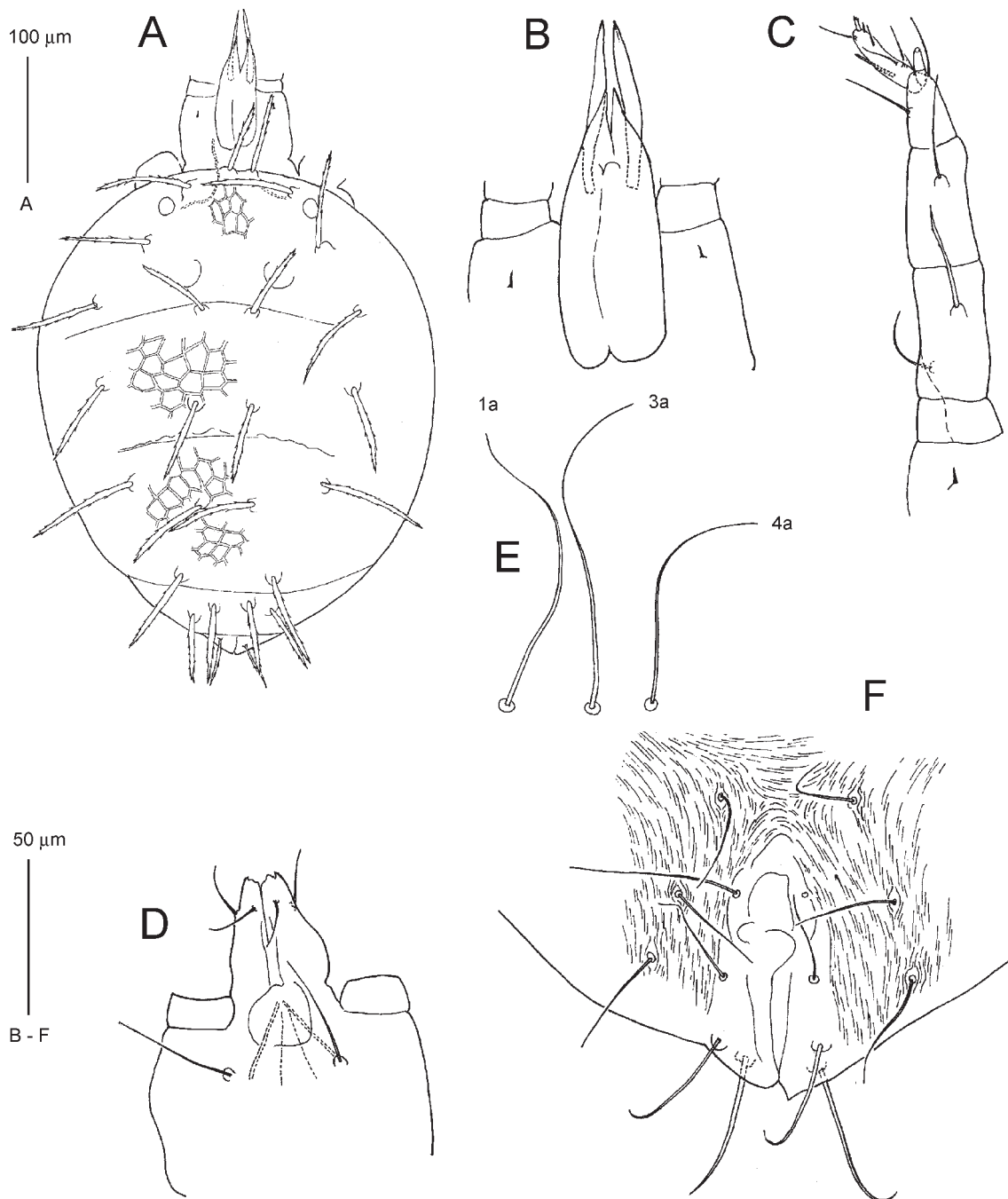


Fig. 136. *Mediolata oleariae* Wood, 1971 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 137.** *Mediolata polyocularis* sp. n. (female). A, dorsal view of idiosoma; B, dorsal view of gnathosoma; C, palp; D, subcapitulum; E, ventral idiosomal setae; F, genitoanal area.

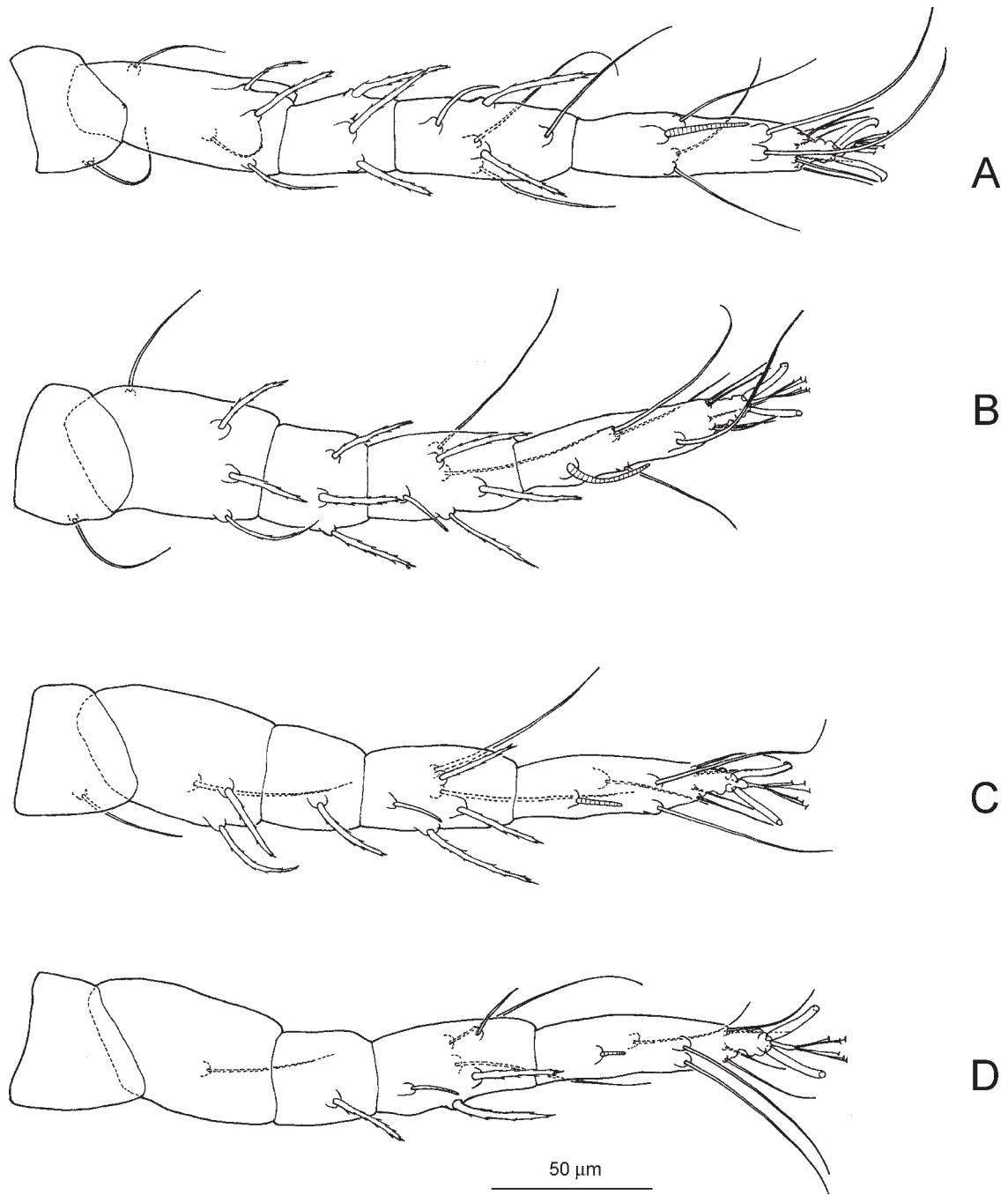
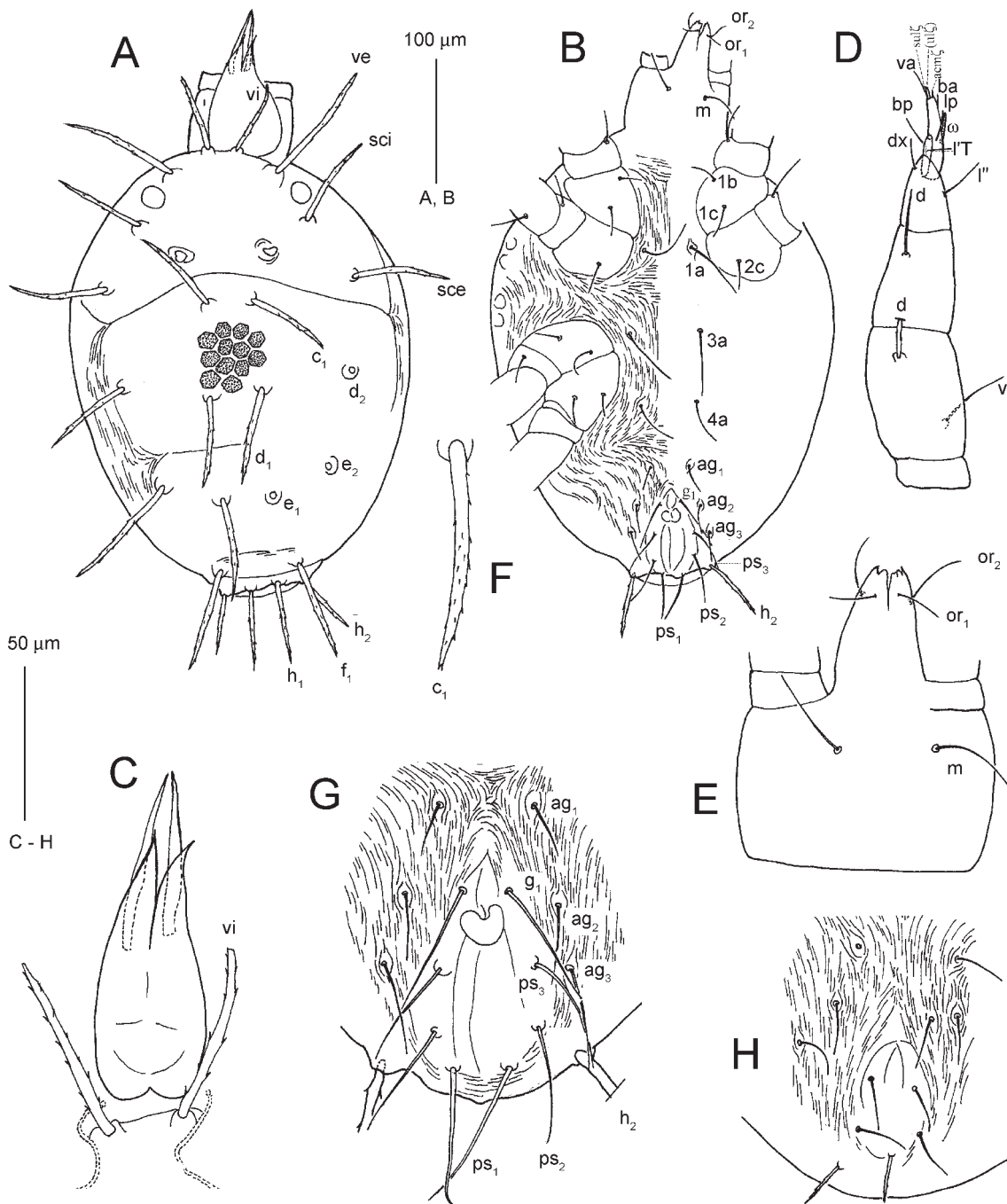


Fig. 138. *Mediolata polyocularis* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 139.** *Mediolata robusta* González-Rodríguez, 1965 (A–G, female; H, deutonymph female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal idiosomal seta; G, genitoanal area; H, genitoanal area.



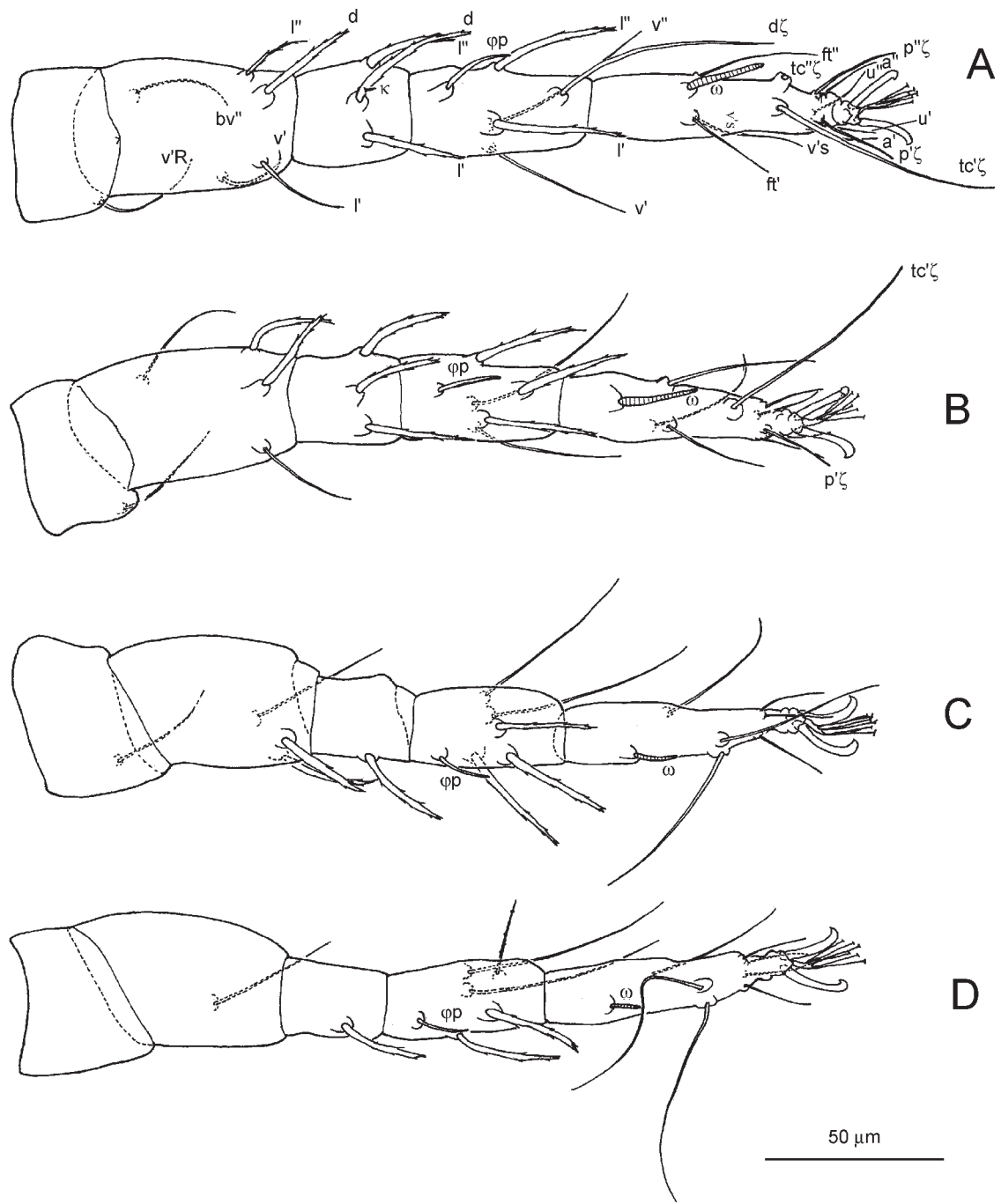
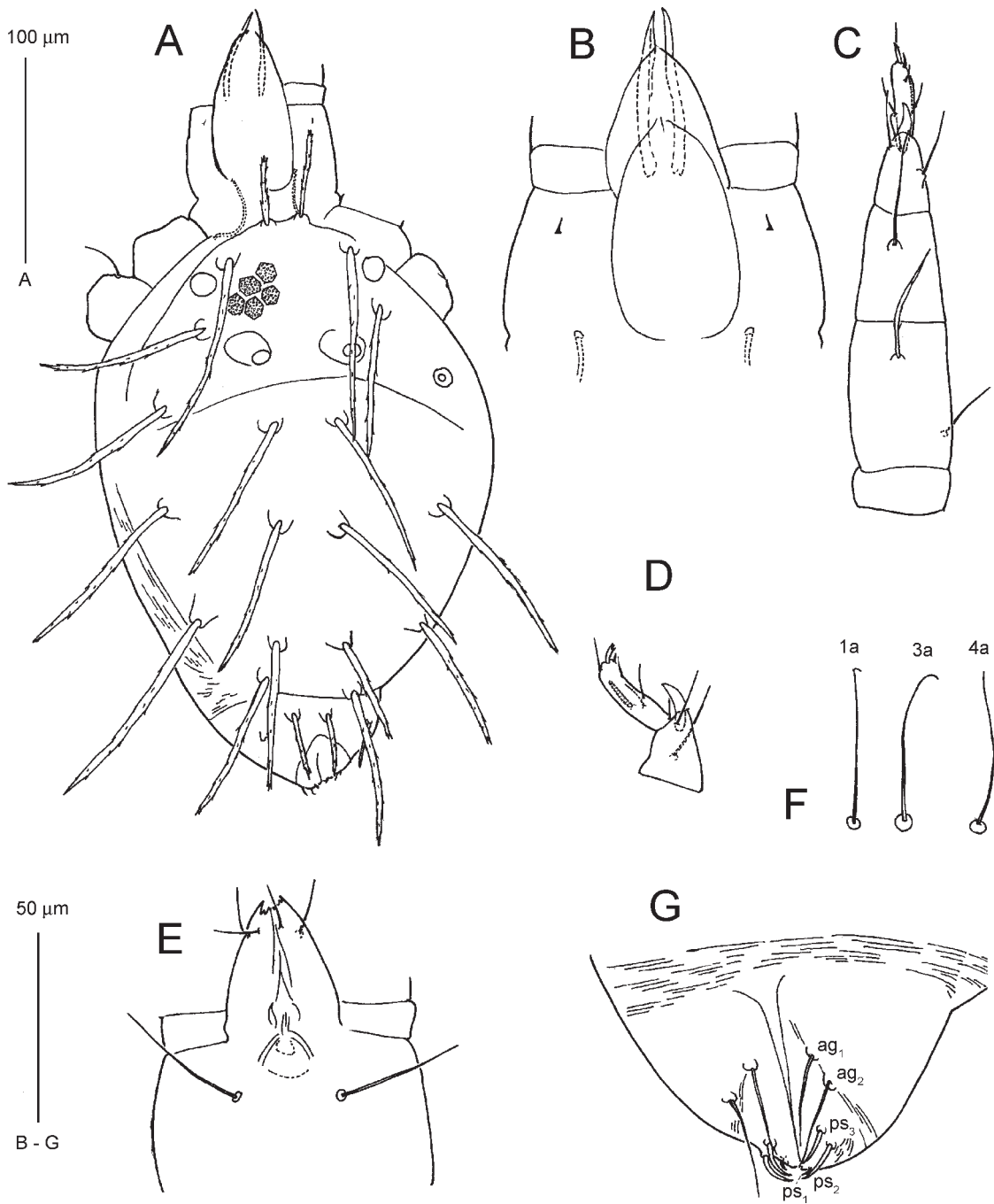


Fig. 140. *Mediolata robusta* González-Rodríguez, 1965 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 141.** *Mediolata robusta* González-Rodríguez, 1965 (male). A, dorsal view of idiosoma; B, dorsal view of gnathosoma; C, palp; D, palpal tibia and tarsus; E, subcapitulum; F, ventral idiosomal setae; G, genital region.

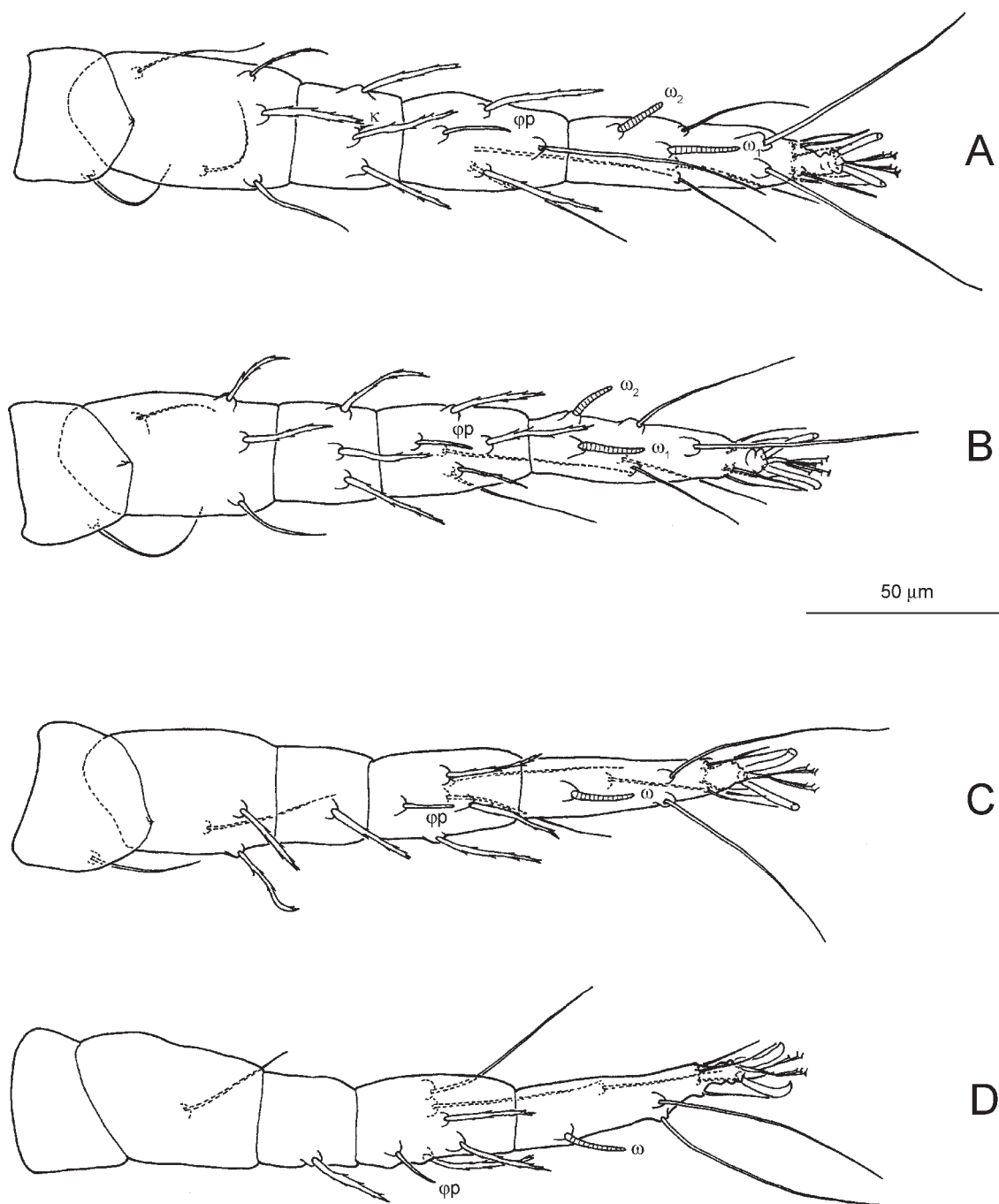
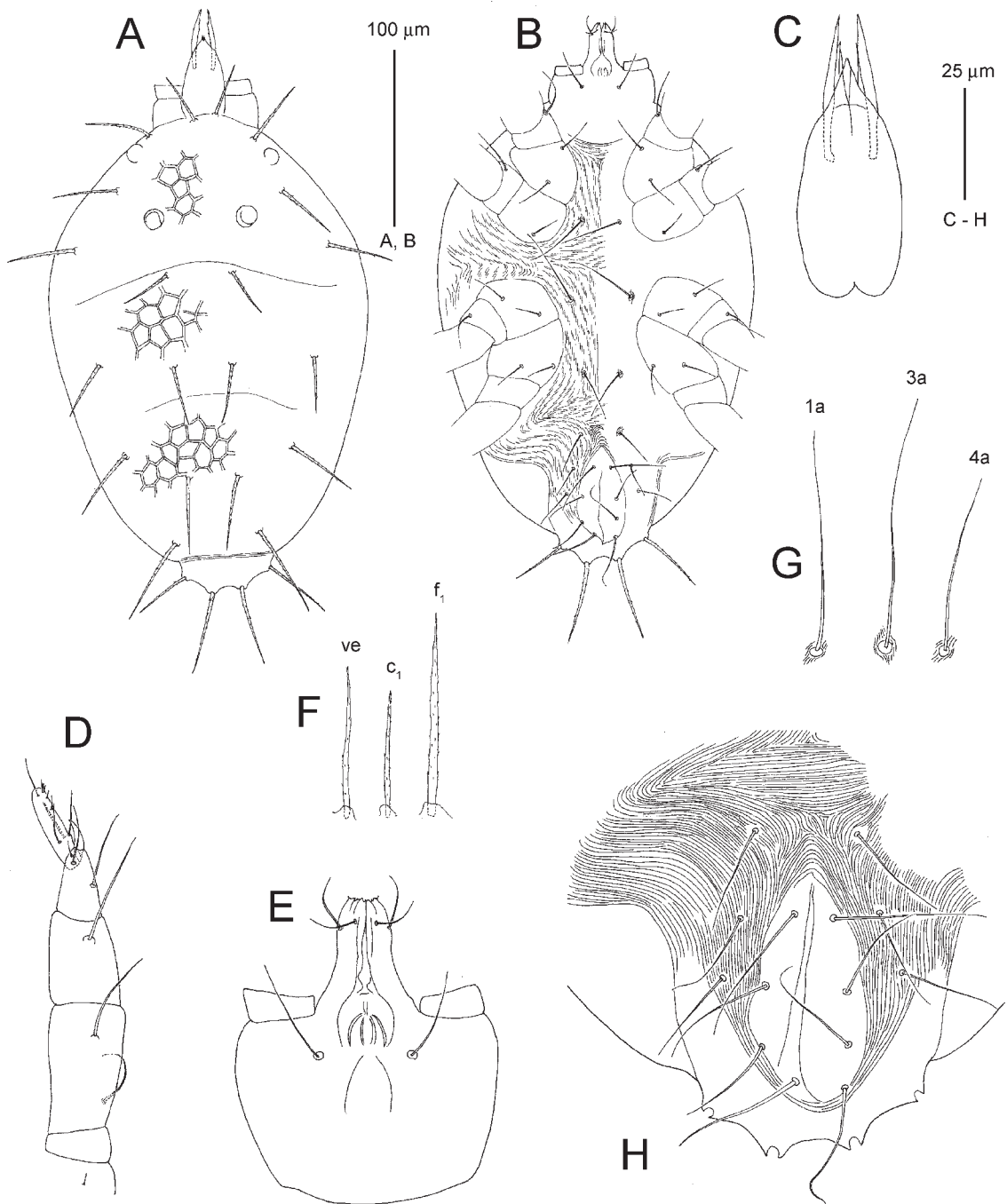


Fig. 142. *Mediolata robusta* González-Rodríguez, 1965 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 143.** *Mediolata simplex* Wood, 1967 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal idiosomal setae; G, ventral idiosomal setae; H, genital region.

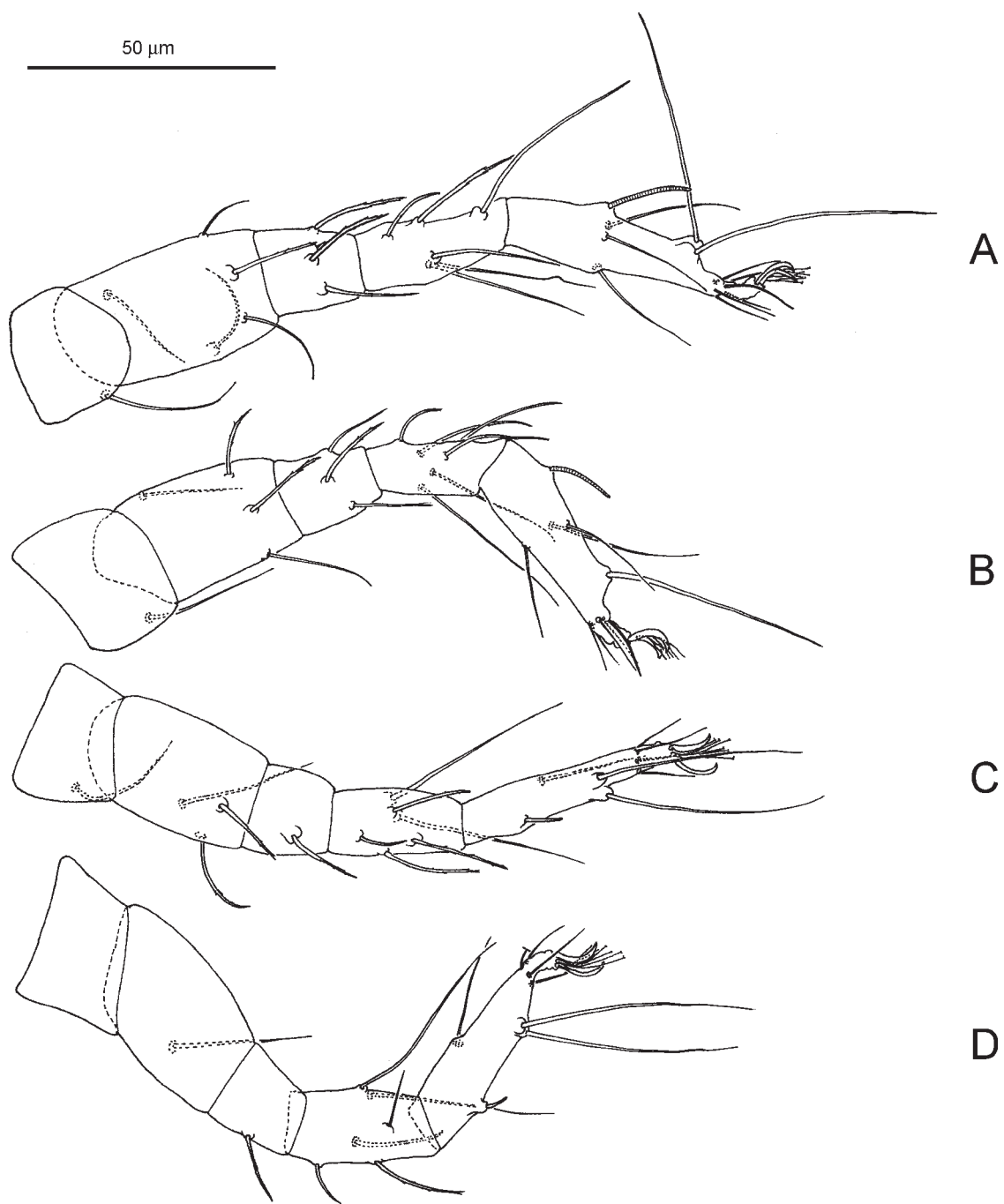
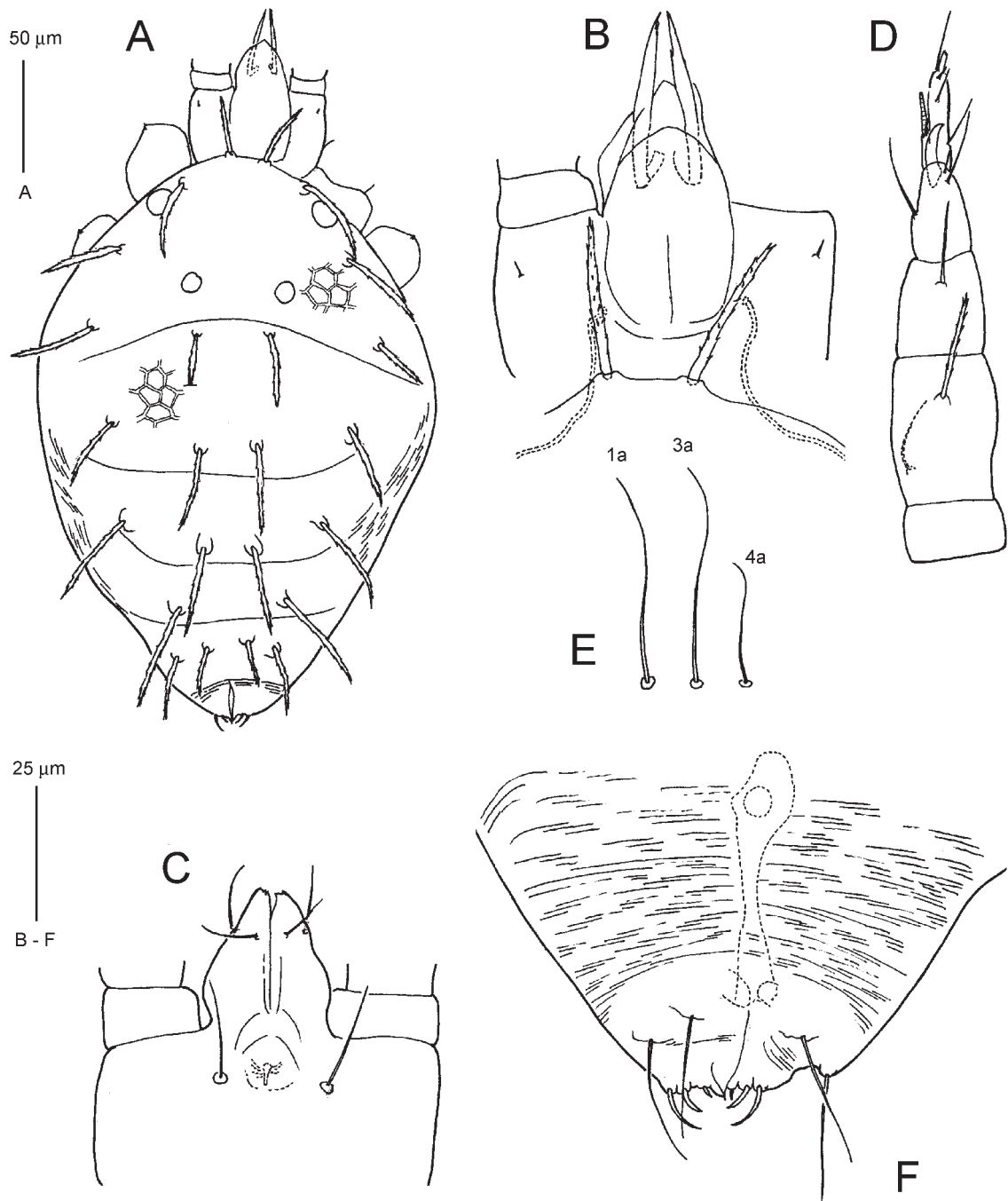


Fig. 144. *Mediolata simplex* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 145.** *Mediolata simplex* Wood, 1967 (male). A, dorsal view of idiosoma; B, dorsal view of gnathosoma; C, subcapitulum; D, palp; E, ventral idiosomal setae; F, genitoanal region.

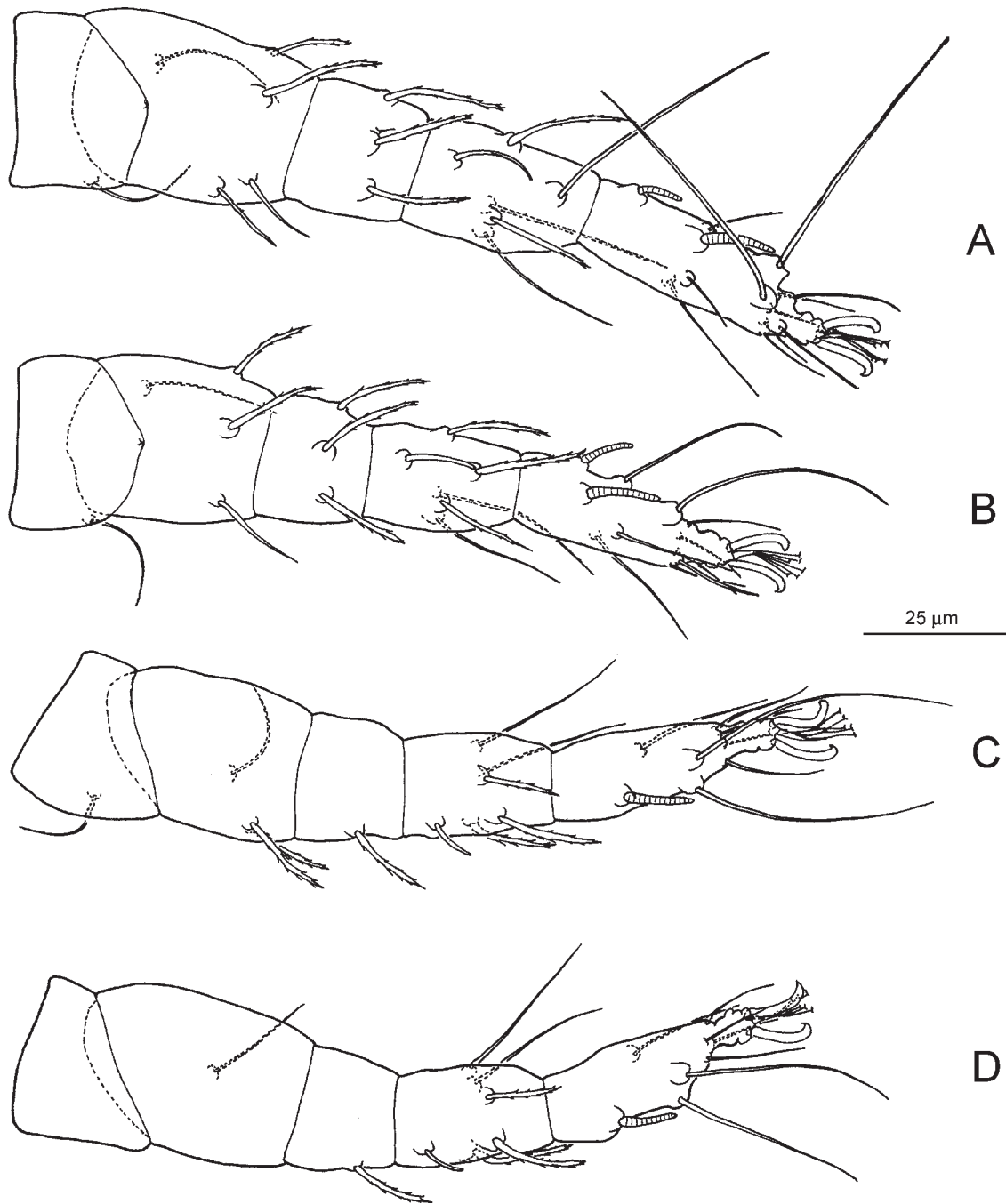
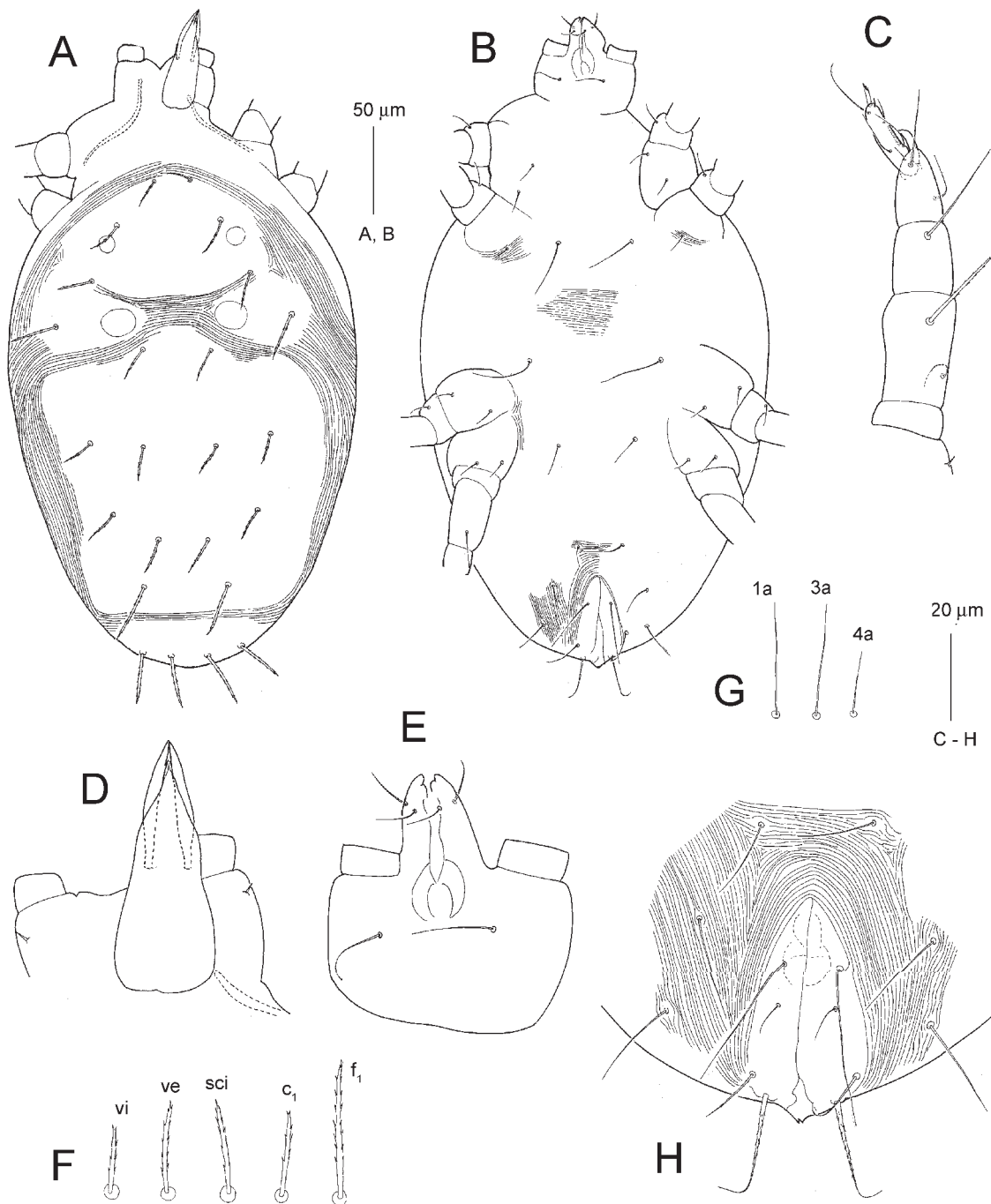


Fig. 146. *Mediolata simplex* Wood, 1967 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 147.** *Mediolata whenua* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal view of gnathosoma; E, subcapitulum; F, dorsal idiosomal setae; G, ventral idiosomal setae; H, genitoanal region.



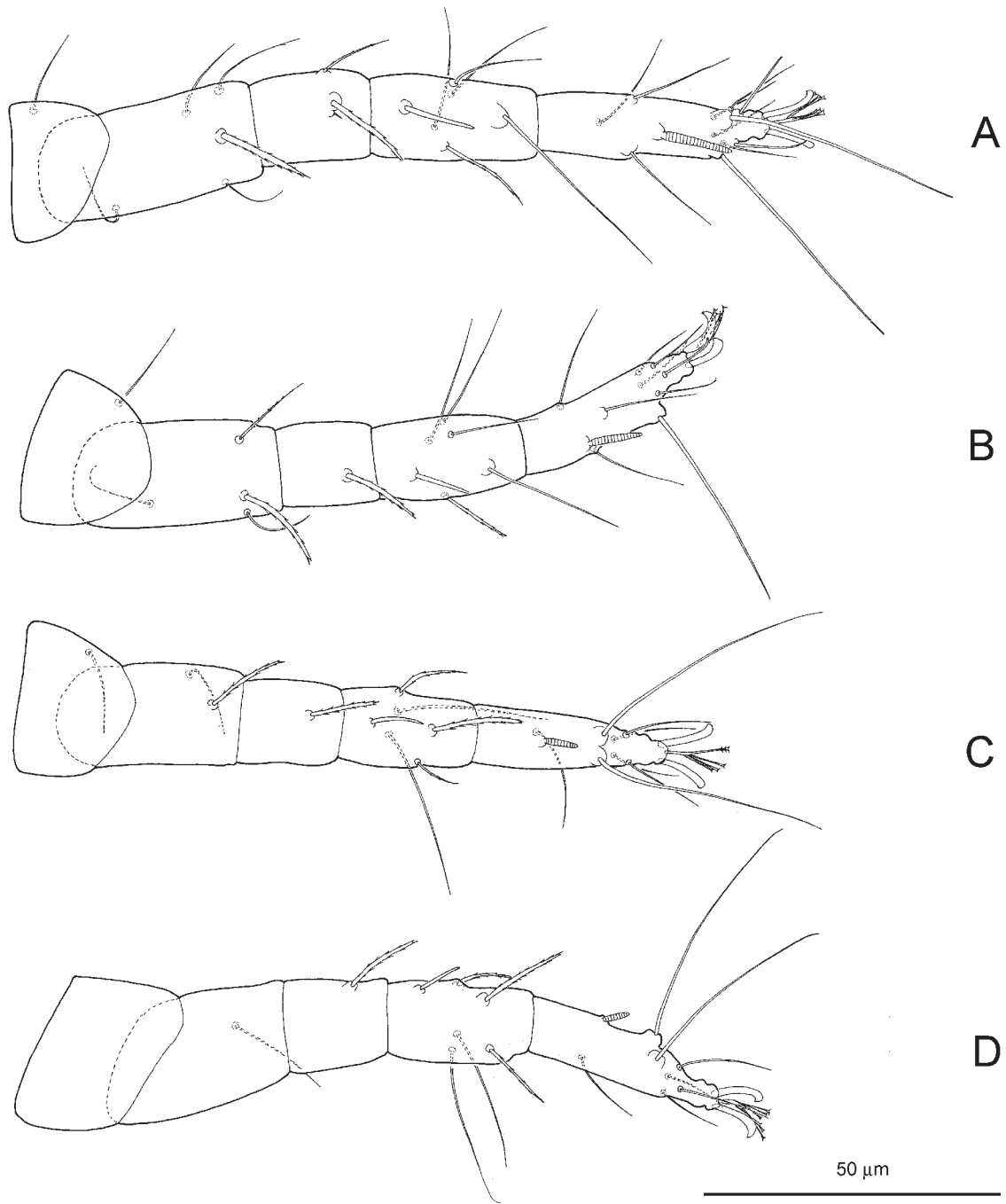
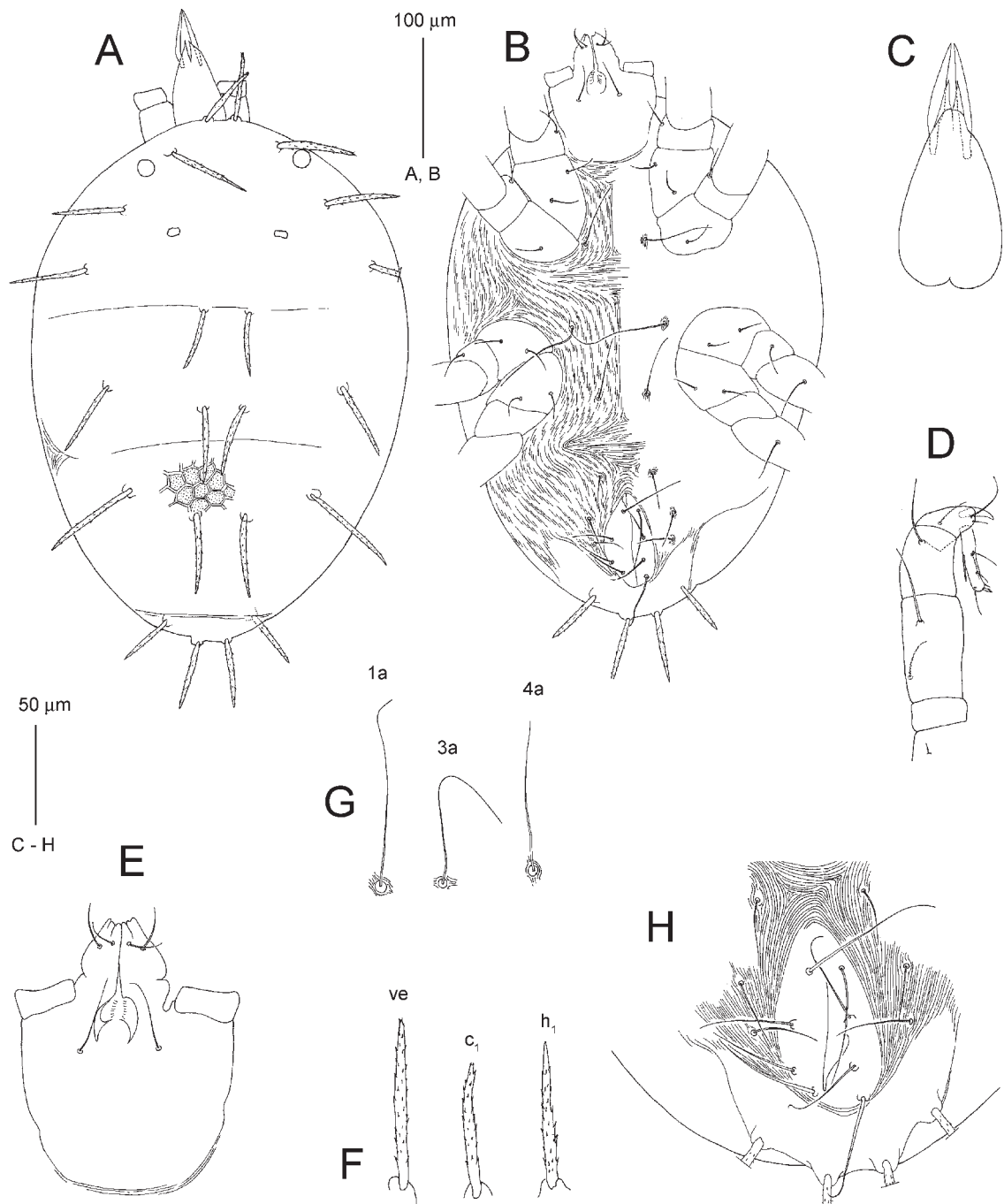


Fig. 148. *Mediolata whenua* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 149.** *Mediolata woodi* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal idiosomal setae; G, ventral idiosomal setae; H, genital region.

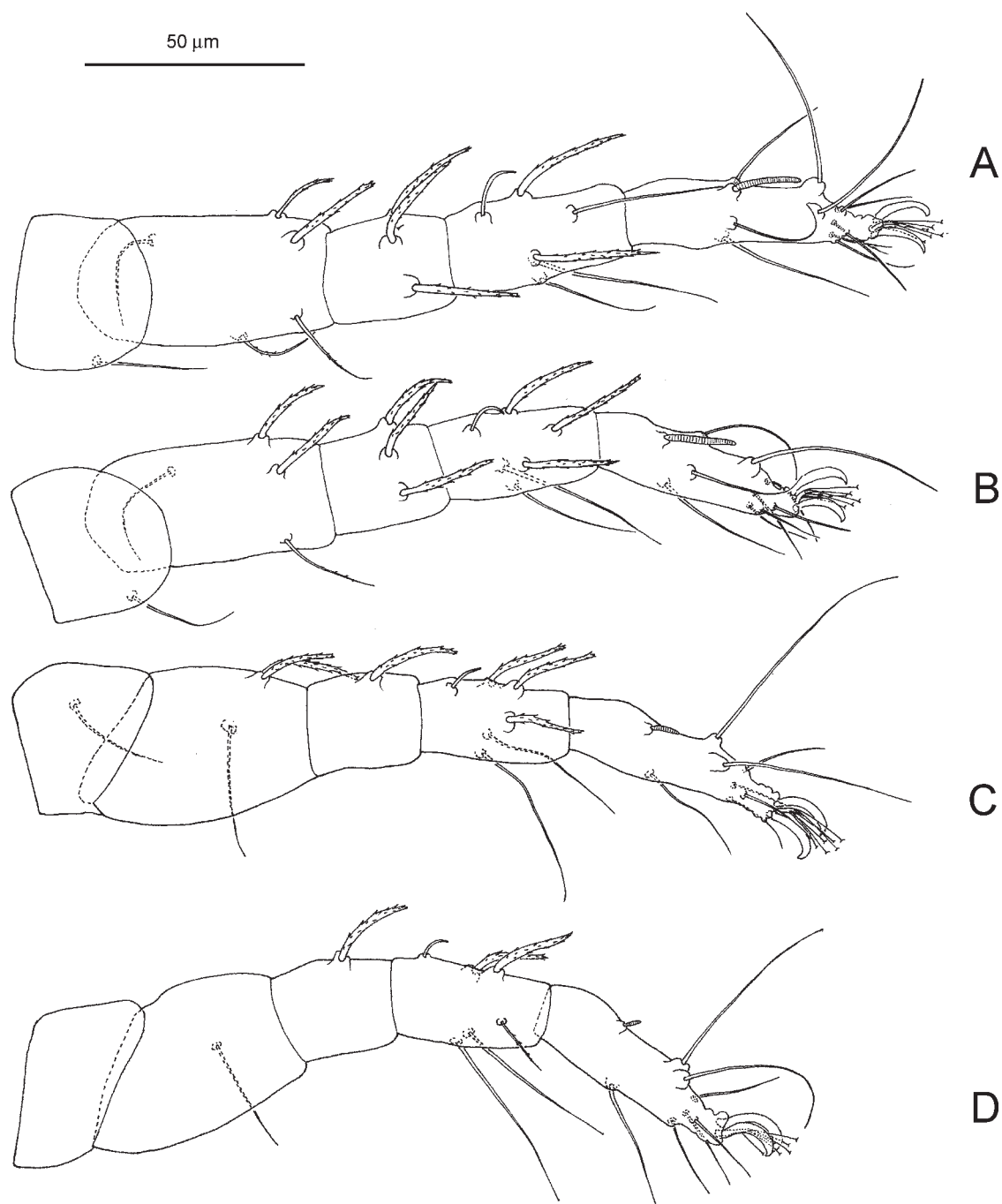
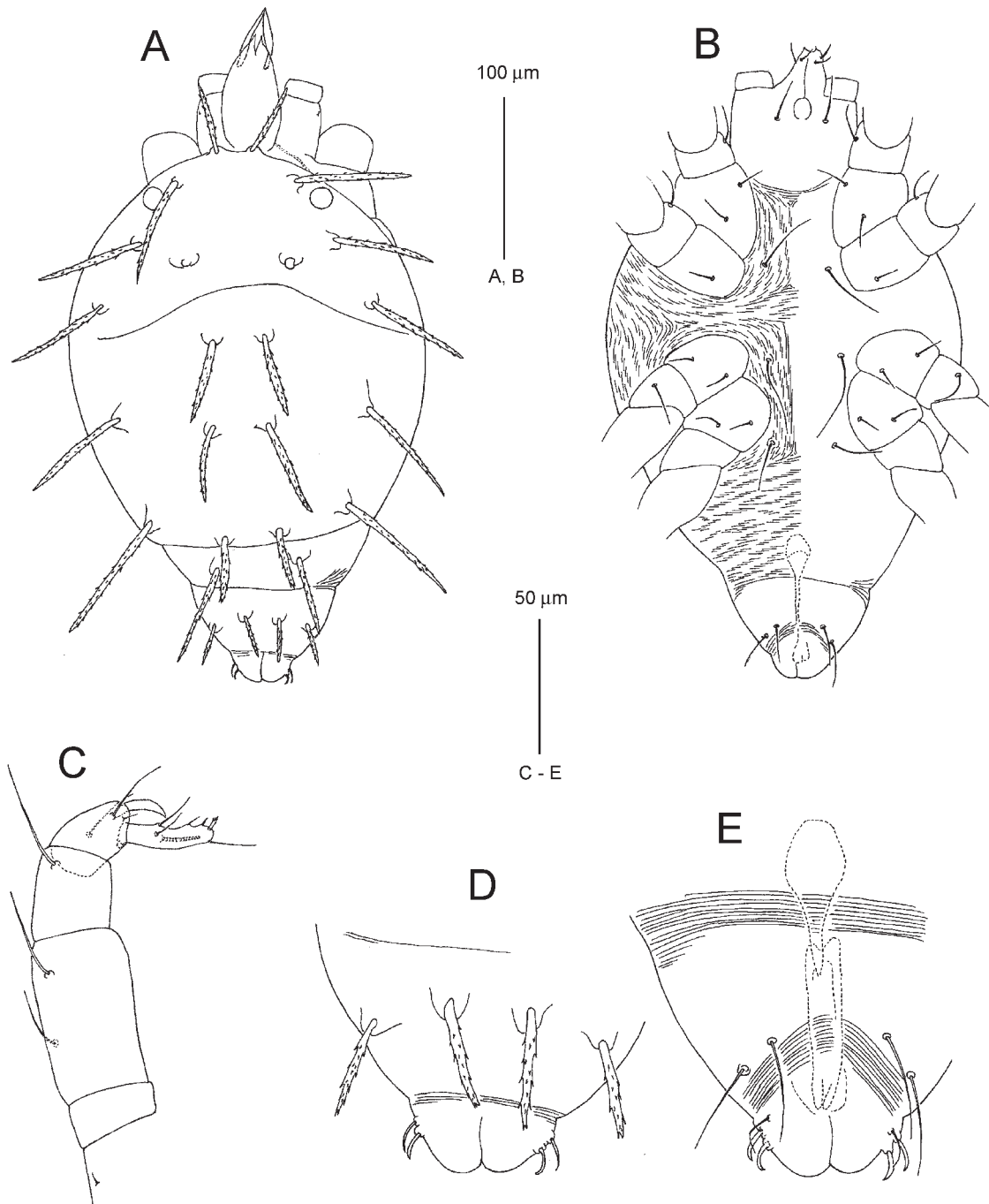


Fig. 150. *Mediolata woodi* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 151.** *Mediolata woodi* sp. n. (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal view of opisthosoma; E, ventral view of opisthosoma.

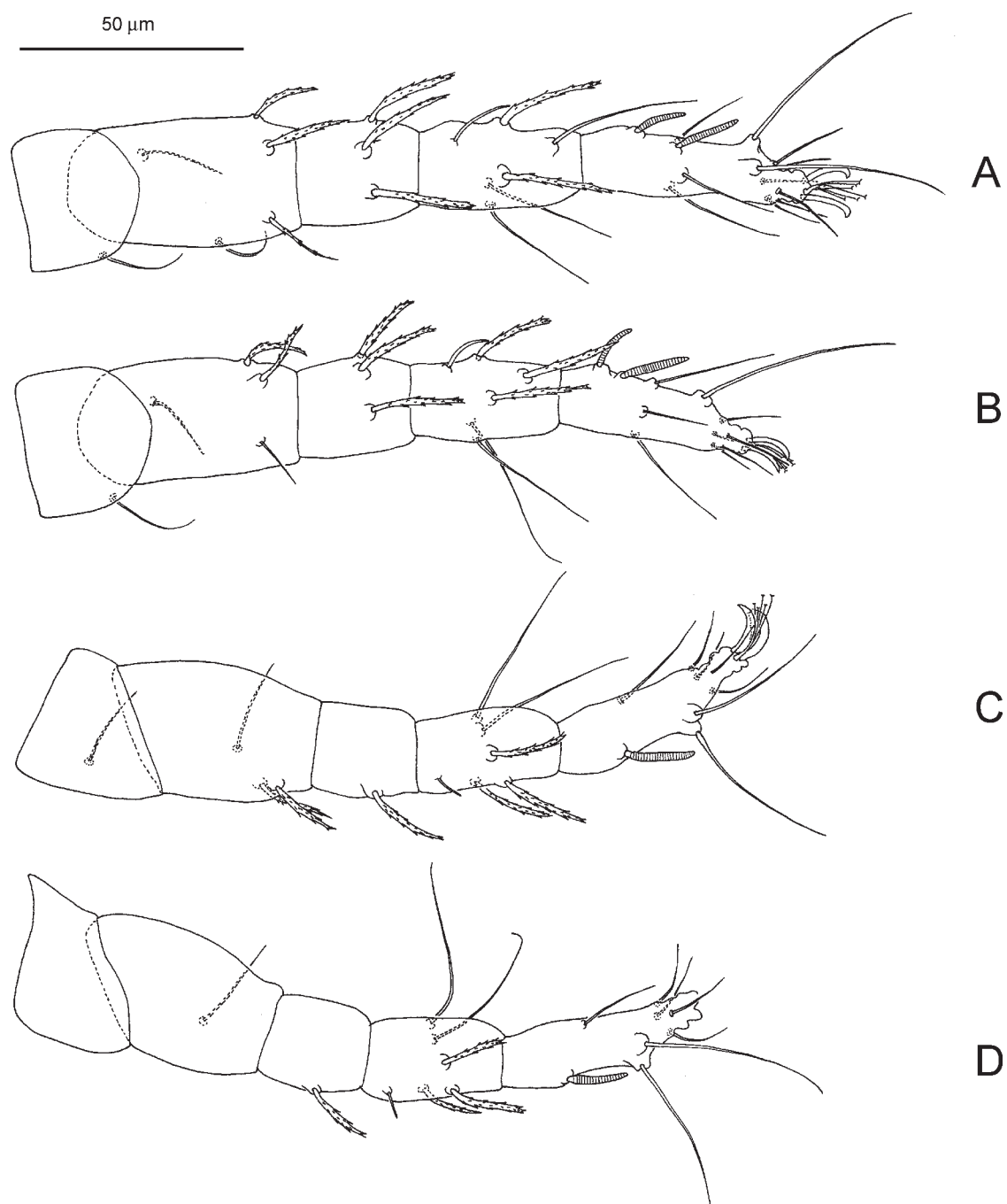
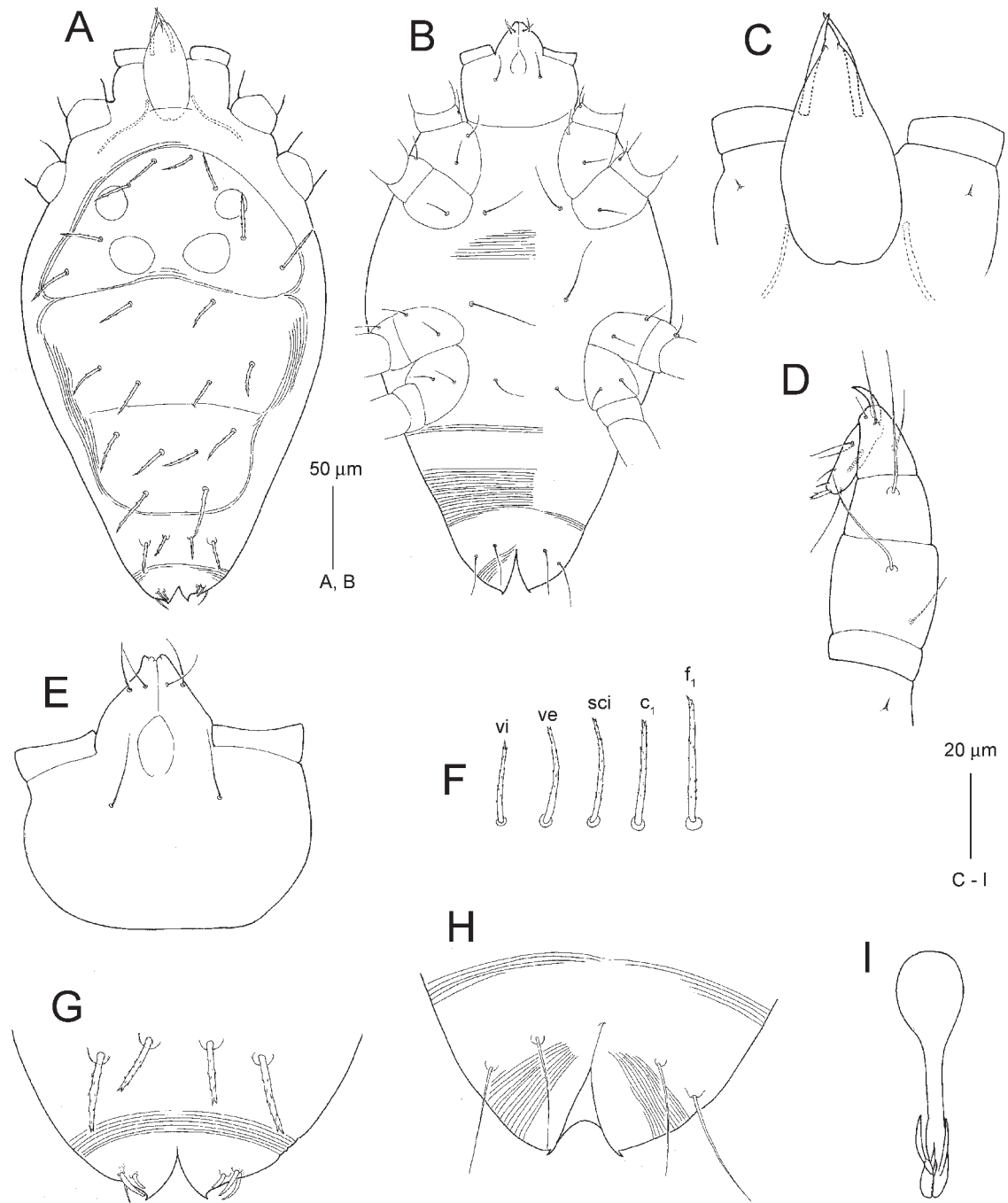


Fig. 152. *Mediolata woodi* sp. n. (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 153.** *Mediolata xerxes* sp. n. (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, dorsal view of gnathosoma; D, palp; E, subcapitulum; F, dorsal idiosomal setae; G, dorsal view of opisthosoma; H, genitoanal area; I, aedeagus.

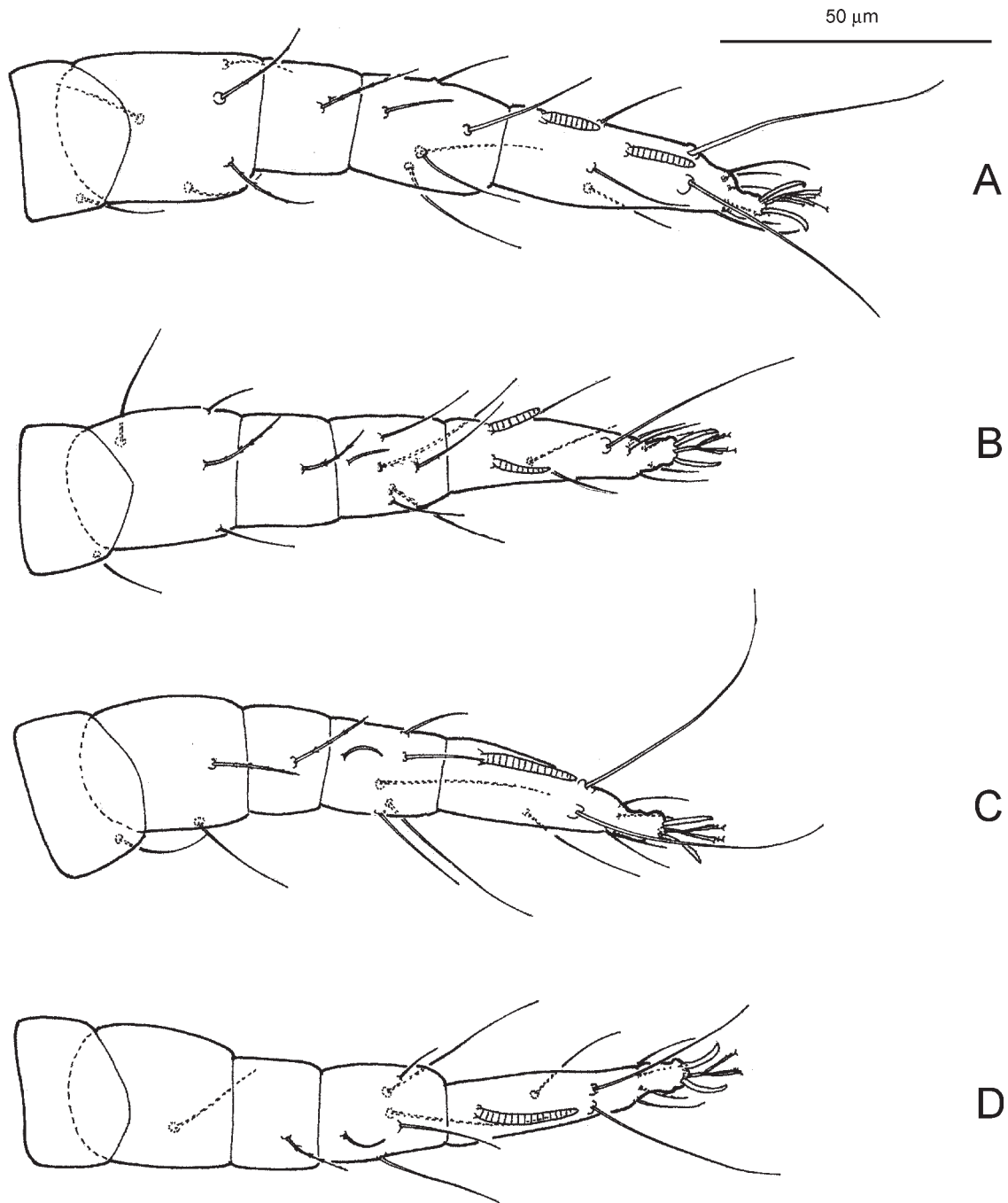
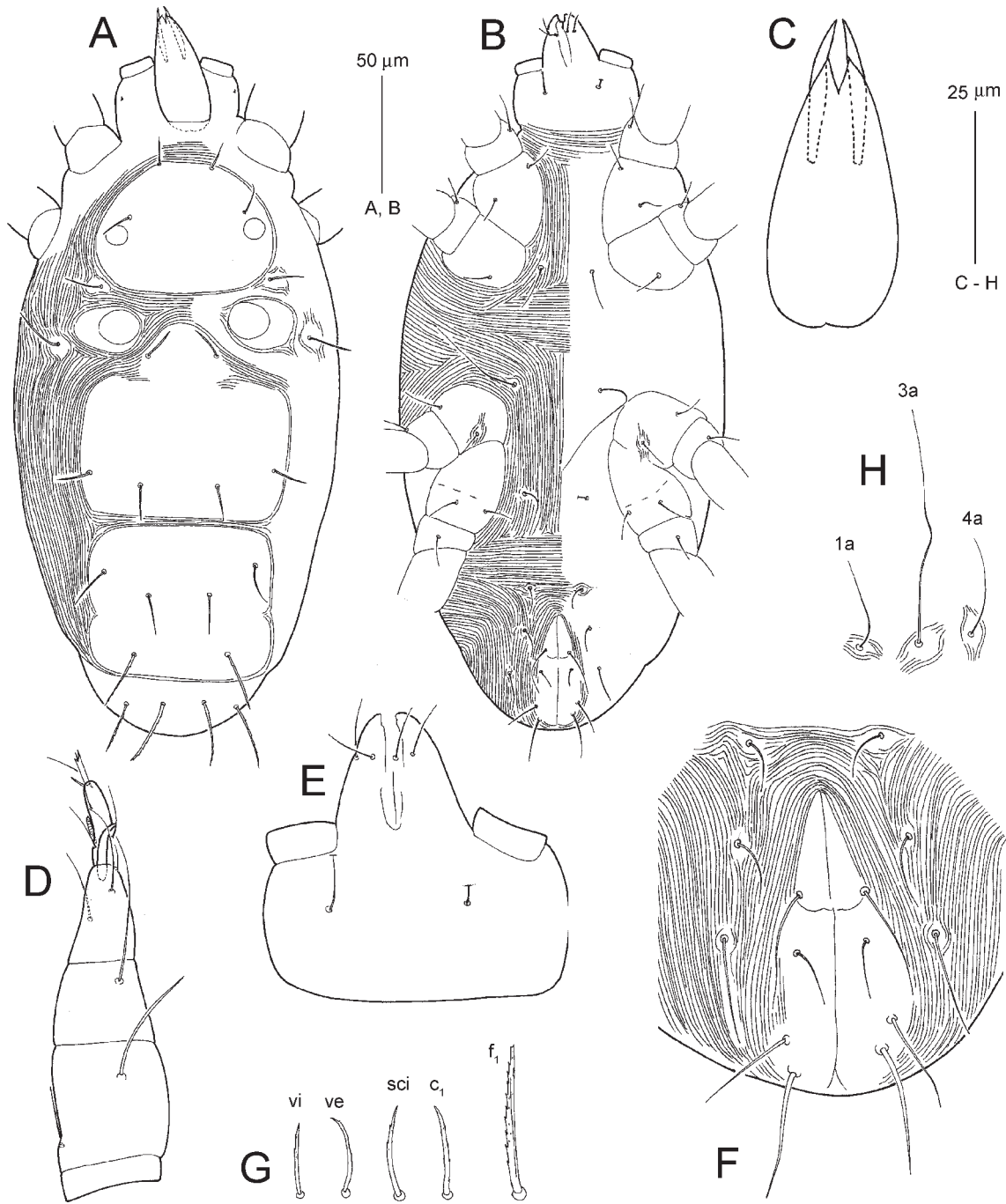


Fig. 154. *Mediolata xerxes* sp. n. (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 155.** *Mediolata zonaria* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, genital area; G, dorsal idiosomal setae; H, ventral setae.



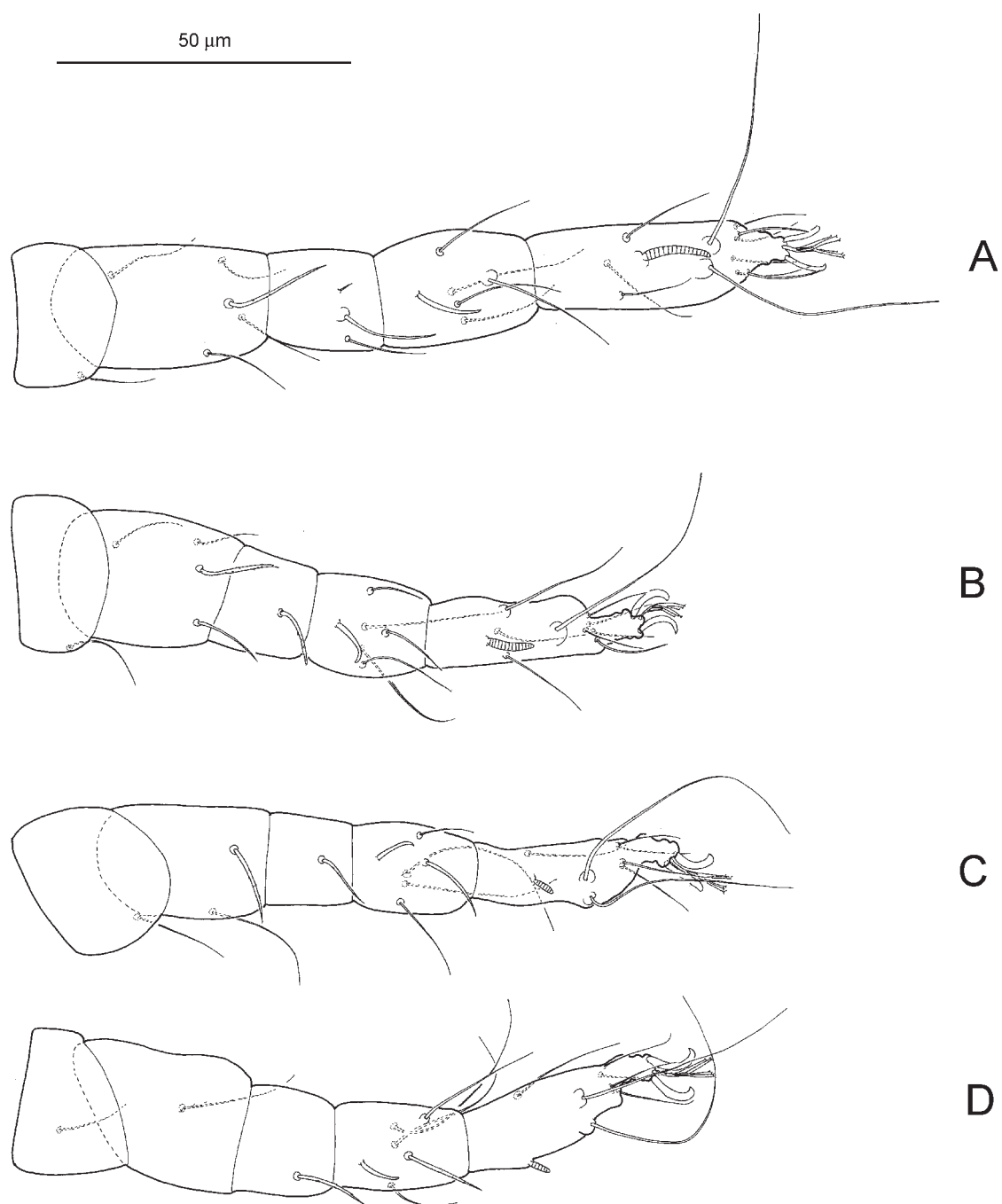
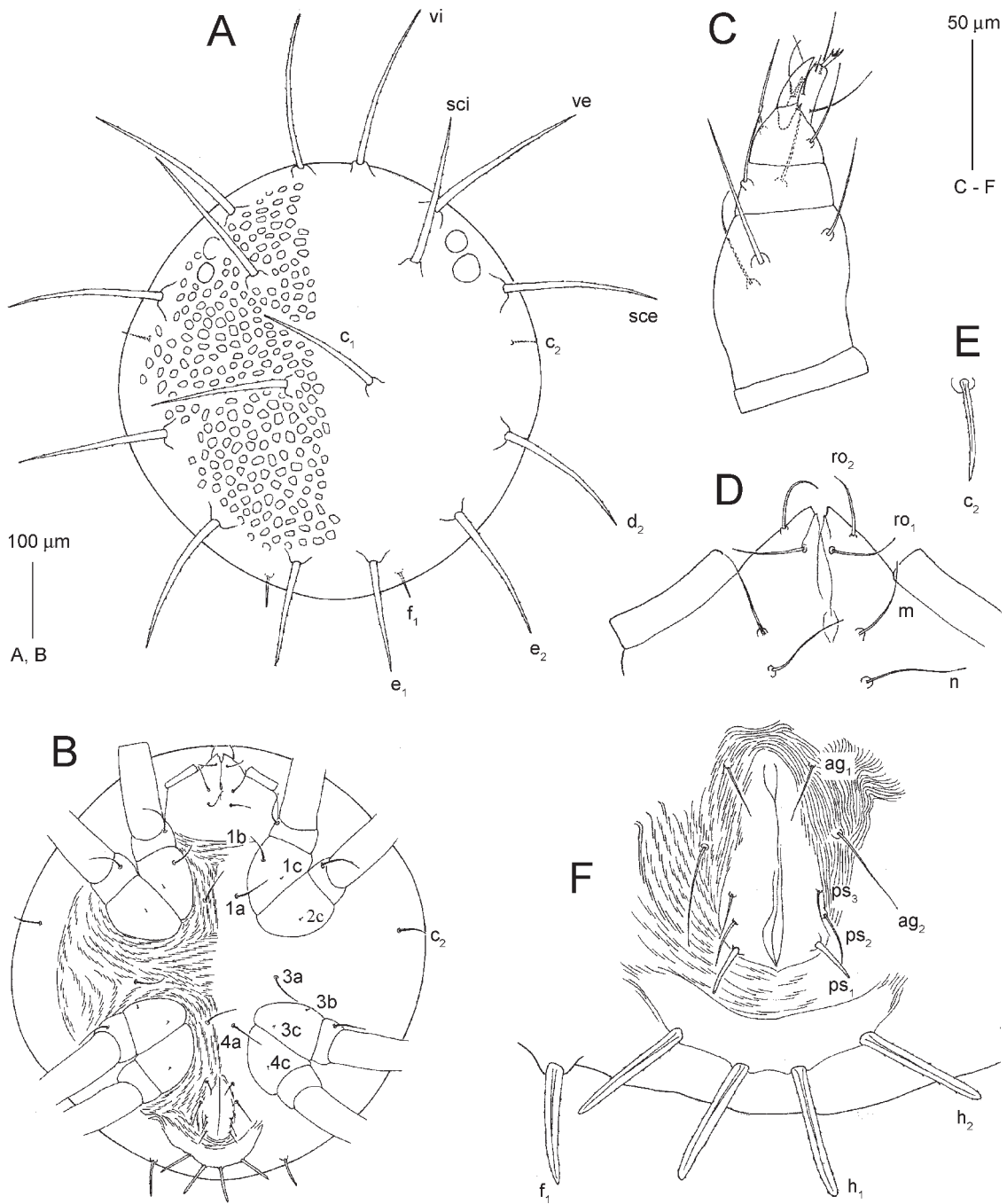


Fig. 156. *Mediolata zonaria* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 157.** *Mullederia arborea* Wood, 1964 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, dorsal idiosomal seta; F, genitoanal region.

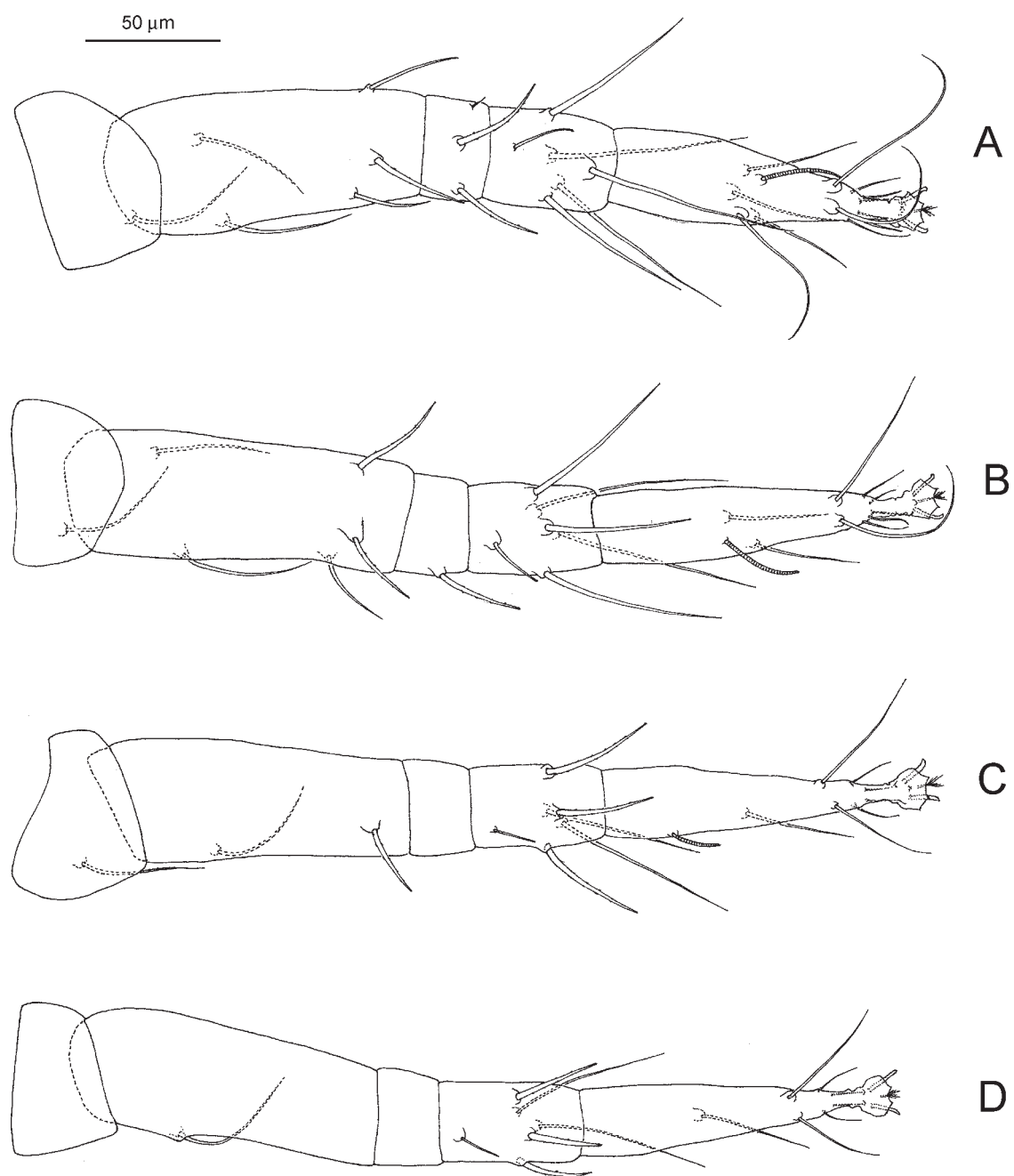
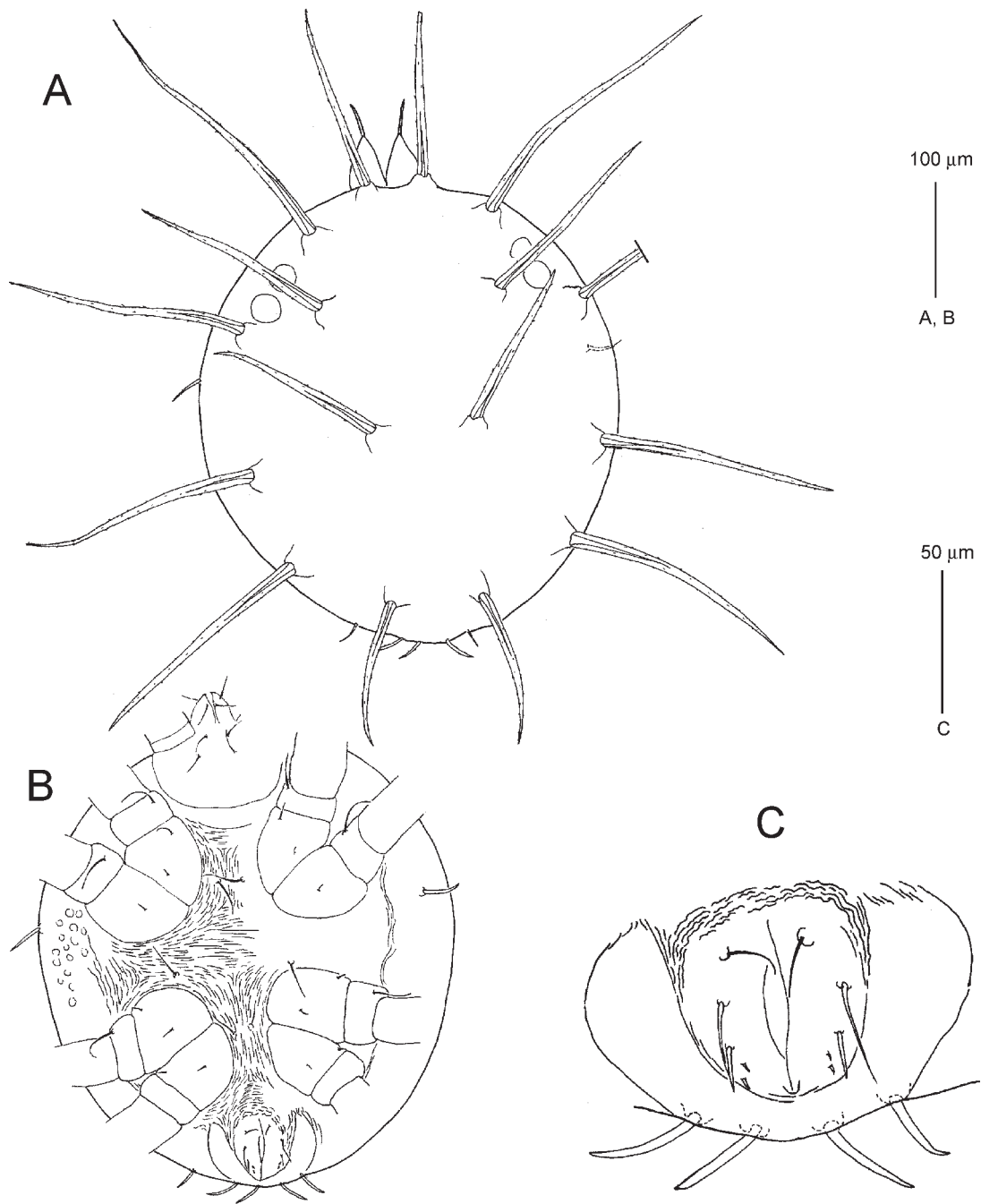


Fig. 158. *Mullederia arborea* Wood, 1964 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 159.** *Mullederia arborea* Wood, 1964 (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, genitoanal area.

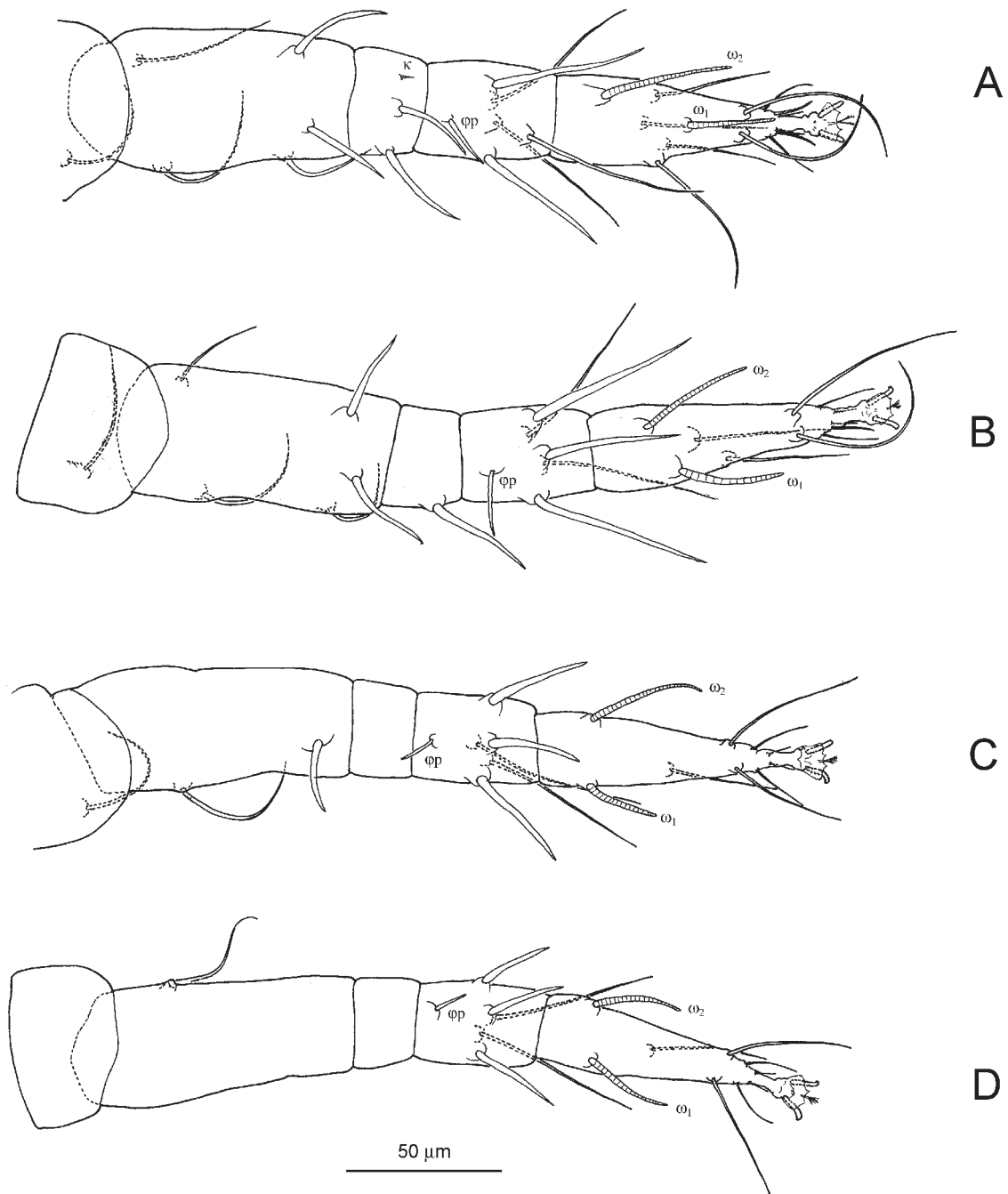
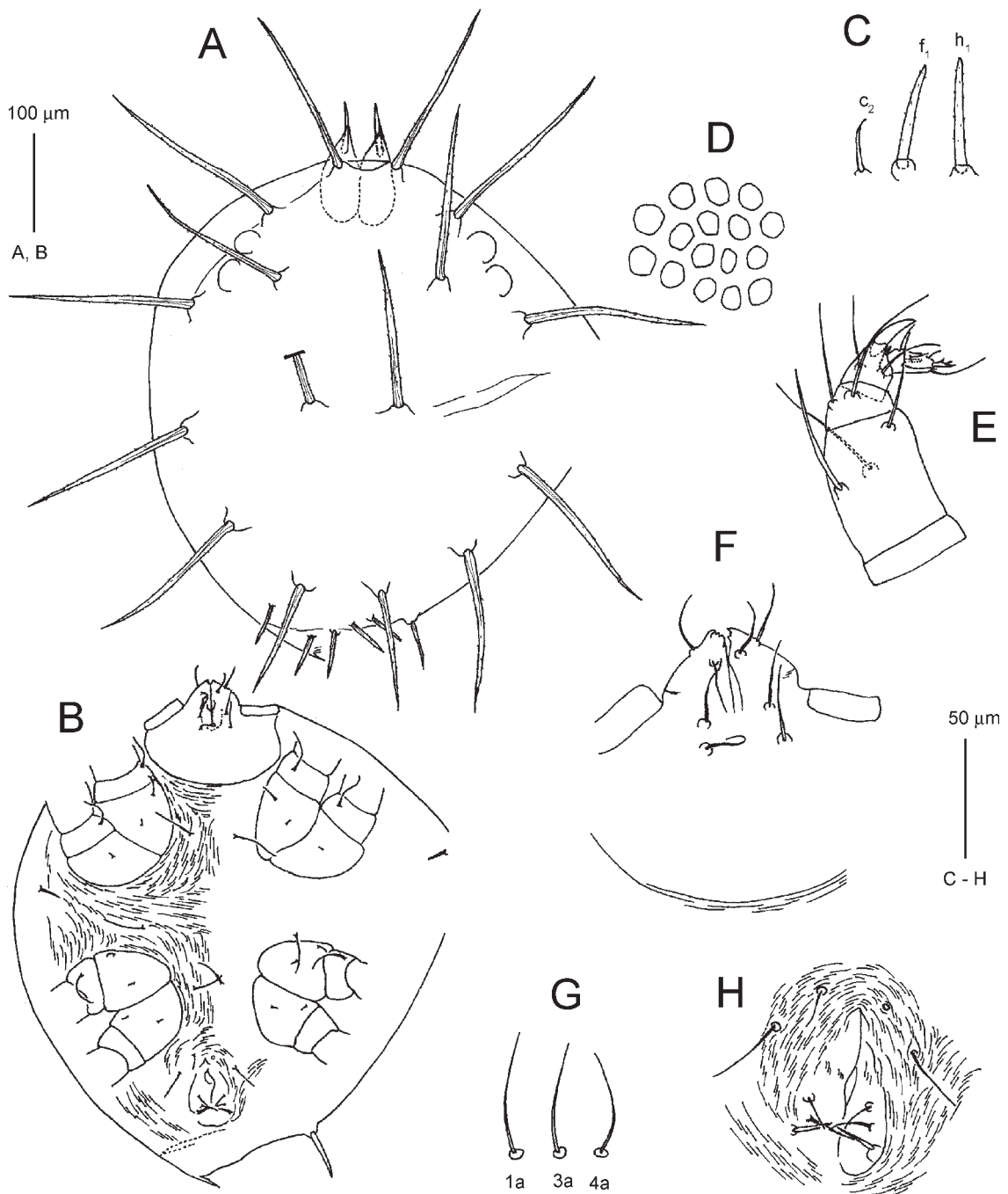


Fig. 160. *Mullederia arborea* Wood, 1964 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 161.** *Mullederia procurrans* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, dorsal idiosomal setae; D, reticulate pattern of dorsal idiosomal shield; E, palp; F, subcapitulum; G, ventral idiosomal setae; H, genitoanal area.

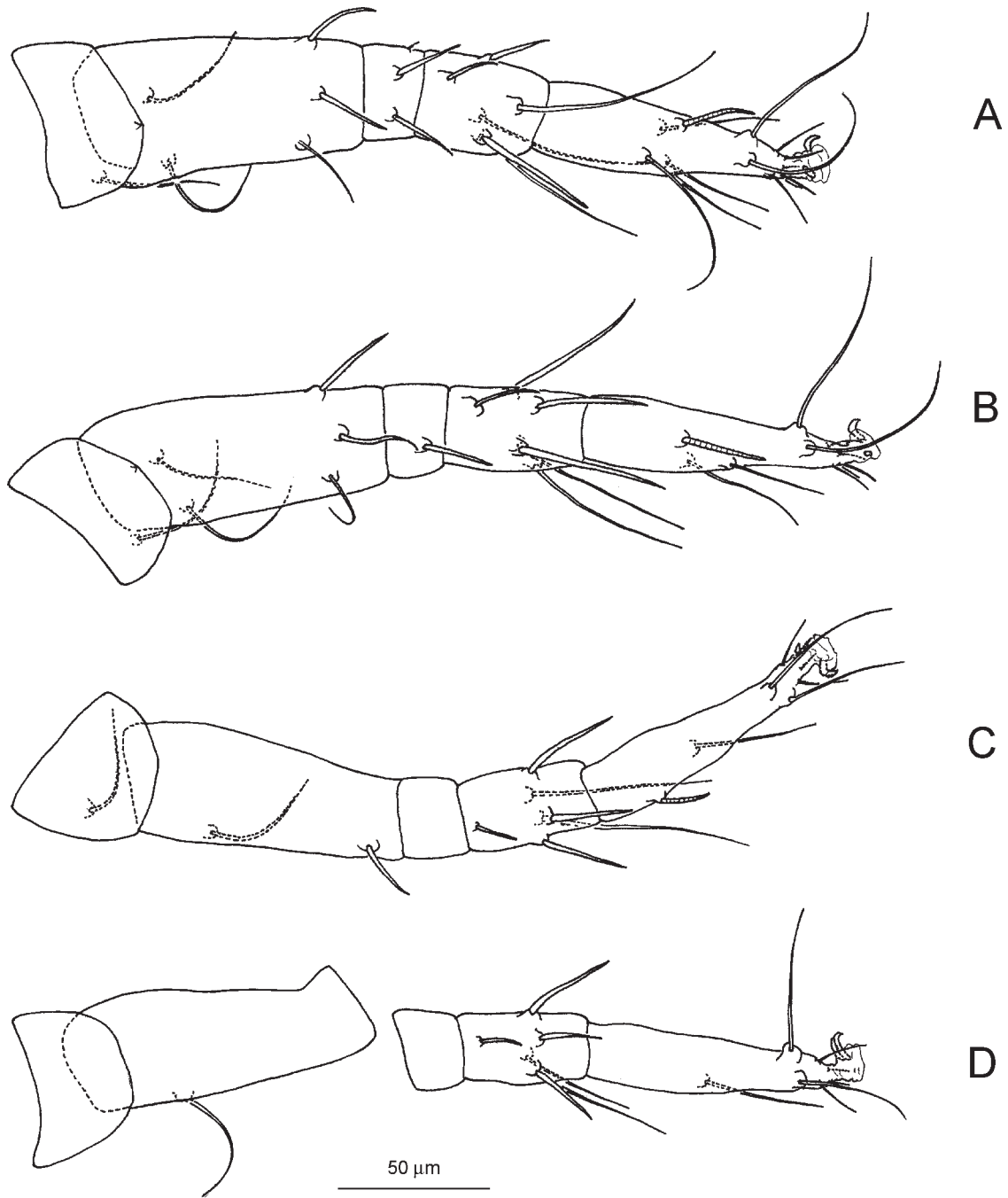
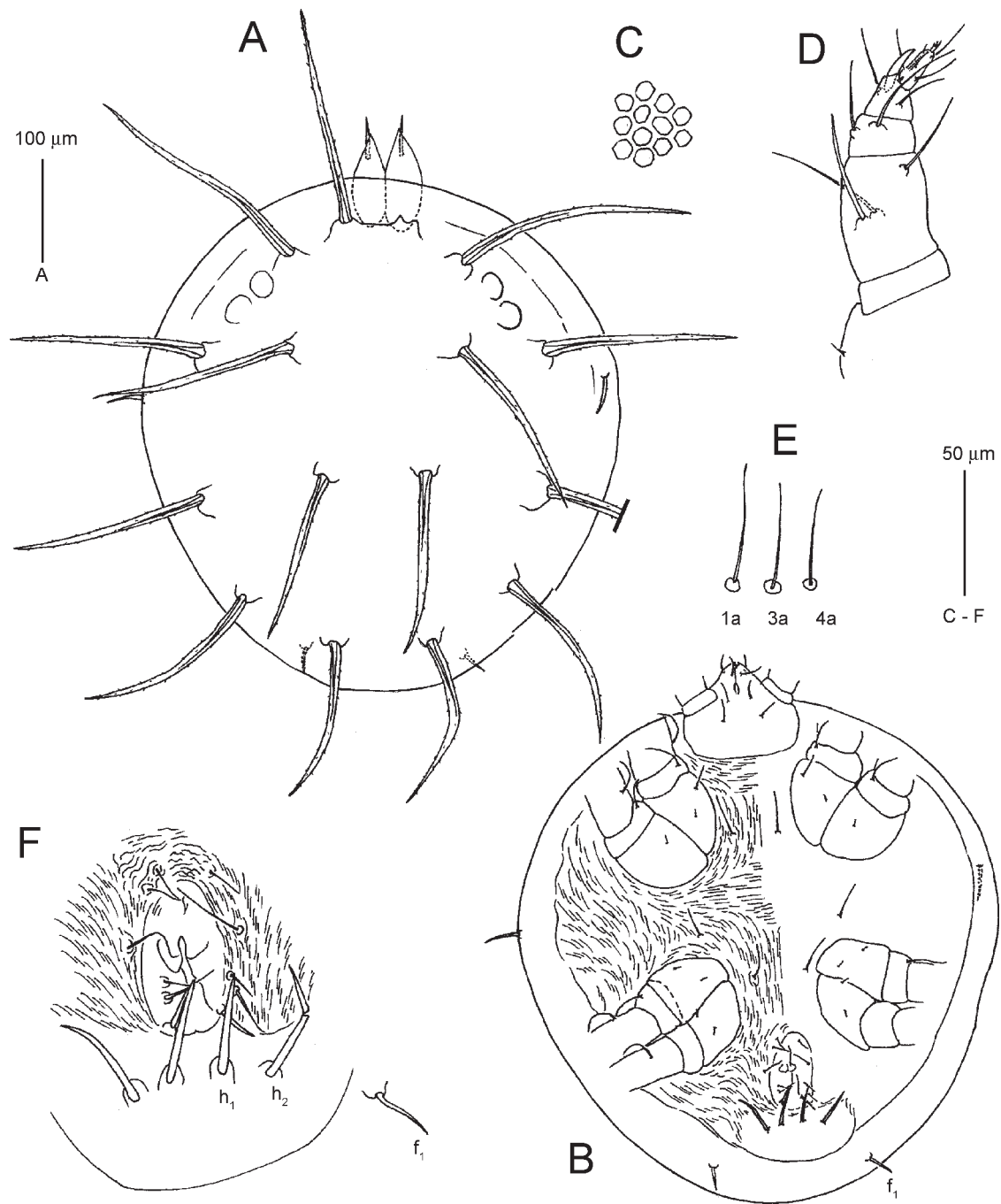


Fig. 162. *Mullederia procurrans* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 163.** *Mullederia scutellaris* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, reticulate pattern of dorsal idiosomal shield; D, palp; E, ventral idiosomal setae; F, suranal and genitoanal area.



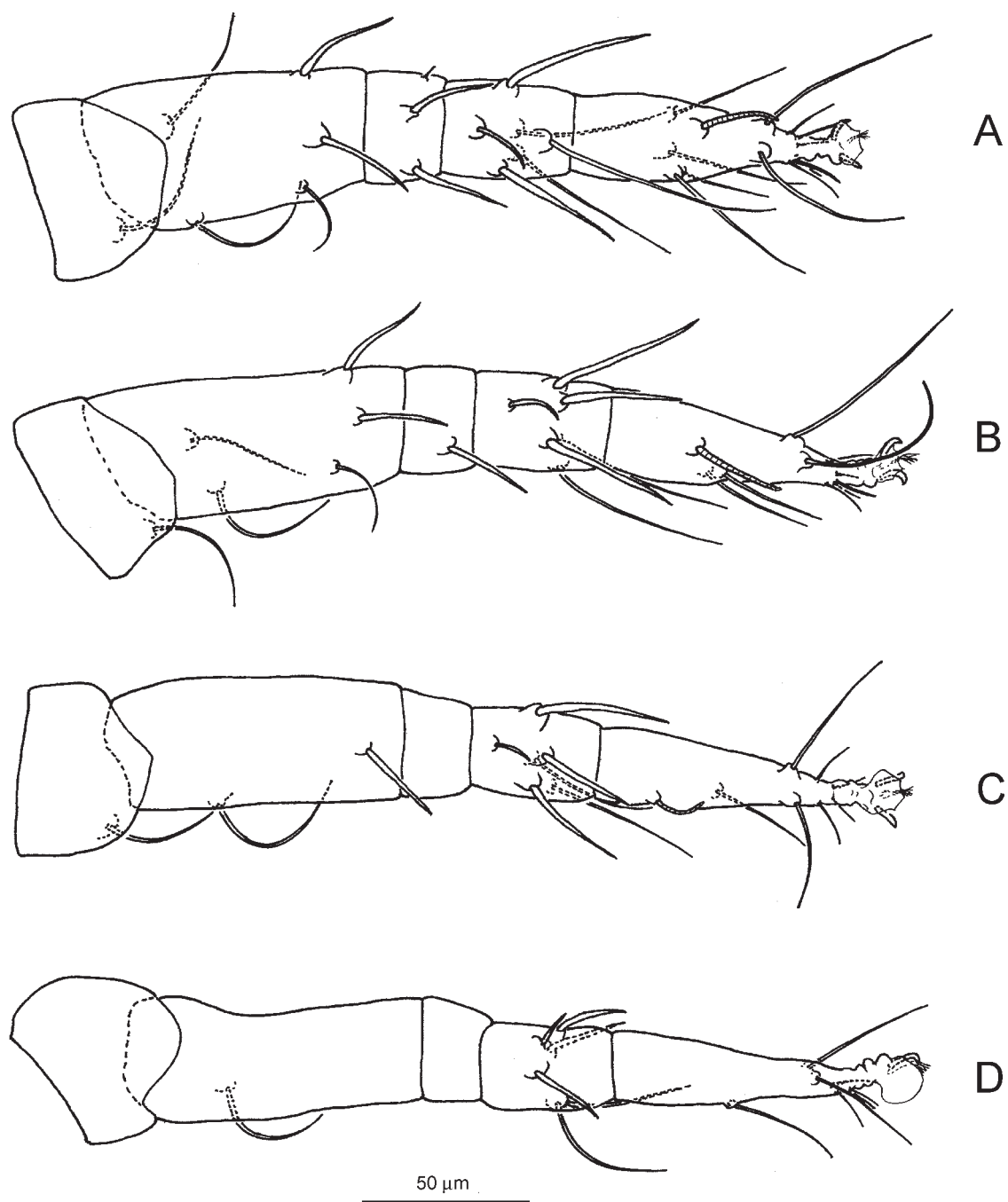
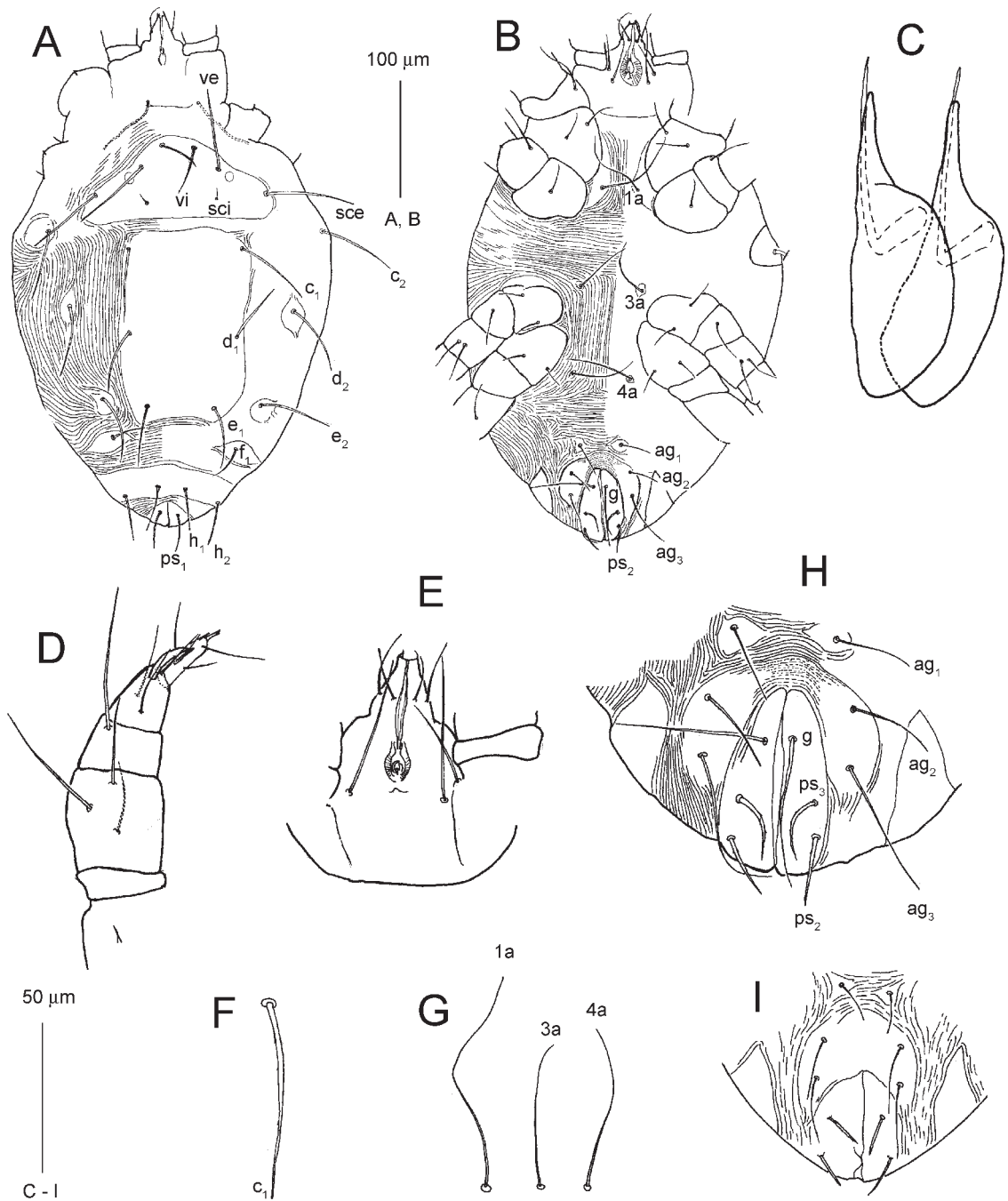


Fig. 164. *Mulederia scutellaris* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 165.** *Primagistemus loadmani* (Wood, 1967) (A–H, female; I, deutonymph female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal idiosomal seta; G, ventral idiosomal setae; H, genitoanal area; I, genitoanal area.

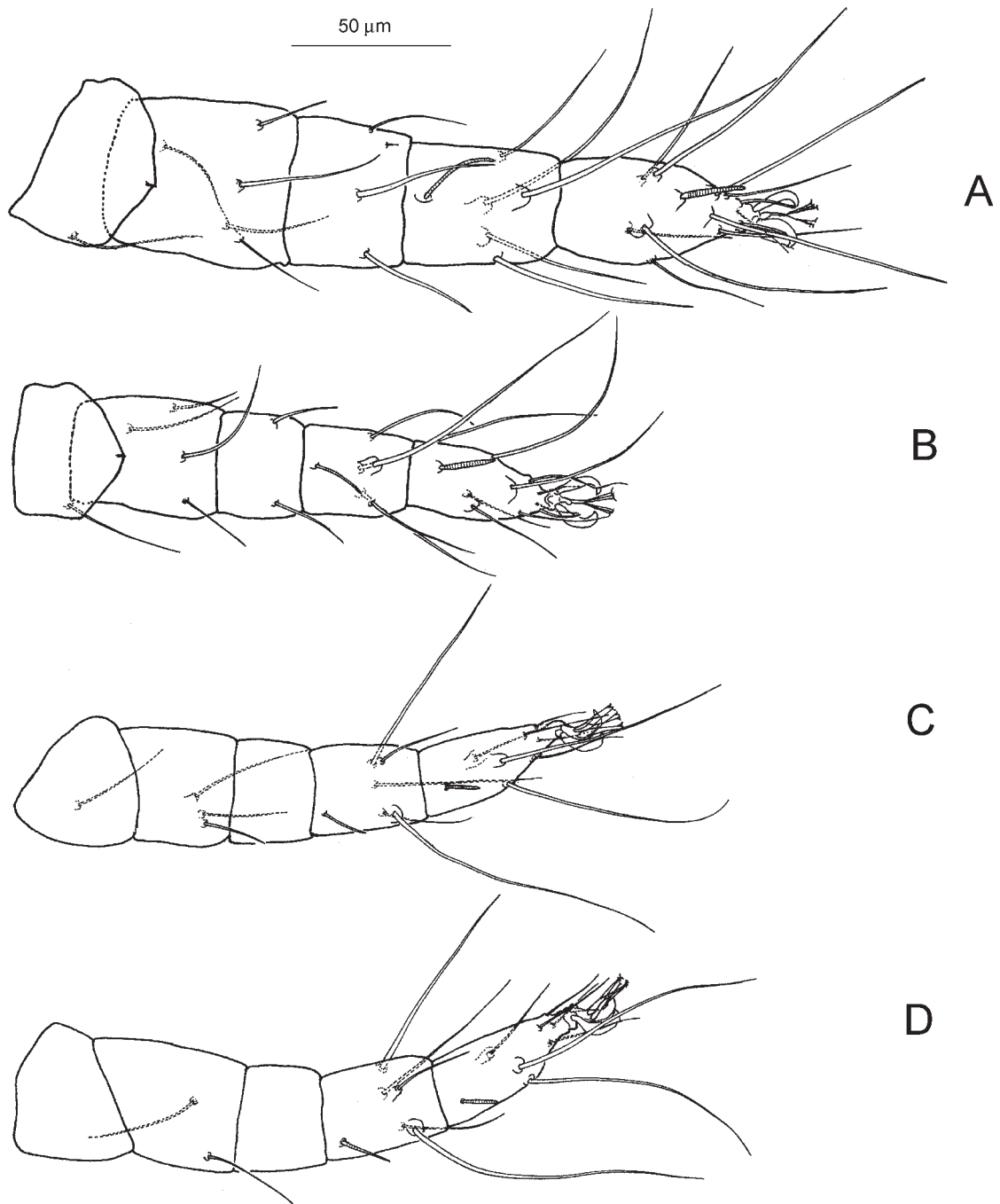
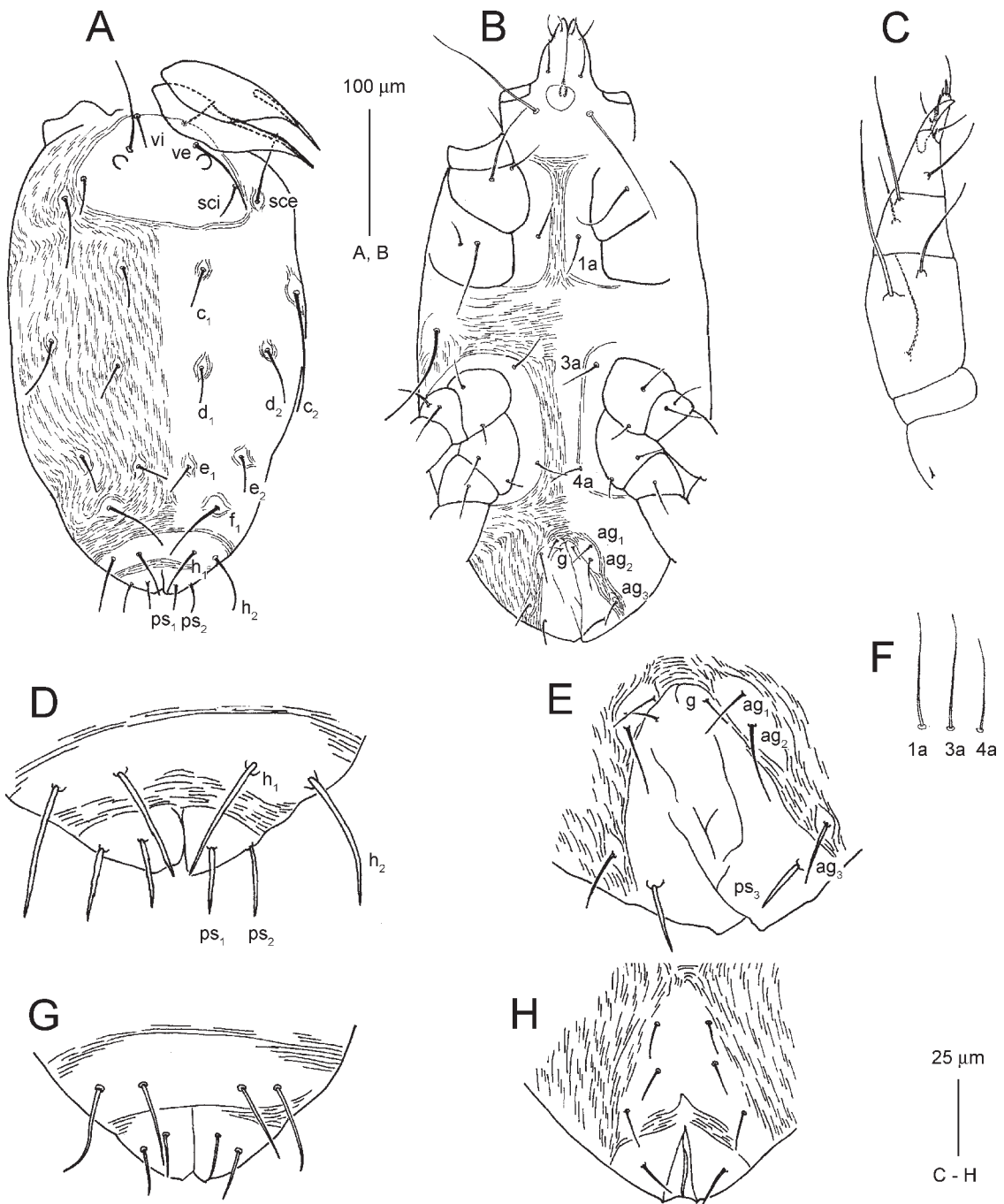


Fig. 166. *Primagistemus loadmani* (Wood, 1967) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 167.** *Pseudostigmaeus collyerae* Wood, 1967 (A–F, female; G–H, deutonymph female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal view of opisthosoma; E, genitoanal region; F, ventral idiosomal setae; G, dorsal view of opisthosoma; H, genitoanal region.

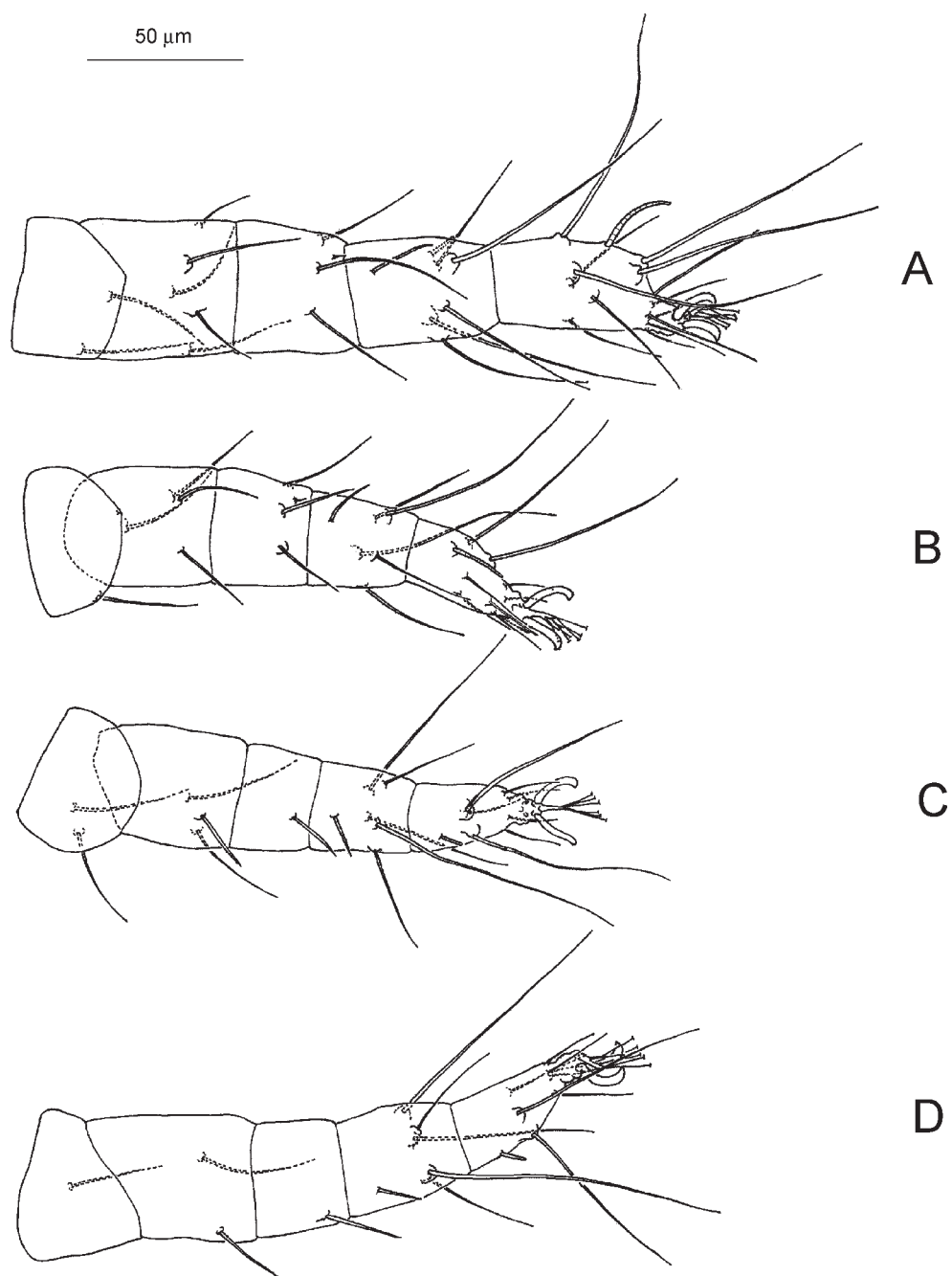
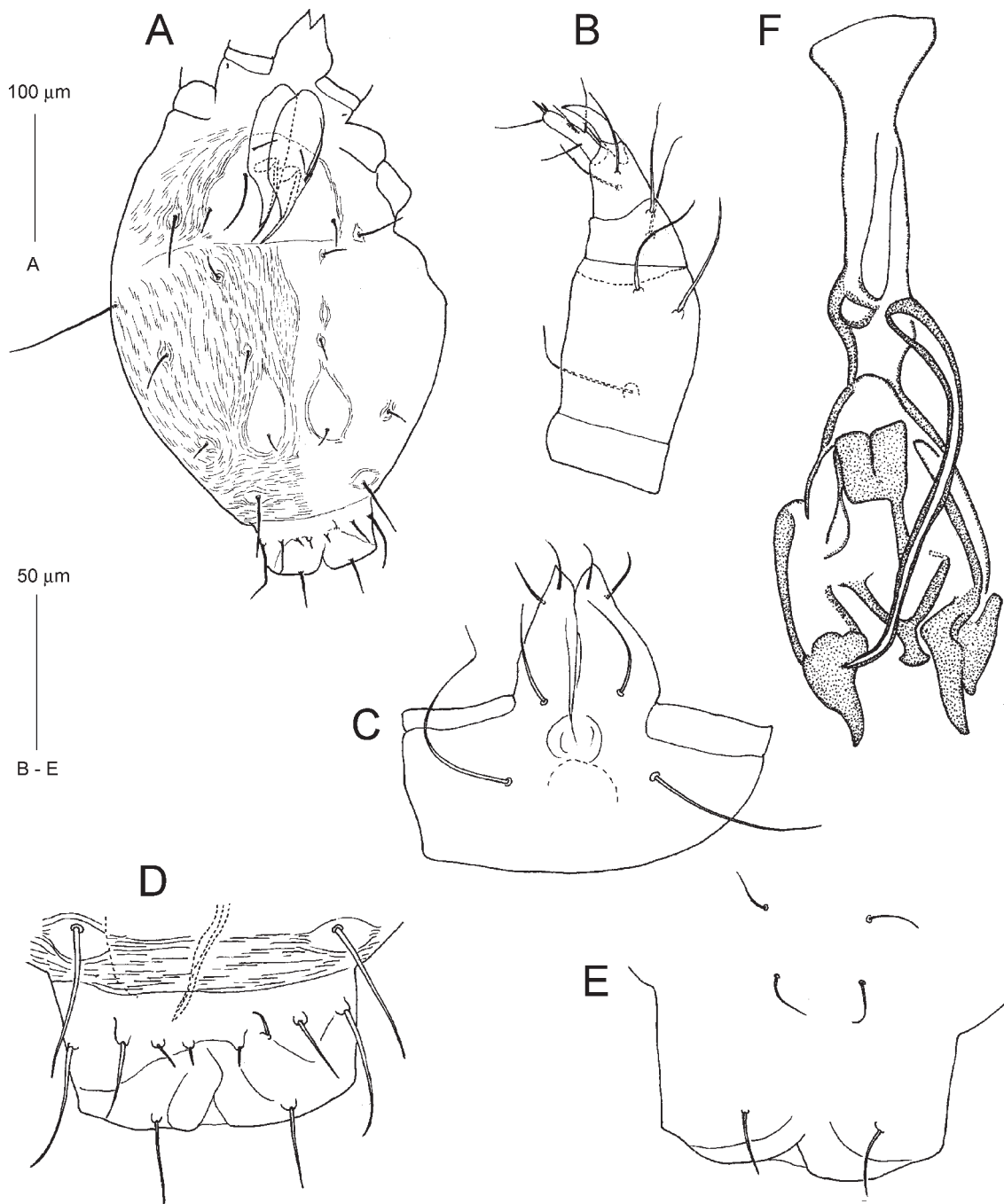


Fig. 168. *Pseudostigmaeus collyerae* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 169.** *Pseudostigmaeus collyerae* Wood, 1967 (male). A, dorsal view of idiosoma; B, palp; C, subcapitulum; D, dorsal view of opisthosoma; E, genitoanal region; F, aedeagus.

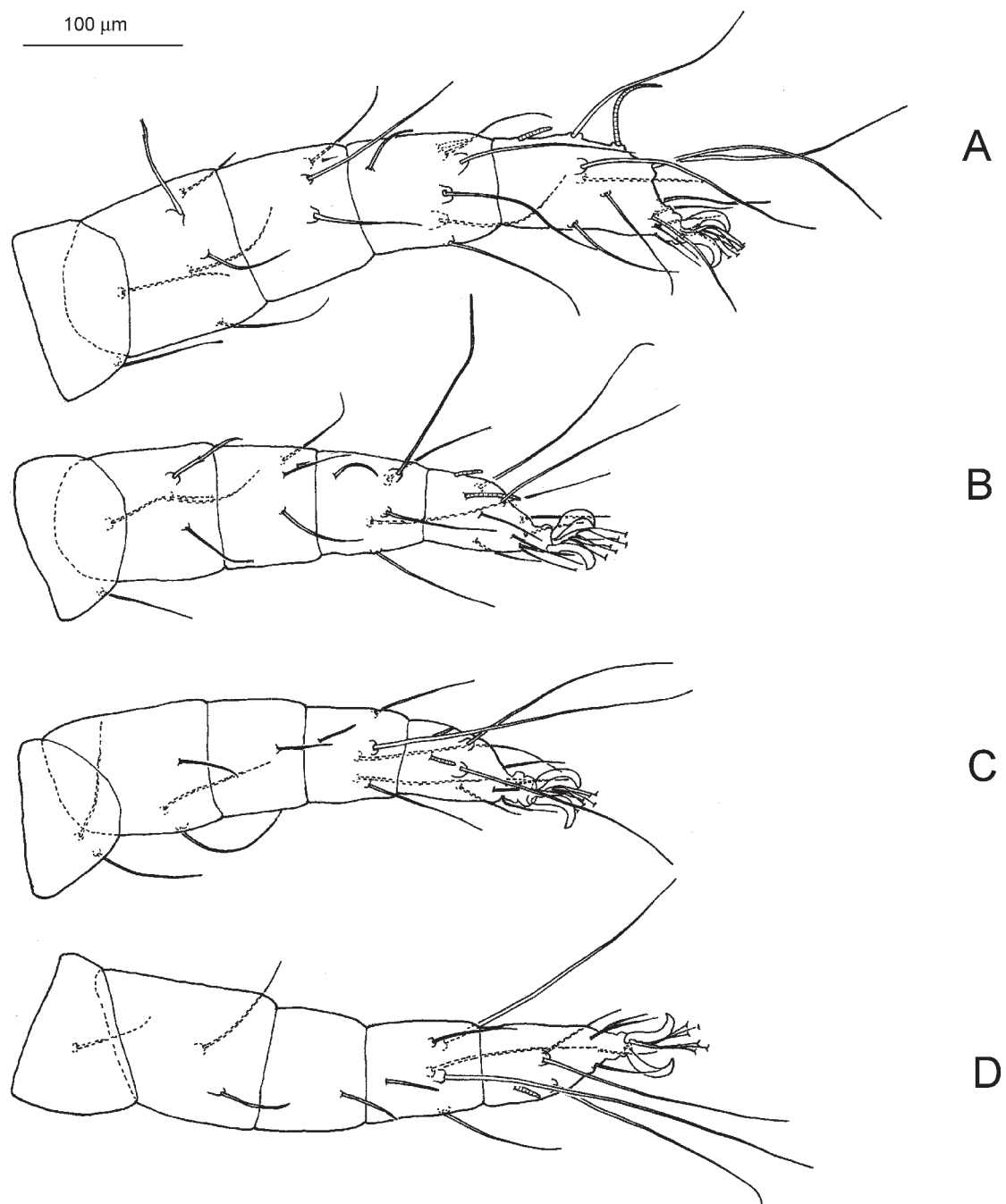
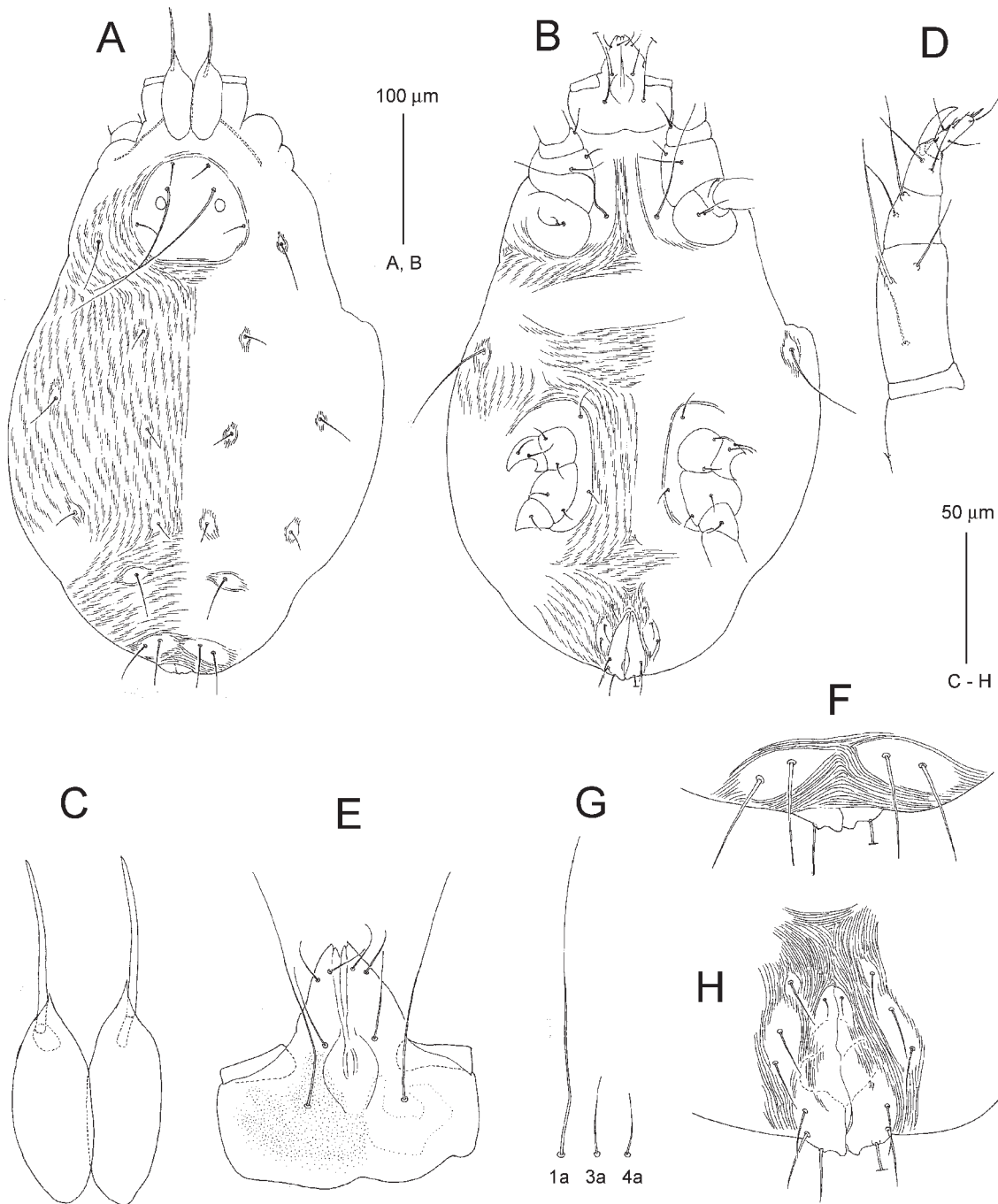


Fig. 170. *Pseudostigmaeus collyerae* Wood, 1967 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 171.** *Pseudostigmaeus longisetis* Wood, 1970 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal view of opisthosoma; G, ventral idiosomal setae; H, genitoanal region.



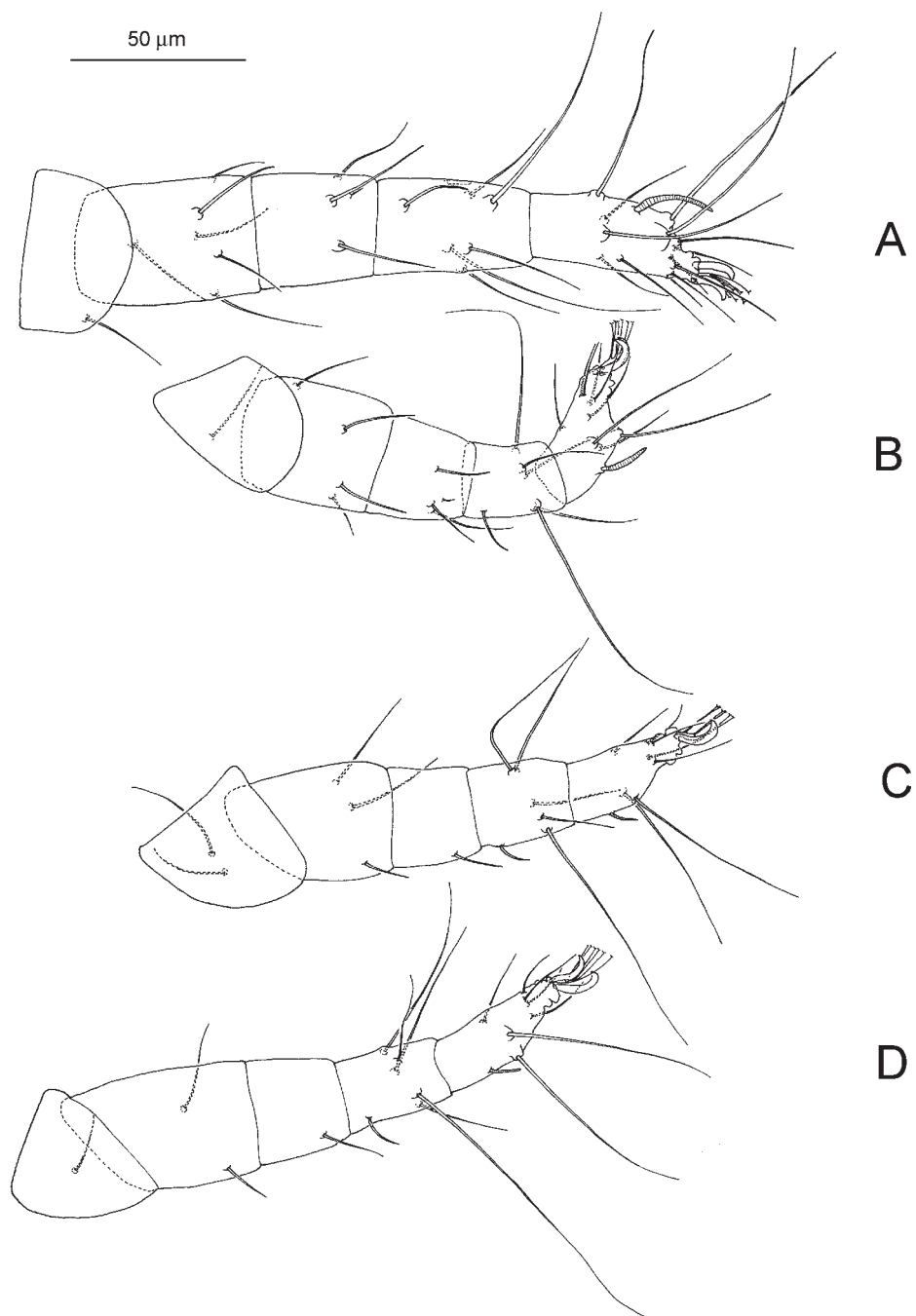
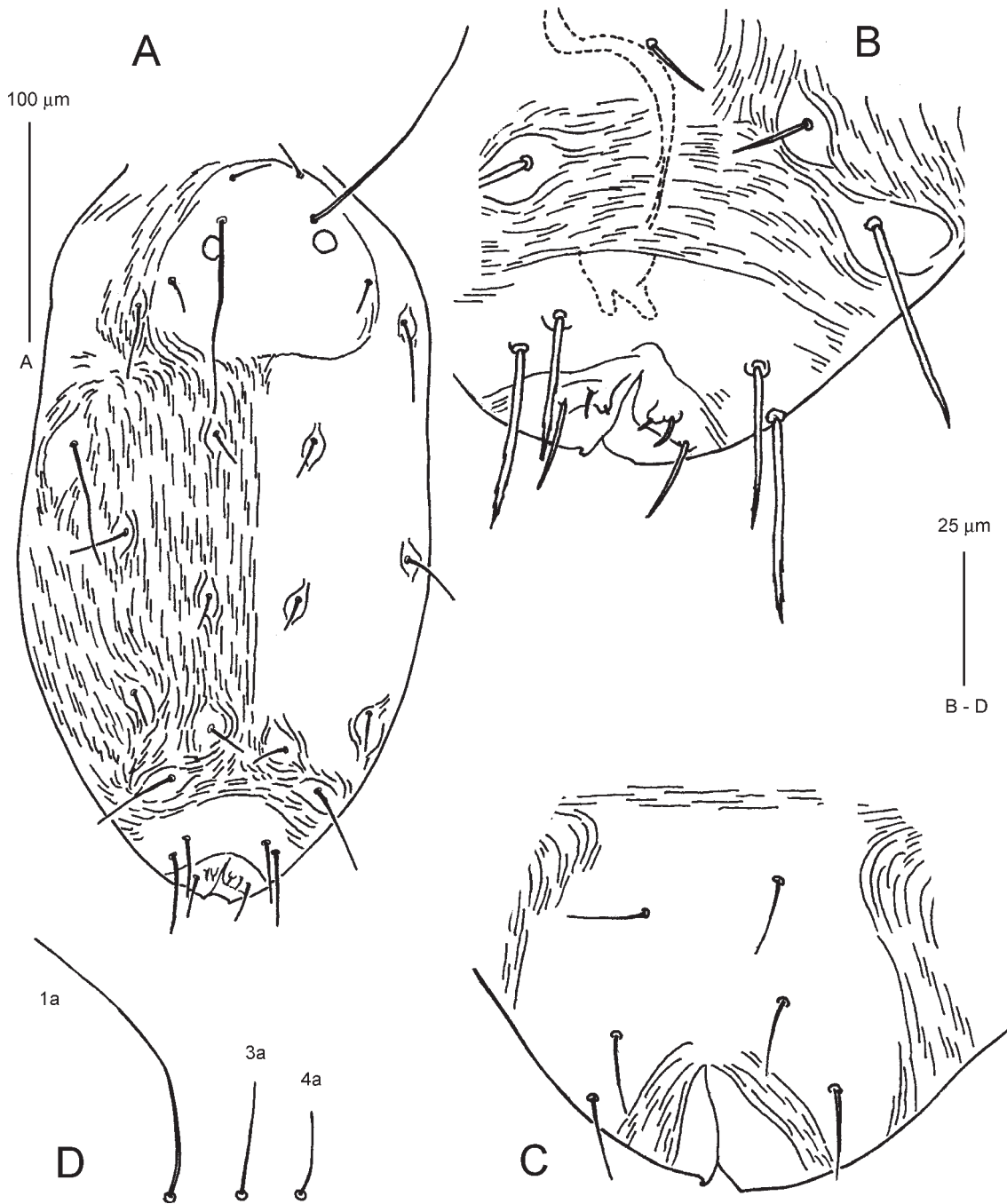


Fig. 172. *Pseudostigmaeus longisetis* Wood, 1970 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 173.** *Pseudostigmaeus longisetis* Wood, 1970 (male). A, dorsal view of idiosoma; B, dorsal view of opisthosoma; C, genitoanal region; D, ventral idiosomal setae.

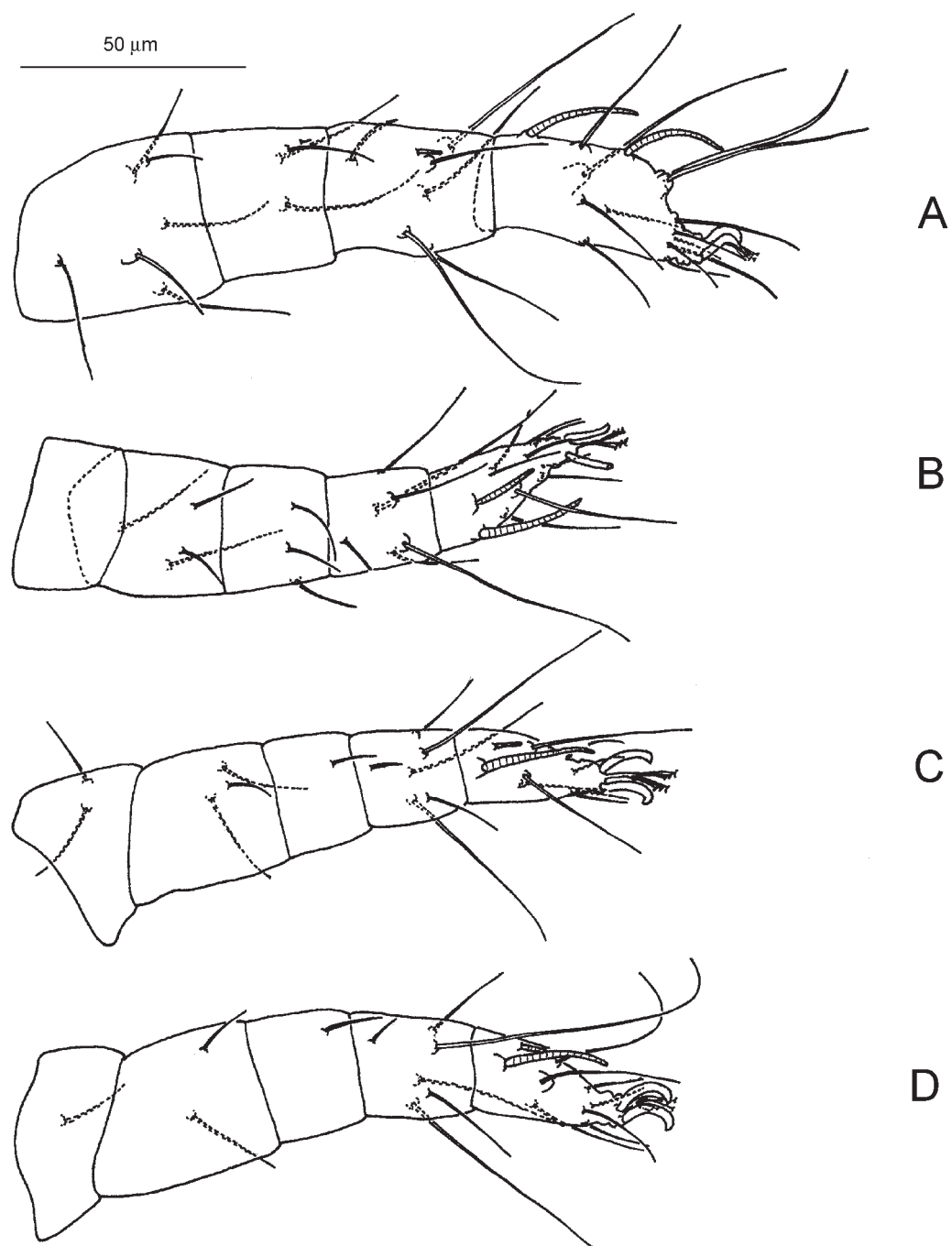
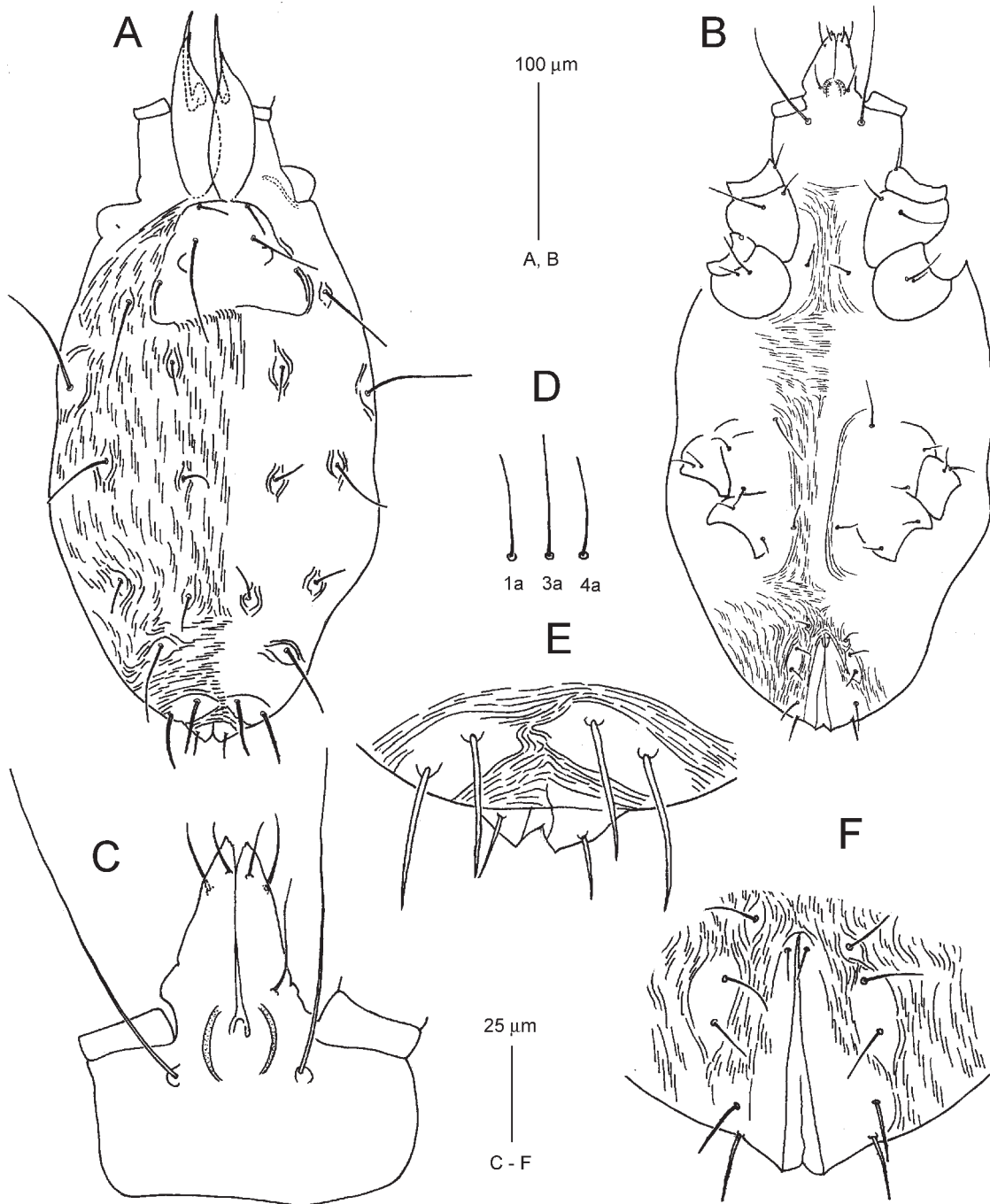


Fig. 174. *Pseudostigmaeus longisetis* Wood, 1970 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 175.** *Pseudostigmaeus schizopeltatus* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, subcapitulum; D, ventral idiosomal setae; E, dorsal view of opisthosoma; F, genitoanal region.

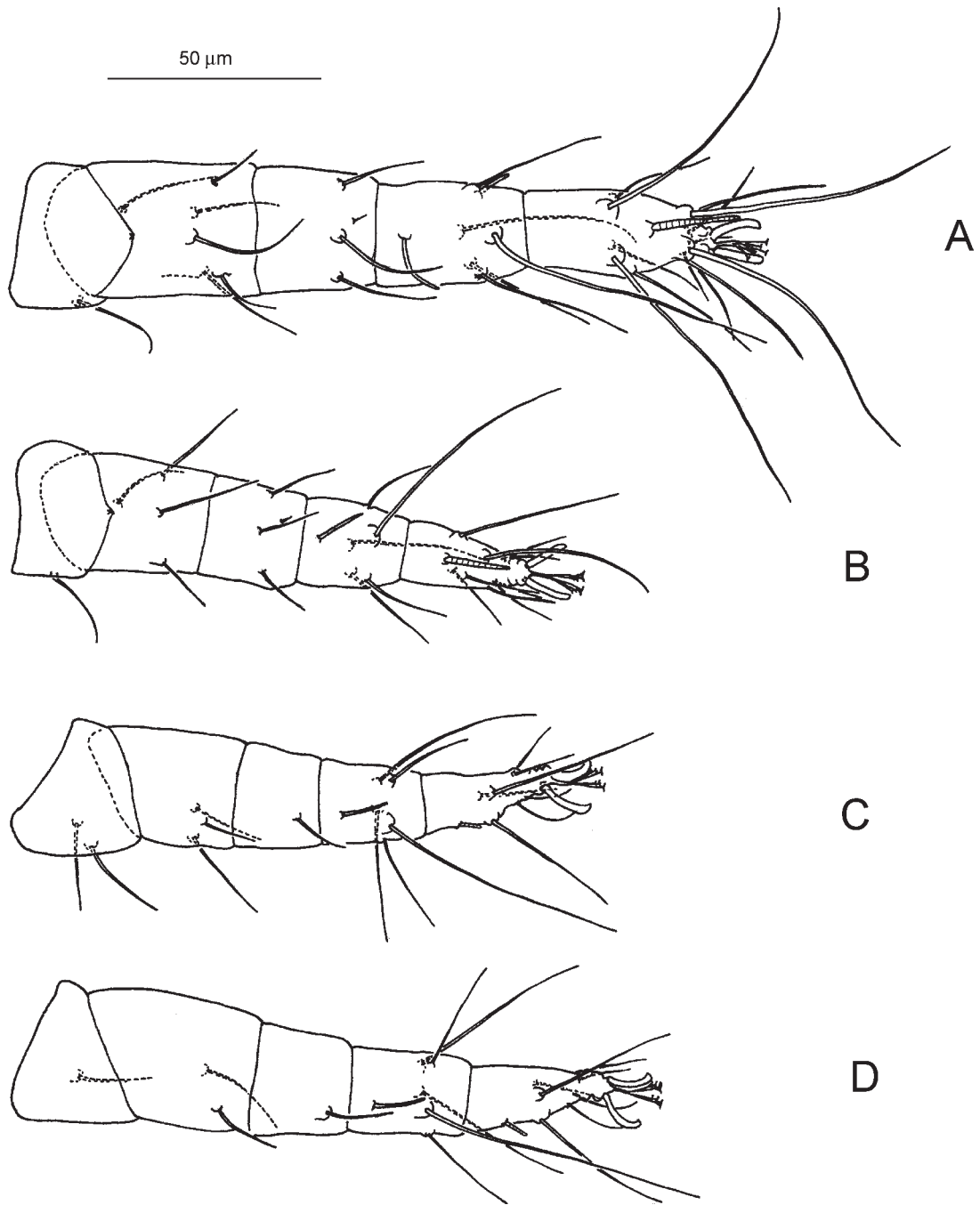
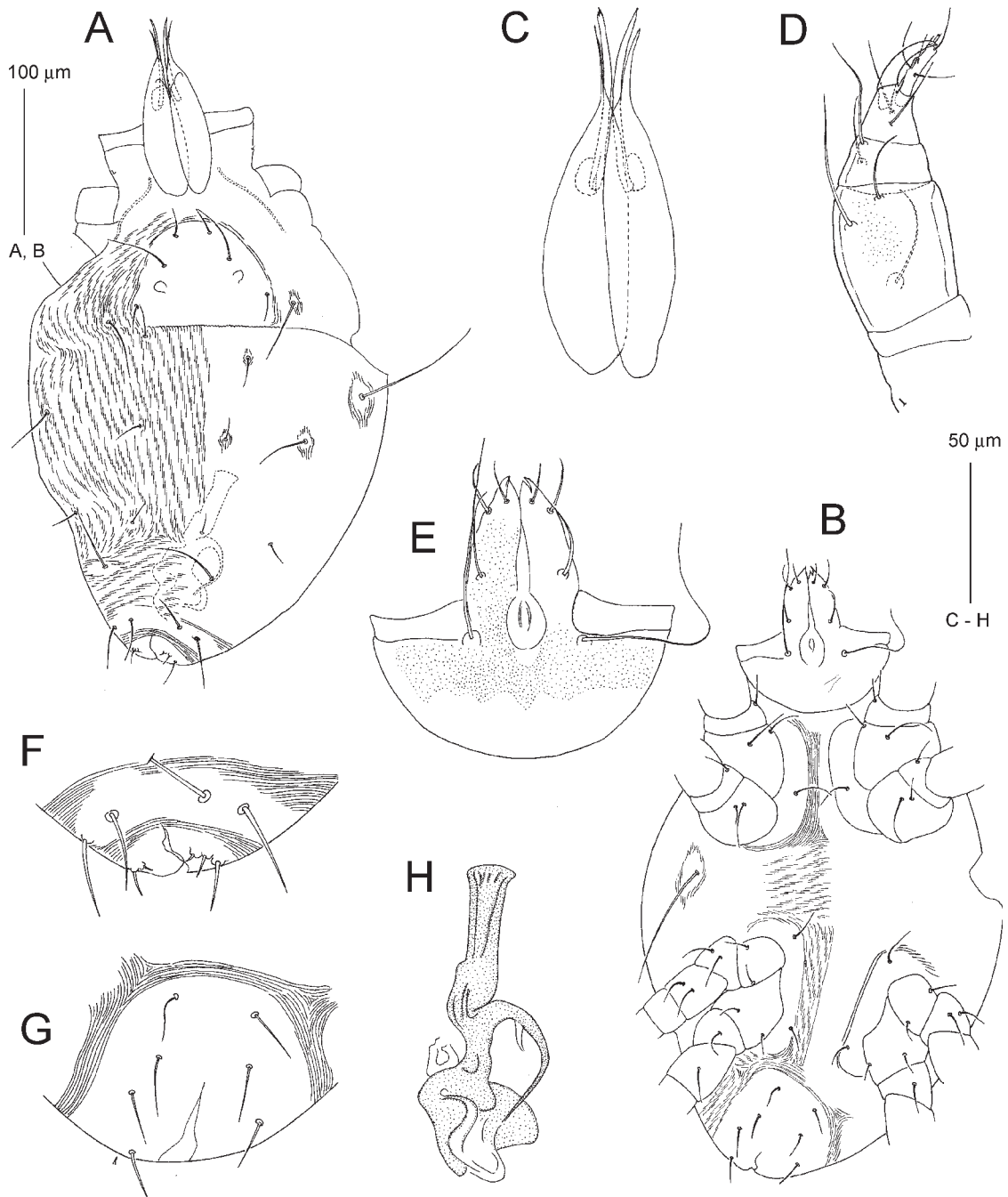
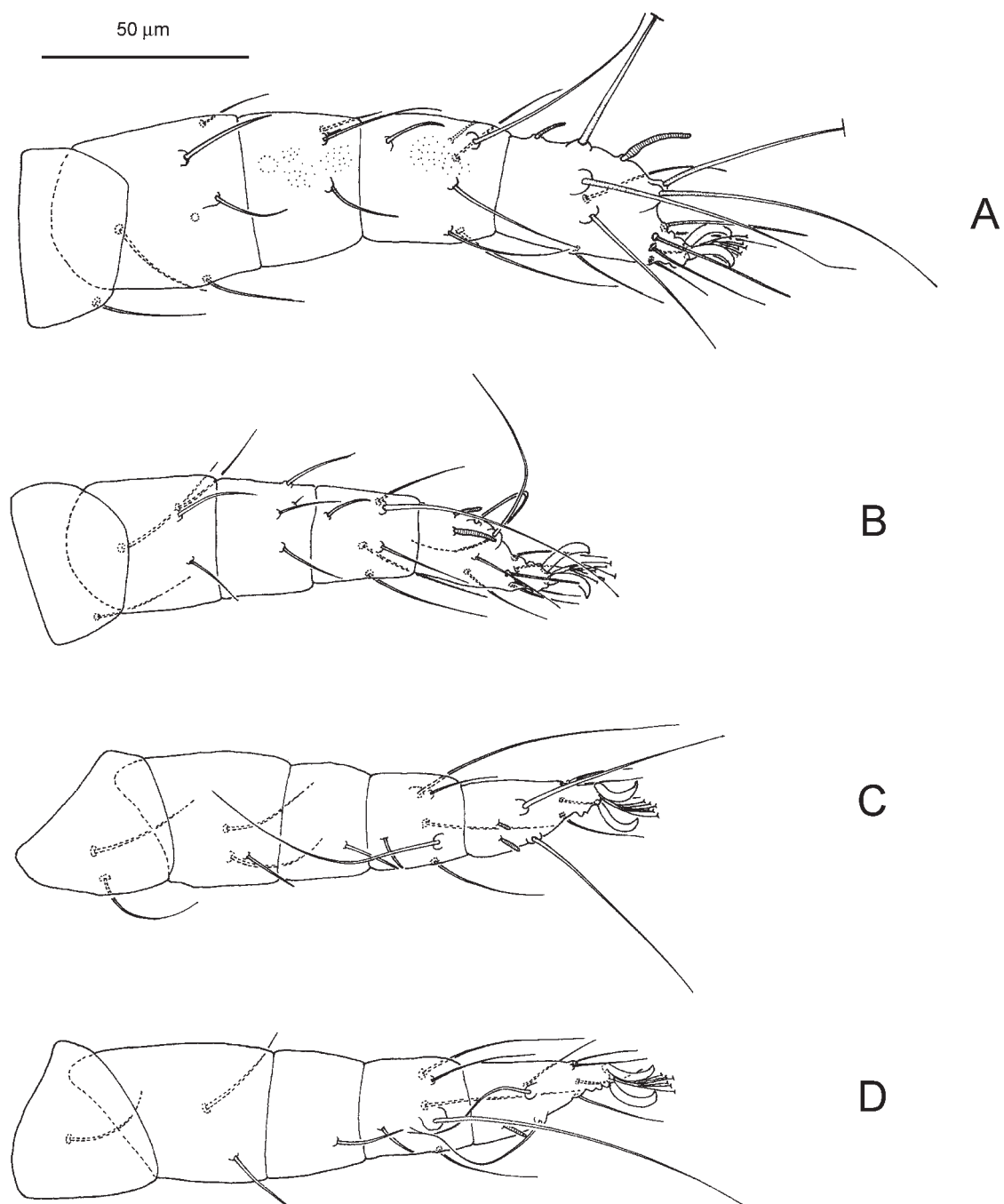


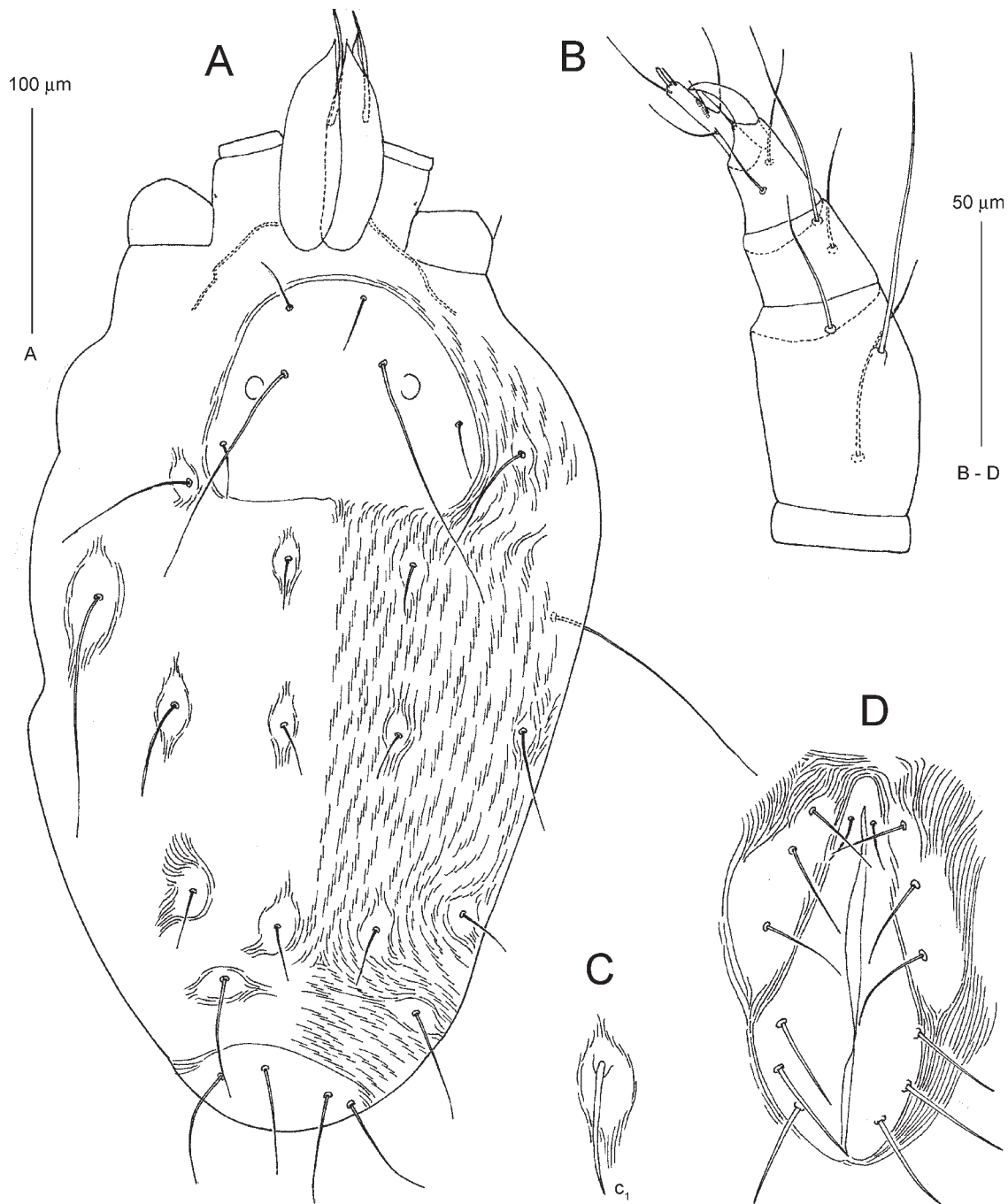
Fig. 176. *Pseudostigmaeus schizopeltatus* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 177.** *Pseudostigmaeus schizopeltatus* sp. n. (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal view of opisthosoma; G, genitoanal region; H, aedeagus.



**Fig. 178.** *Pseudostigmaeus schizopeltatus* sp. n. (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 179.** *Pseudostigmaeus striatus* Wood, 1967 (female). A, dorsal view of idiosoma; B, palp; C, dorsal idiosomal seta; D, genital area.



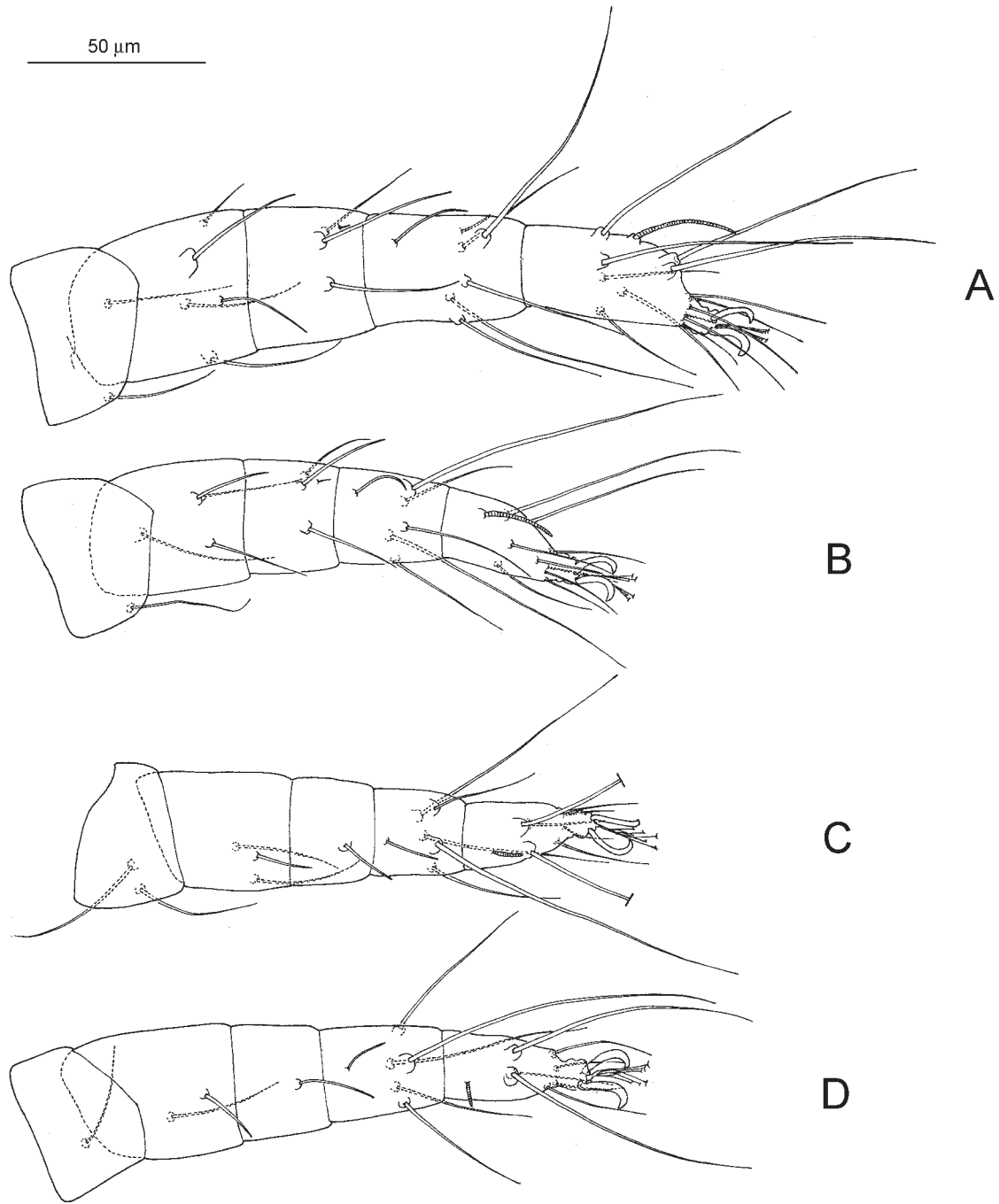
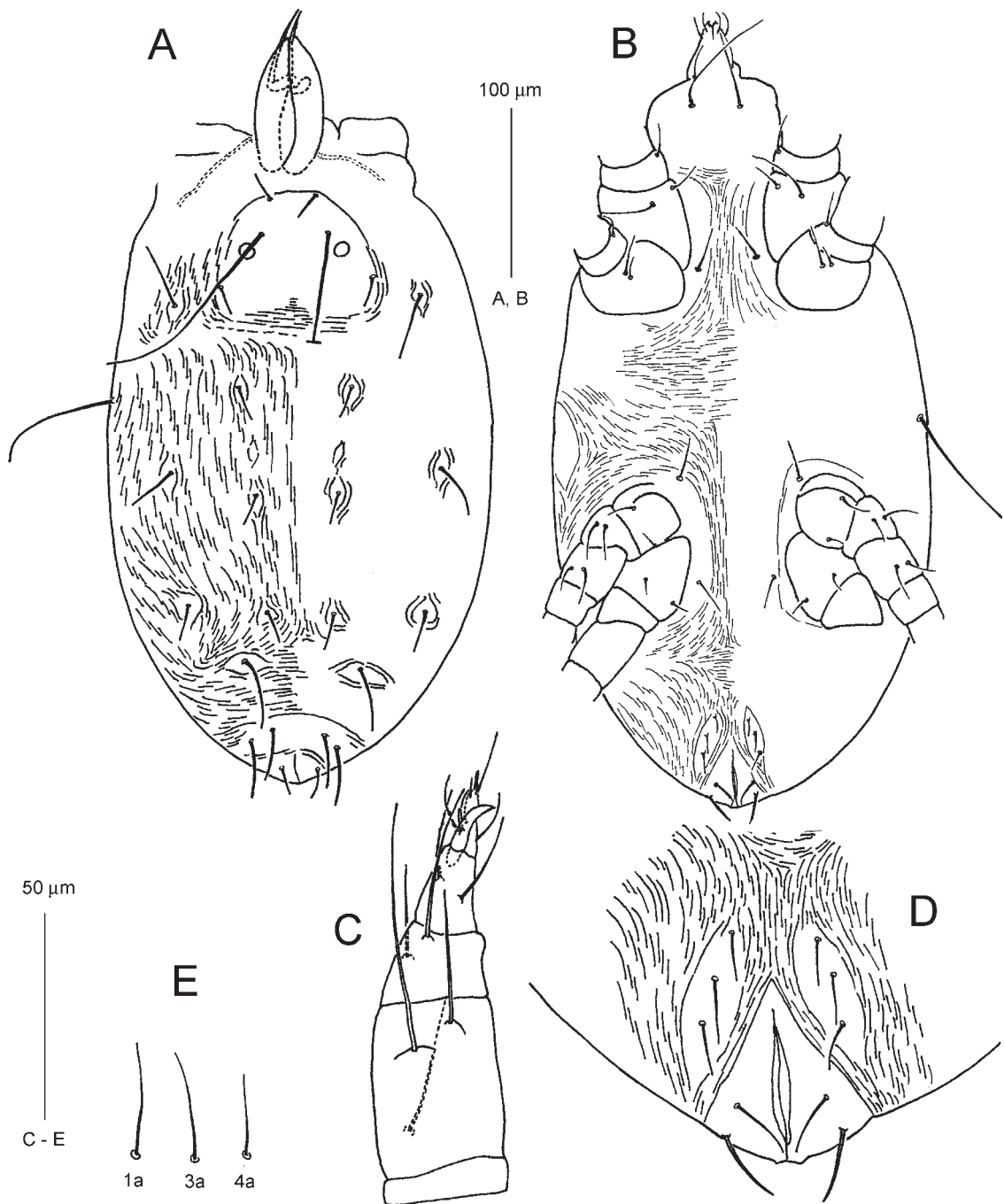


Fig. 180. *Pseudostigmaeus striatus* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 181.** *Pseudostigmaeus striatus* Wood, 1967 (deutonymph female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, genitoanal region; E, ventral idiosomal setae.

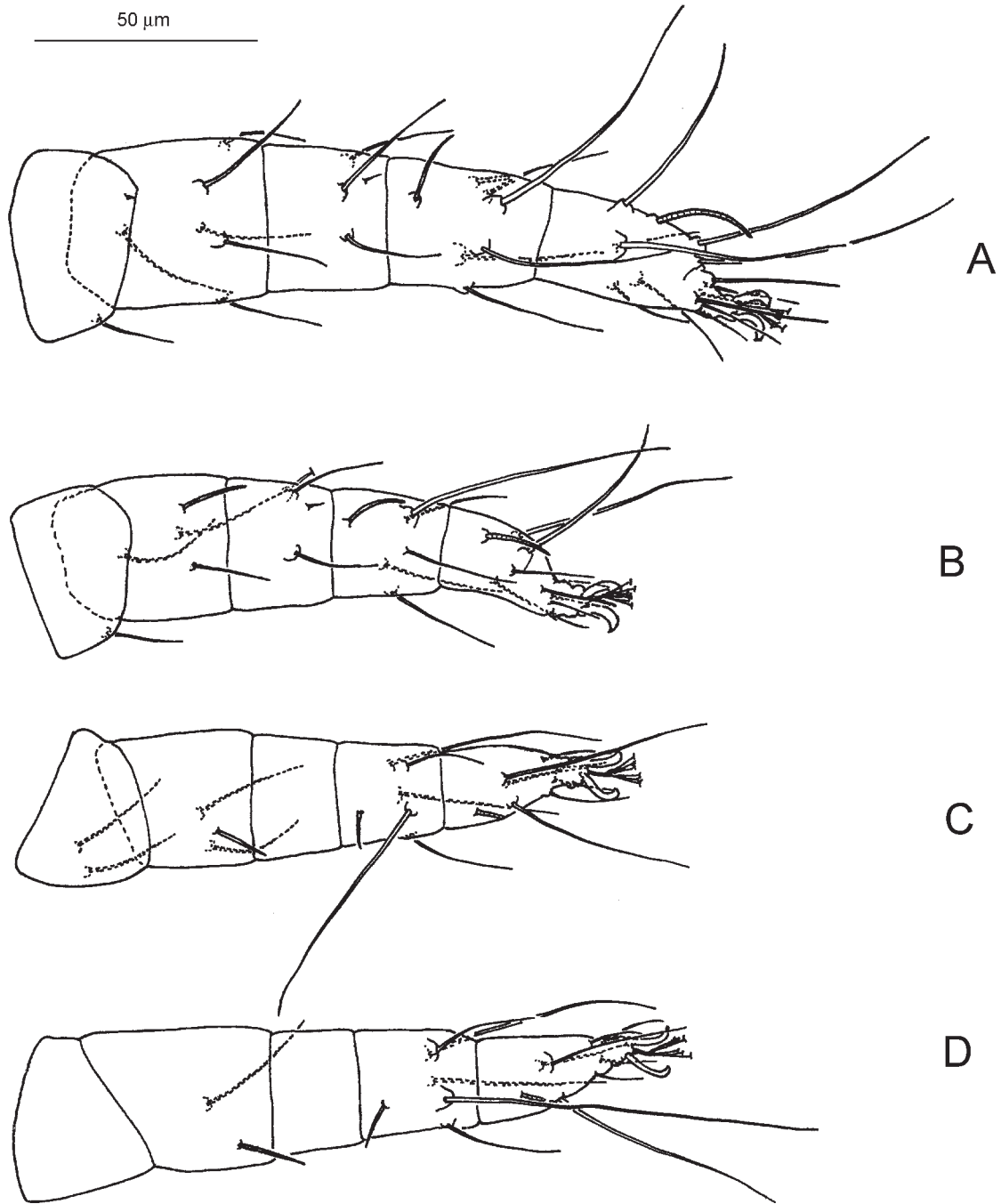
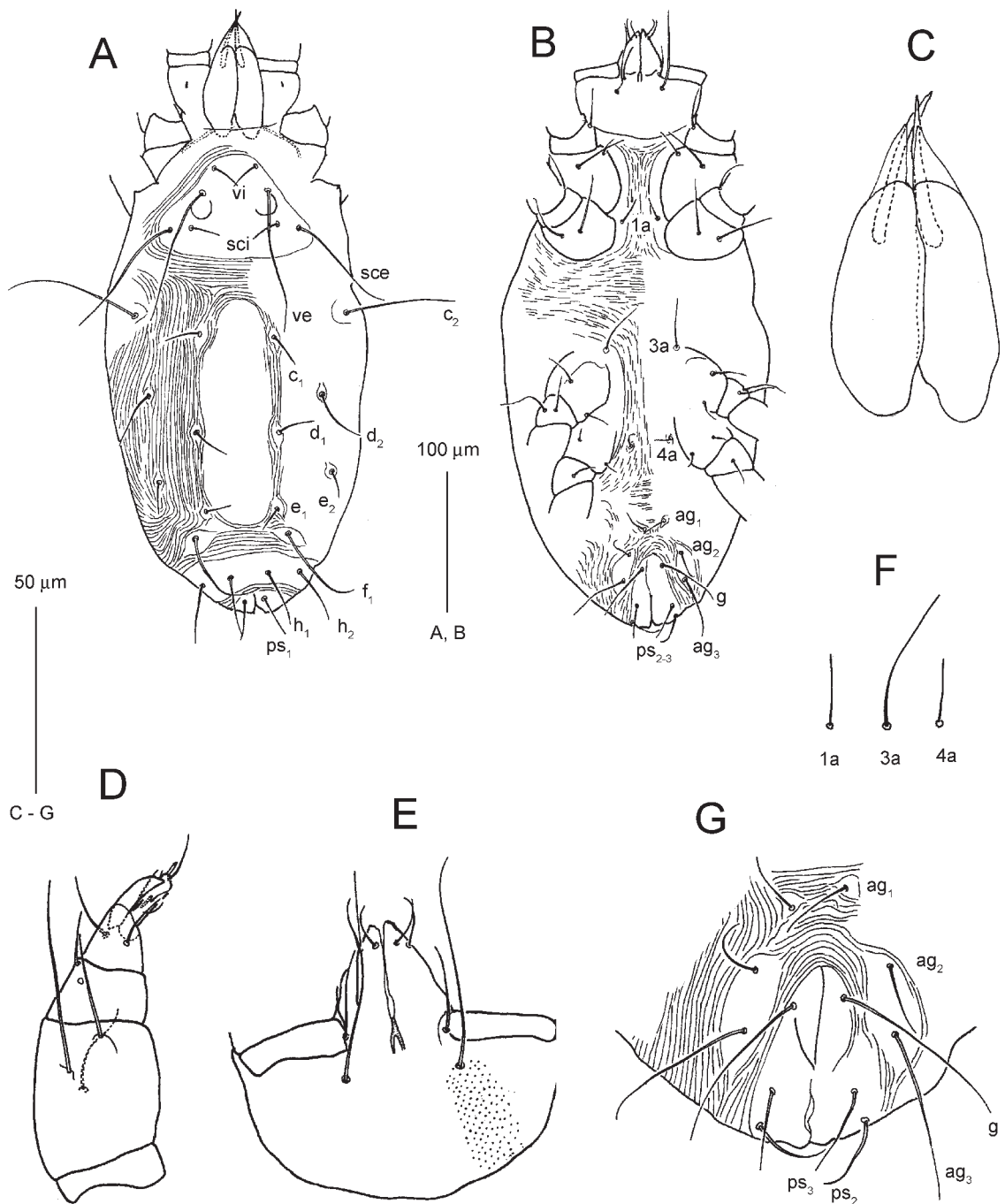


Fig. 182. *Pseudostigmaeus striatus* Wood, 1967 (deutonymph female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 183.** *Scutastigmaeus confusus* (Wood, 1967) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, ventral idiosomal setae; G, genital area.

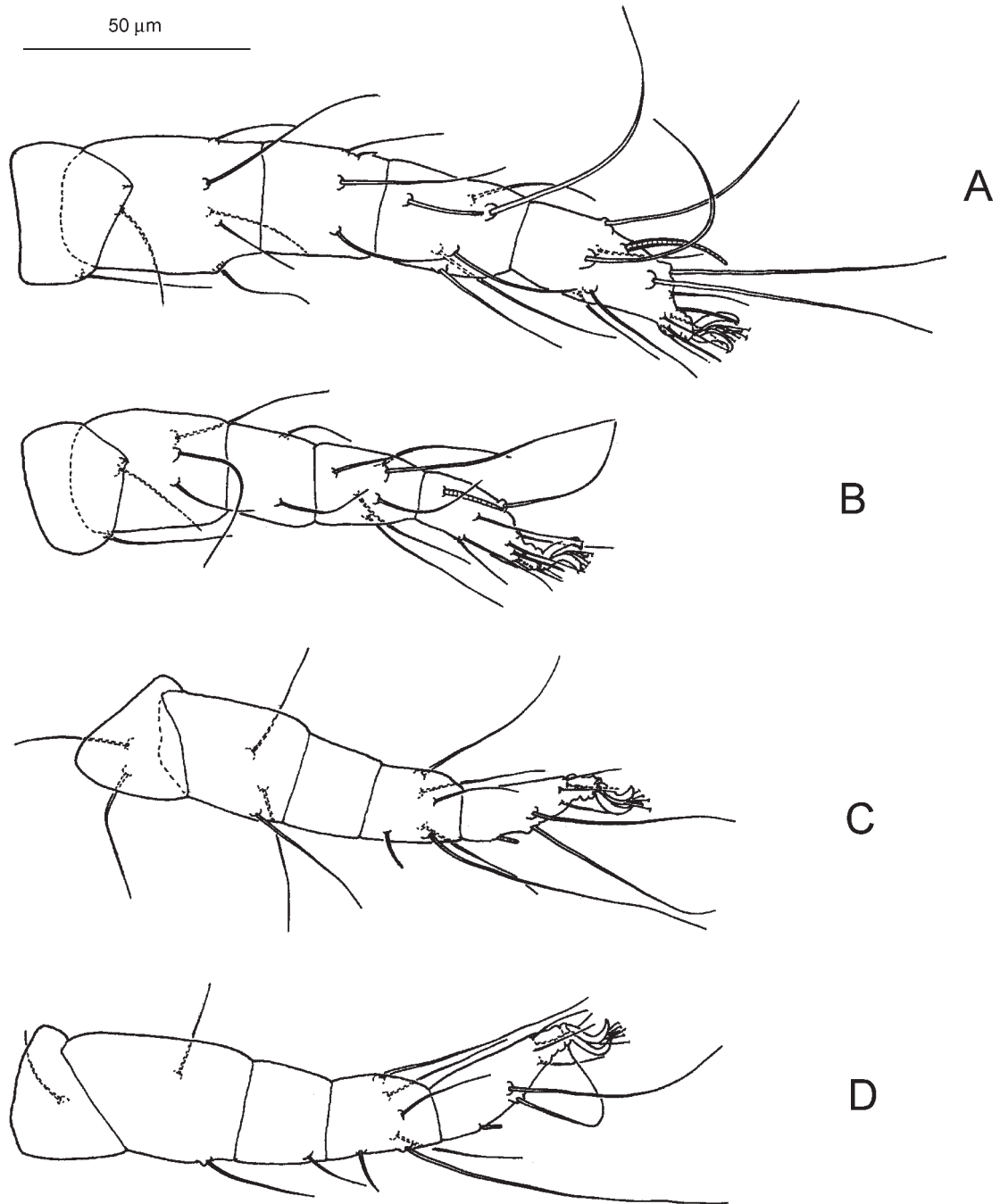
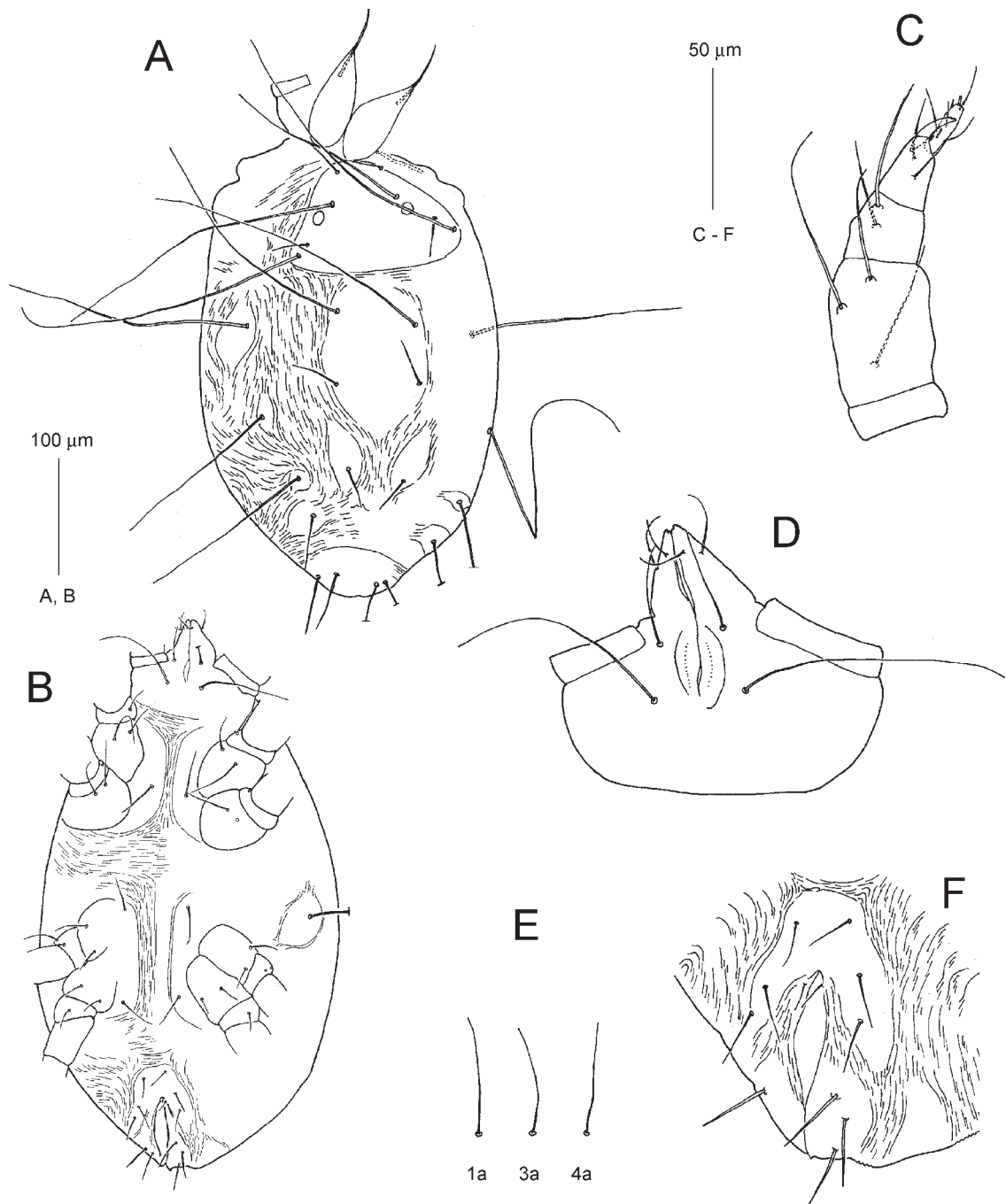


Fig. 184. *Scutastigmaeus confusus* (Wood, 1967) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 185.** *Scutastigmaeus longisetis* (Wood, 1967) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, ventral idiosomal setae; F, genitoanal area.

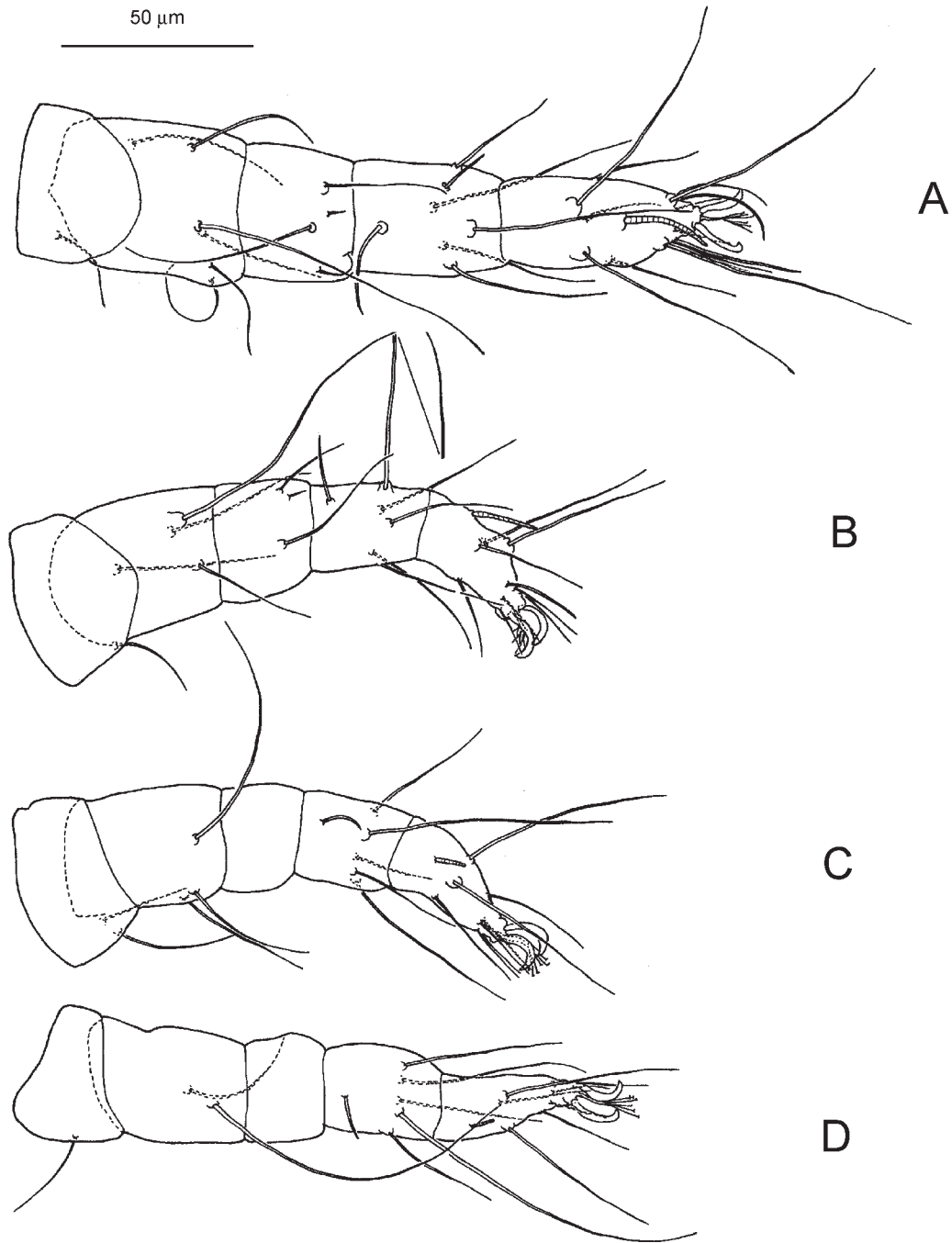
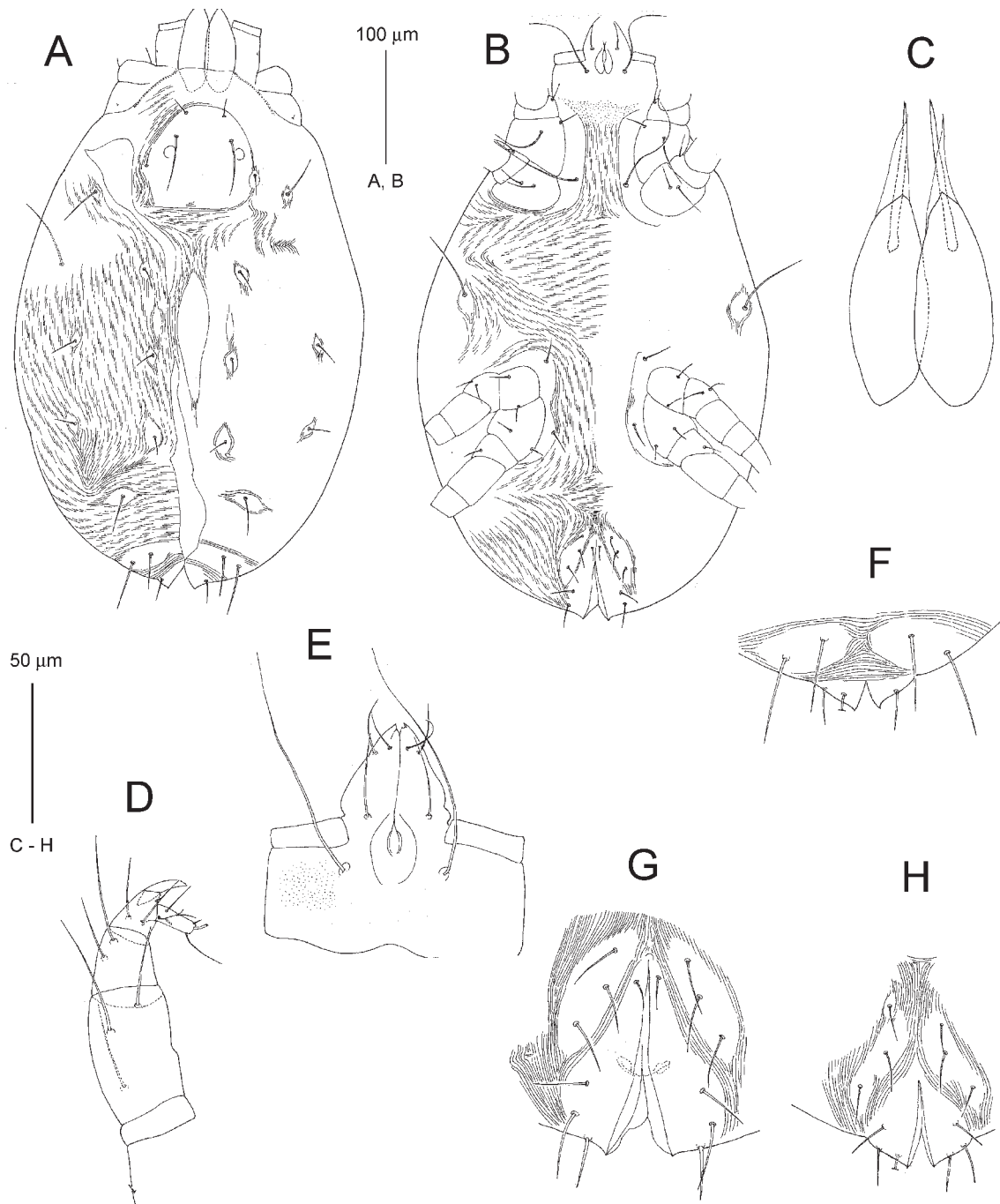


Fig. 186. *Scutastigmaeus longisetis* (Wood, 1967) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 187.** *Scutastigmaeus montanus* (Wood, 1981) (A–G, female; H, deutonymph female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal view of opisthosoma; G, genitoanal area; H, genitoanal area.



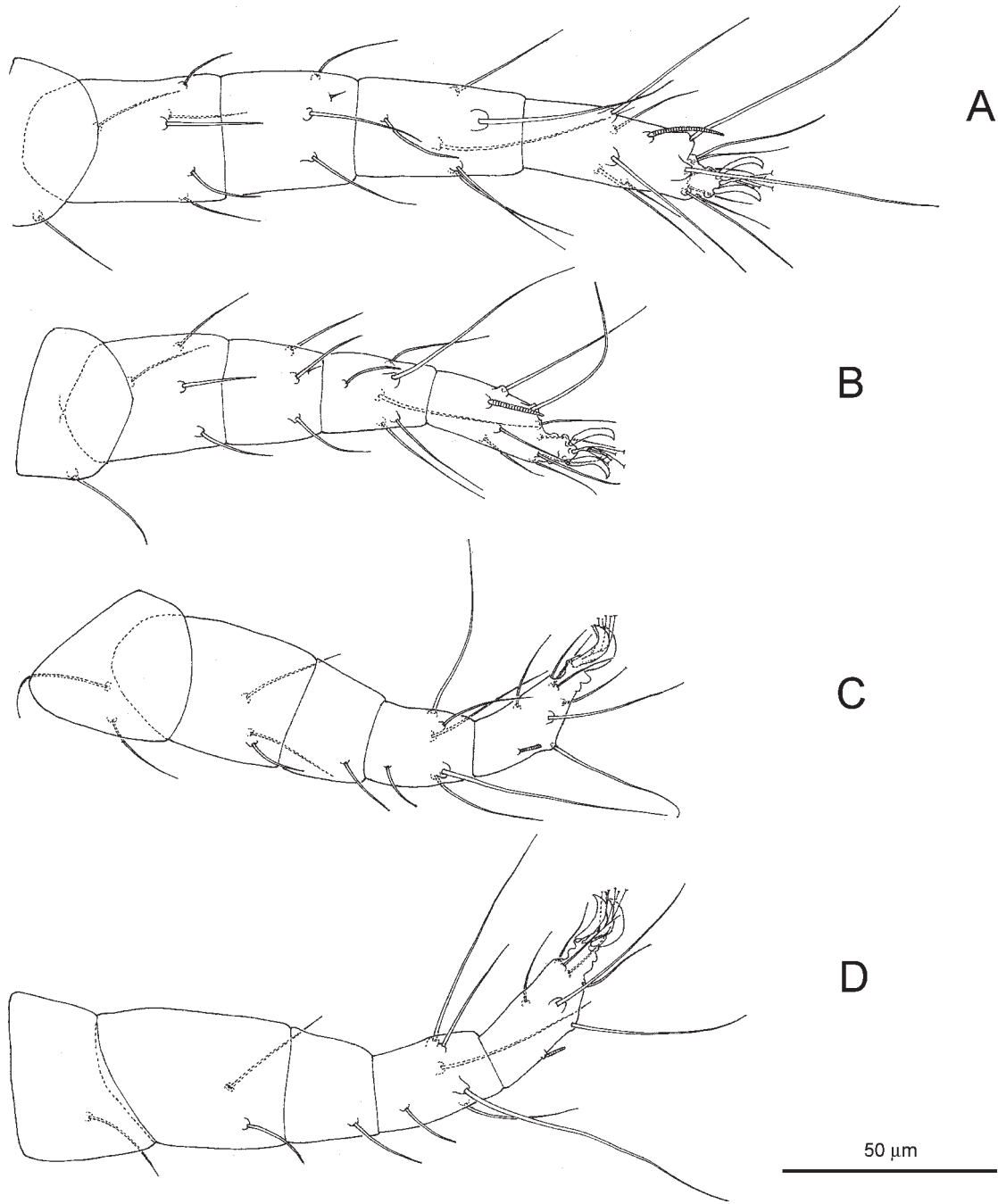
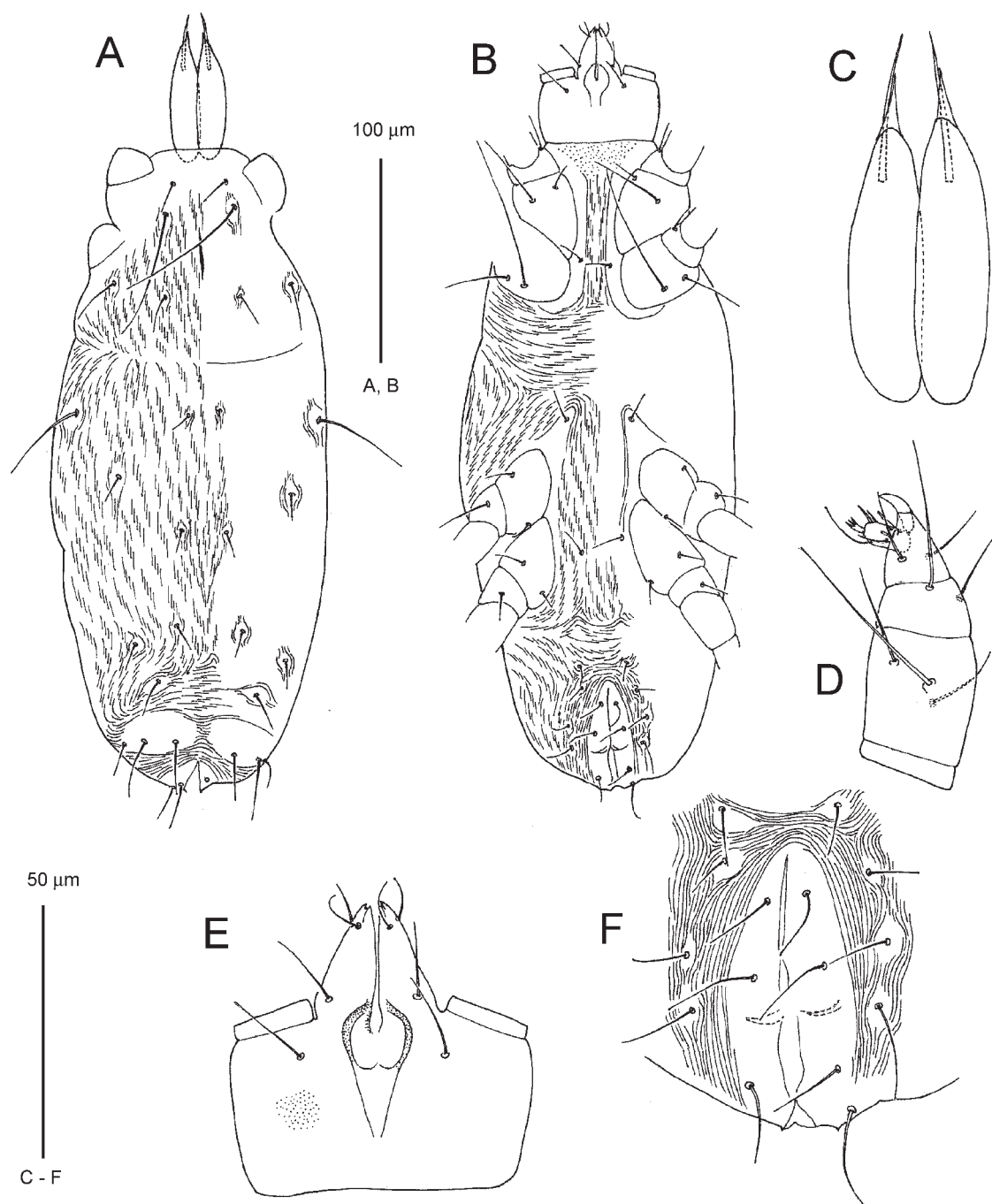


Fig. 188. *Scutastigmaeus montanus* (Wood, 1981) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 189.** *Stigmaeus arboricola* Wood, 1981 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, genitoanal area.

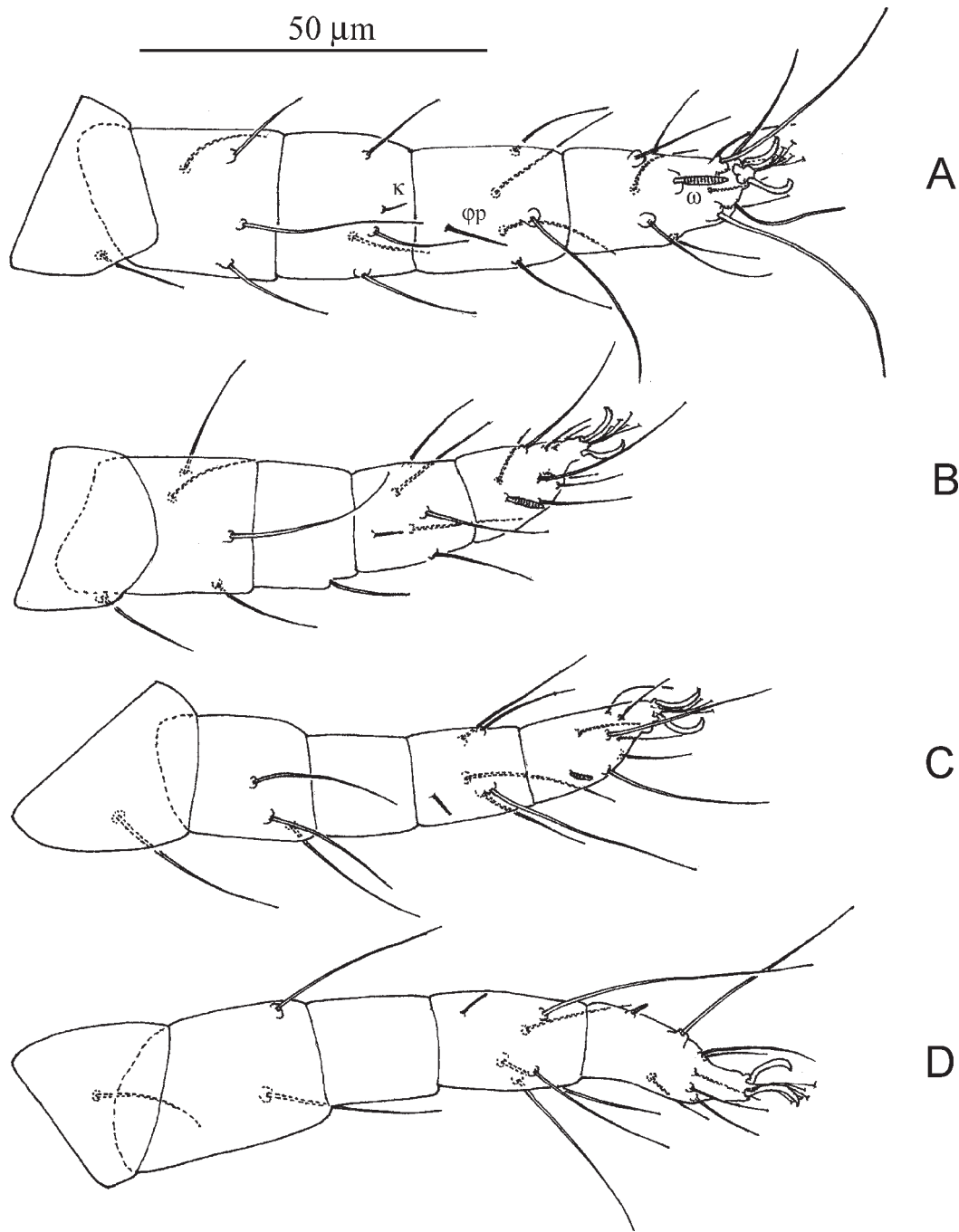
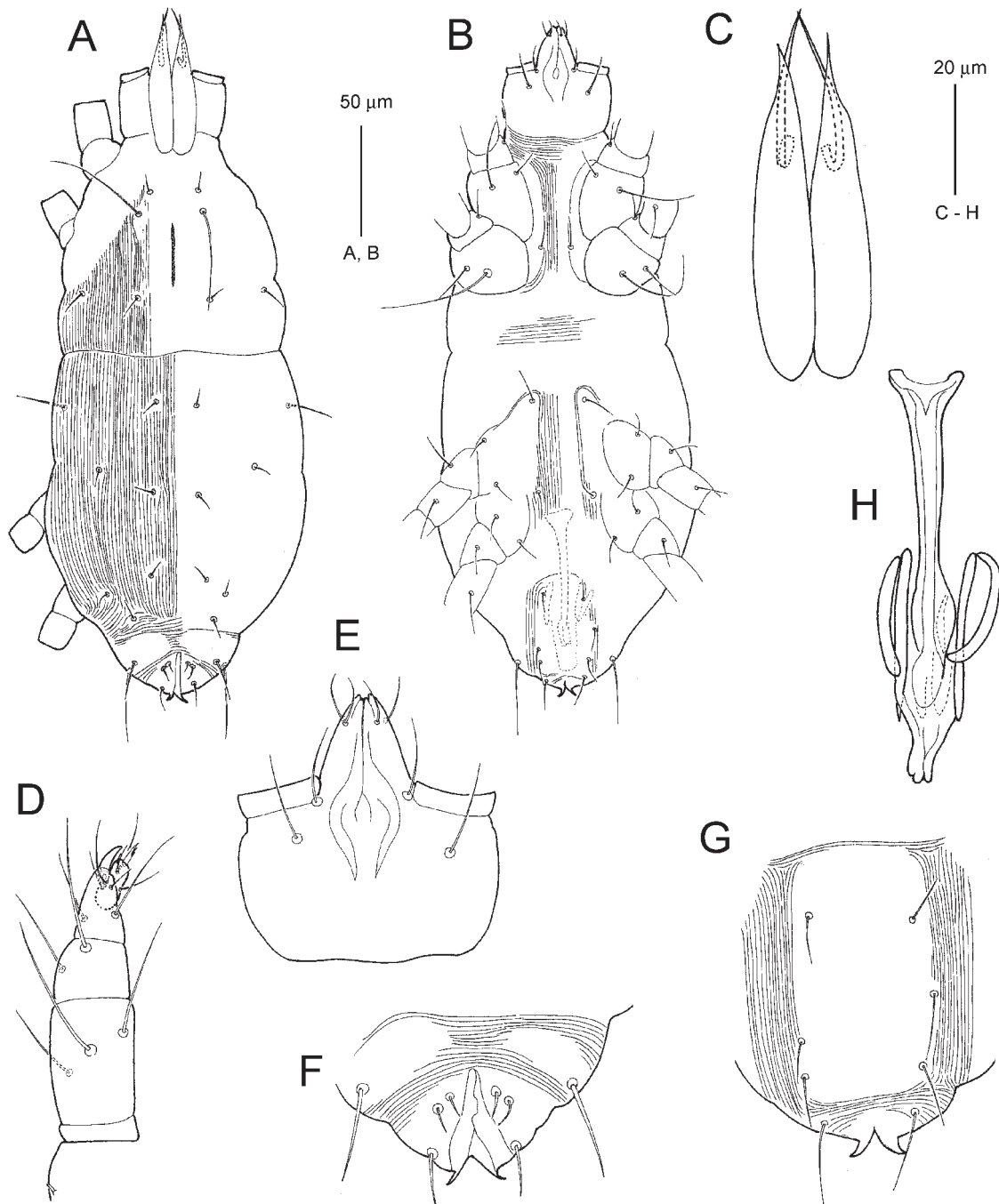


Fig. 190. *Stigmaeus arboricola* Wood, 1981 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 191.** *Stigmaeus arboricola* Wood, 1981 (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal view of opisthosoma; G, genitoanal area; H, aedeagus.

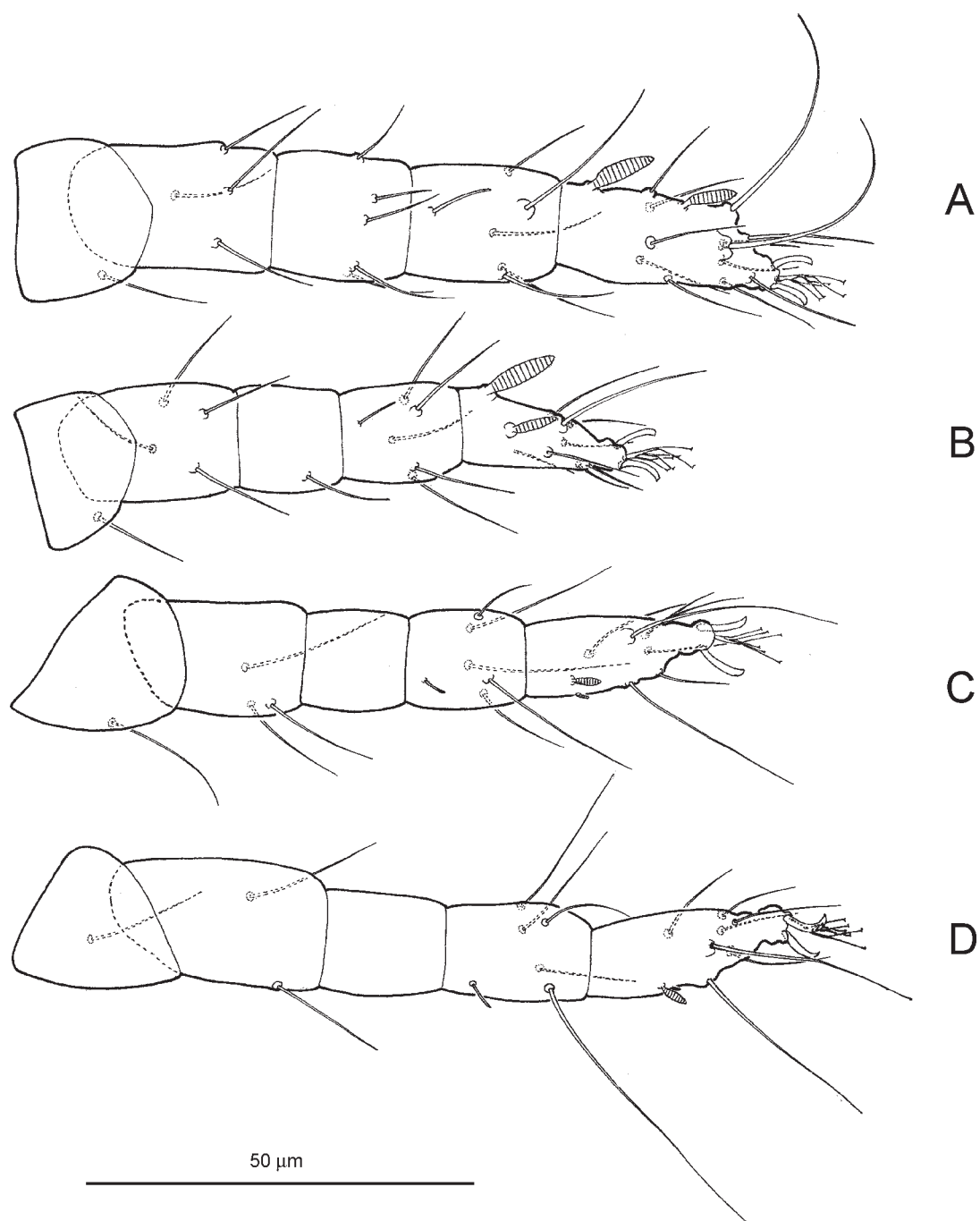
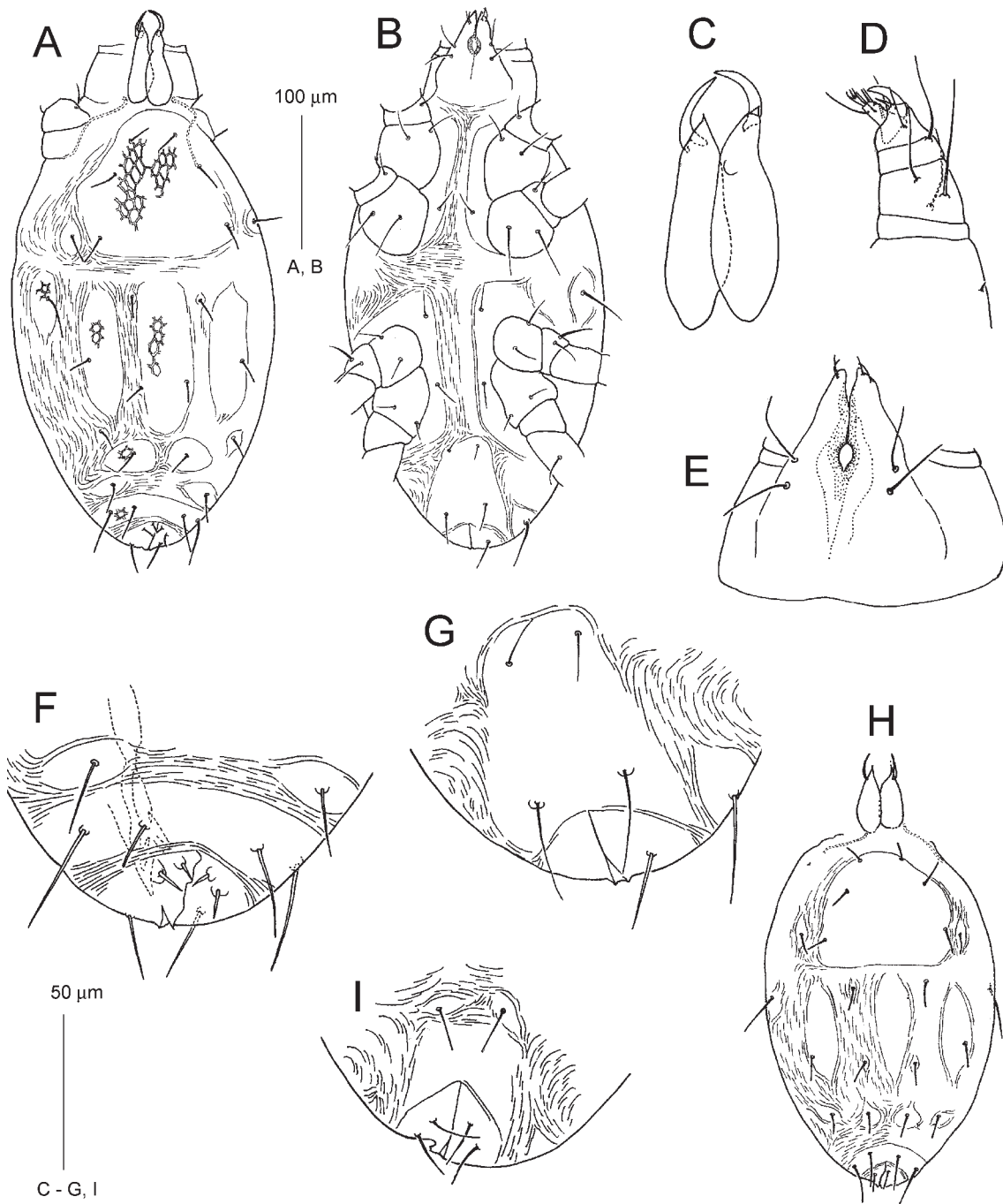


Fig. 192. *Stigmaeus arboricola* Wood, 1981 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 193.** *Stigmaeus brevisetis* Wood, 1967 (A–G, male; H–I, protonymph). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, dorsal view of opisthosoma; G, genitoanal region; H, dorsal view of idiosoma; I, genitoanal region.

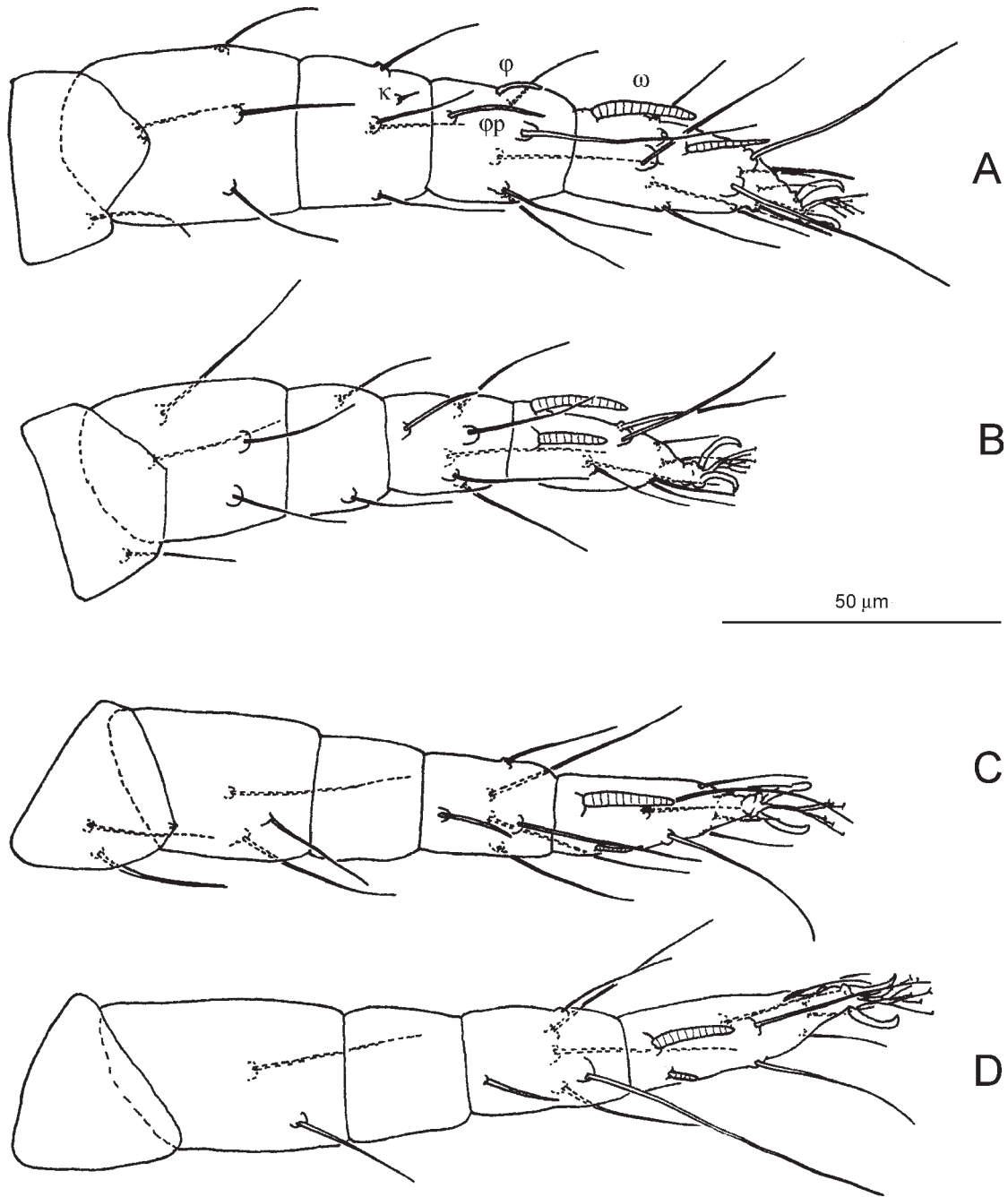
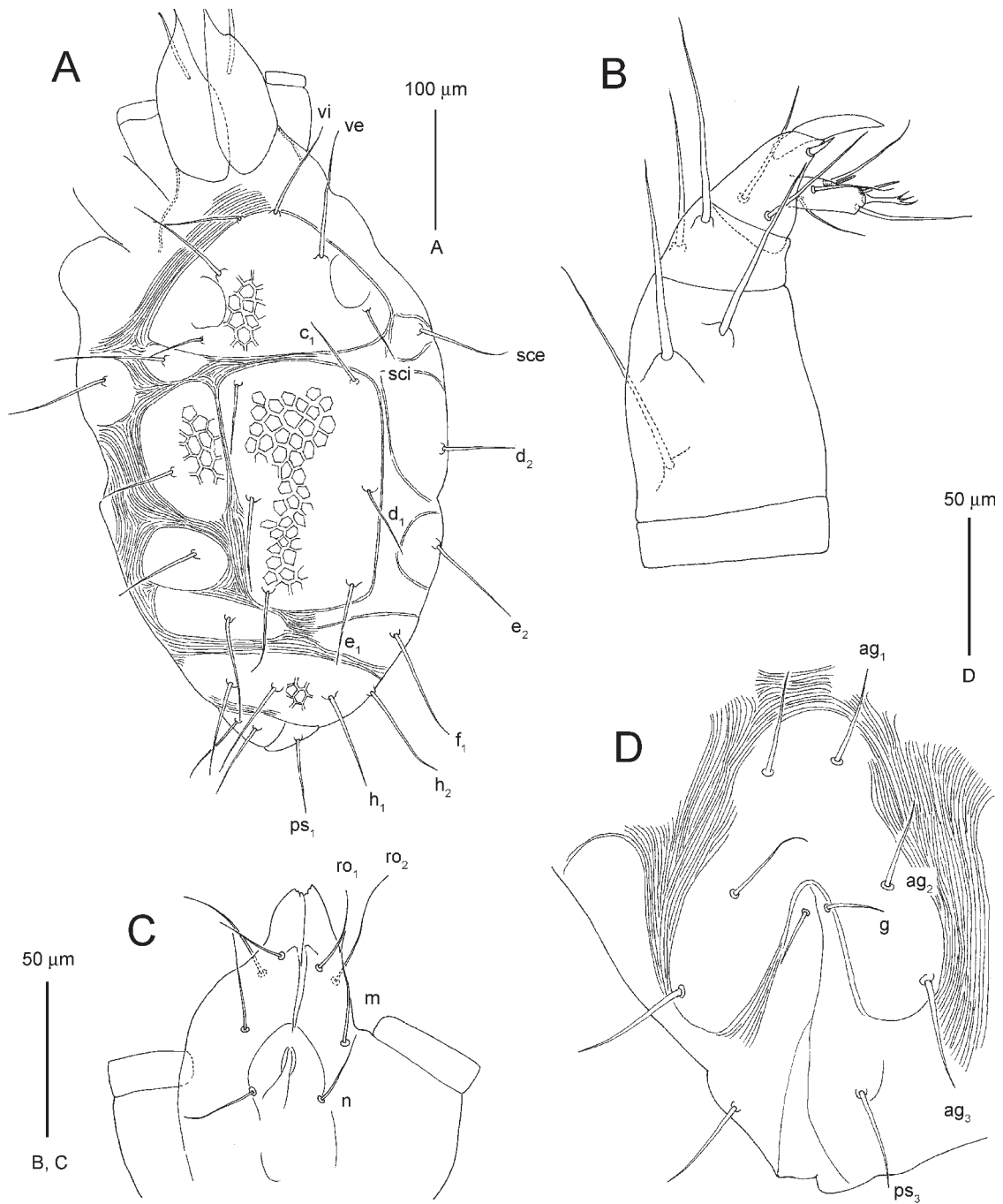


Fig. 194. *Stigmaeus brevisetis* Wood, 1967 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 195.** *Stigmaeus campbellensis* Wood, 1970 (female). A, dorsal view of idiosoma; B, palp; C, subcapitulum; D, genitoanal area.



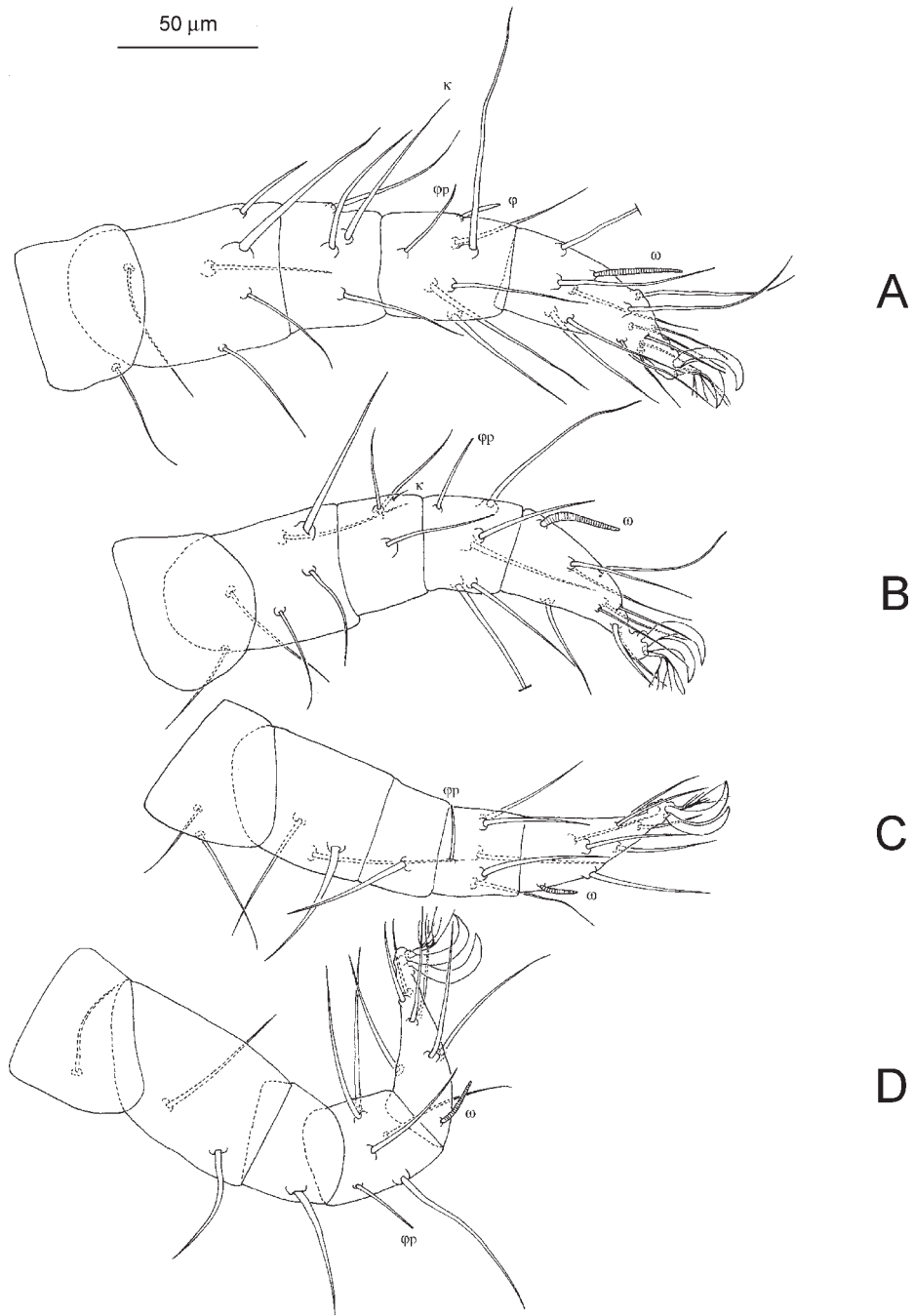
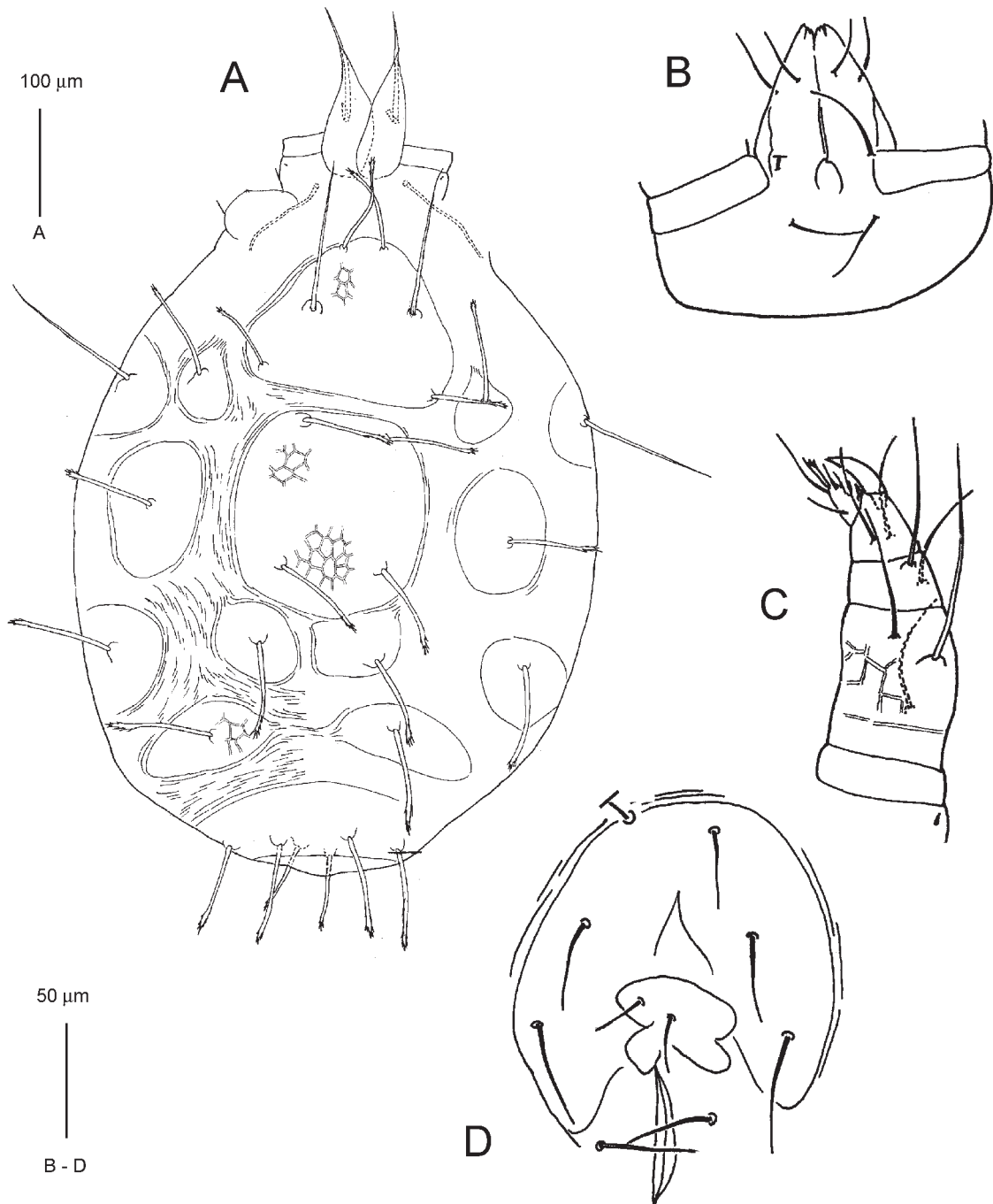


Fig. 196. *Stigmaeus campbellensis* Wood, 1970 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 197.** *Stigmaeus luxtoni* Wood, 1967 (female). A, dorsal view of idiosoma; B, subcapitulum; C, palp; D, genitoanal area.

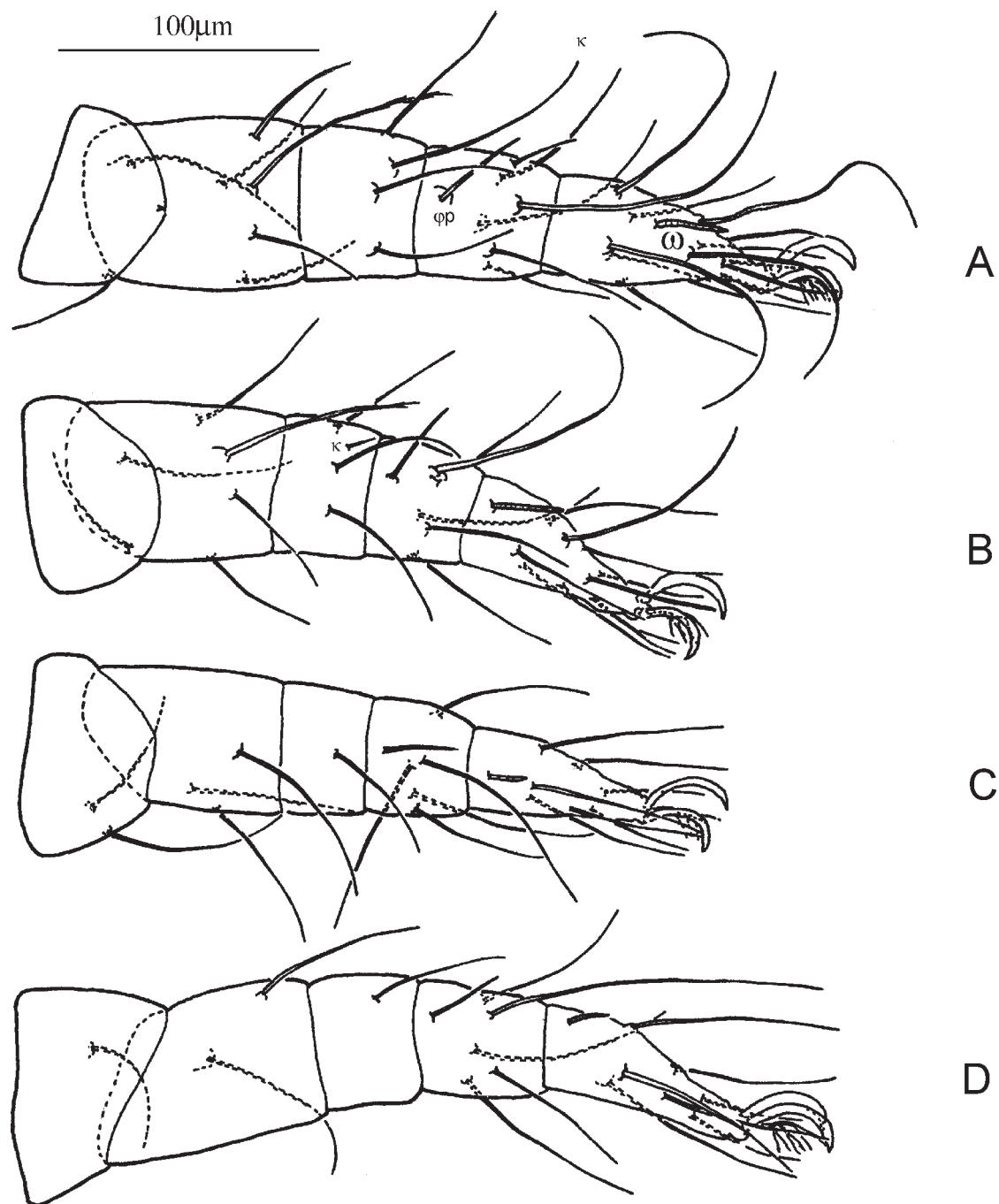


Fig. 198. *Stigmaeus luxtoni* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.

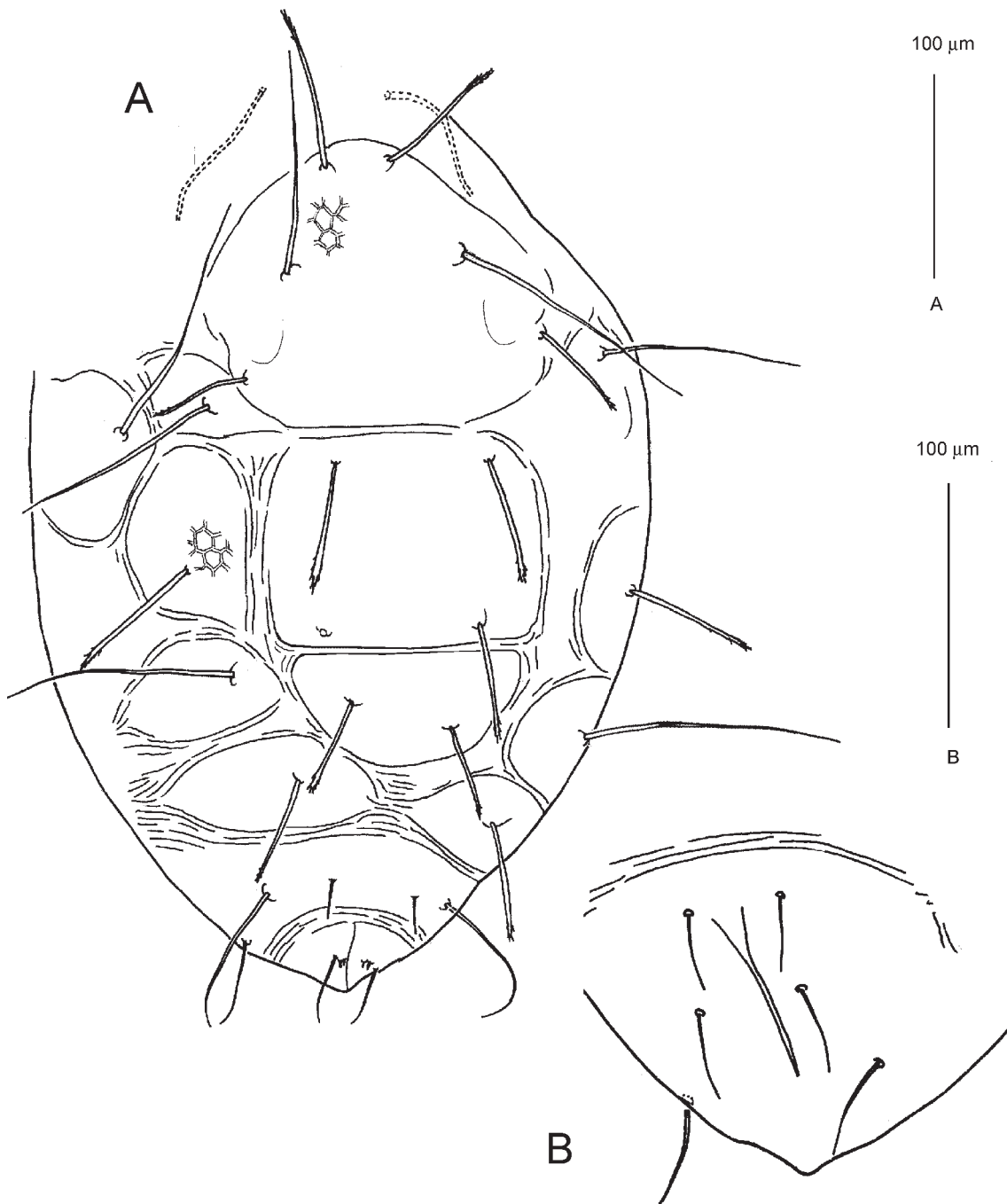


Fig. 199. *Stigmaeus luxtoni* Wood, 1967 (male). A, dorsal view of idiosoma; B, genitoanal region.

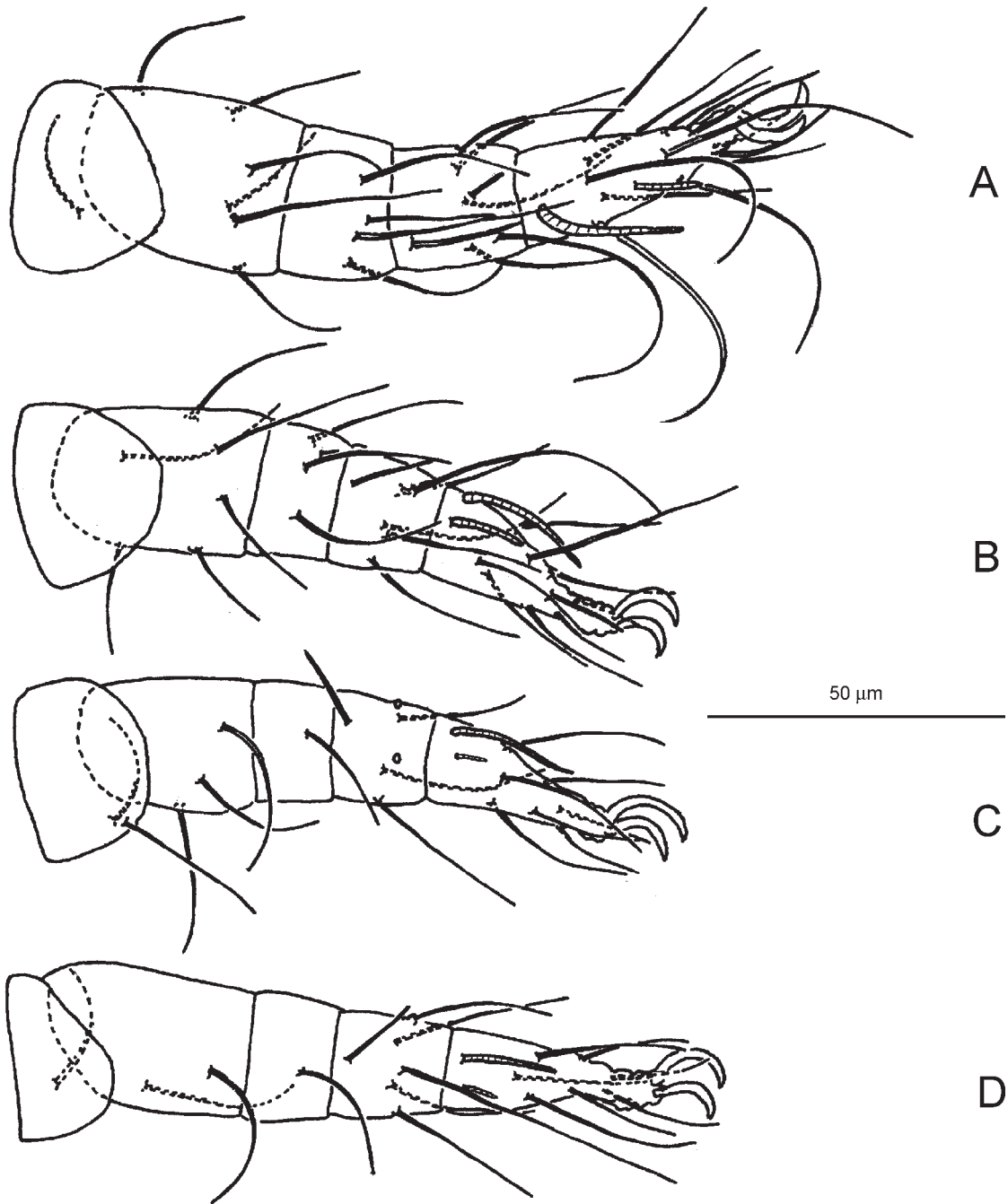
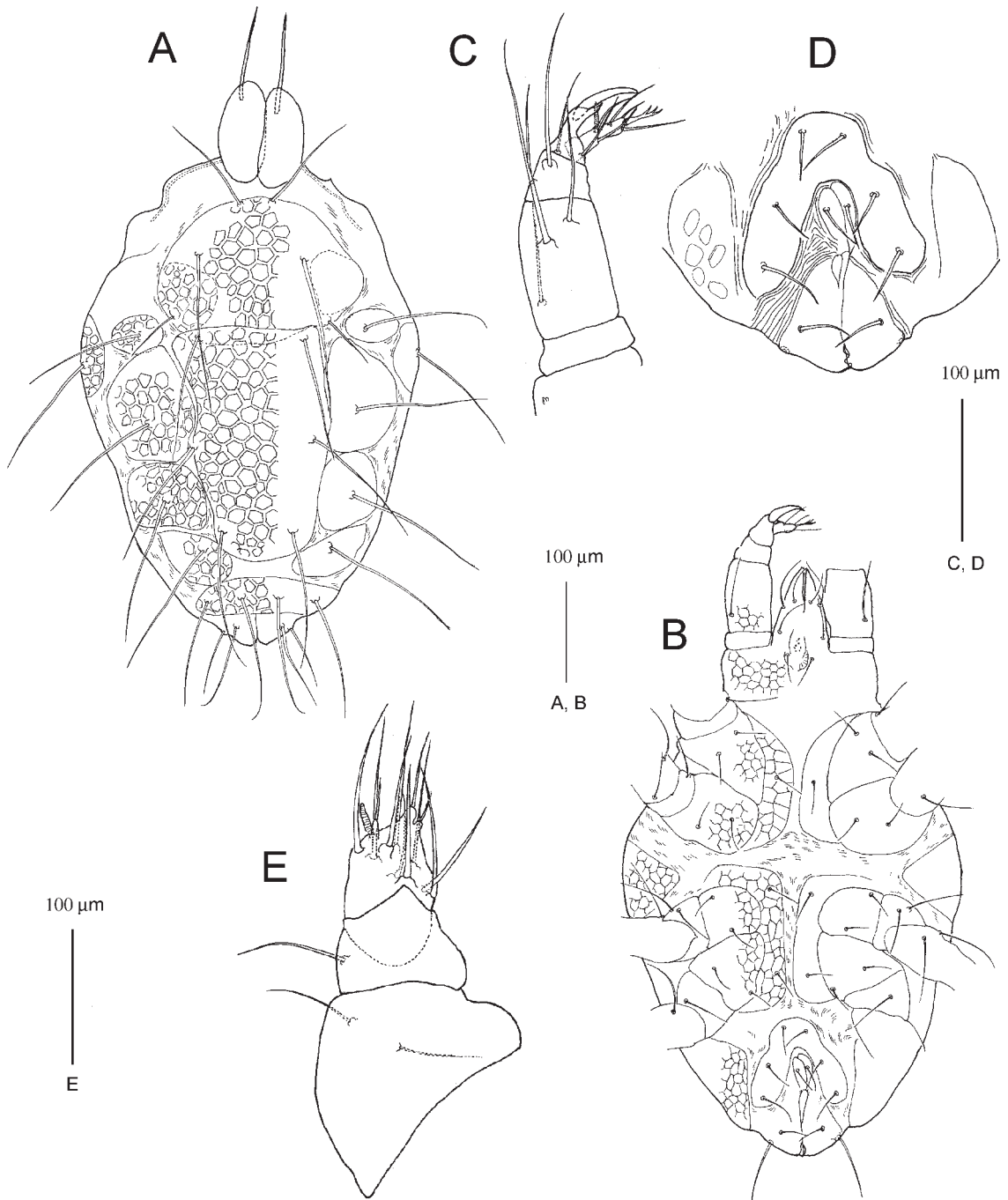


Fig. 200. *Stigmaeus luxtoni* Wood, 1967 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 201.** *Stigmaeus novazealandicus* Wood, 1981 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, genital area; E, reproduced leg III.

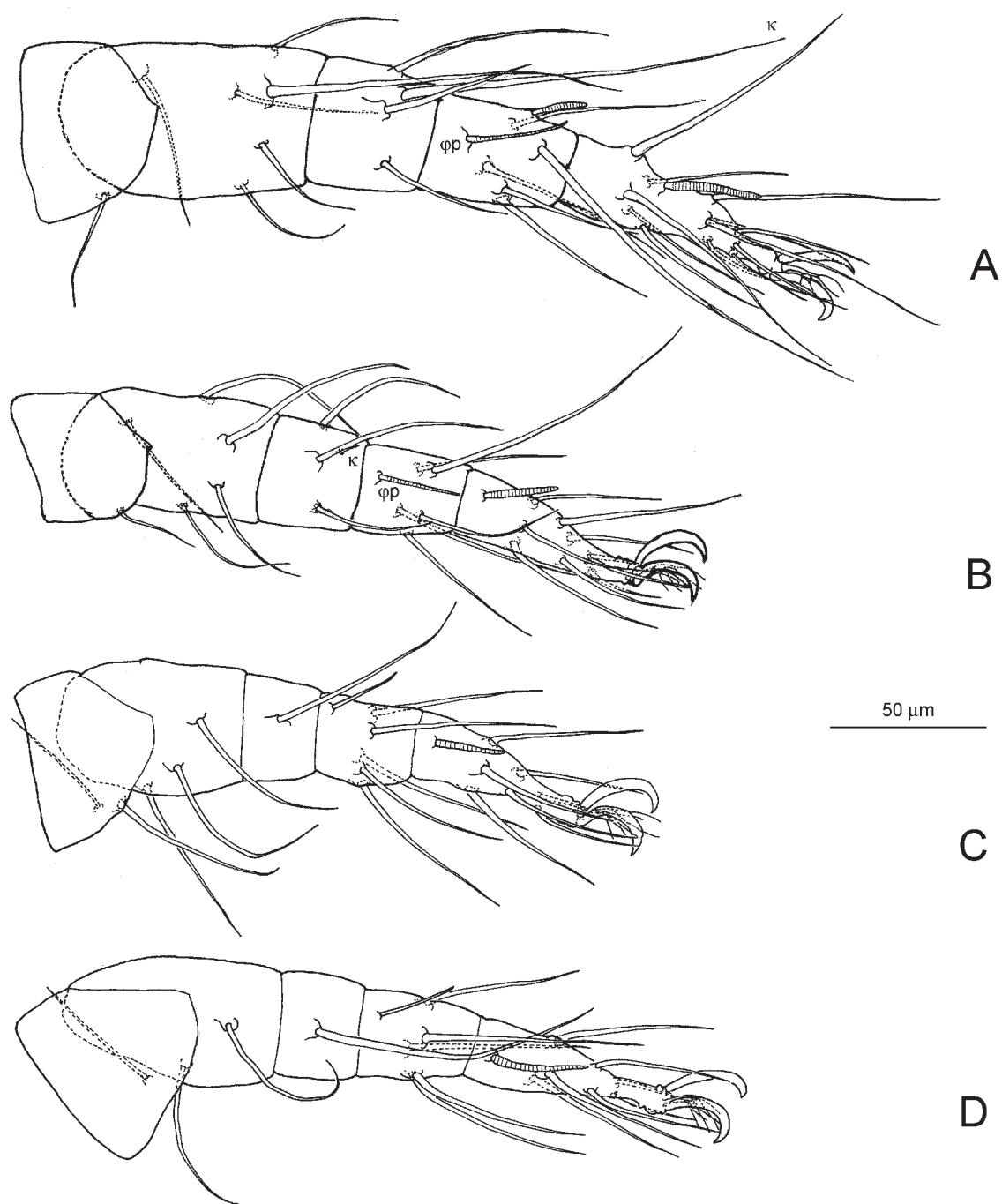
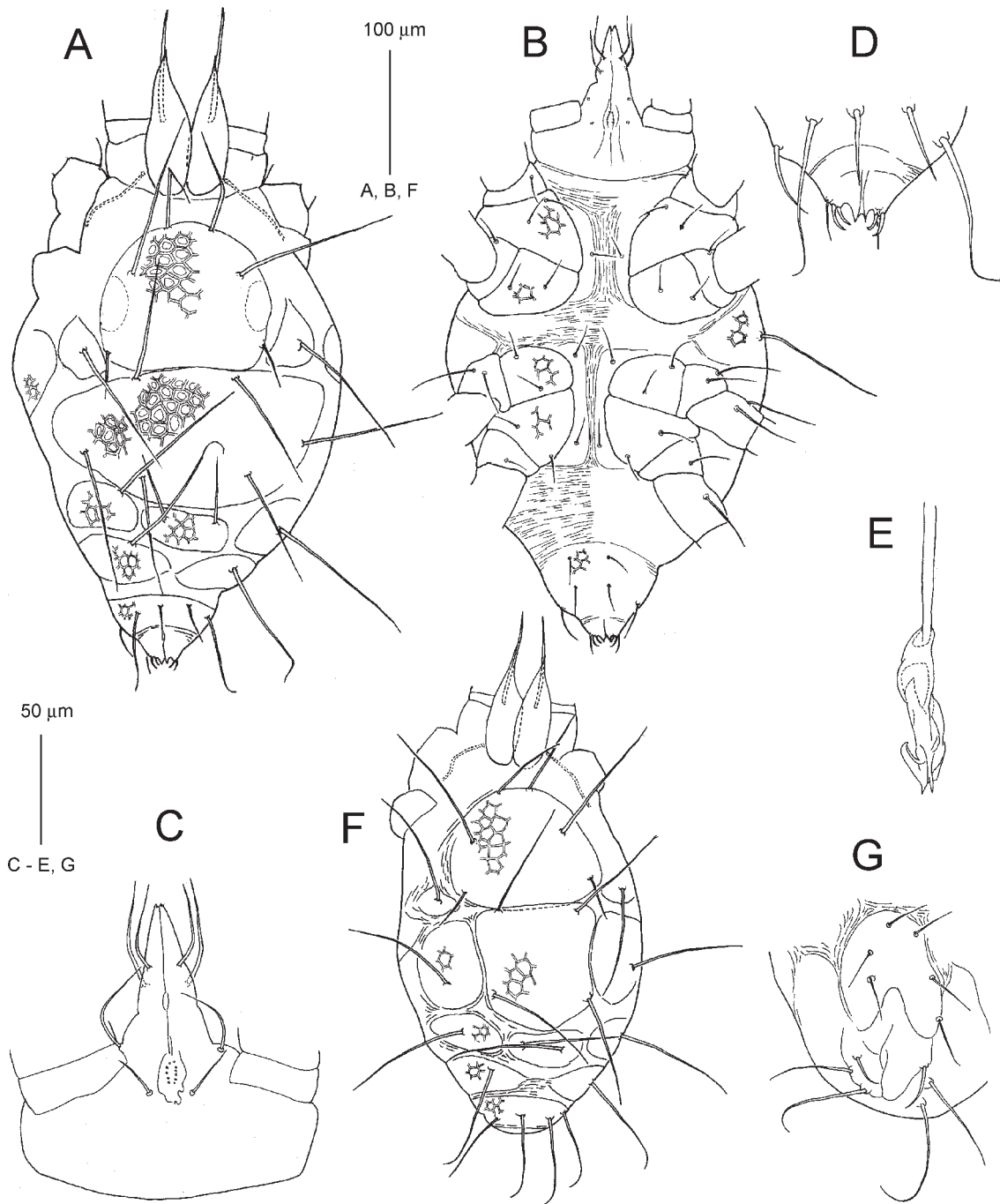
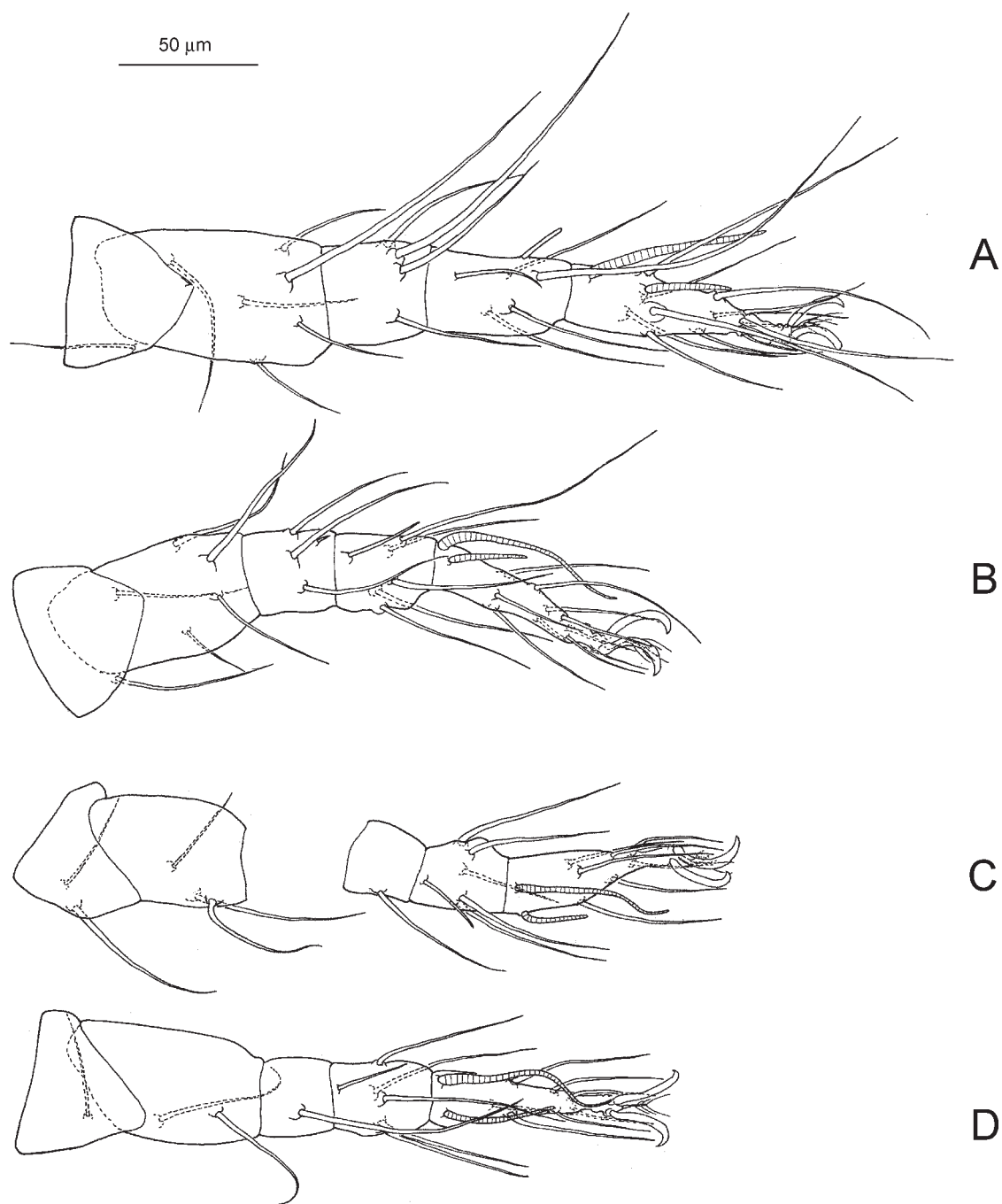


Fig. 202. *Stigmaeus novazealandicus* Wood, 1981 (female). A, leg I; B, leg II; C, leg III; D, leg IV.

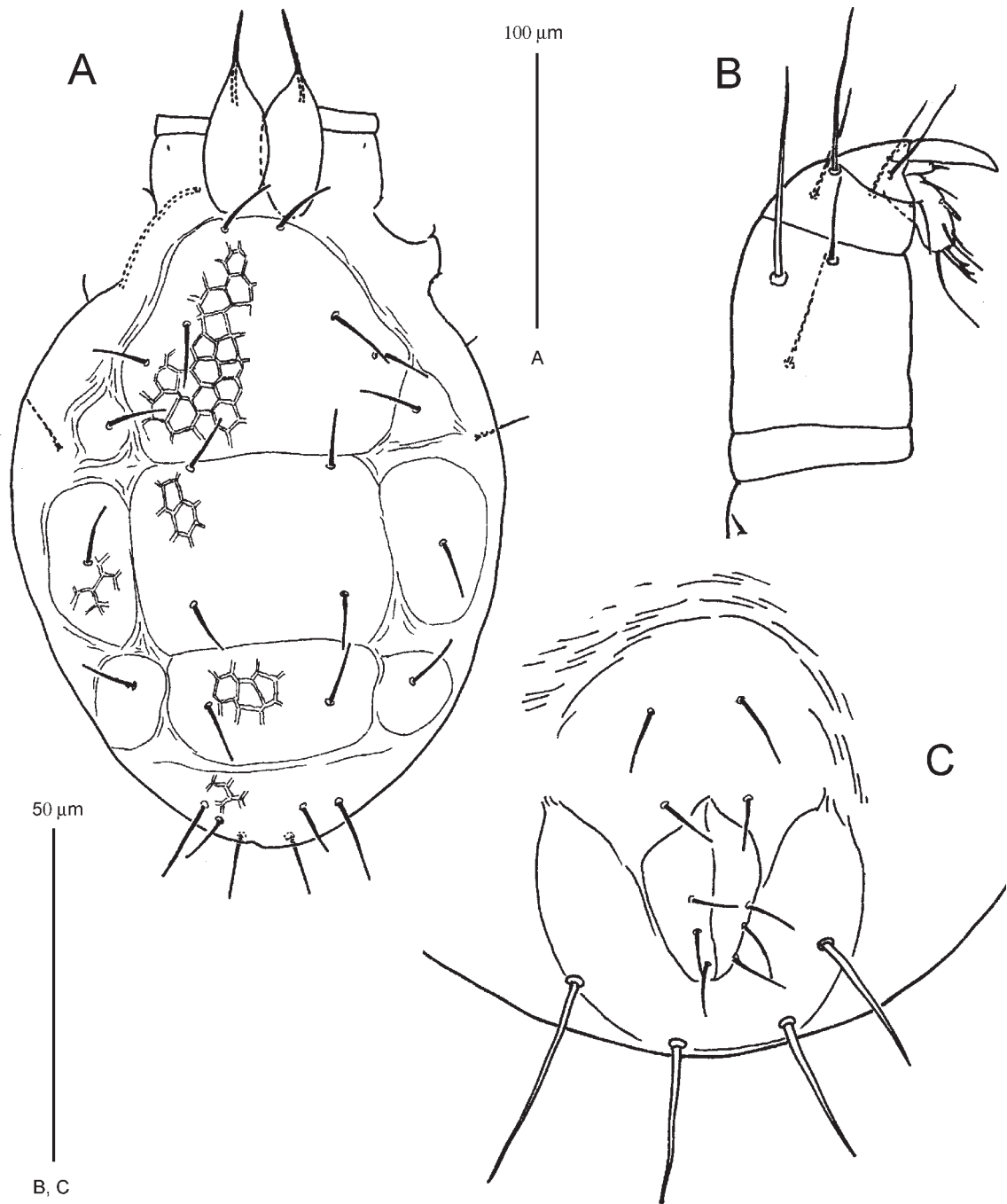


**Fig. 203.** *Stigmaeus novazealandicus* Wood, 1981 (A–E, male; F–G, deutonymph female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, subcapitulum; D, dorsal view of opisthosoma; E, aedeagus; F, dorsal view of idiosoma; G, genitoanal area.





**Fig. 204.** *Stigmaeus novazealandicus* Wood, 1981 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 205.** *Stigmaeus rotundus* Wood, 1967 (deutonymph female). A, dorsal view of idiosoma; B, palp; C, genitoanal area.

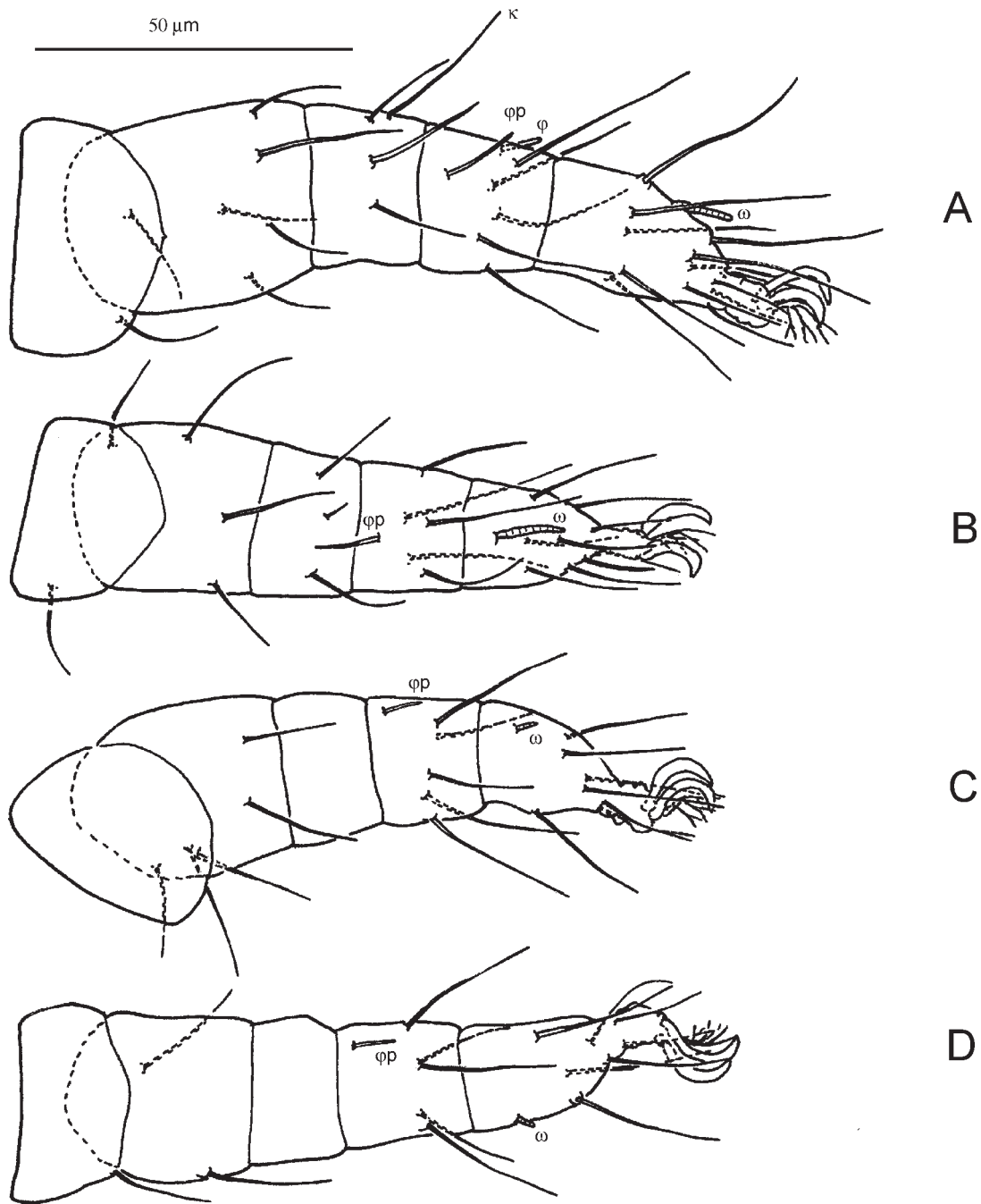
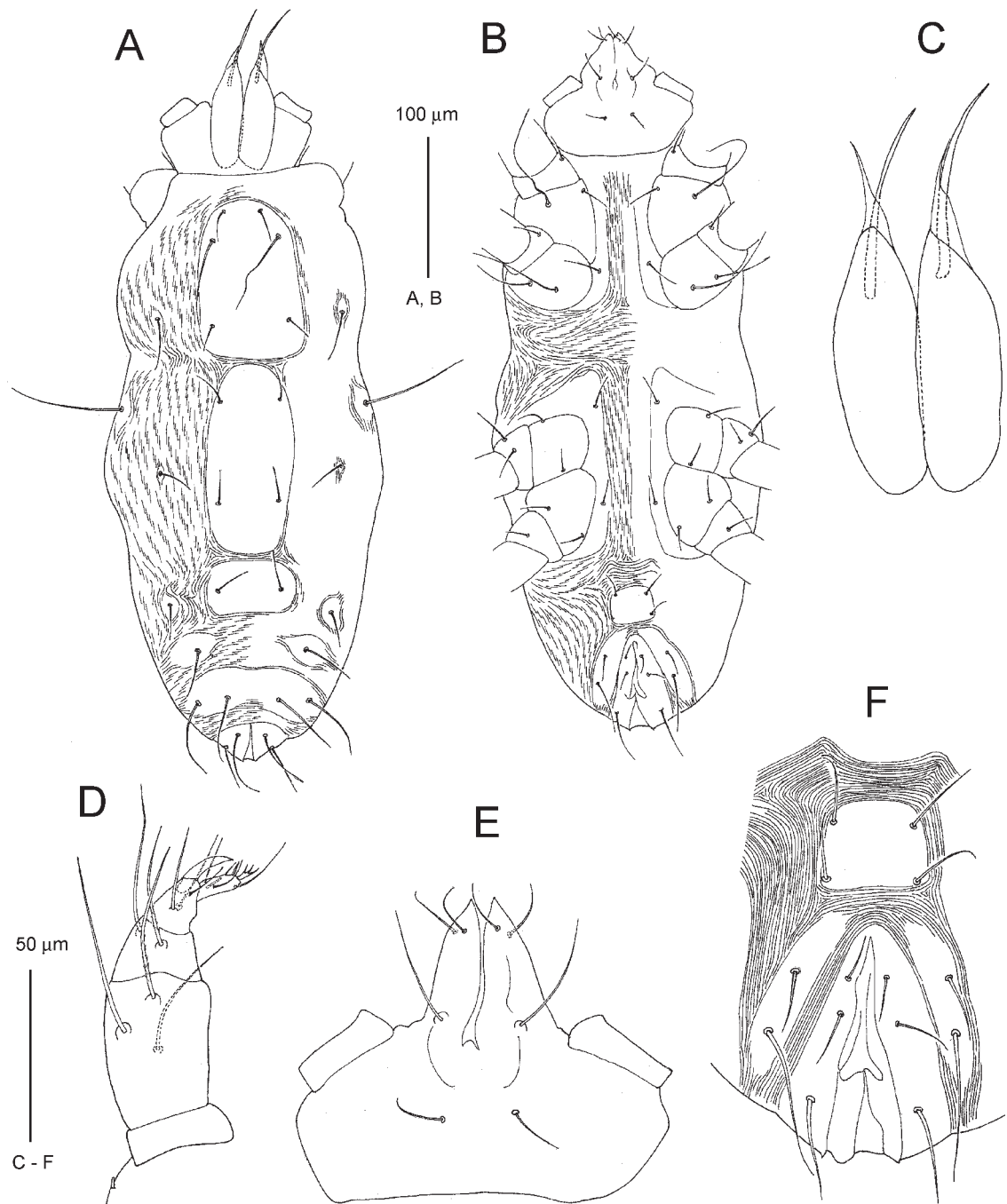


Fig. 206. *Stigmaeus rotundus* Wood, 1967 (deutonymph female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 207.** *Stigmaeus rupicola* Wood, 1967 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, genitoanal area.

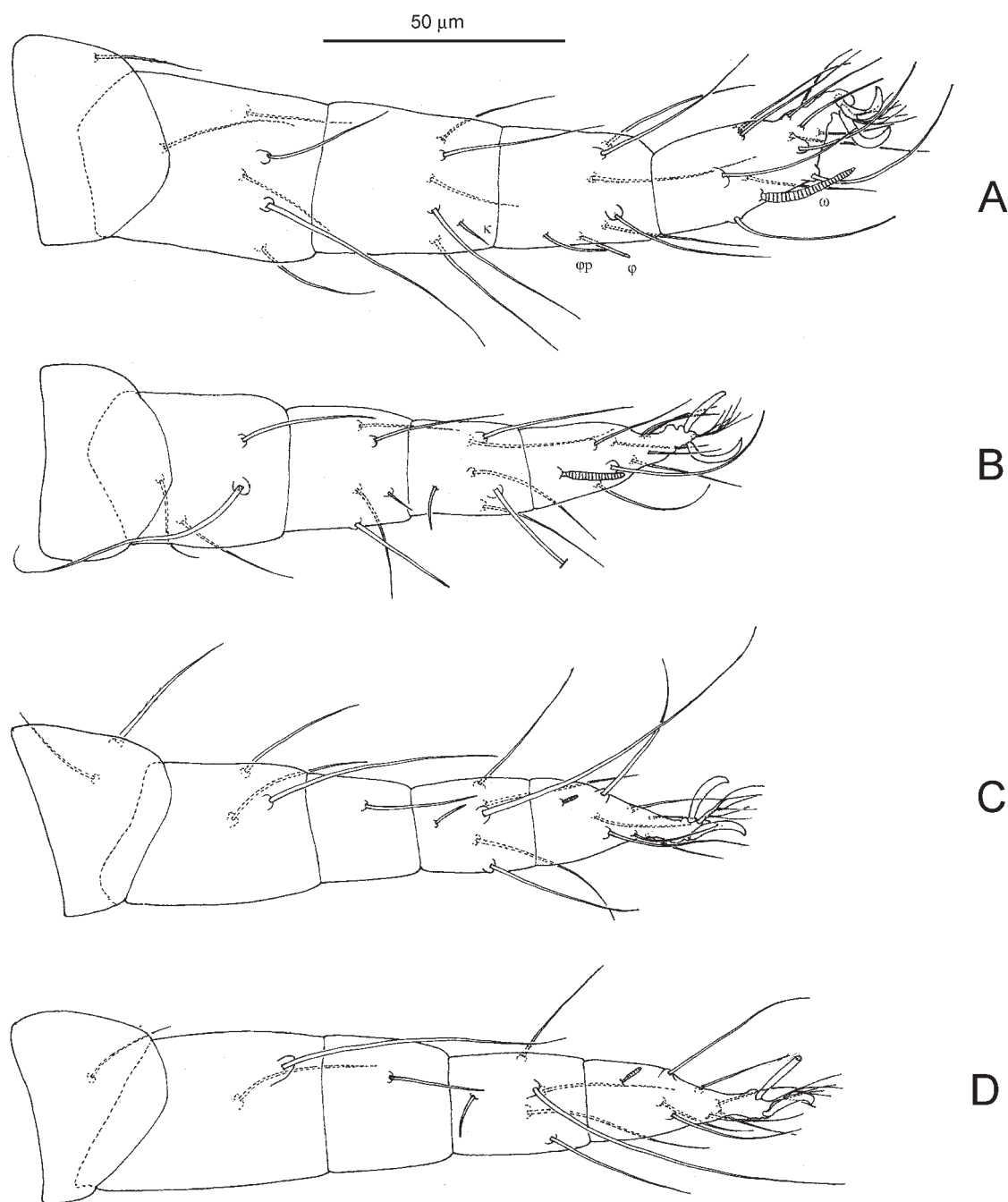
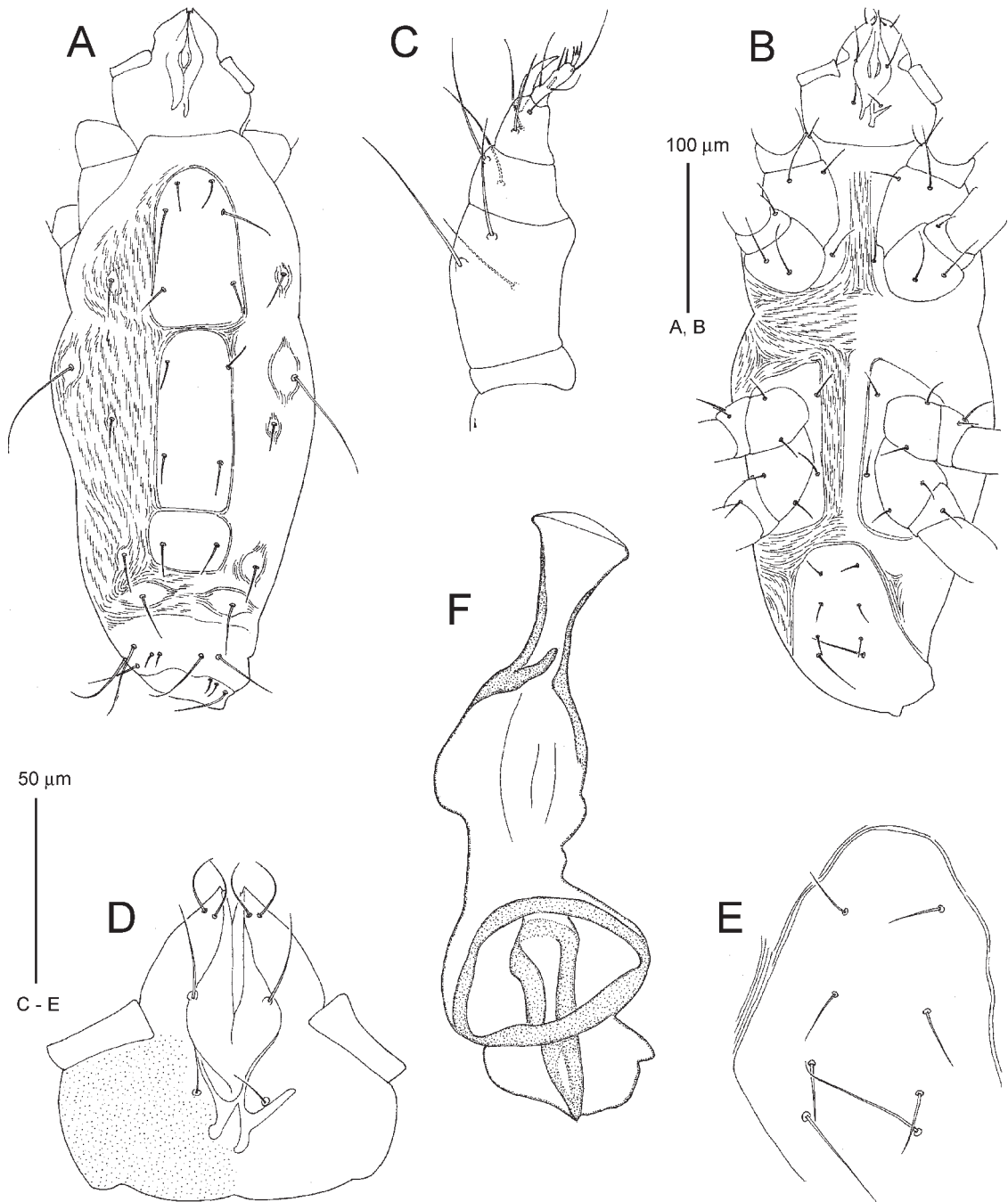


Fig. 208. *Stigmaeus rupicola* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 209.** *Stigmaeus rupicola* Wood, 1967 (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, genitoanal area; F, aedeagus.

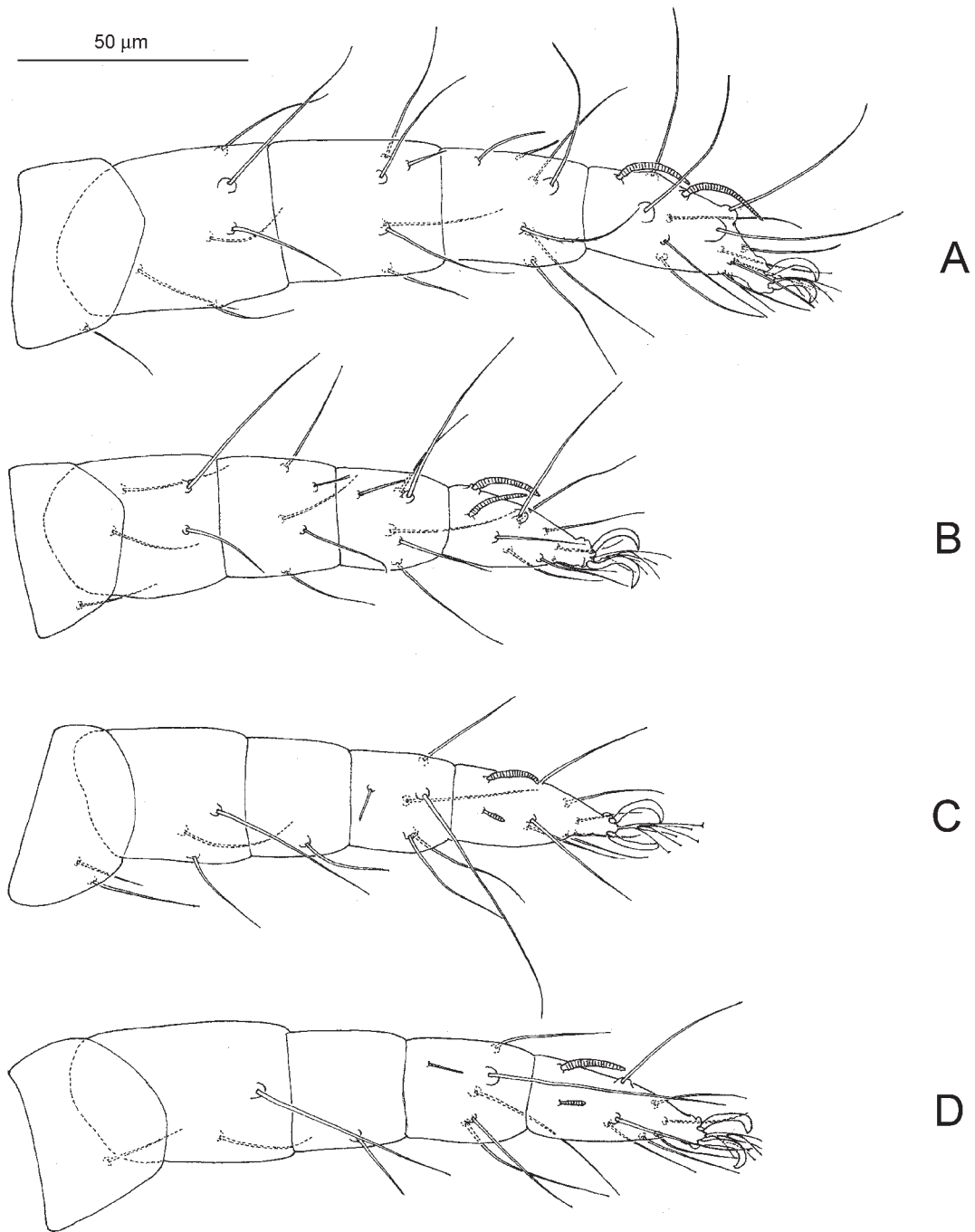
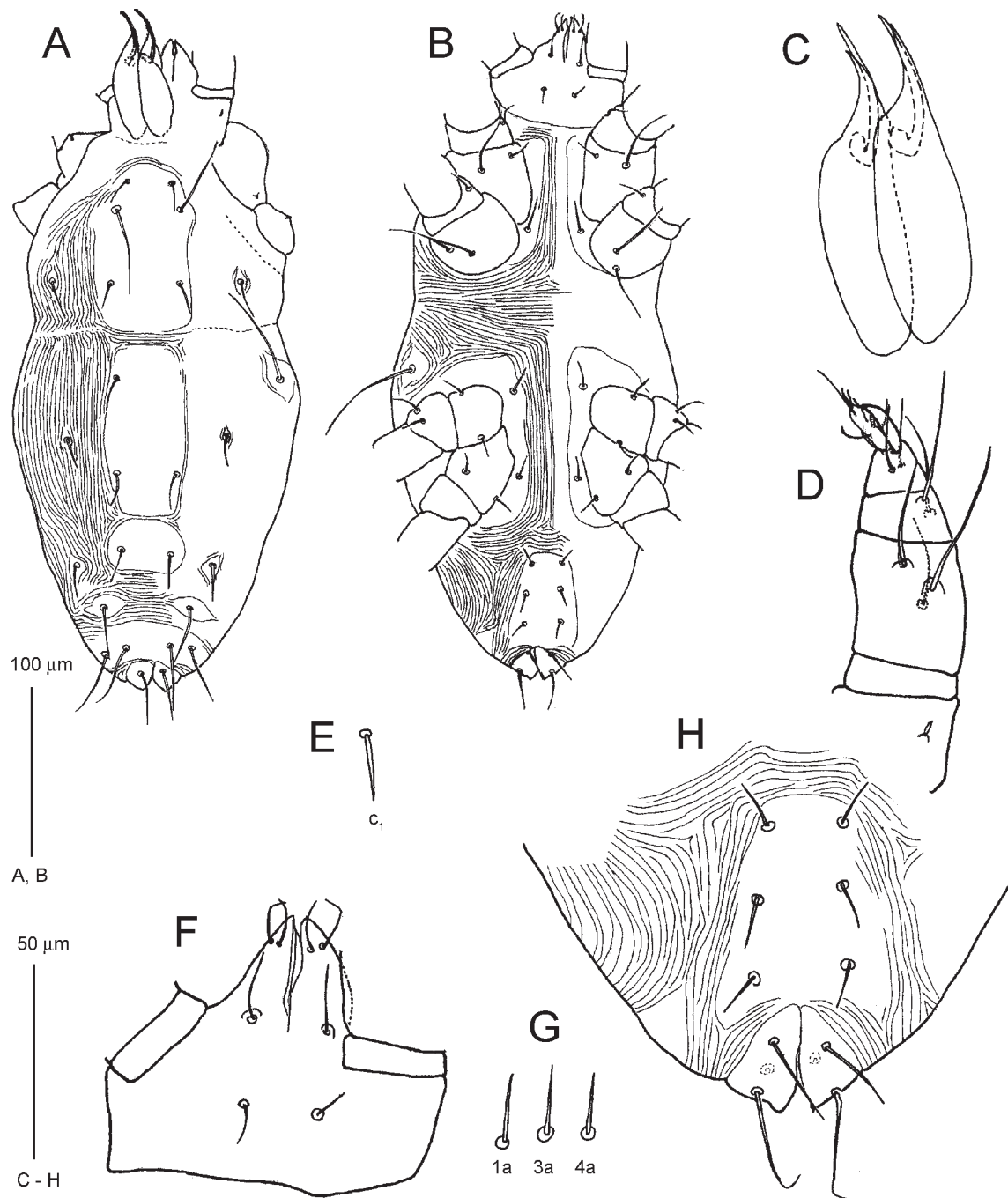


Fig. 210. *Stigmaeus rupicola* Wood, 1967 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 211.** *Stigmaeus rupicola* Wood, 1967 (deutonymph female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, dorsal idiosomal seta; F, subcapitulum; G, ventral idiosomal setae; H, genitoanal area.



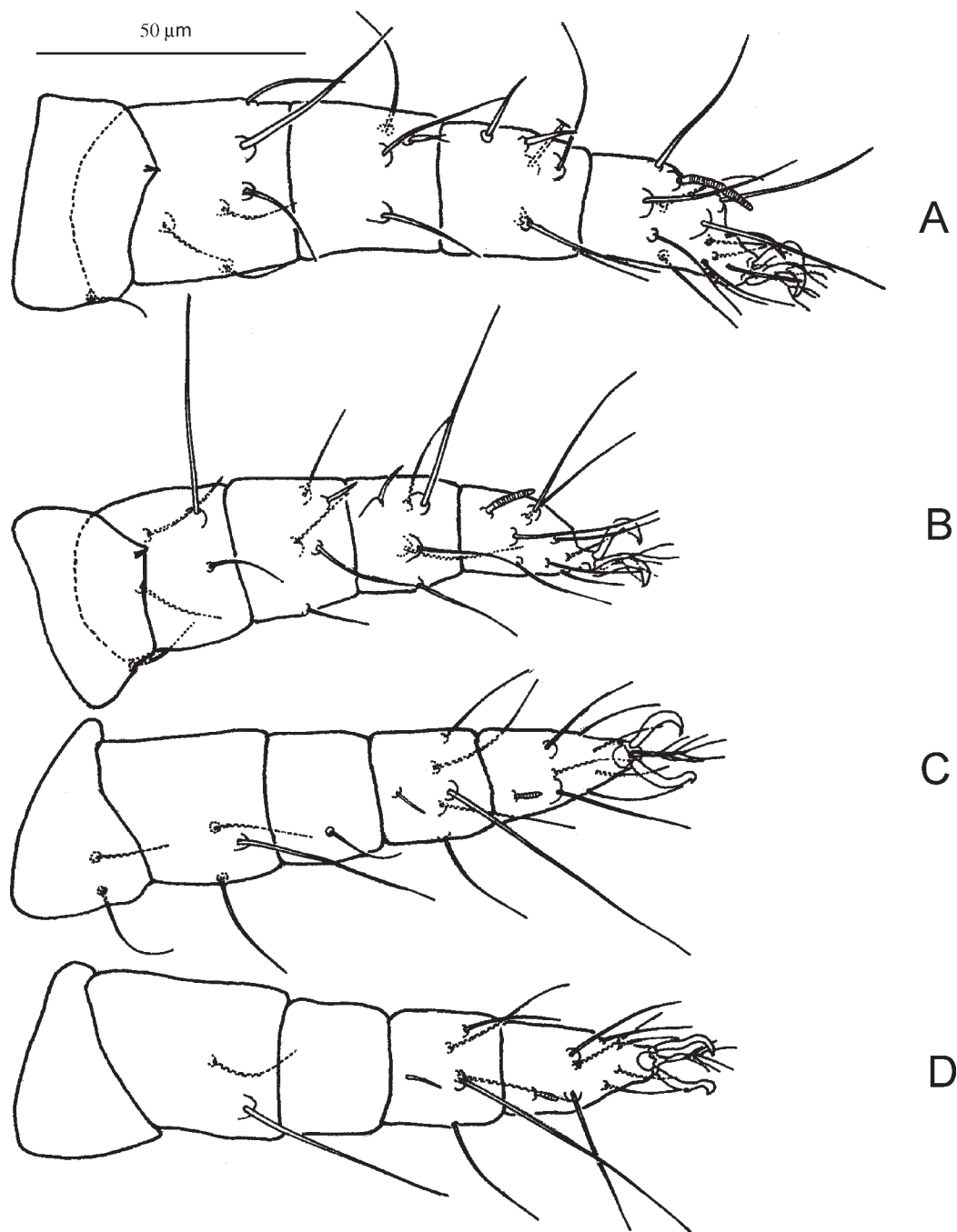
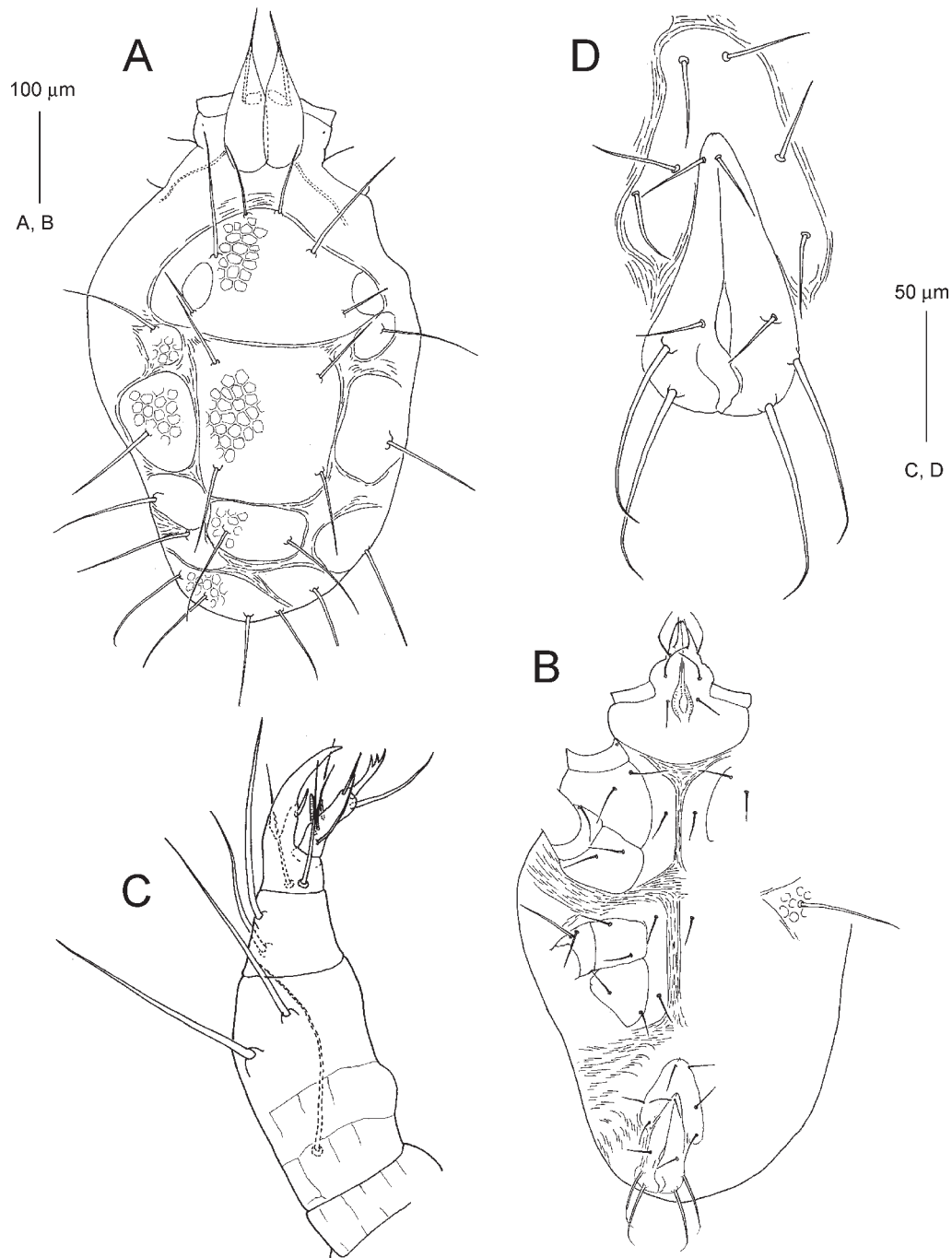


Fig. 212. *Stigmaeus rupicola* Wood, 1967 (deutonymph female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 213.** *Stigmaeus summersi* Wood, 1967 (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, genitoanal area.

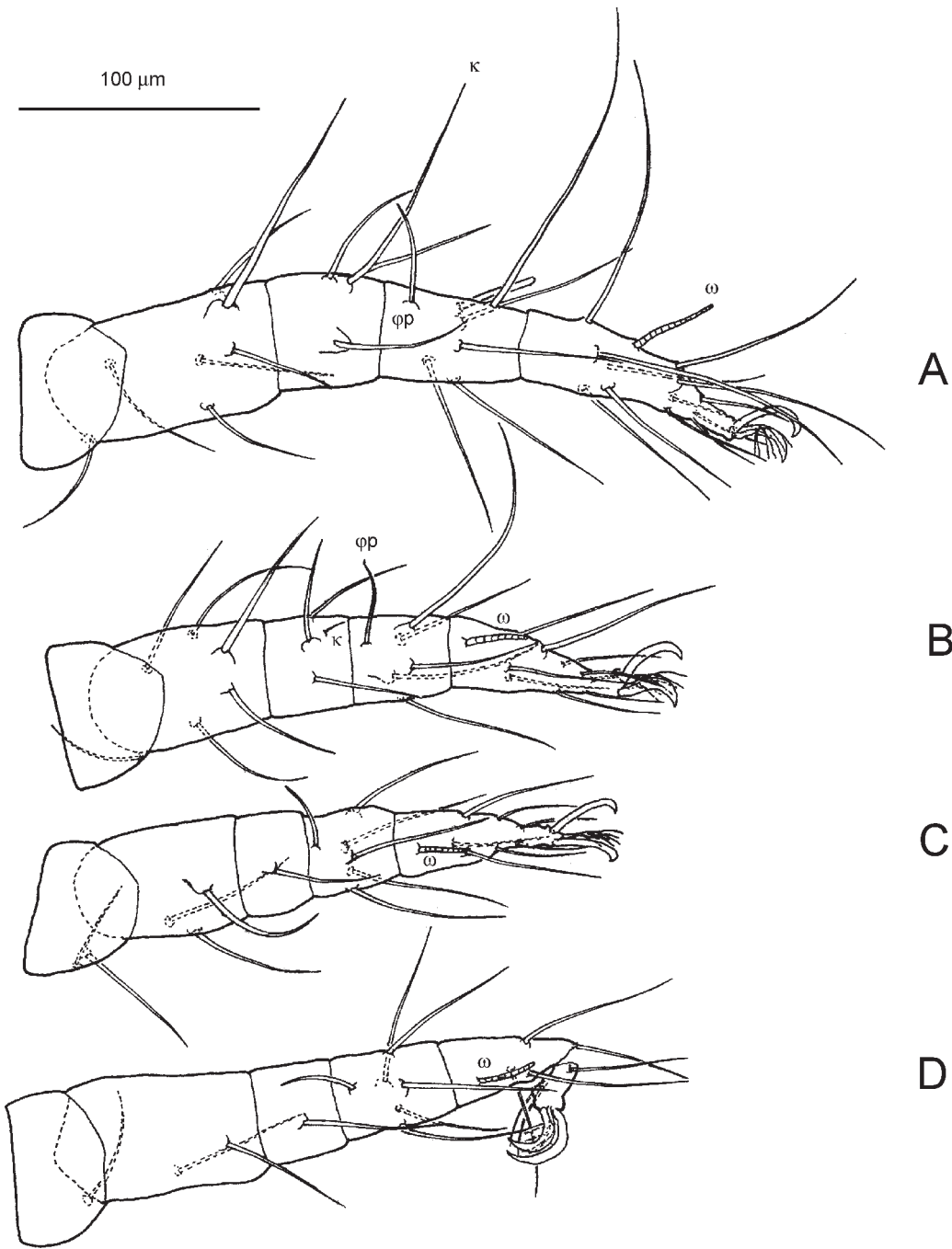
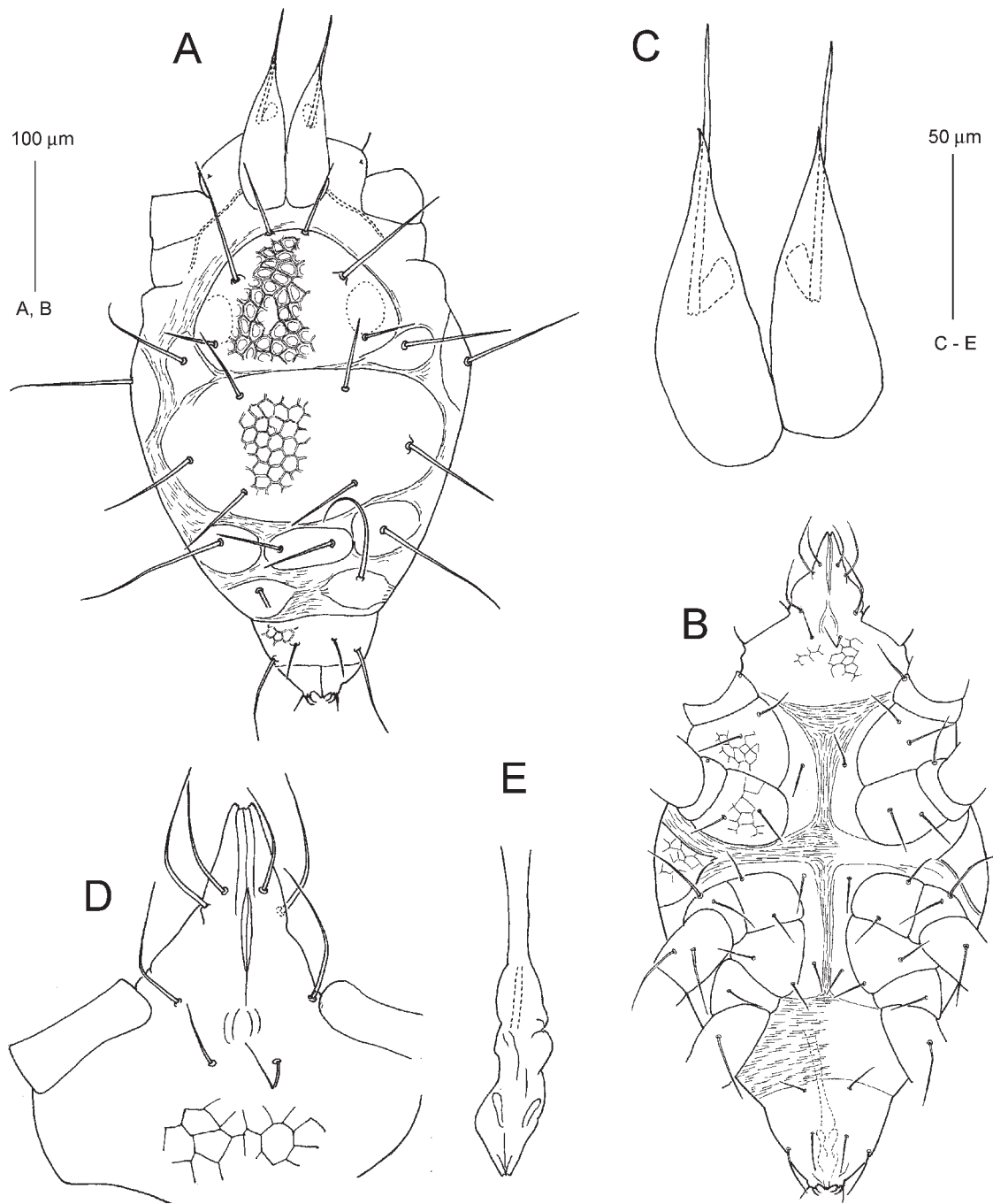


Fig. 214. *Stigmaeus summersi* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 215.** *Stigmaeus summersi* Wood, 1967 (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, subcapitulum; E, aedeagus.

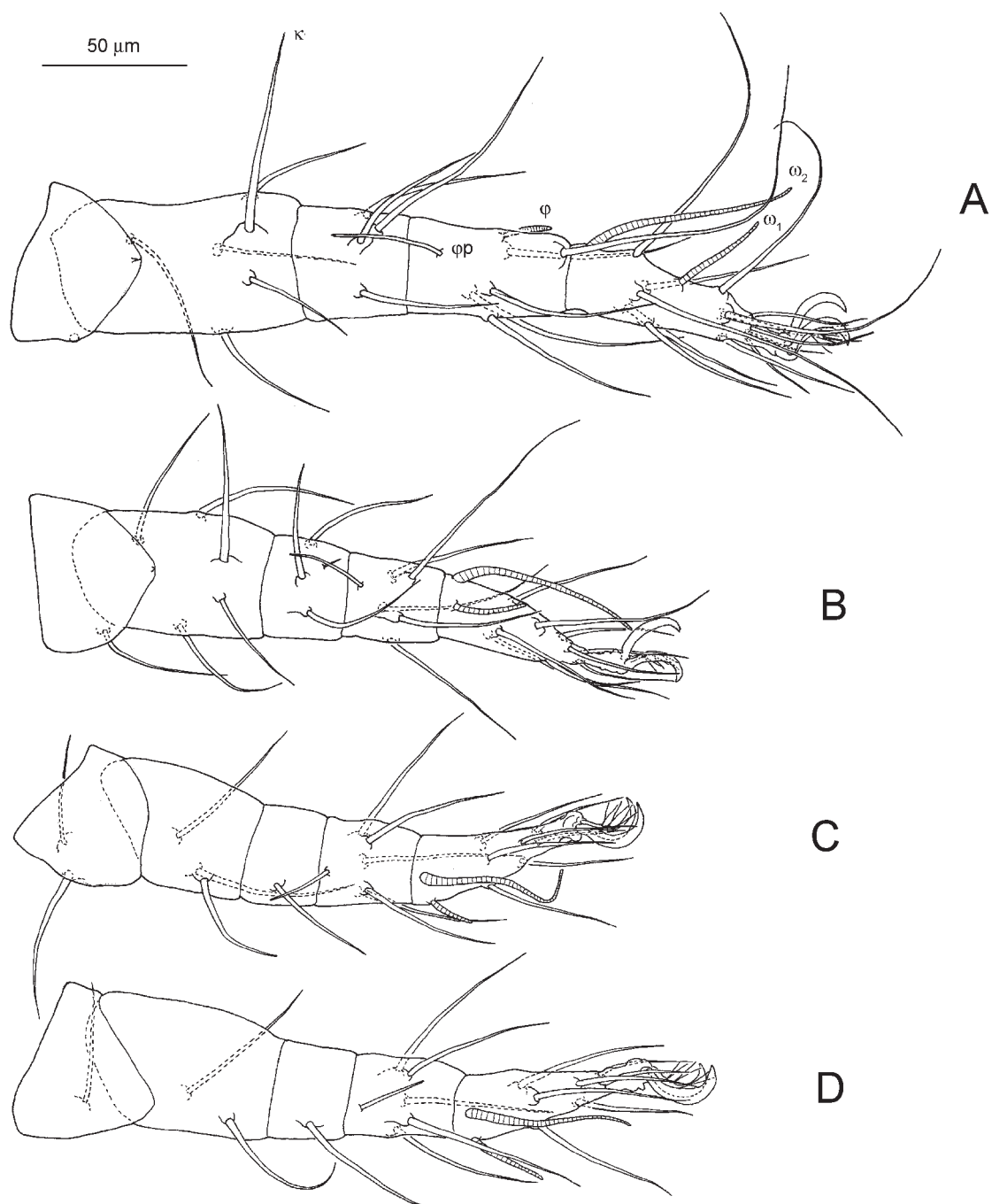
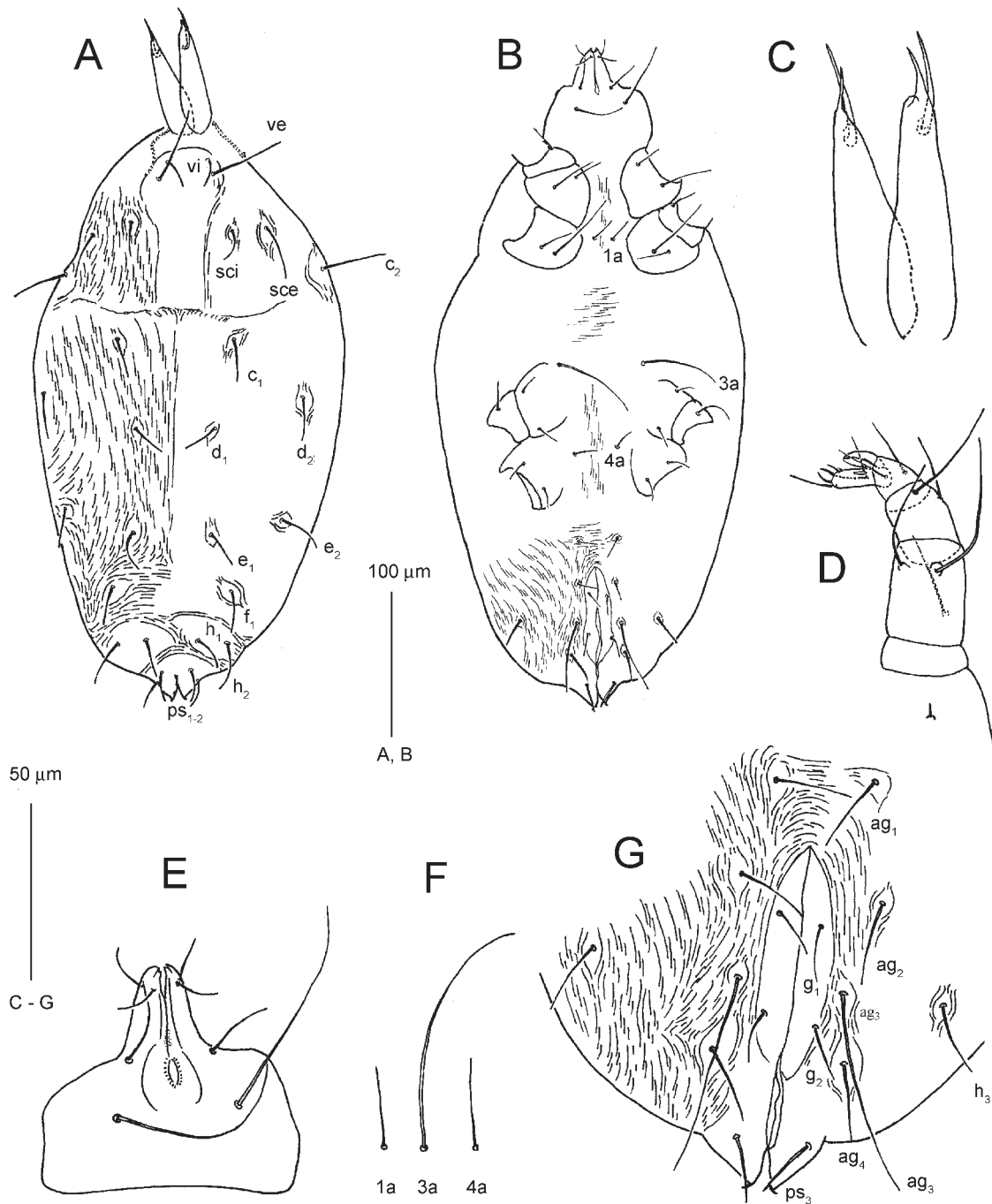


Fig. 216. *Stigmaeus summersi* Wood, 1967 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 217.** *Storchia hendersonae* sp. n. (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, ventral idiosomal setae; G, genitoanal area.

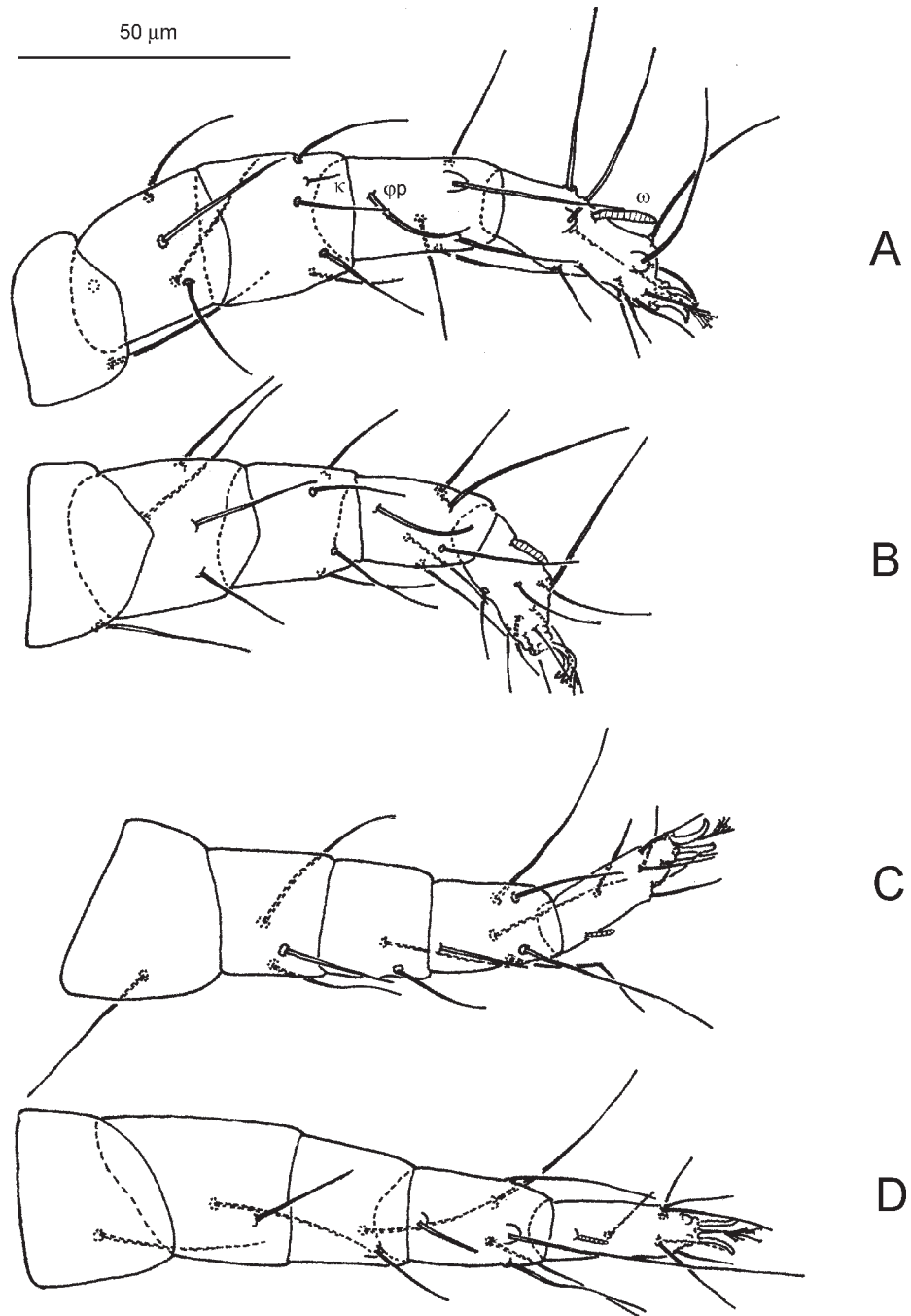
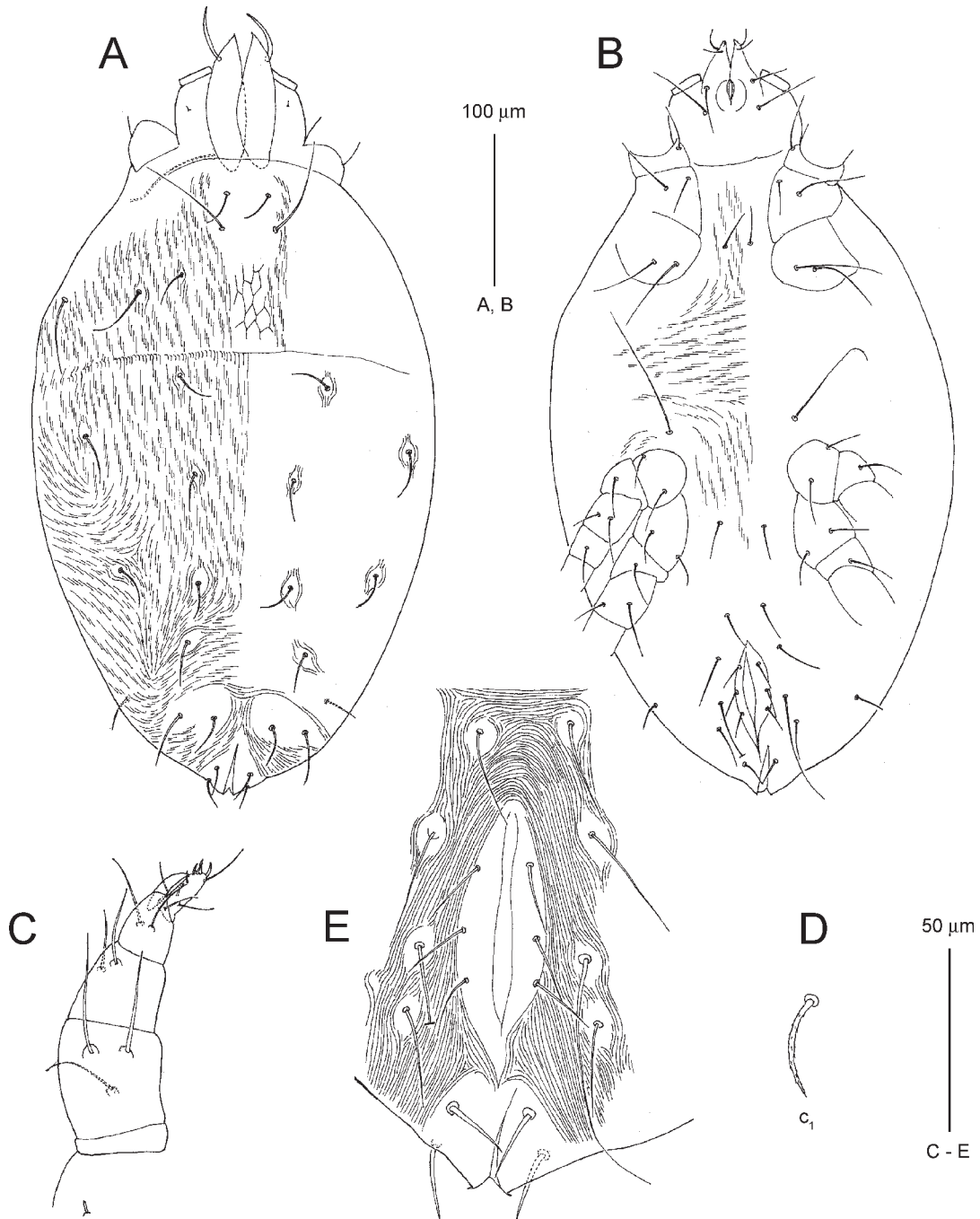


Fig. 218. *Storchia hendersonae* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 219.** *Storchia robustus* (Berlese, 1885) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, dorsal idiosomal seta; E, genitoanal area.



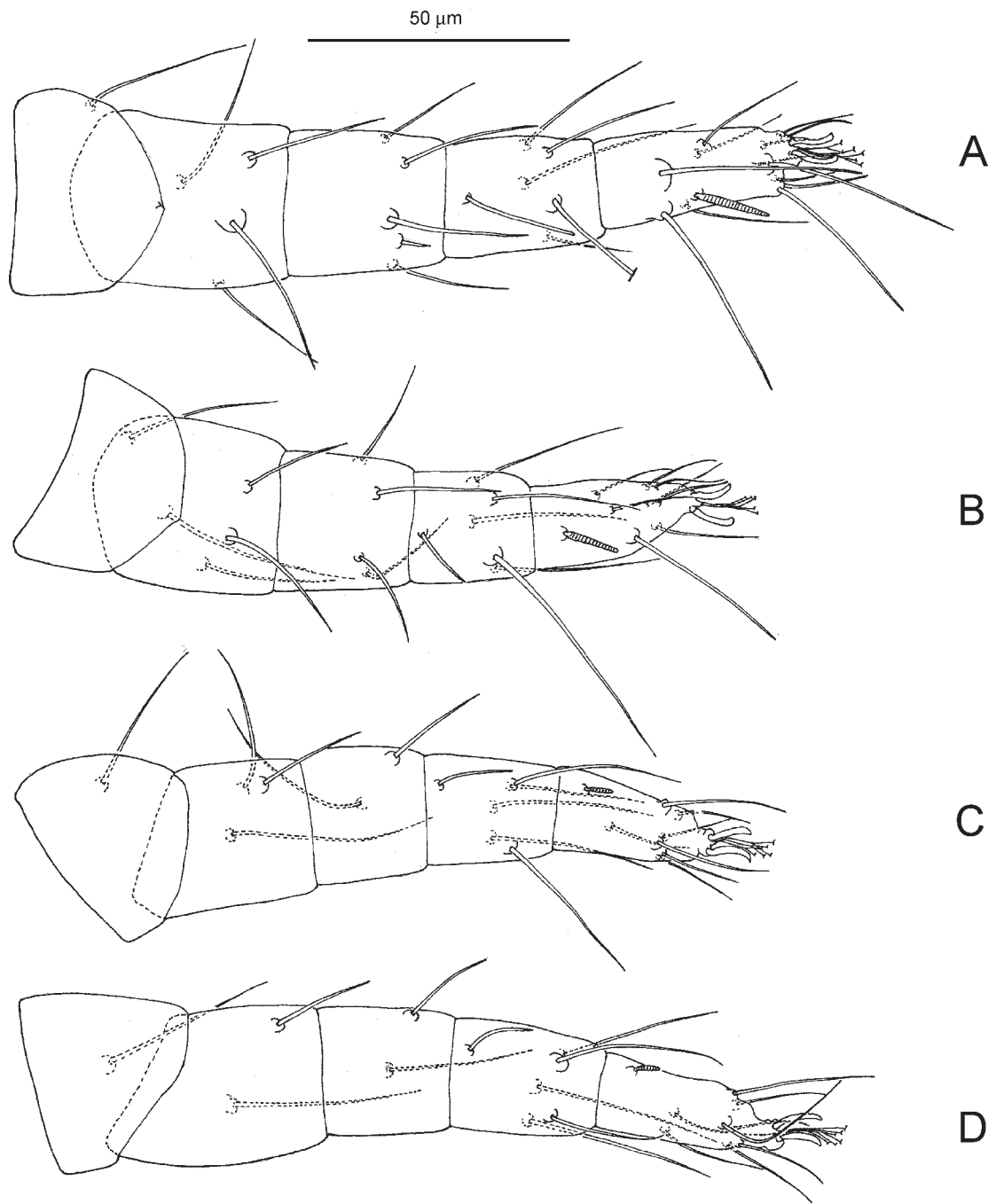
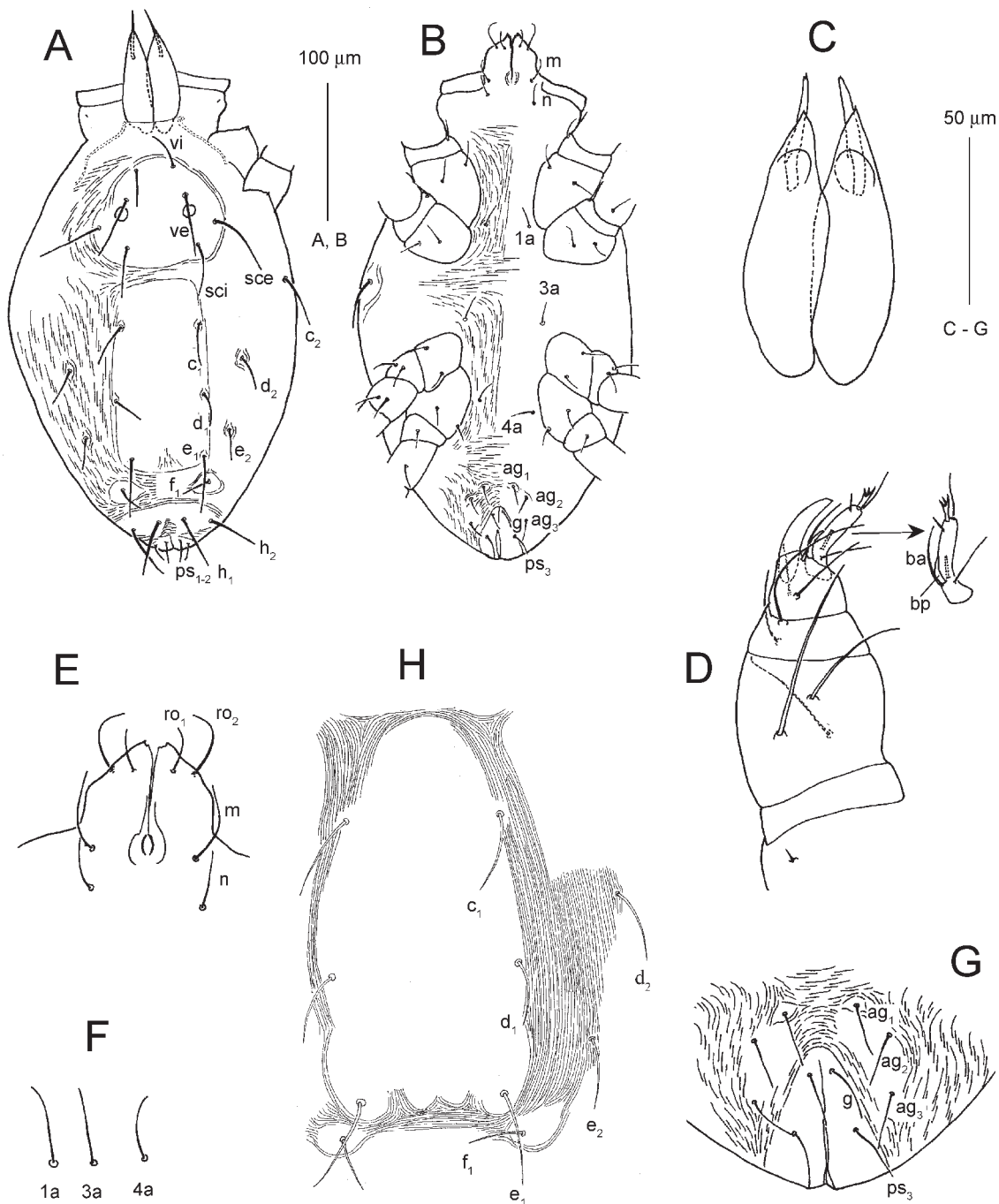


Fig. 220. *Storchia robustus* (Berlese, 1885) (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 221.** *Summersiella coprosmae* (Wood, 1967) (female). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, chelicerae; D, palp; E, subcapitulum; F, ventral setae; G, genitoanal area; H, detail view of central hysterosomal shield.

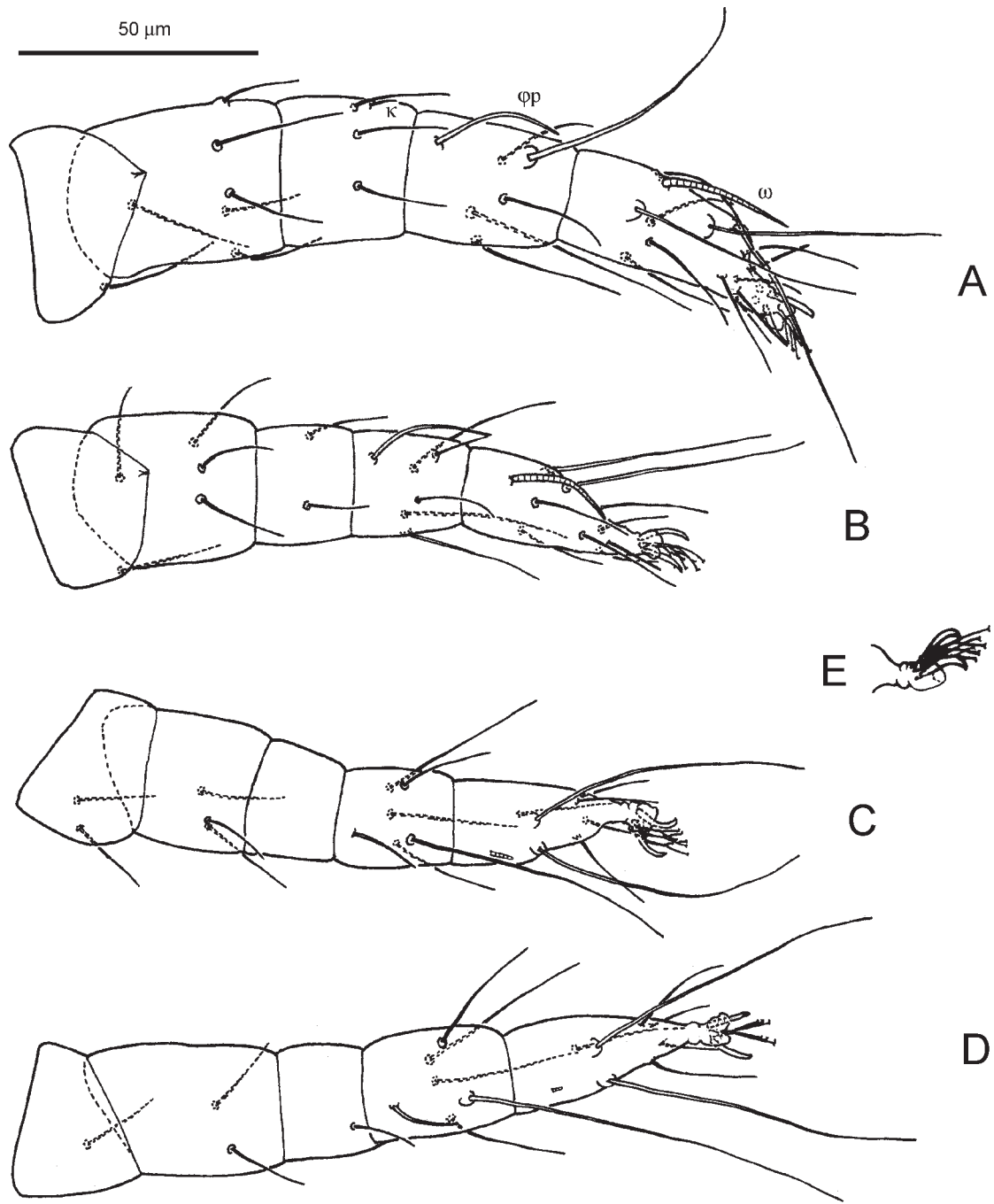
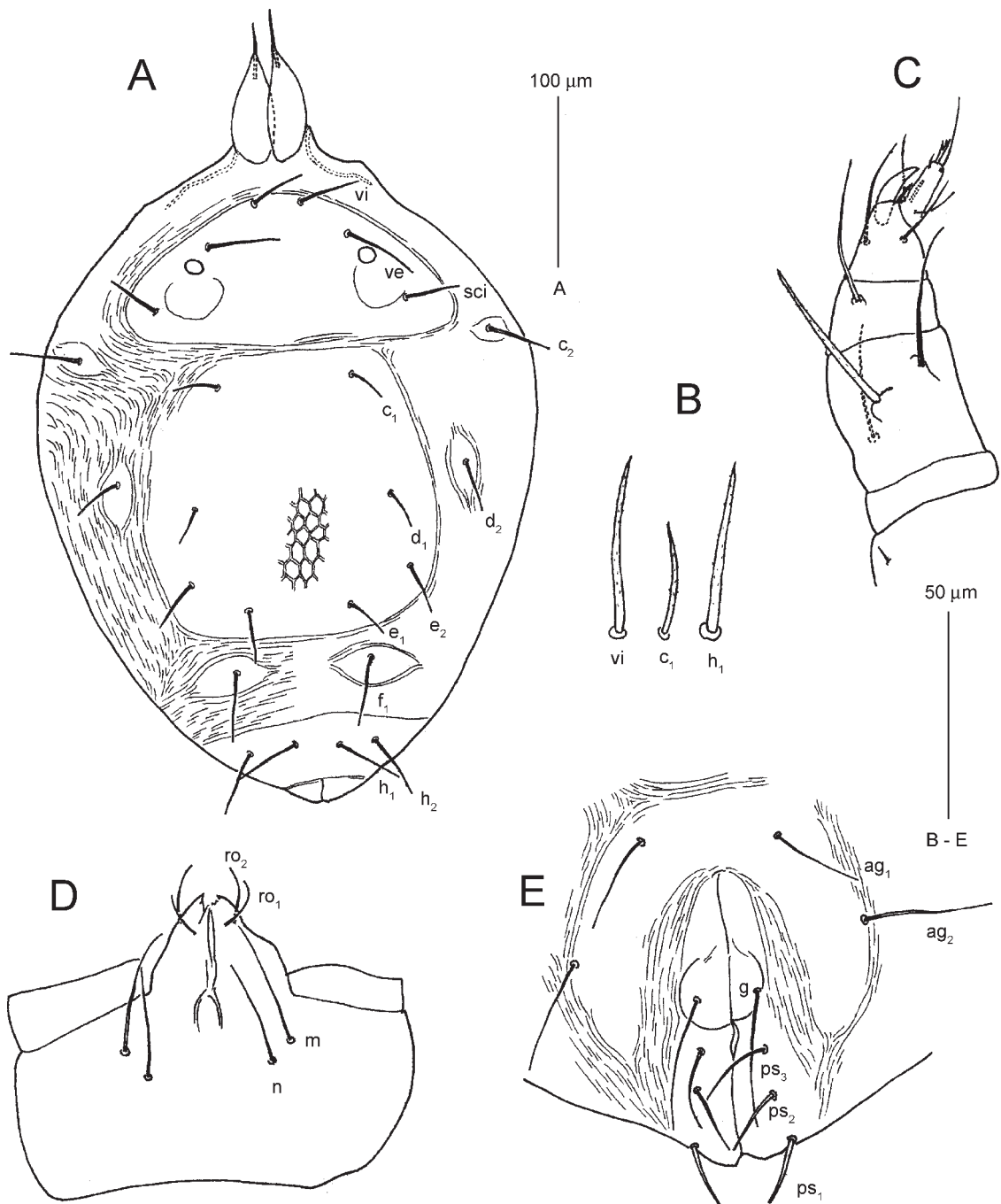


Fig. 222. *Summersiella coprosmae* (Wood, 1967) (female). A, leg I; B, leg II; C, leg III; D, leg IV; E, pretarsus.



**Fig. 223.** *Zetzellia antipoda* Wood, 1967 (female). A, dorsal view of idiosoma; B, dorsal idiosomal setae; C, palp; D, subcapitulum; E, genital area.

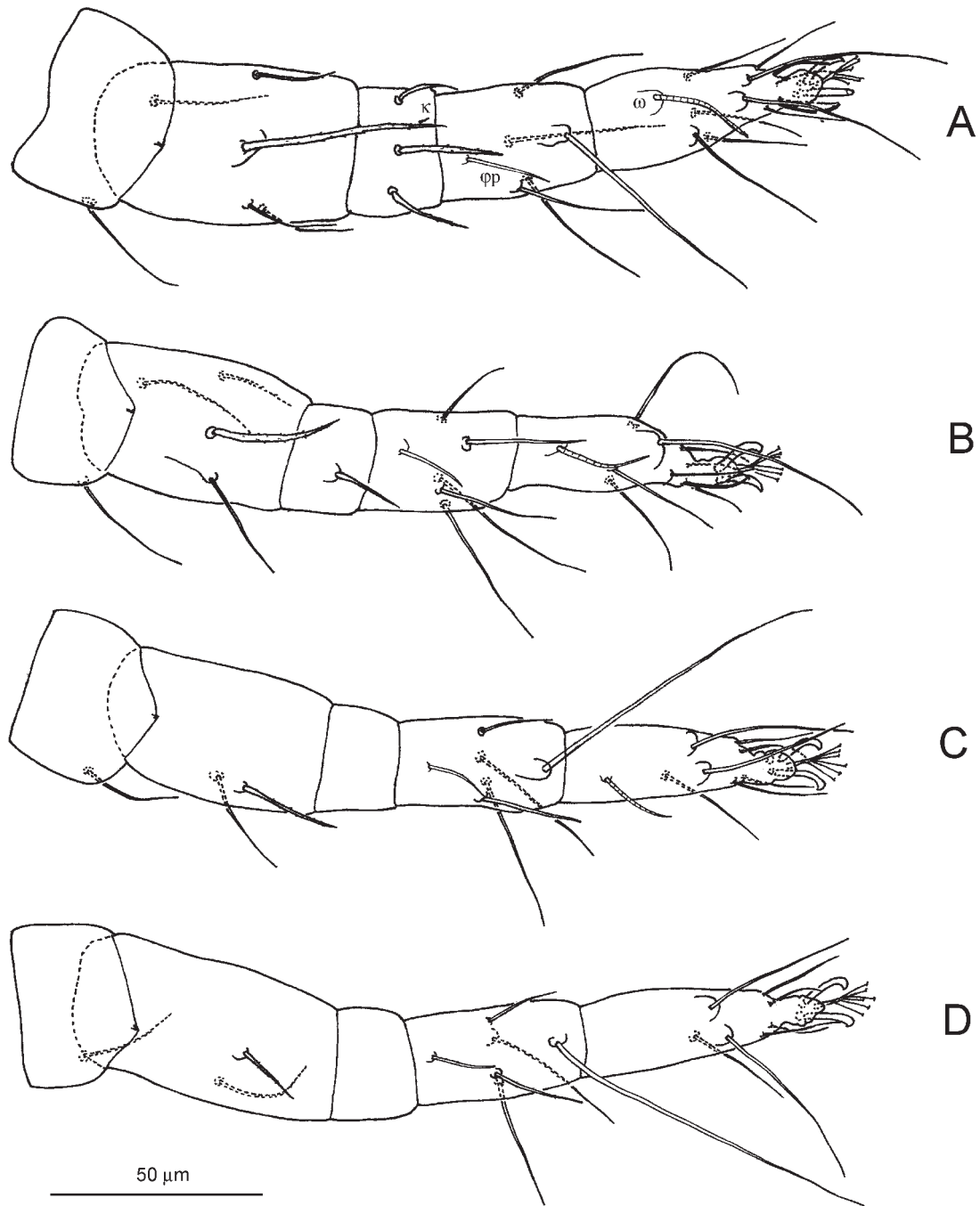
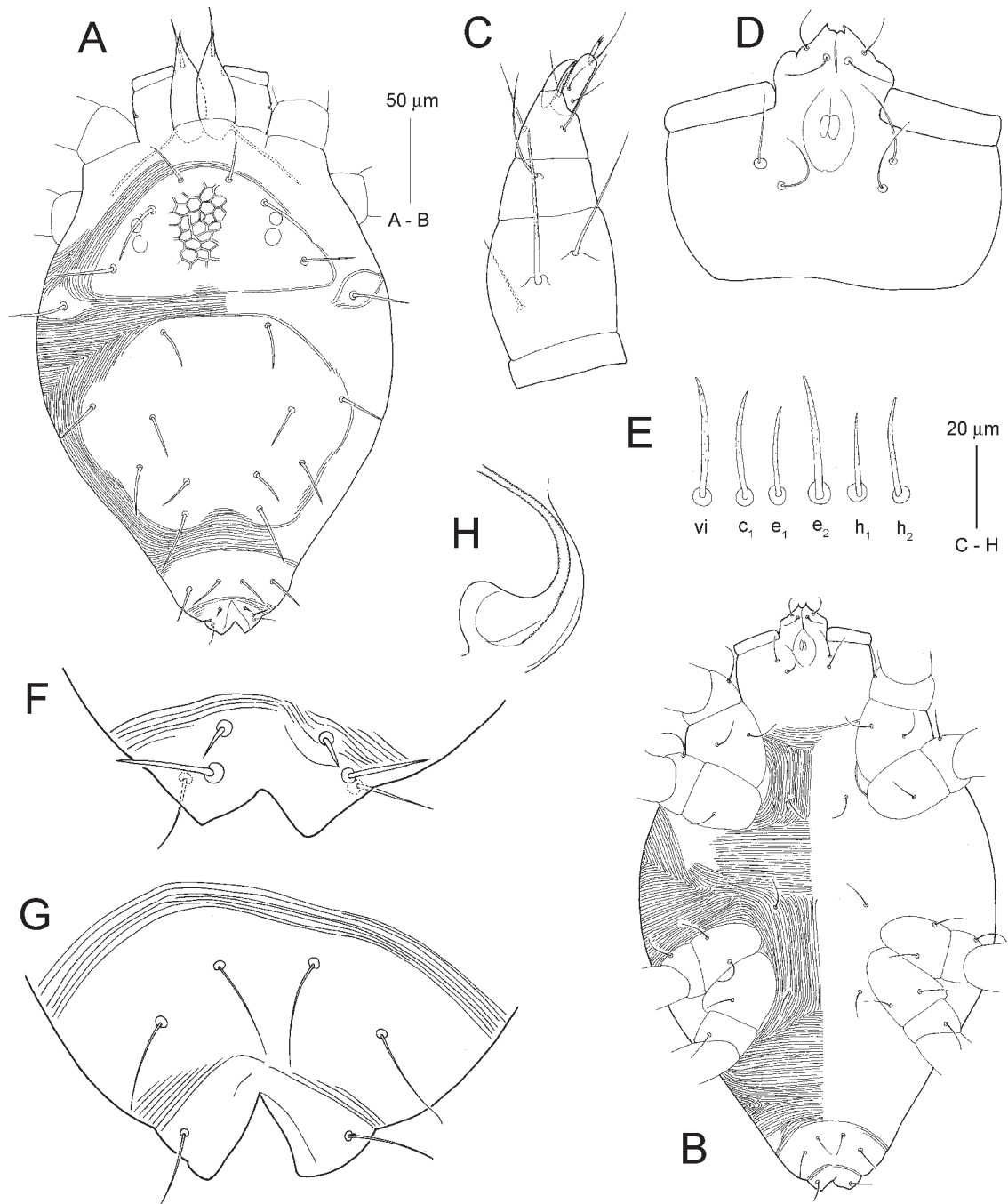


Fig. 224. *Zetzellia antipoda* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 225.** *Zetzellia antipoda* Wood, 1967 (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, subcapitulum; E, dorsal idiosomal setae; F, dorsal view of opisthosoma; G, genitoanal area; H, aedeagus.

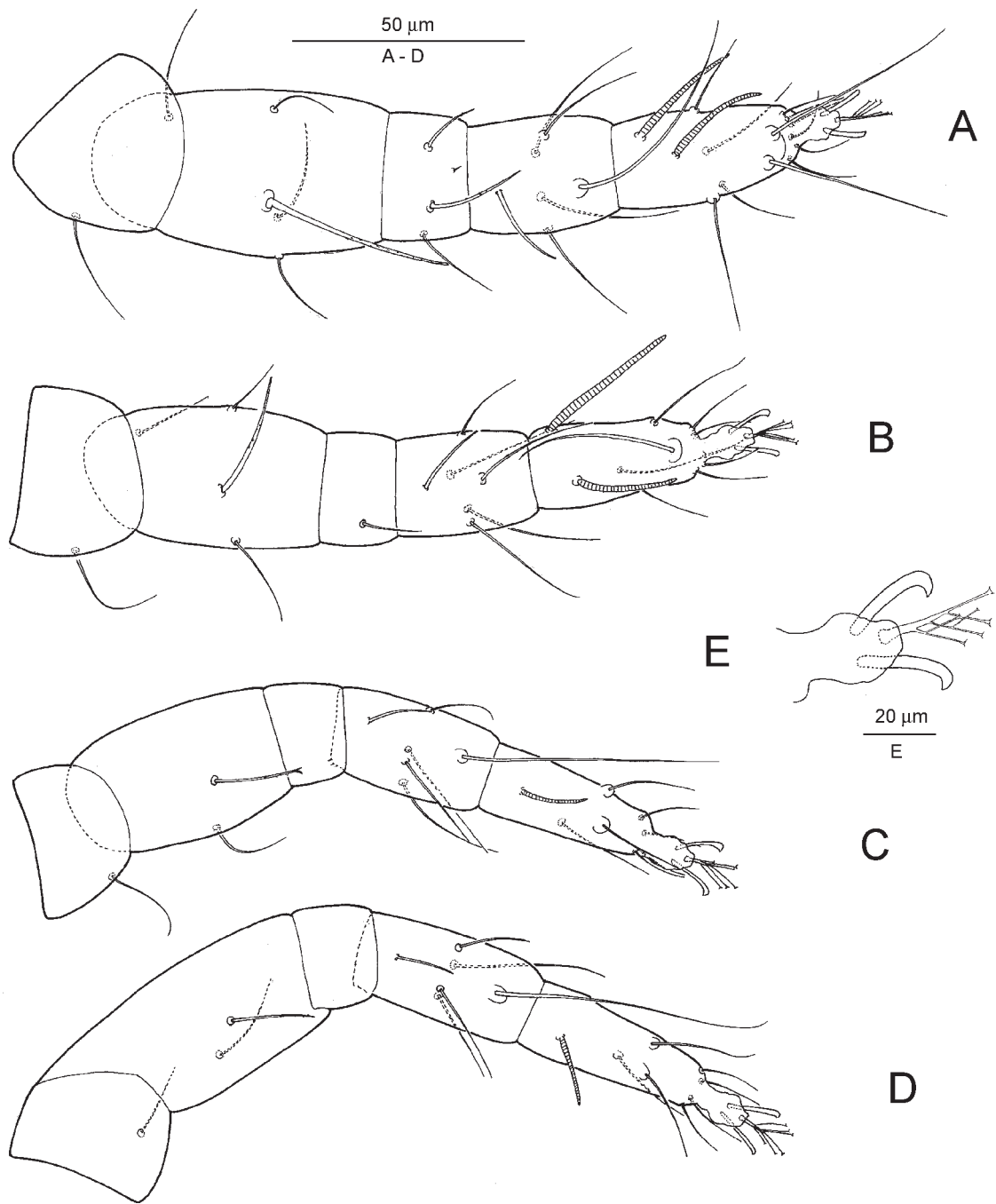
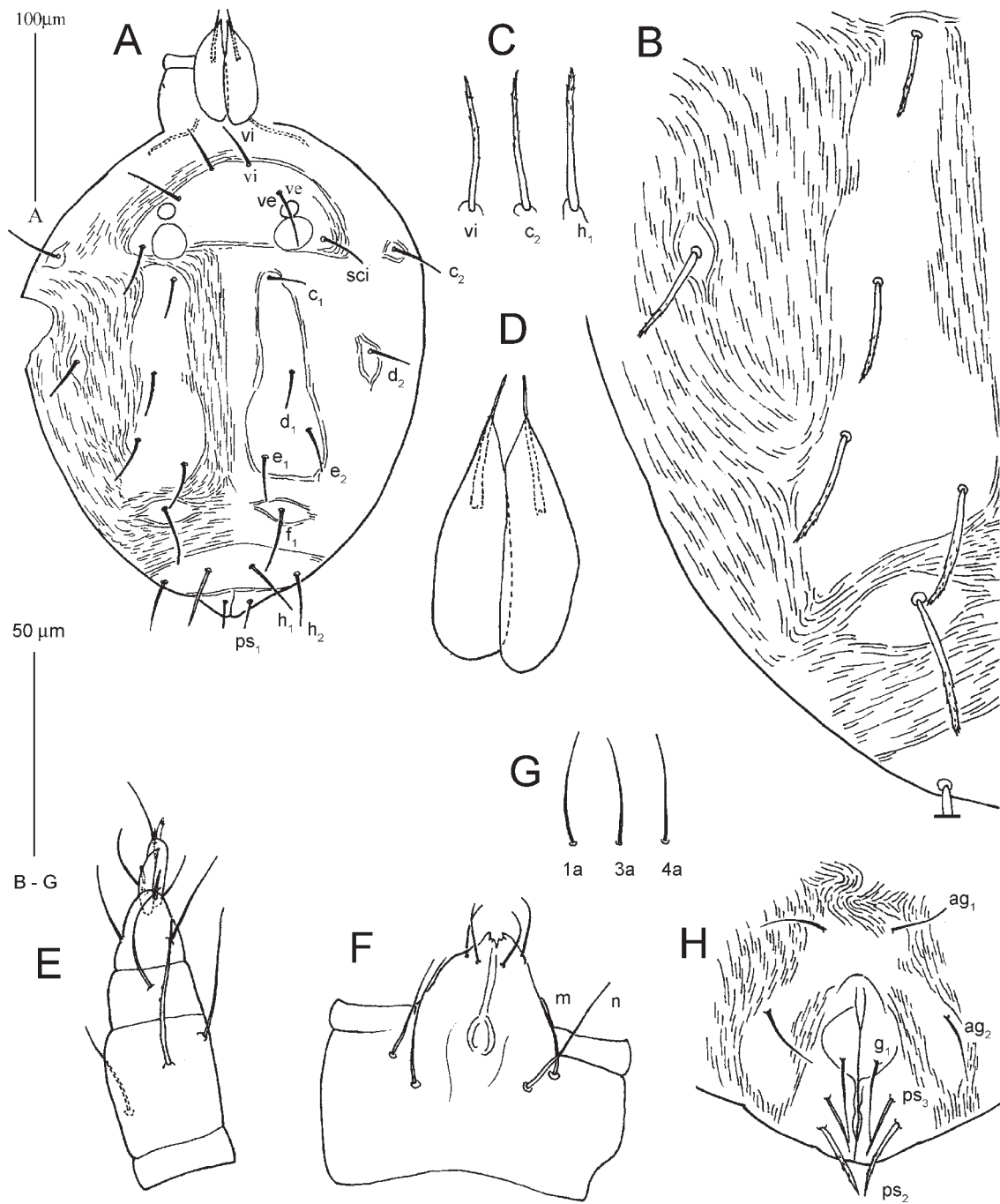


Fig. 226. *Zetzellia antipoda* Wood, 1967 (male). A, leg I; B, leg II; C, leg III; D, leg IV; E, pretarsus III.



**Fig. 227.** *Zetzellia biscutata* sp. n. (female). A, dorsal view of idiosoma; B, detail view of dorsal hysterosomal shields; C, dorsal idiosomal setae; D, chelicerae; E, palp; F, subcapitulum; G, ventral idiosomal setae; H, genitoanal area.



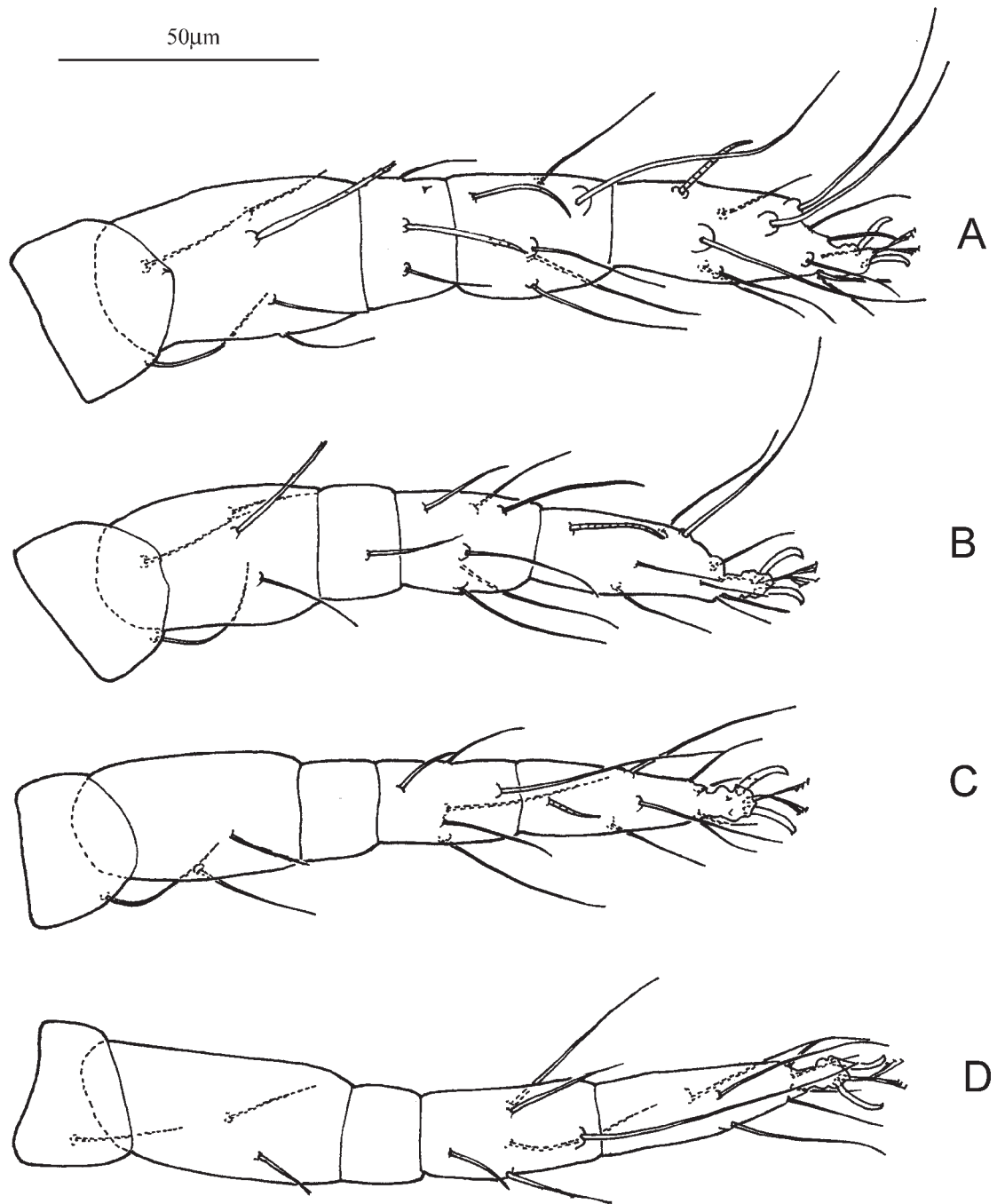
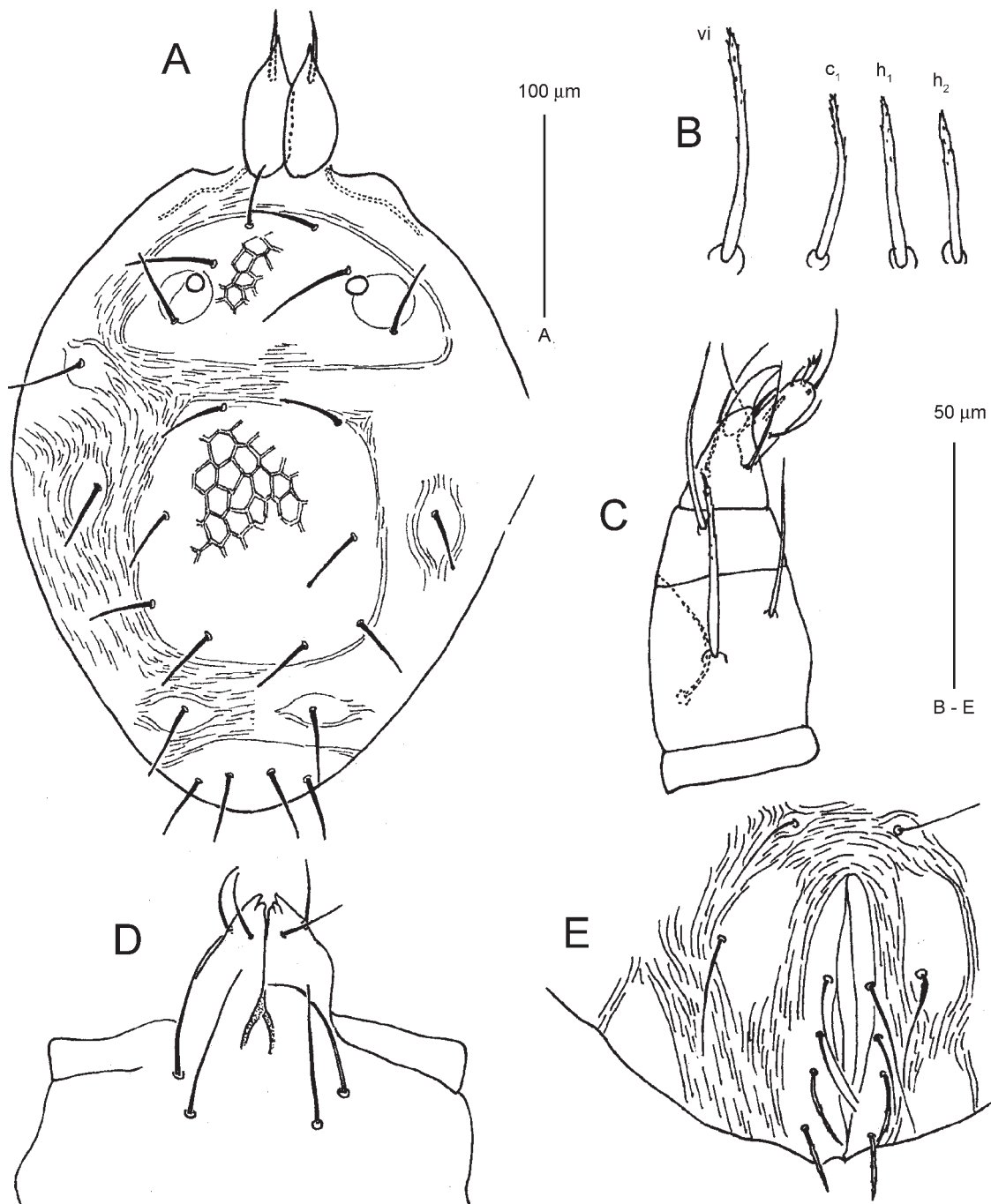


Fig. 228. *Zetzellia biscutata* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 229.** *Zetzellia gonzalezi* Wood, 1967 (female). A, dorsal view of idiosoma; B, dorsal idiosomal setae; C, palp; D, subcapitulum; E, genitoanal area.

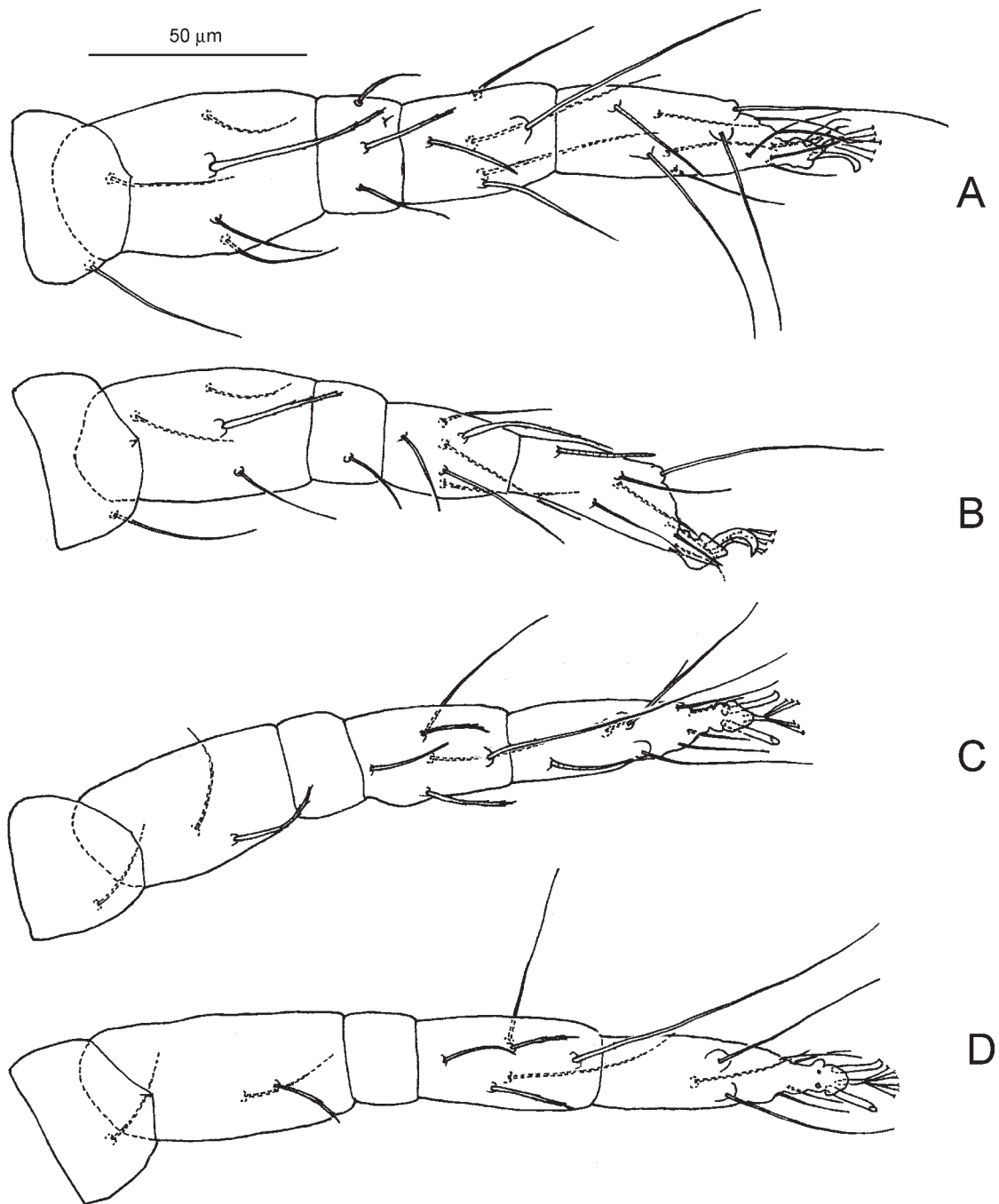
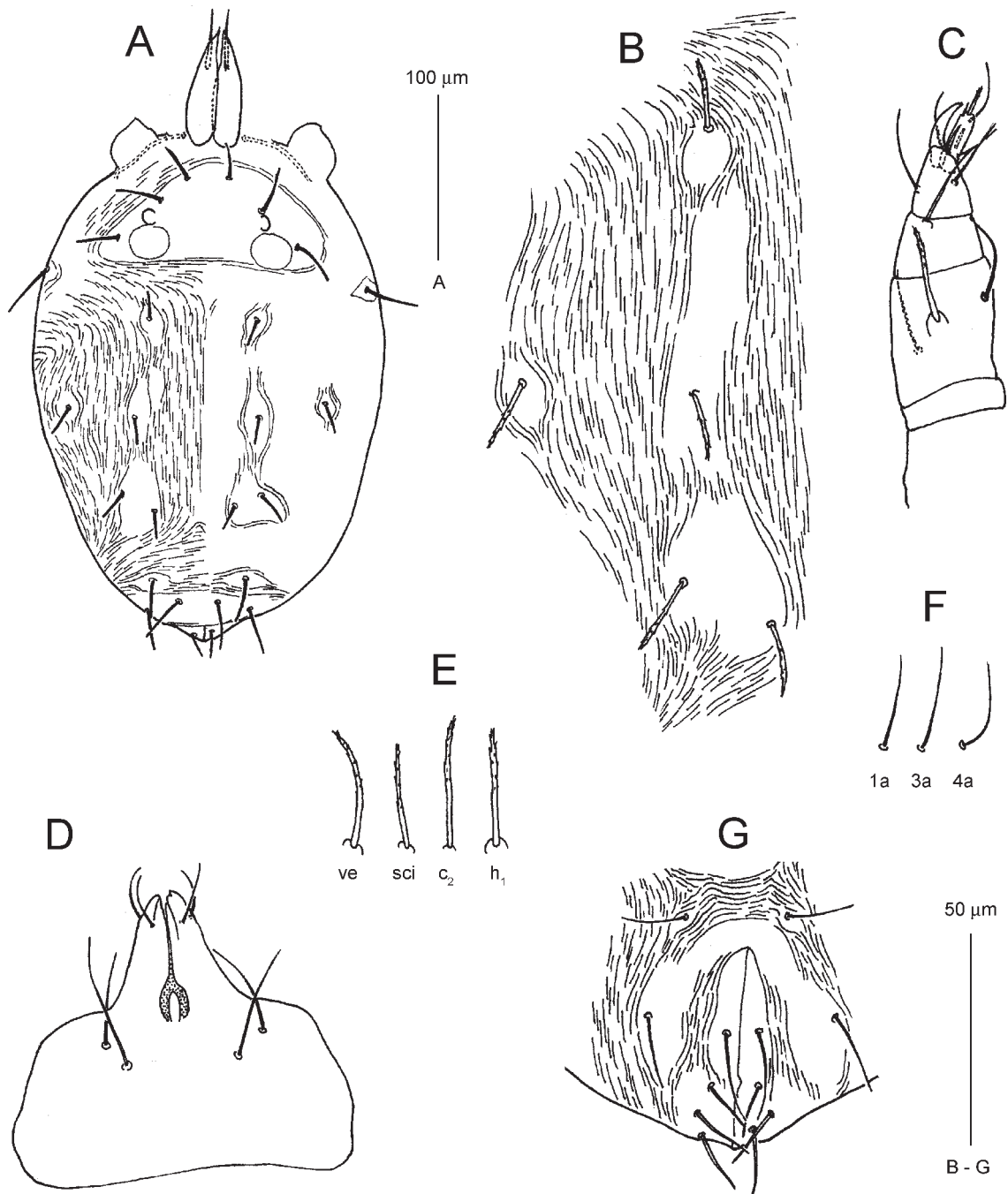


Fig. 230. *Zetzellia gonzalezi* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 231.** *Zetzellia maori* González-Rodríguez, 1965 (female). A, dorsal view of idiosoma; B, detail view of dorsal hysterosomal shields; C, palp; D, subcapitulum; E, dorsal idiosomal setae; F, ventral idiosomal setae; G, genitoanal area.

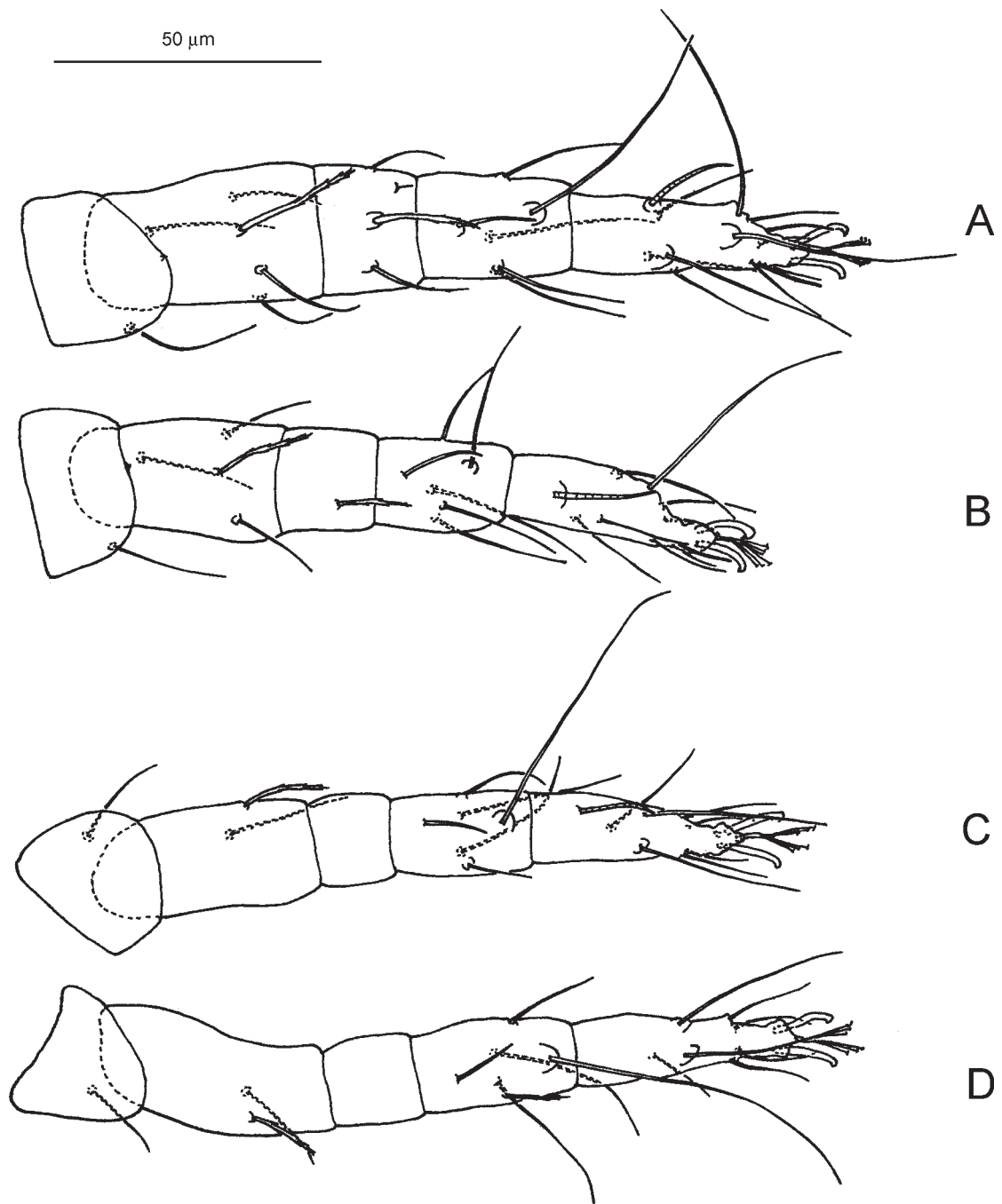
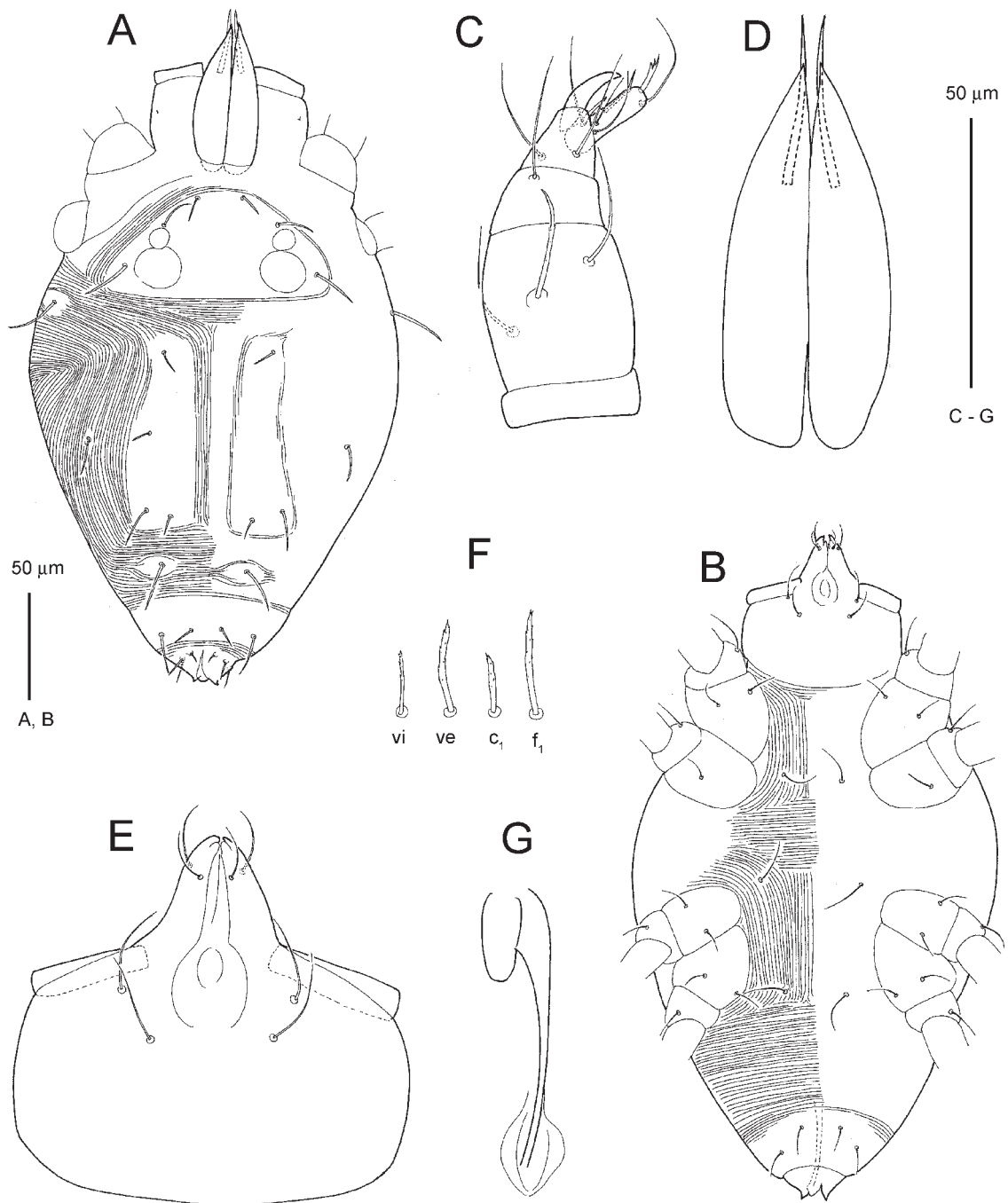


Fig. 232. *Zetzellia maori* González-Rodríguez, 1965 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 233.** *Zetzellia maori* González-Rodríguez, 1965 (male). A, dorsal view of idiosoma; B, ventral view of idiosoma; C, palp; D, chelicerae; E, subcapitulum; F, dorsal idiosomal setae; G, aedeagus.

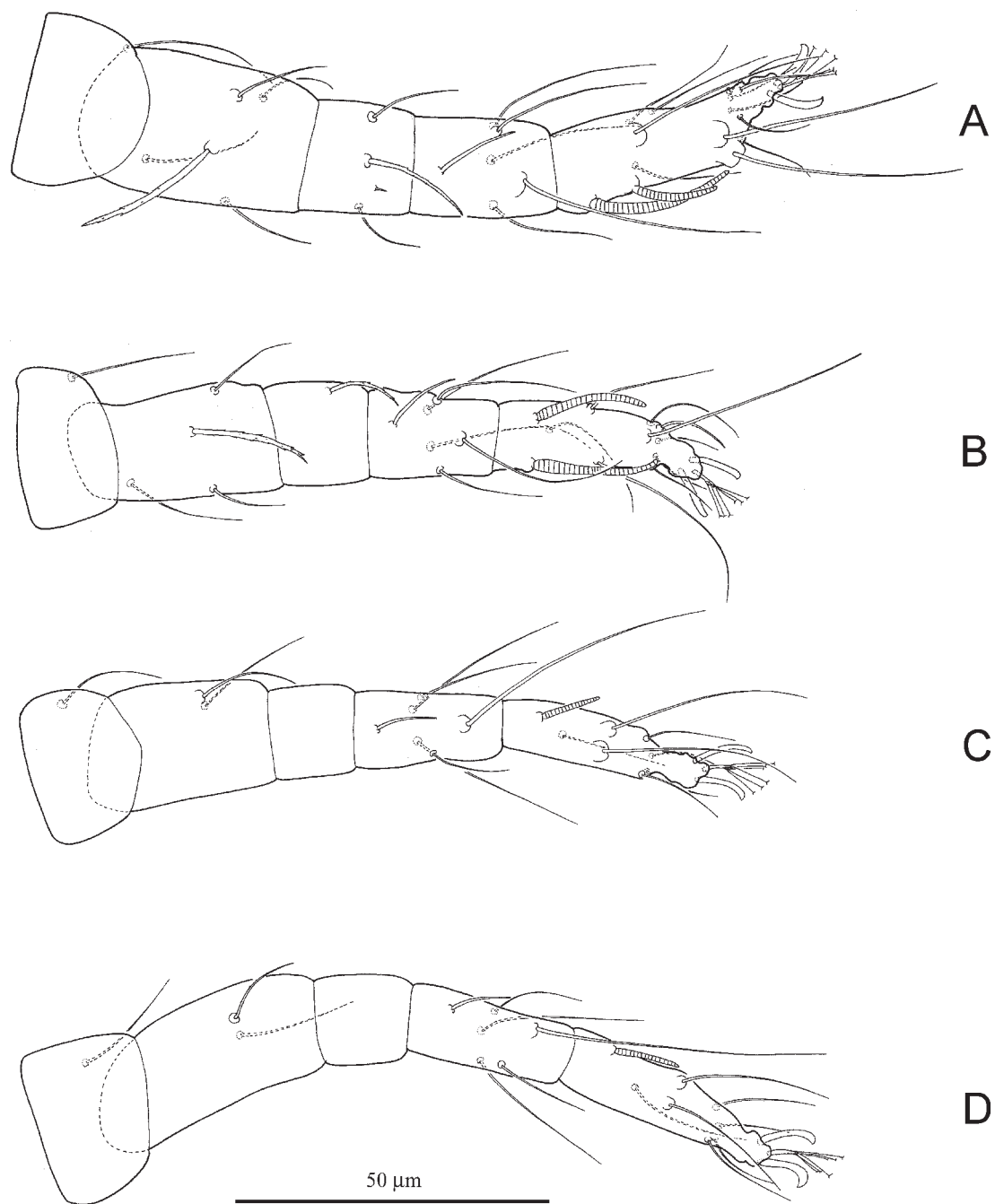
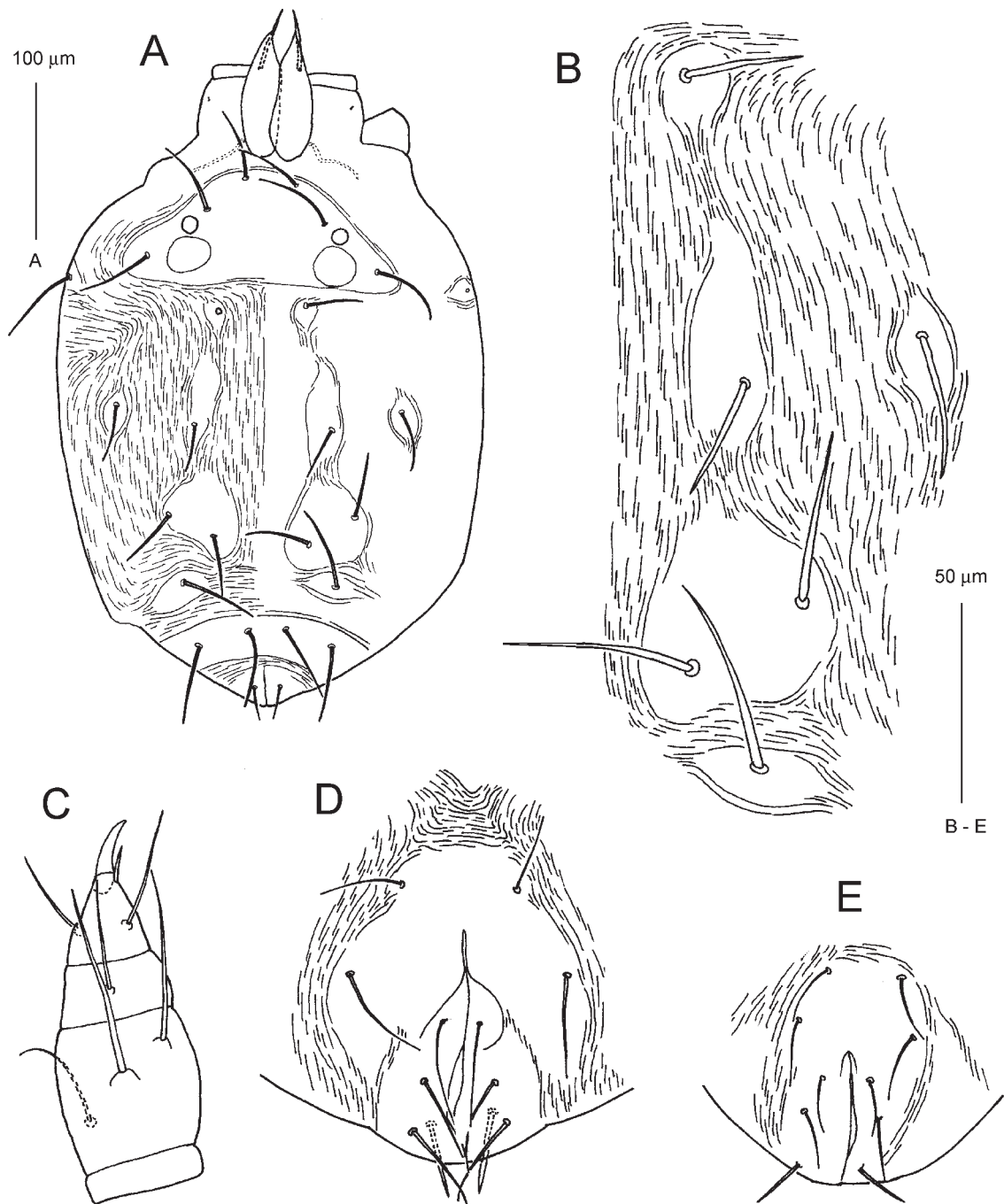


Fig. 234. *Zetzellia maori* González-Rodríguez, 1965 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 235.** *Zetzellia oudemansi* Wood, 1967 (A–D, female; E, deutonymph female). A, dorsal view of idiosoma; B, detail view of dorsal hysterosomal shields; C, palp; D, genitoanal area; E, genitoanal area.



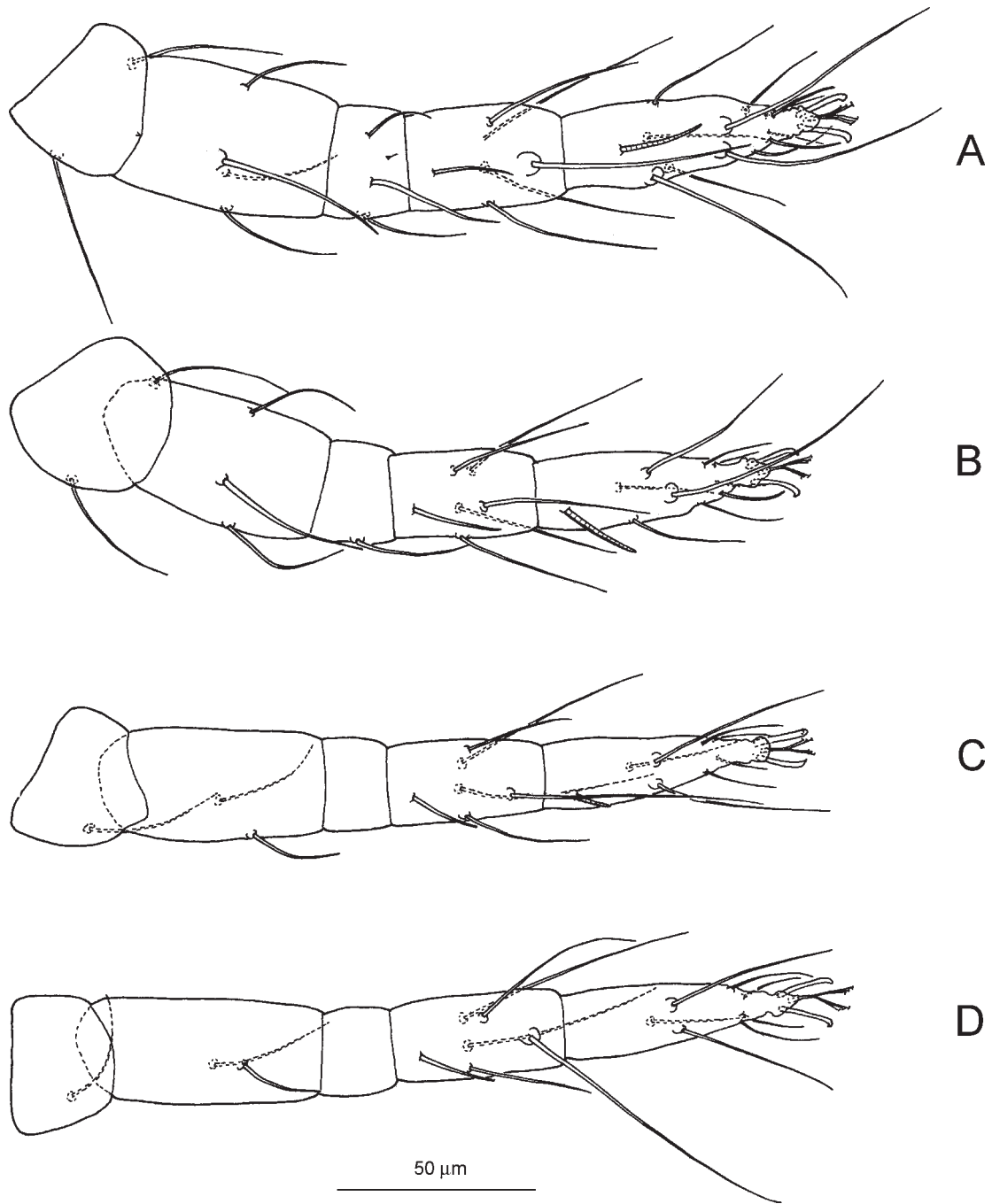
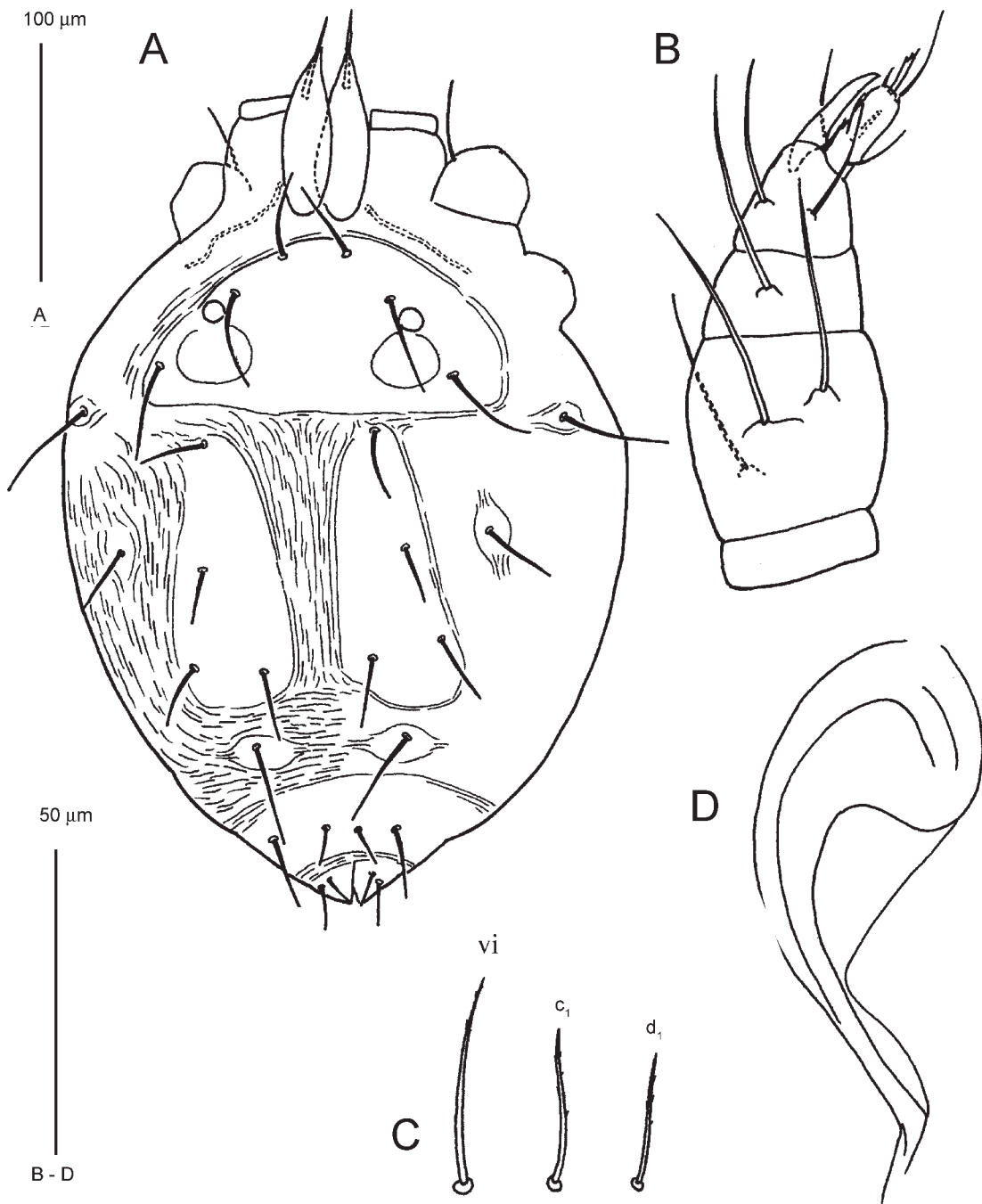


Fig. 236. *Zetzellia oudemansi* Wood, 1967 (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 237.** *Zetzellia oudemansi* Wood, 1967 (male). A, dorsal view of idiosoma; B, palp; C, dorsal idiosomal setae; D, aedeagus.

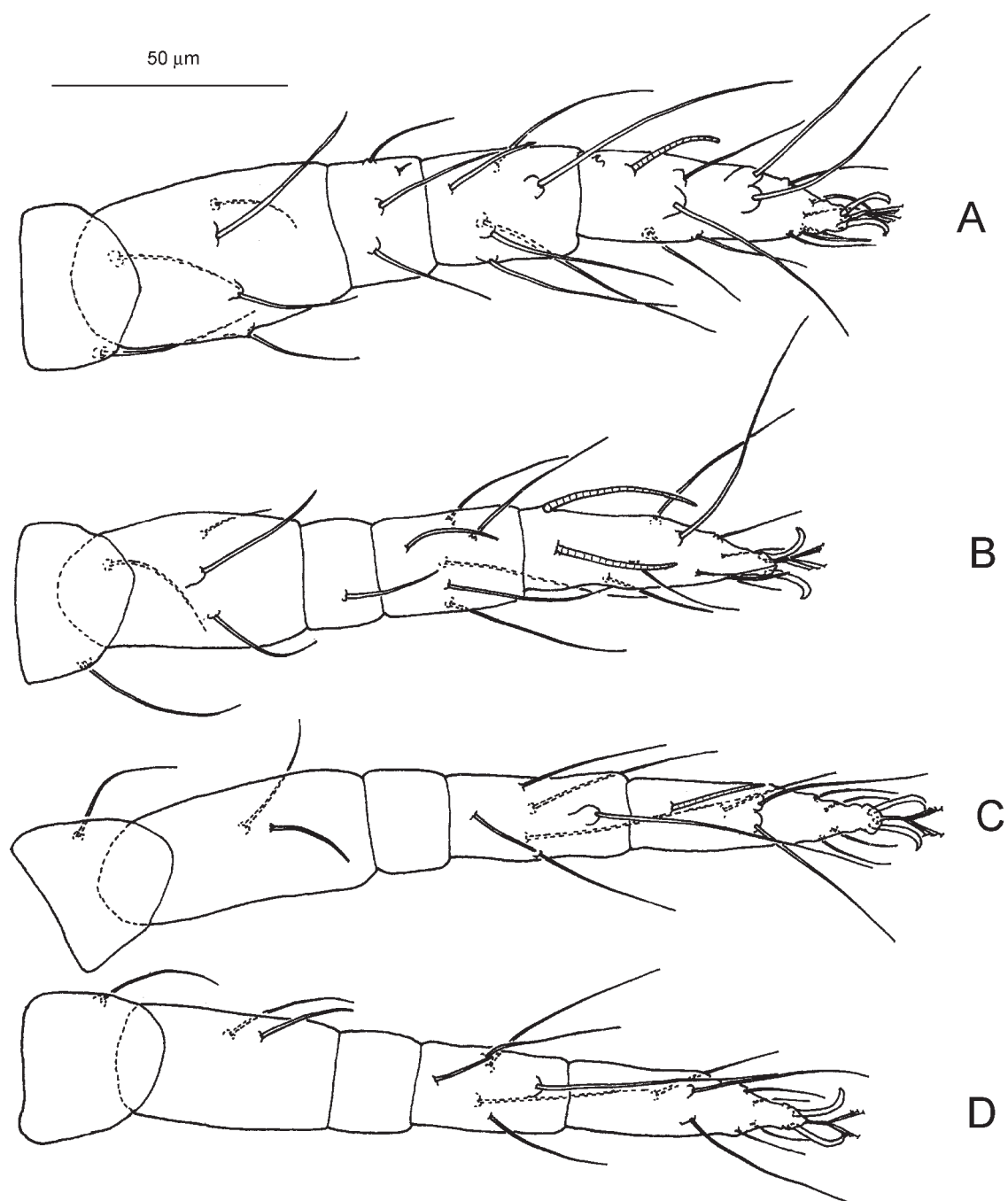
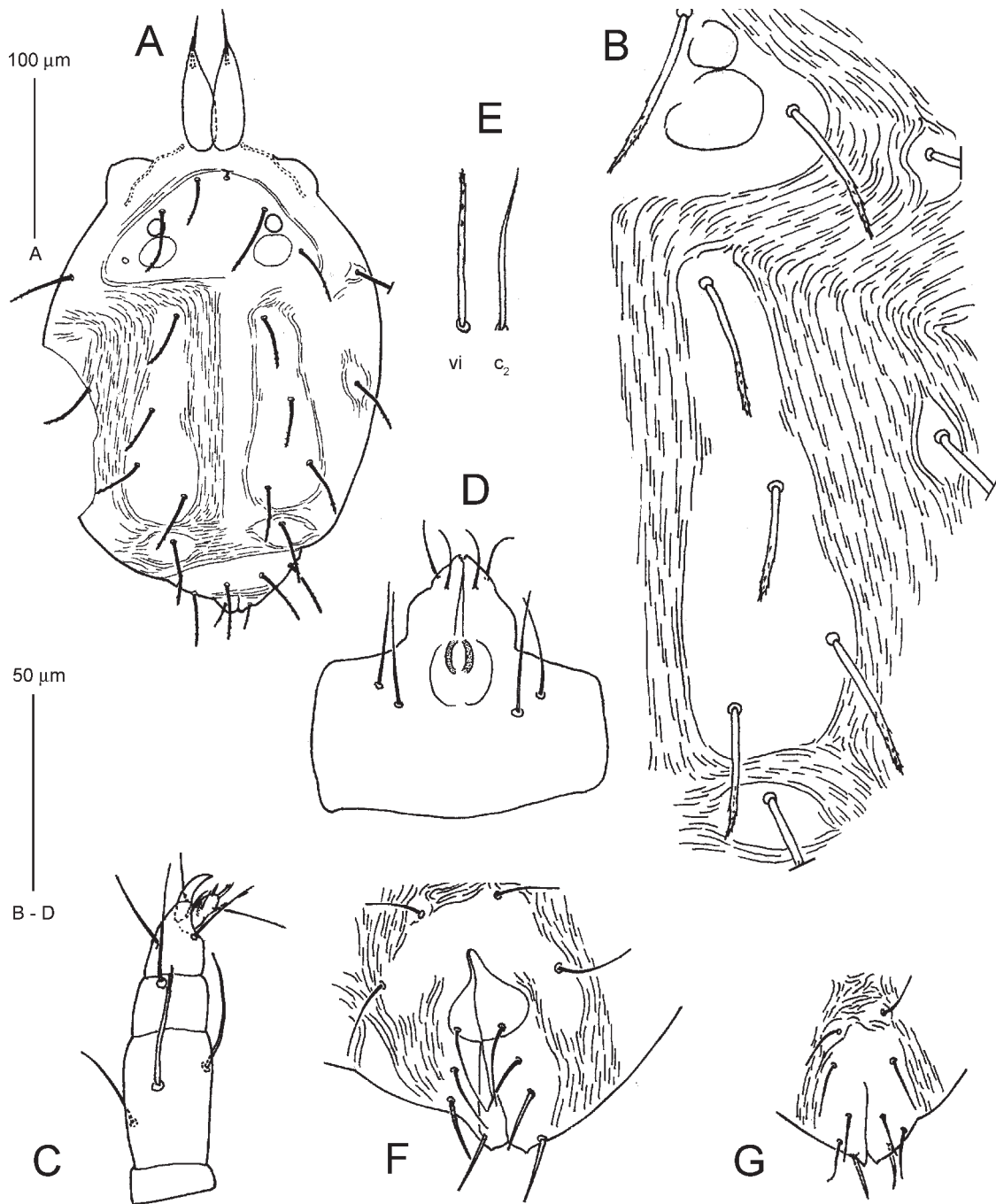


Fig. 238. *Zetzellia oudemansi* Wood, 1967 (male). A, leg I; B, leg II; C, leg III; D, leg IV.



**Fig. 239.** *Zetzellia spiculosa* sp. n. (A–F, female; G, deutonymph female). A, dorsal view of idiosoma; B, detail view of dorsal hysterosomal shields; C, palp; D, subcapitulum; E, dorsal idiosomal setae; F, genitoanal area; G, genitoanal area.

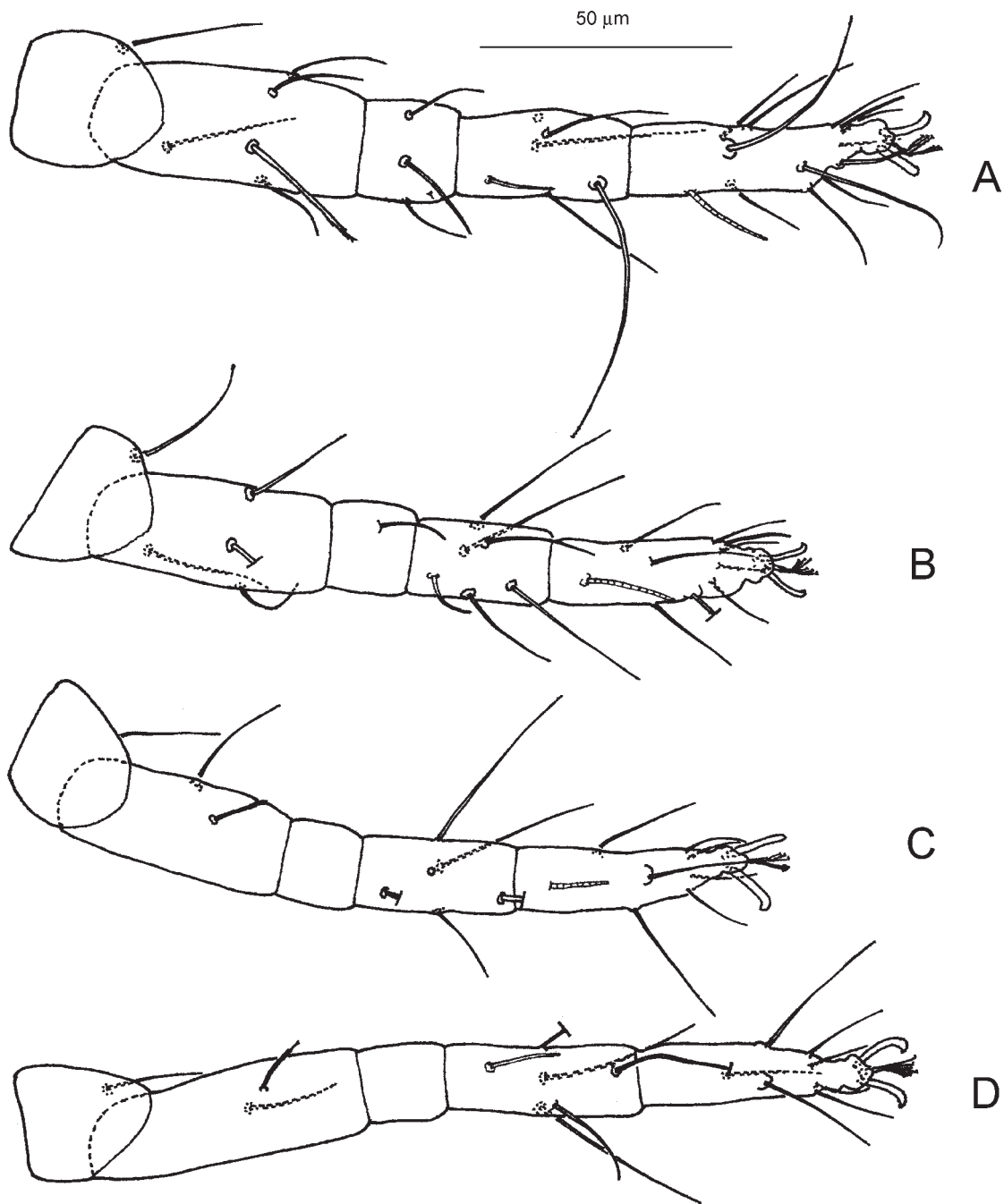
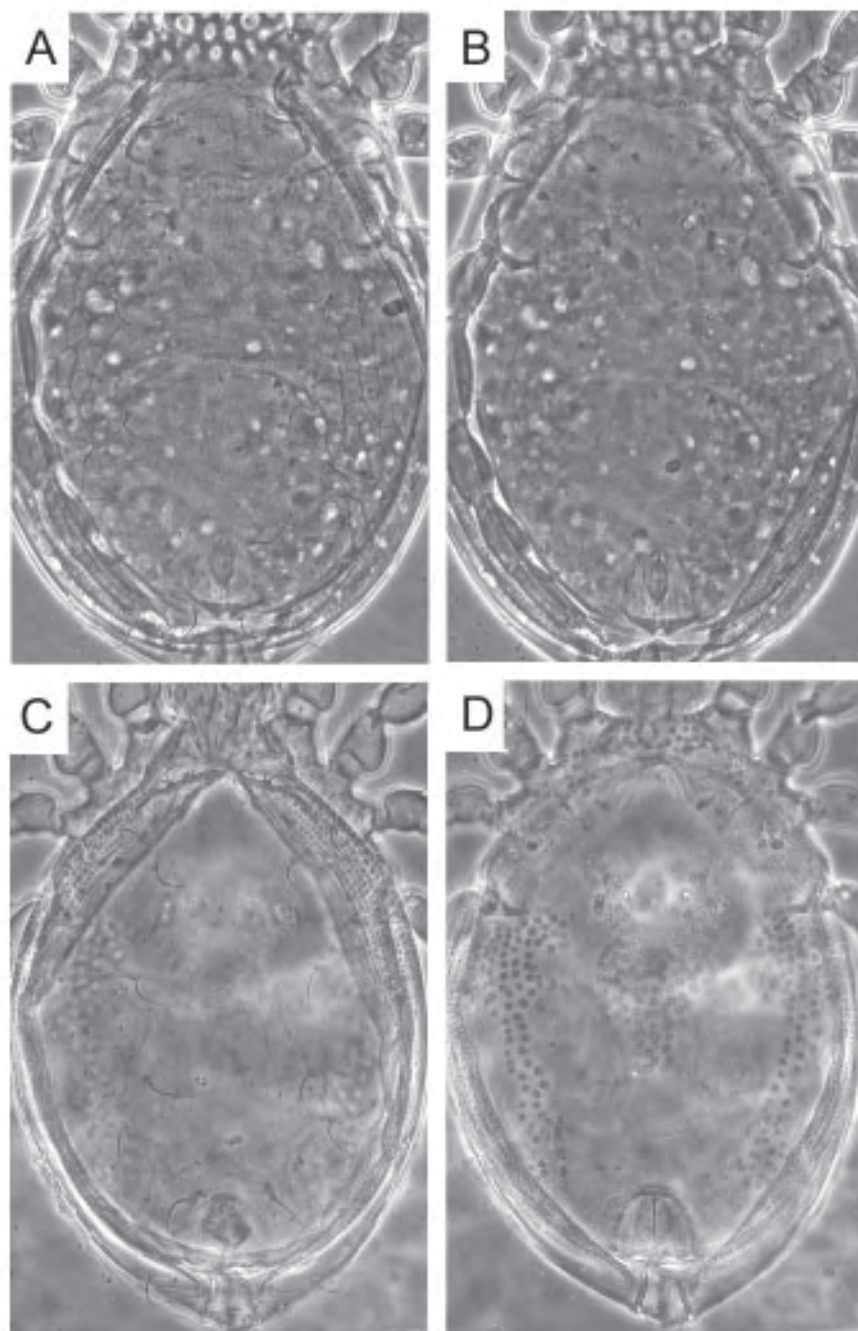
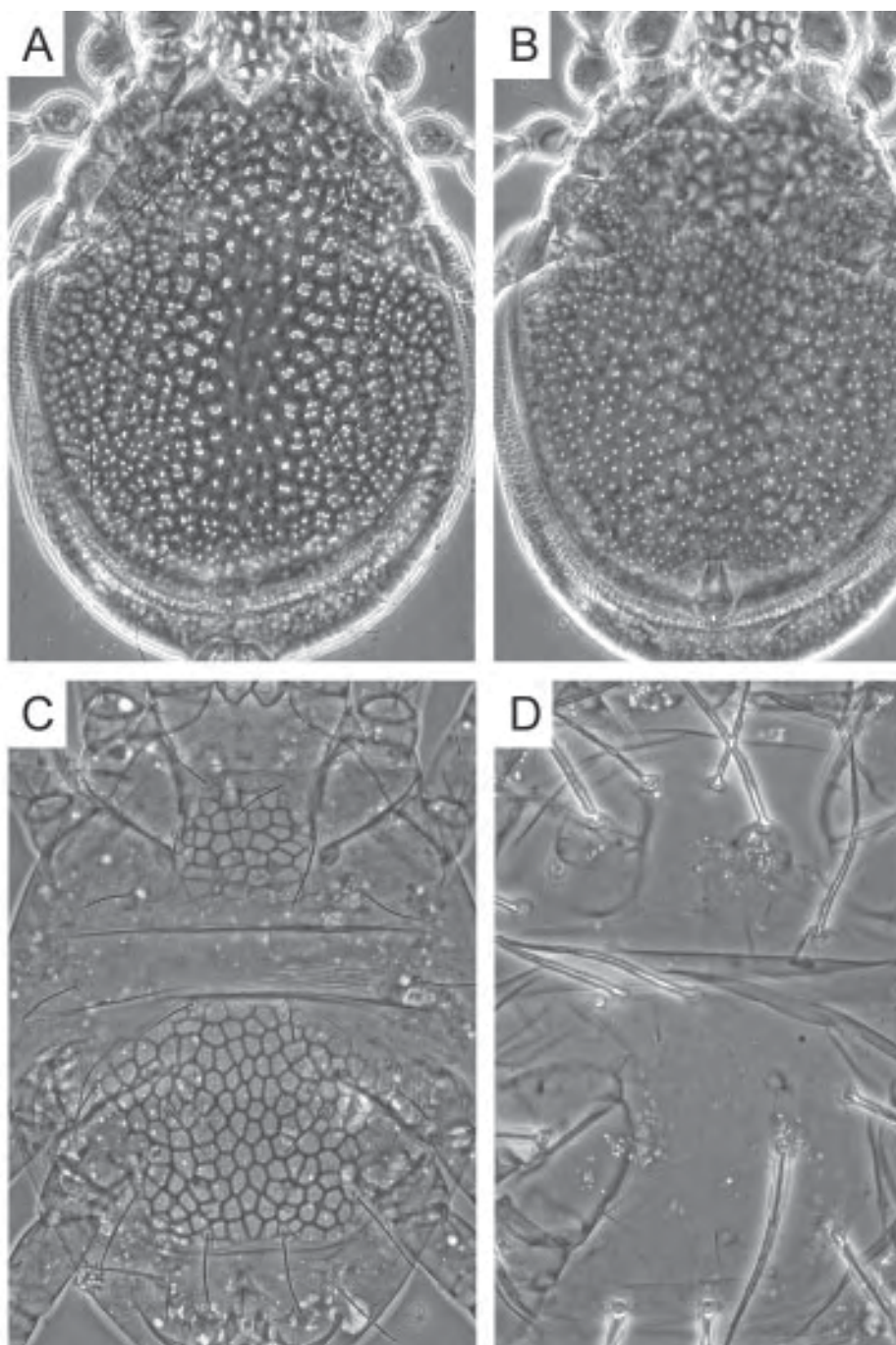


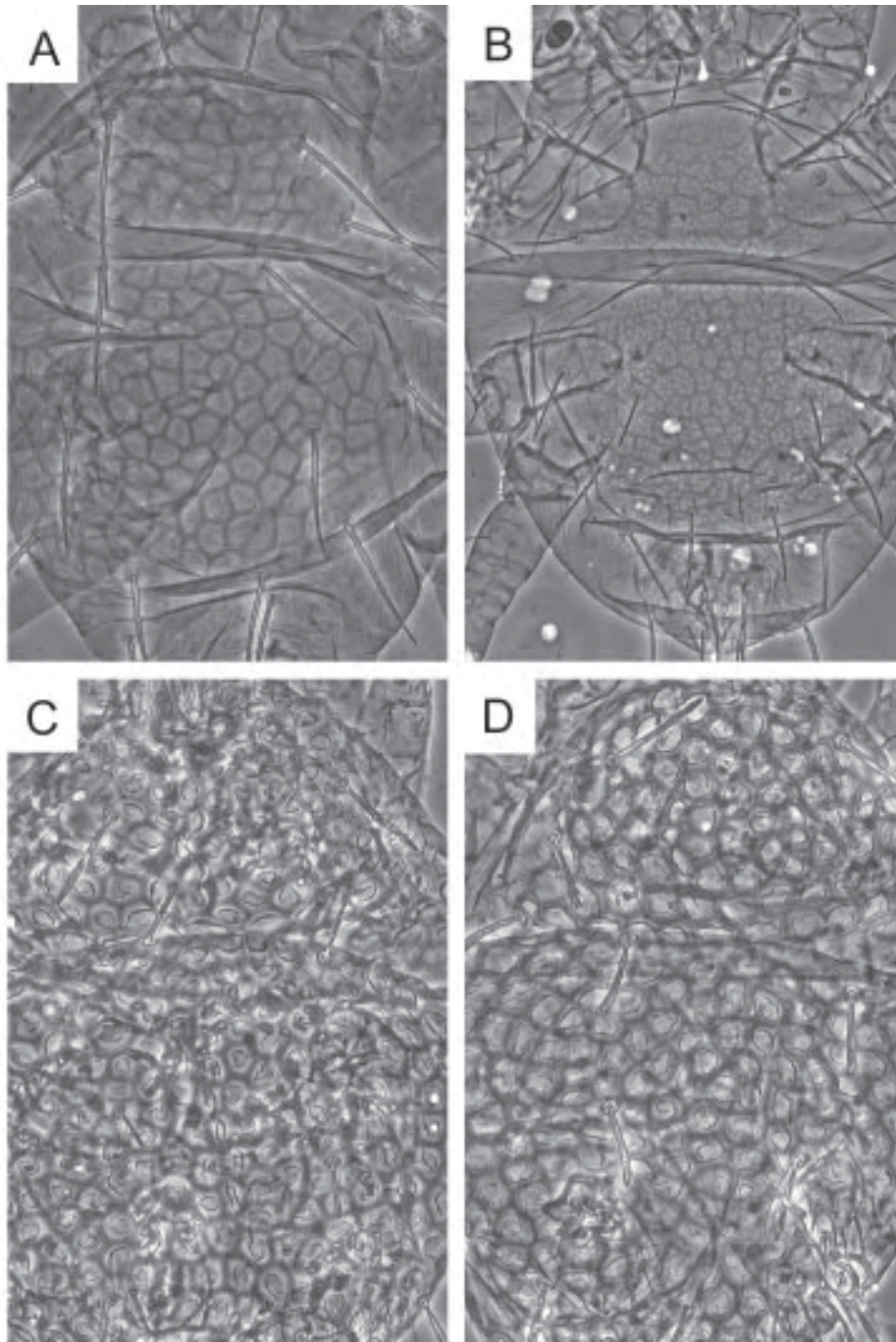
Fig. 240. *Zetzellia spiculosa* sp. n. (female). A, leg I; B, leg II; C, leg III; D, leg IV.



**Plate 1.** A, dorsal idiosoma of *Cryptognathus striatus* Luxton, 1973 (female); B, ventral idiosoma of *Cryptognathus striatus* Luxton, 1973 (female); C, dorsal idiosoma of *Cryptognathus vulgaris* Luxton, 1973 (female); D, ventral idiosoma of *Cryptognathus vulgaris* Luxton, 1973 (female).

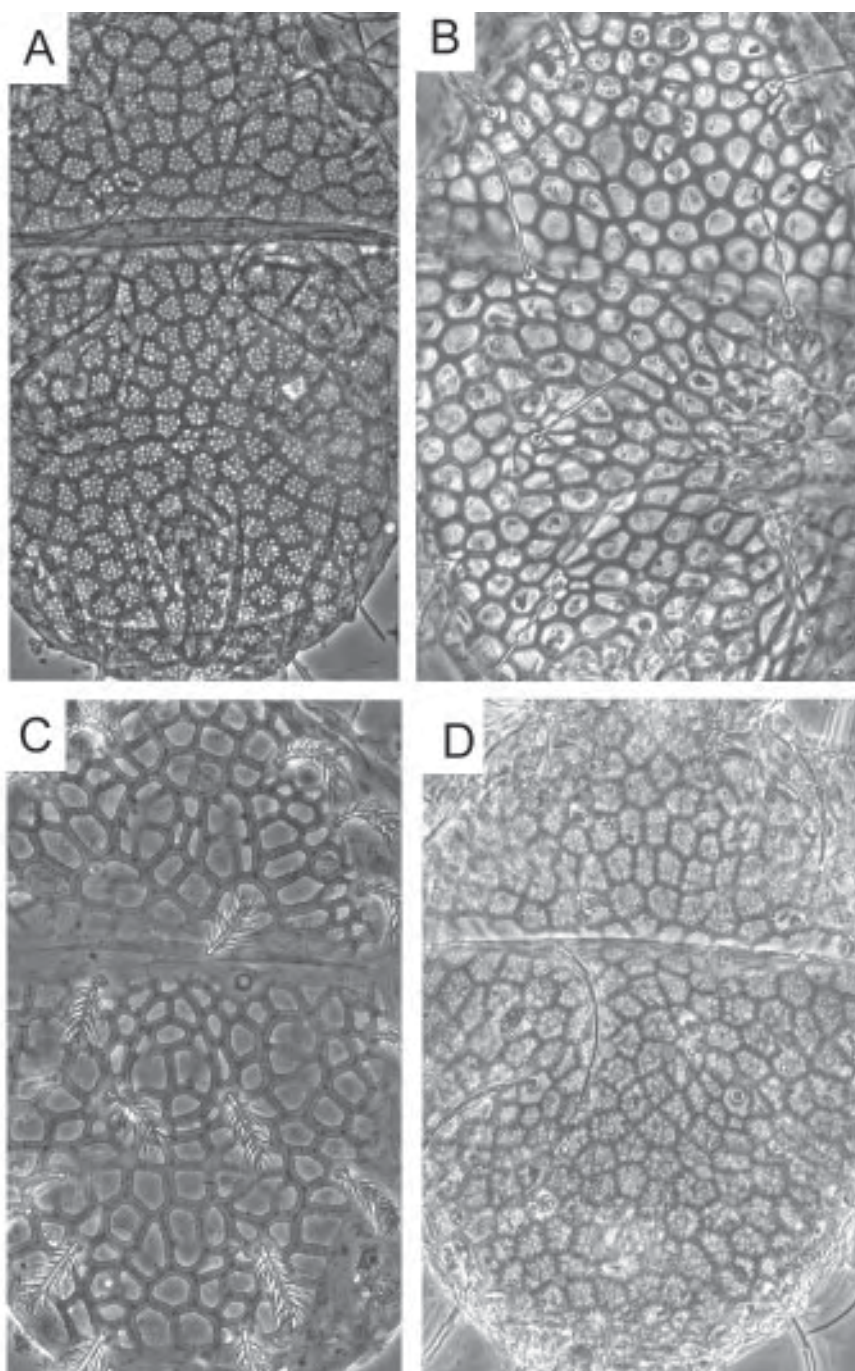


**Plate 2.** A, dorsal idiosoma of *Favognathus leopardus* Luxton, 1973 (female); B, ventral idiosoma of *Favognathus leopardus* Luxton, 1973 (female); C, dorsal idiosoma of *Agistemus collyerae* González-Rodríguez, 1963 (female); D, dorsal idiosoma of *Agistemus longisetus* González-Rodríguez, 1963 (female).

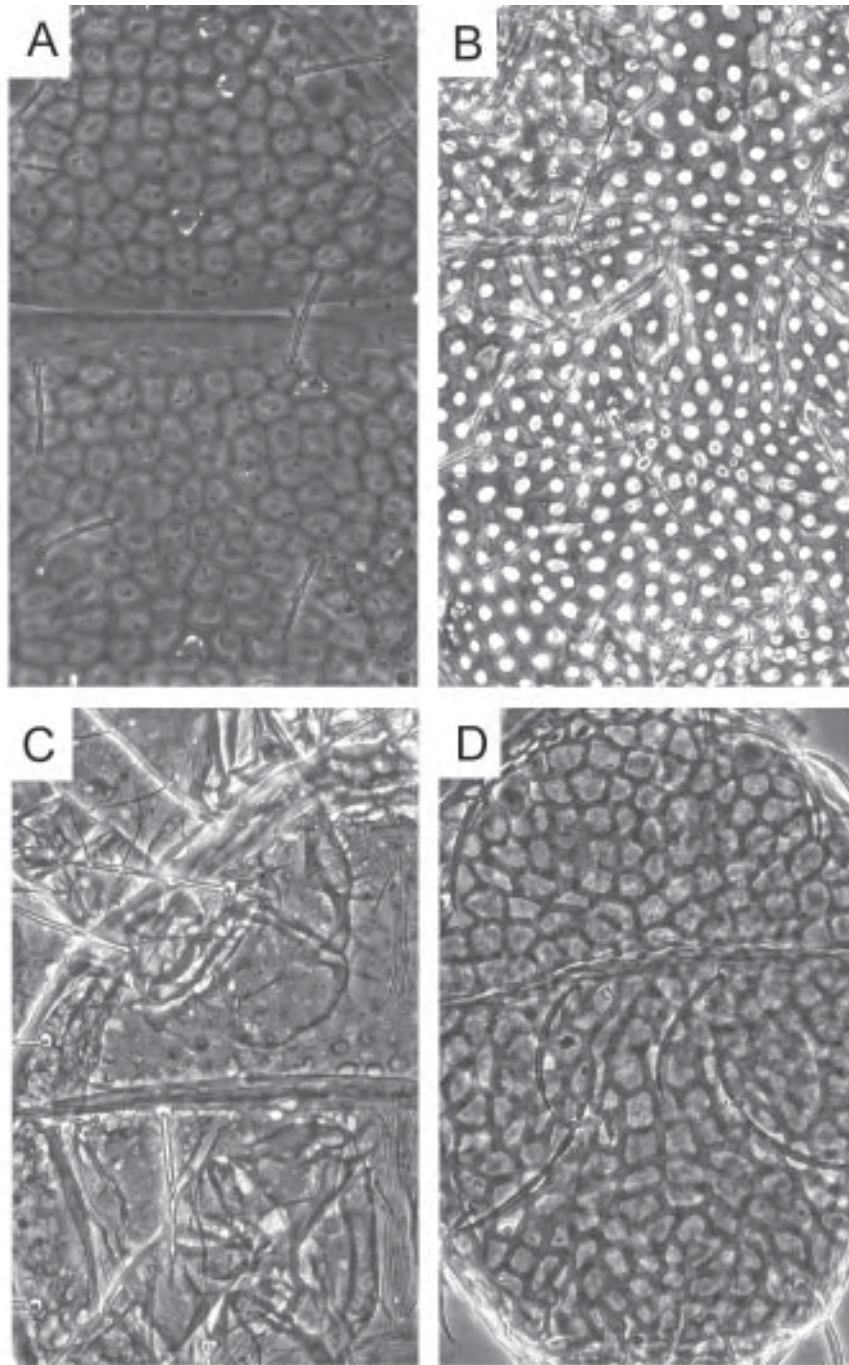


**Plate 3.** Dorsal idiosoma of females. A, *Agistemus novazelandicus* González-Rodríguez, 1963; B, *Agistemus subreticulatus* (Wood, 1967); C, *Eustigmaeus brevisetosus* (Wood, 1966); D, *Eustigmaeus clavigerus* (Wood, 1966).

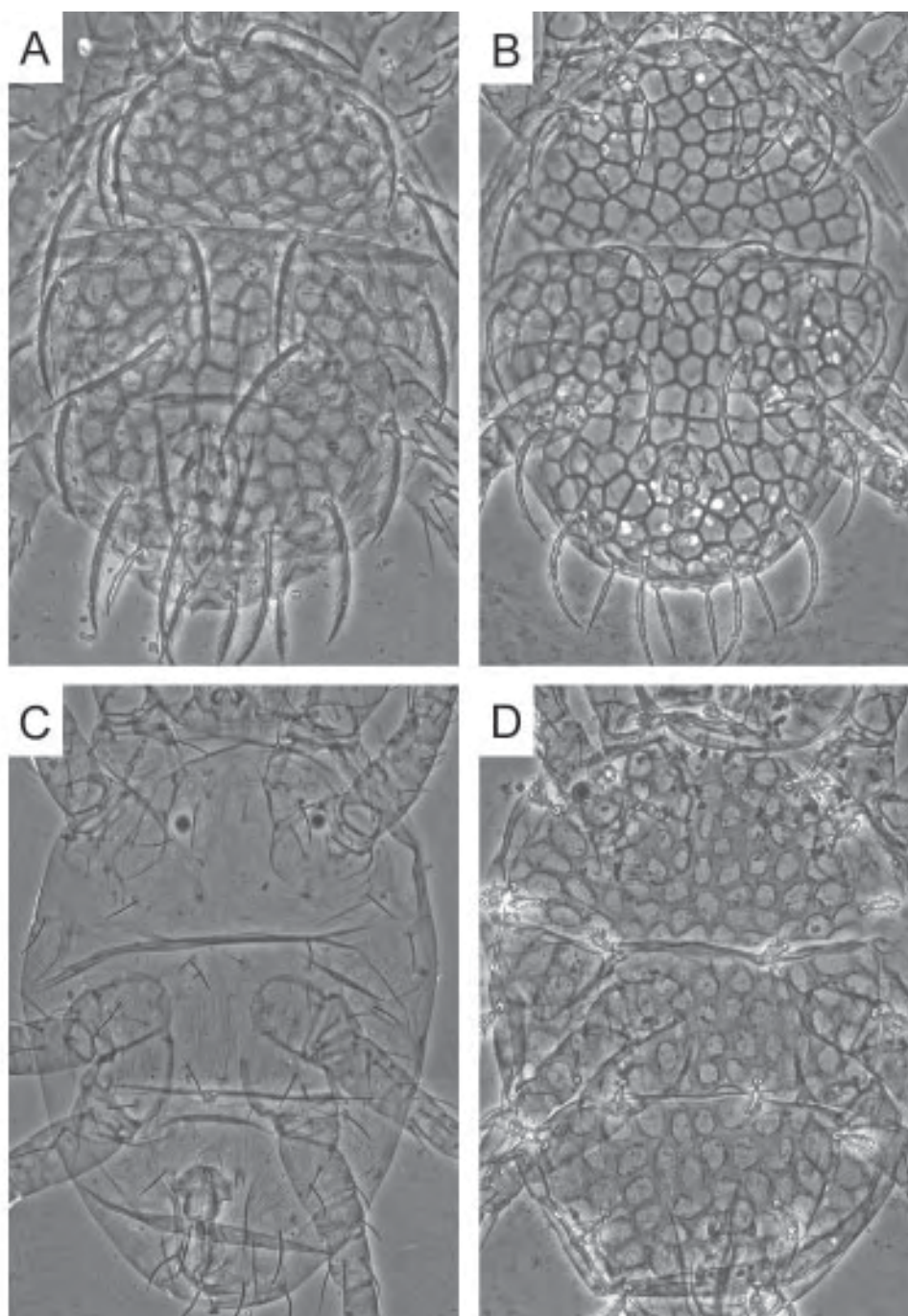




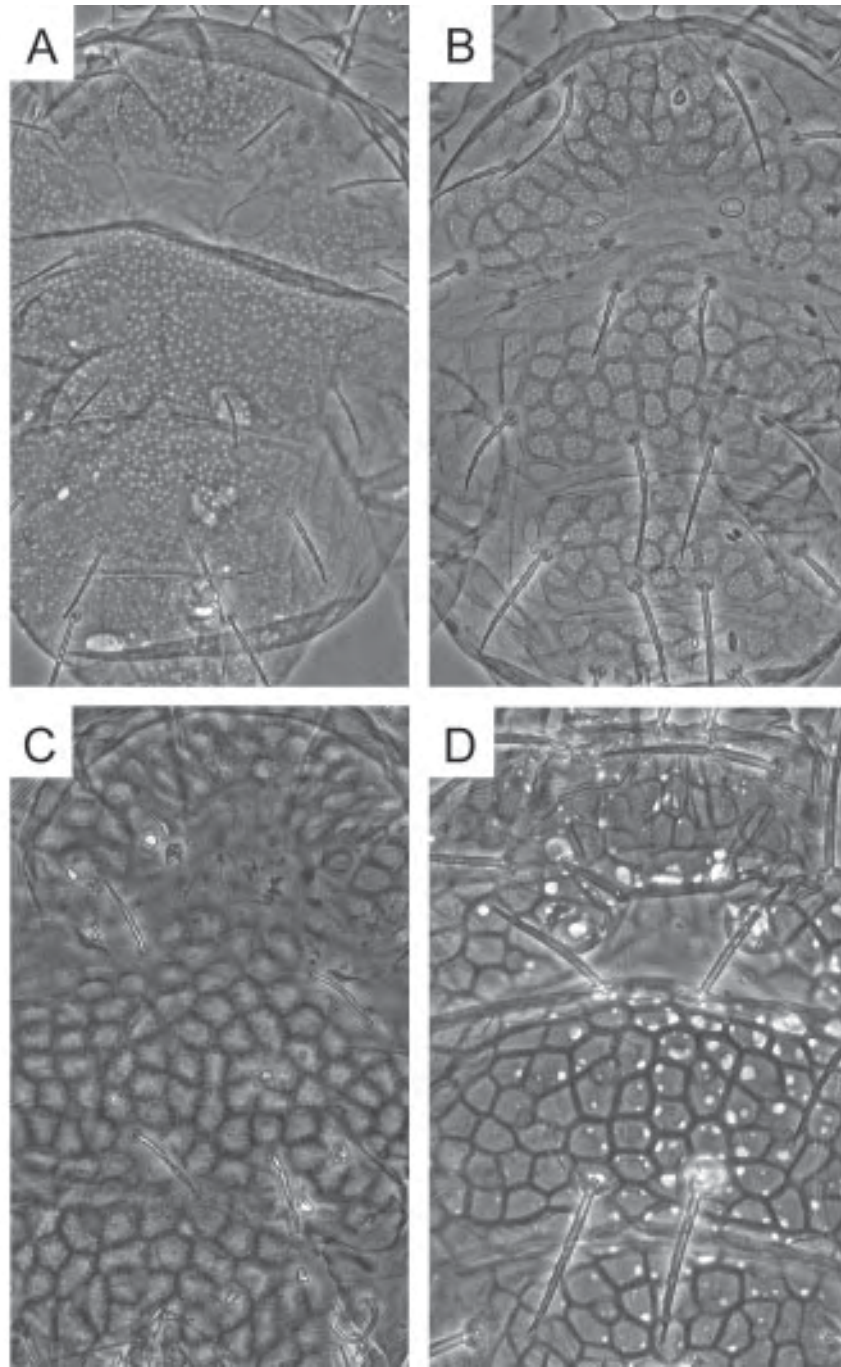
**Plate 4.** Dorsal idiosoma of females. A, *Eustigmaeus corticolus* (Wood, 1966); B, *Eustigmaeus distinctus* (Wood, 1966); C, *Eustigmaeus dumosus* (Wood, 1966); D, *Eustigmaeus eburneus* **sp. n.**



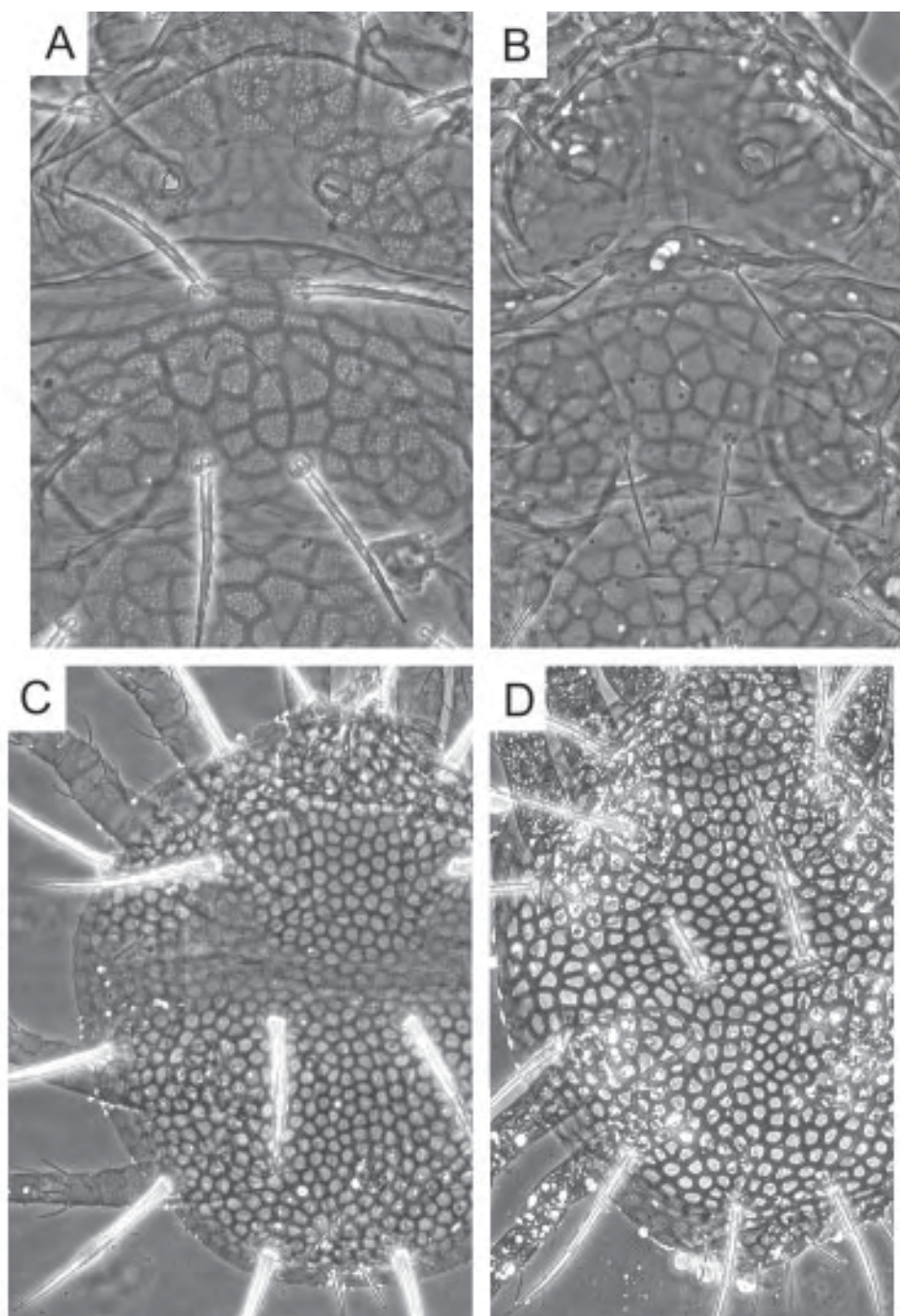
**Plate 5.** Dorsal idiosoma of females. A, *Eustigmaeus edentatus* sp. n.; B, *Eustigmaeus granulatus* (Wood, 1966); C, *Eustigmaeus manapouriensis* (Wood, 1966); D, *Eustigmaeus mixtus* (Wood, 1966).



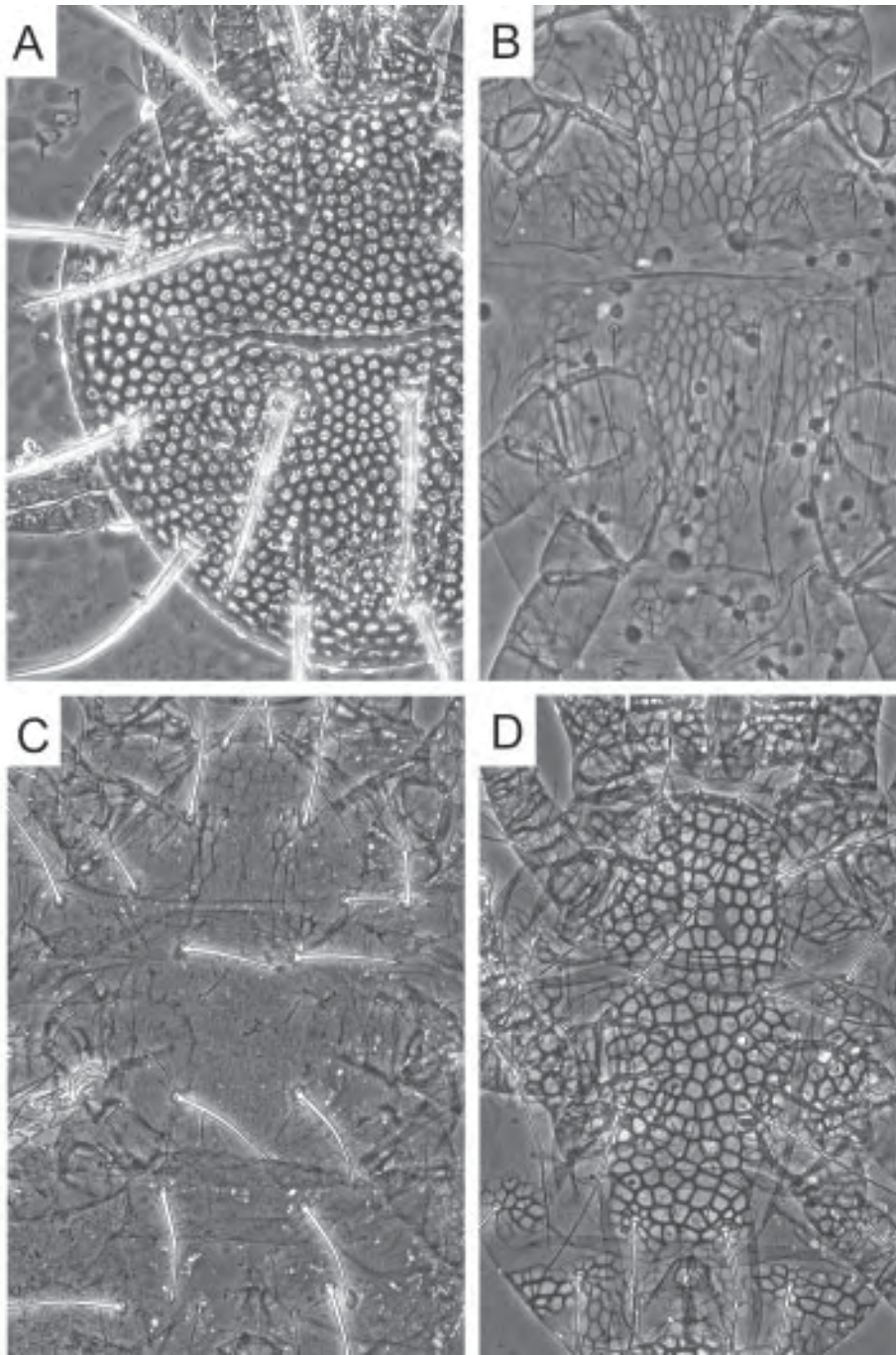
**Plate 6.** Dorsal idiosoma of females. A, *Eustigmaeus ptilosetus* sp. n.; B, *Eustigmaeus simplex* (Wood, 1966); C, *Ledermulleriopsis insica* Wood, 1967; D, *Ledermulleriopsis spinosa* Wood, 1967.



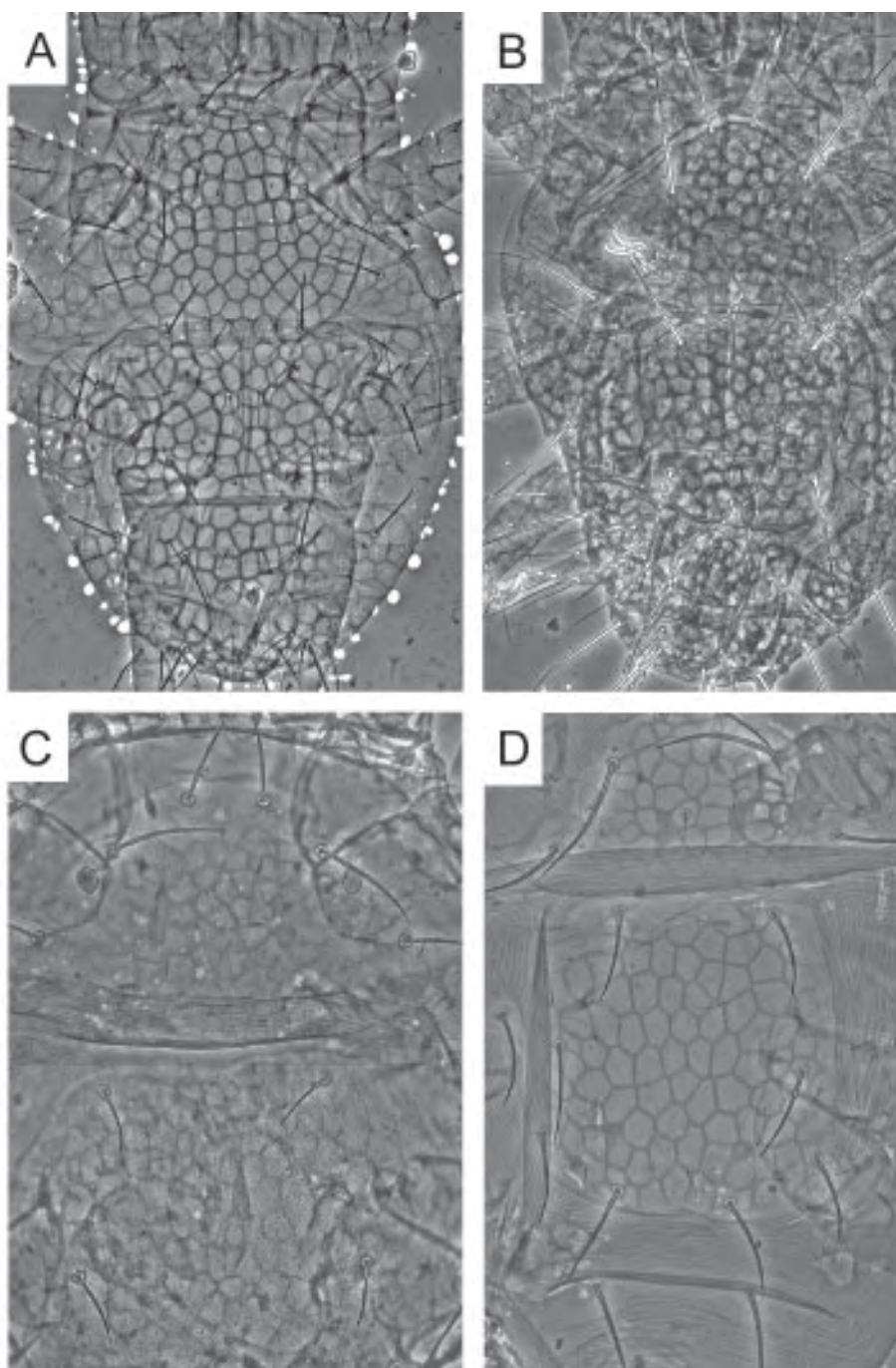
**Plate 7.** Dorsal idiosoma of females. A, *Mediolata brevistis* Wood, 1967; B, *Mediolata favulosa* Wood, 1967; C, *Mediolata oleariae* Wood, 1971; D, *Mediolata polyocularis* **sp. n.**



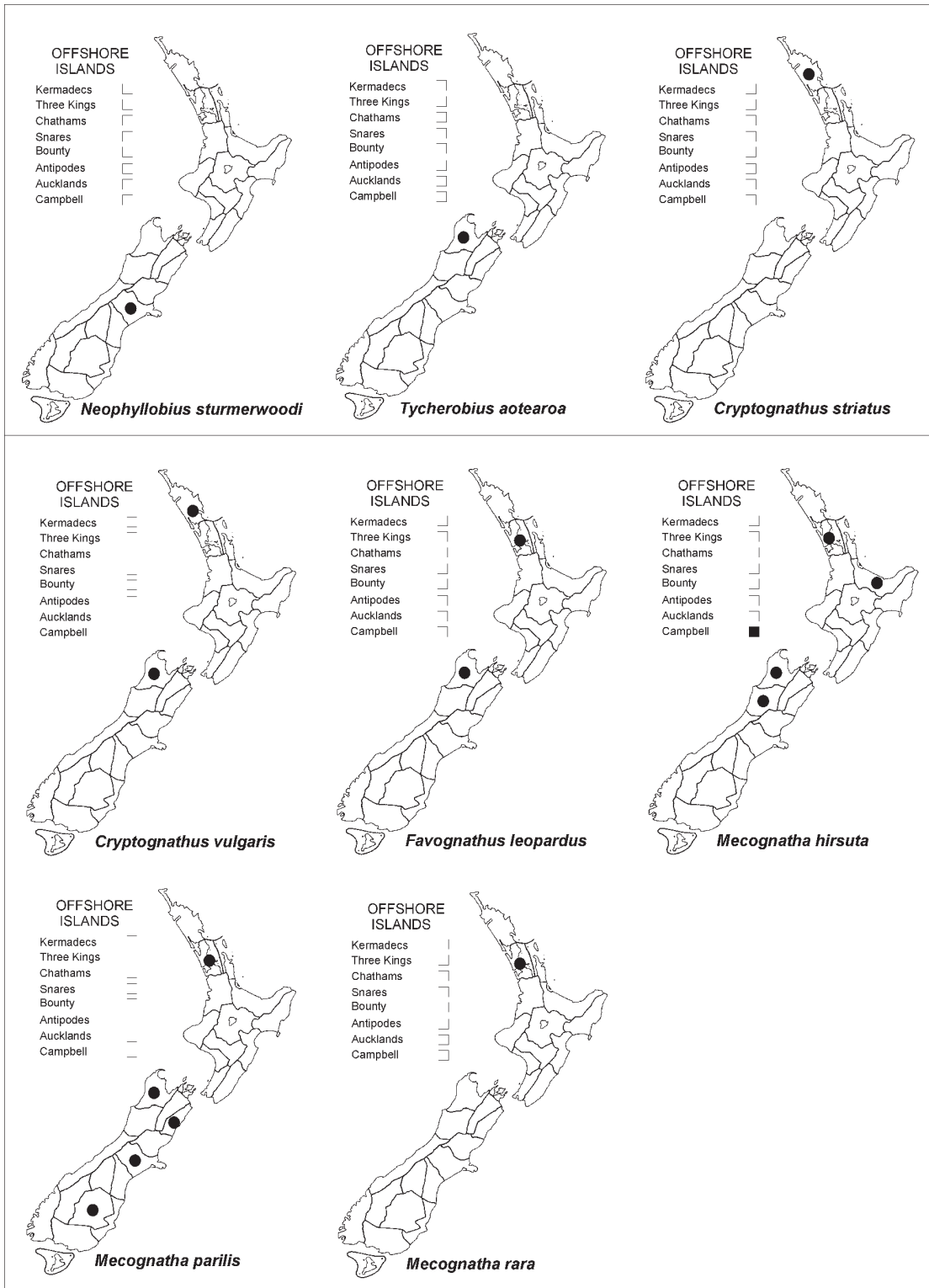
**Plate 8.** Dorsal idiosoma of females. A, *Mediolata robusta* González-Rodríguez, 1965; B, *Mediolata simplex* Wood, 1967; C, *Mullederia arborea* Wood, 1964; D, *Mullederia procurrans* **sp. n.**



**Plate 9.** Dorsal idiosoma. A, *Mulleteria scutellaris* sp. n. (female); B, *Stigmaeus brevisetis* Wood, 1967 (male); C, *Stigmaeus luxtoni* Wood, 1967 (female); D, *Stigmaeus novazealandicus* Wood, 1981 (female).

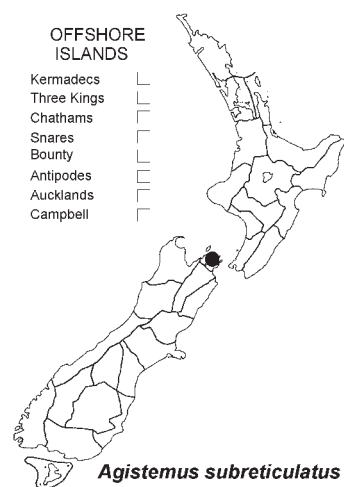
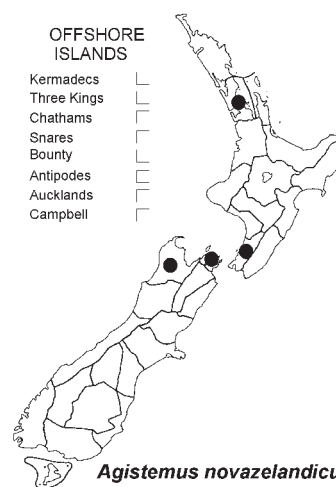
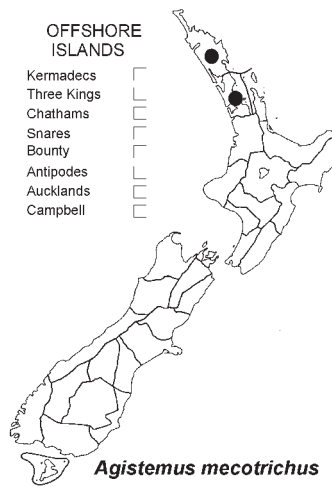
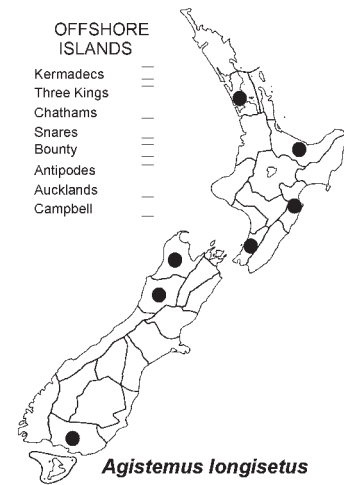
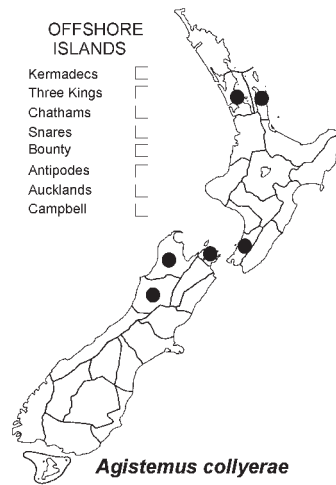
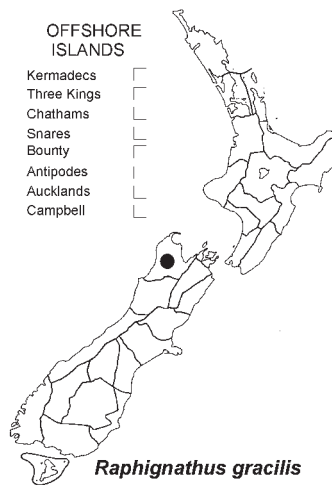
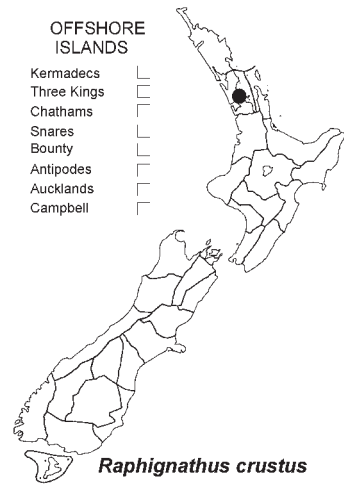
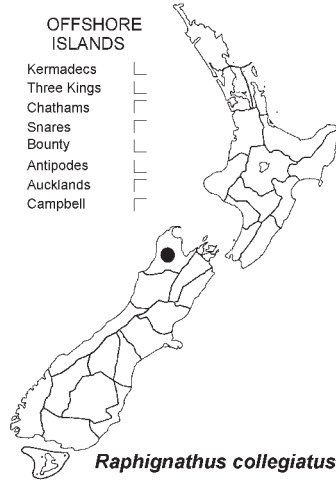
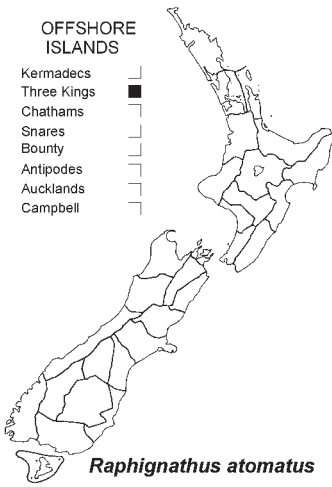


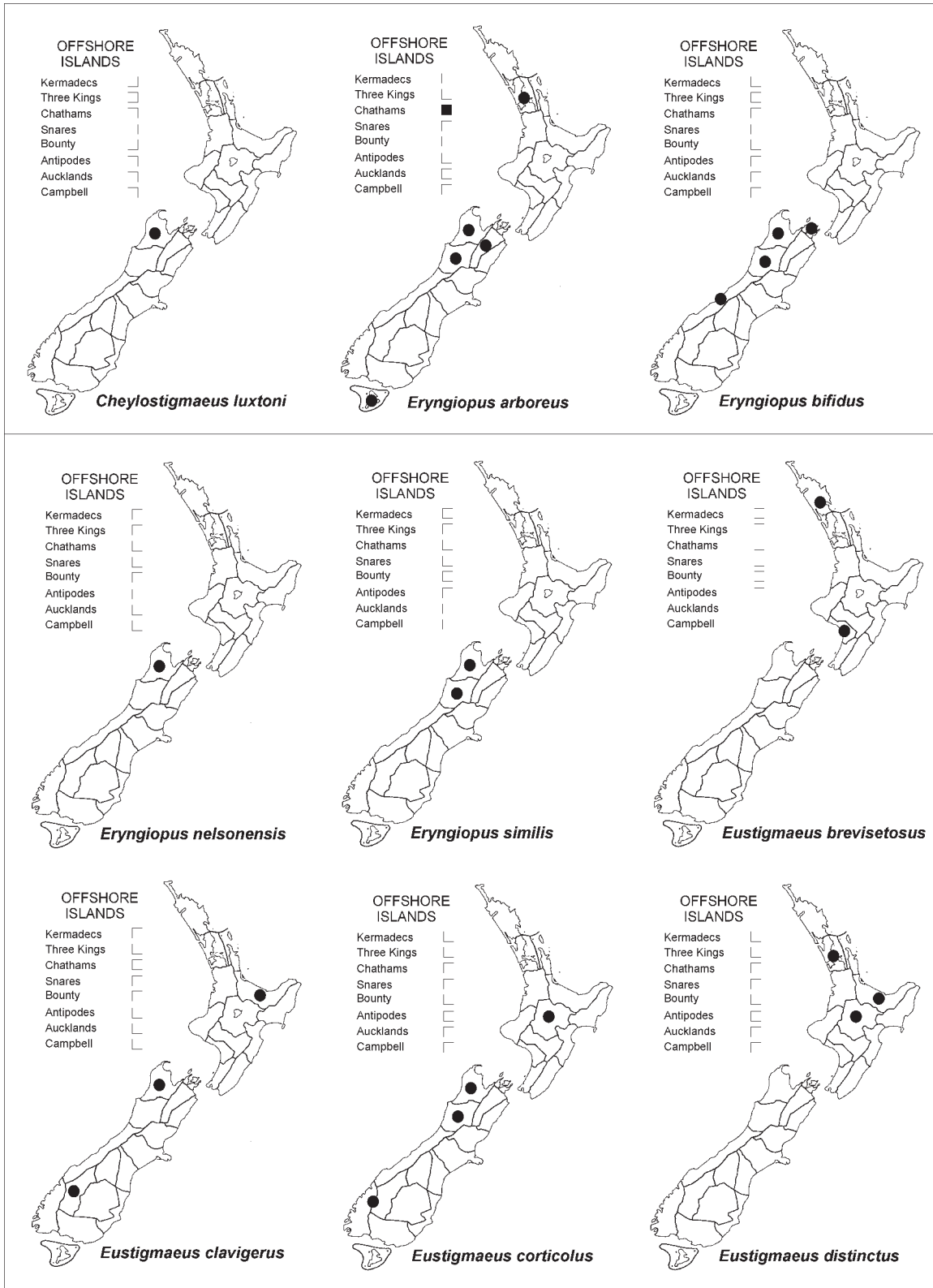
**Plate 10.** Dorsal idiosoma. A, *Stigmaeus rotundus* Wood, 1967 (deutonymph female); B, *Stigmaeus summersi* Wood, 1967 (female); C, *Zetzellia antipoda* Wood, 1967 (female); D, *Zetzellia gonzalezi* Wood, 1967 (female).

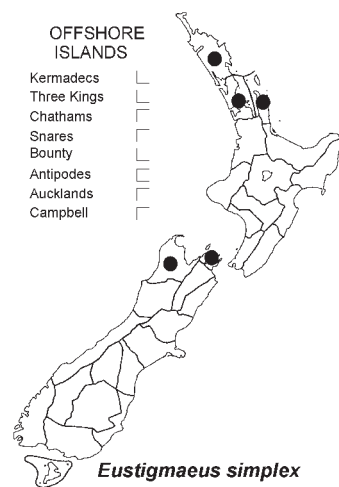
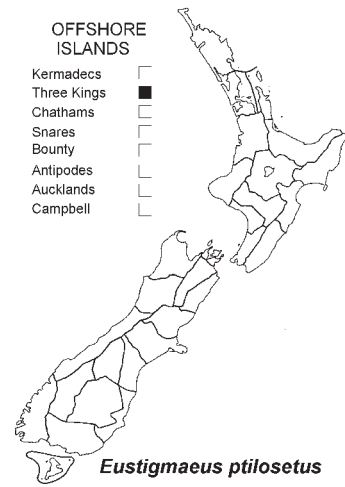
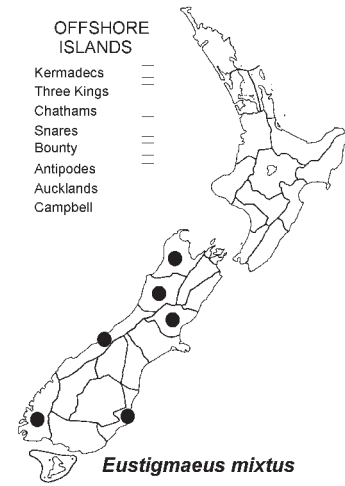
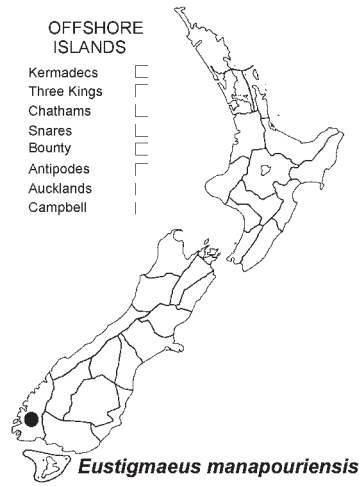
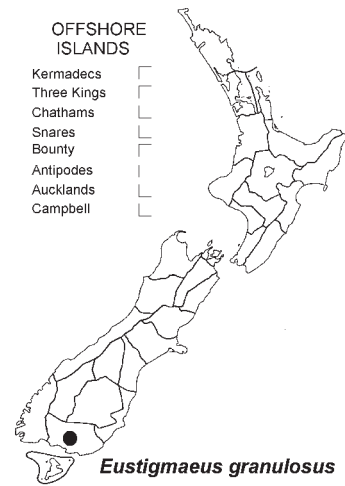
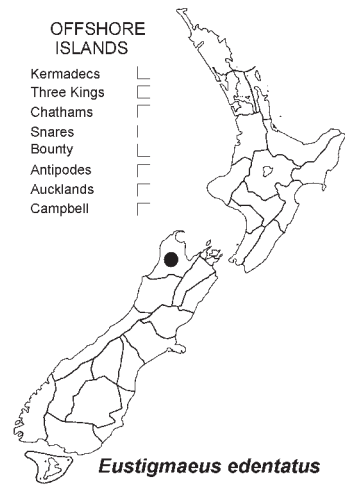
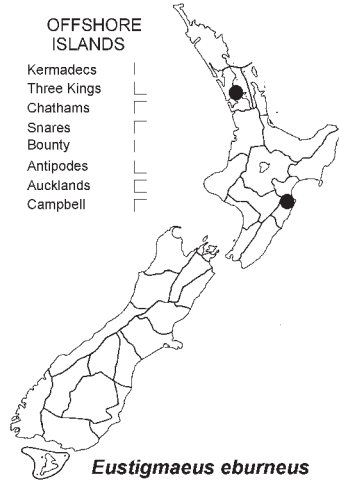
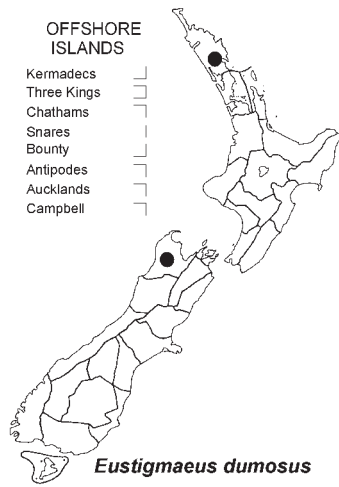


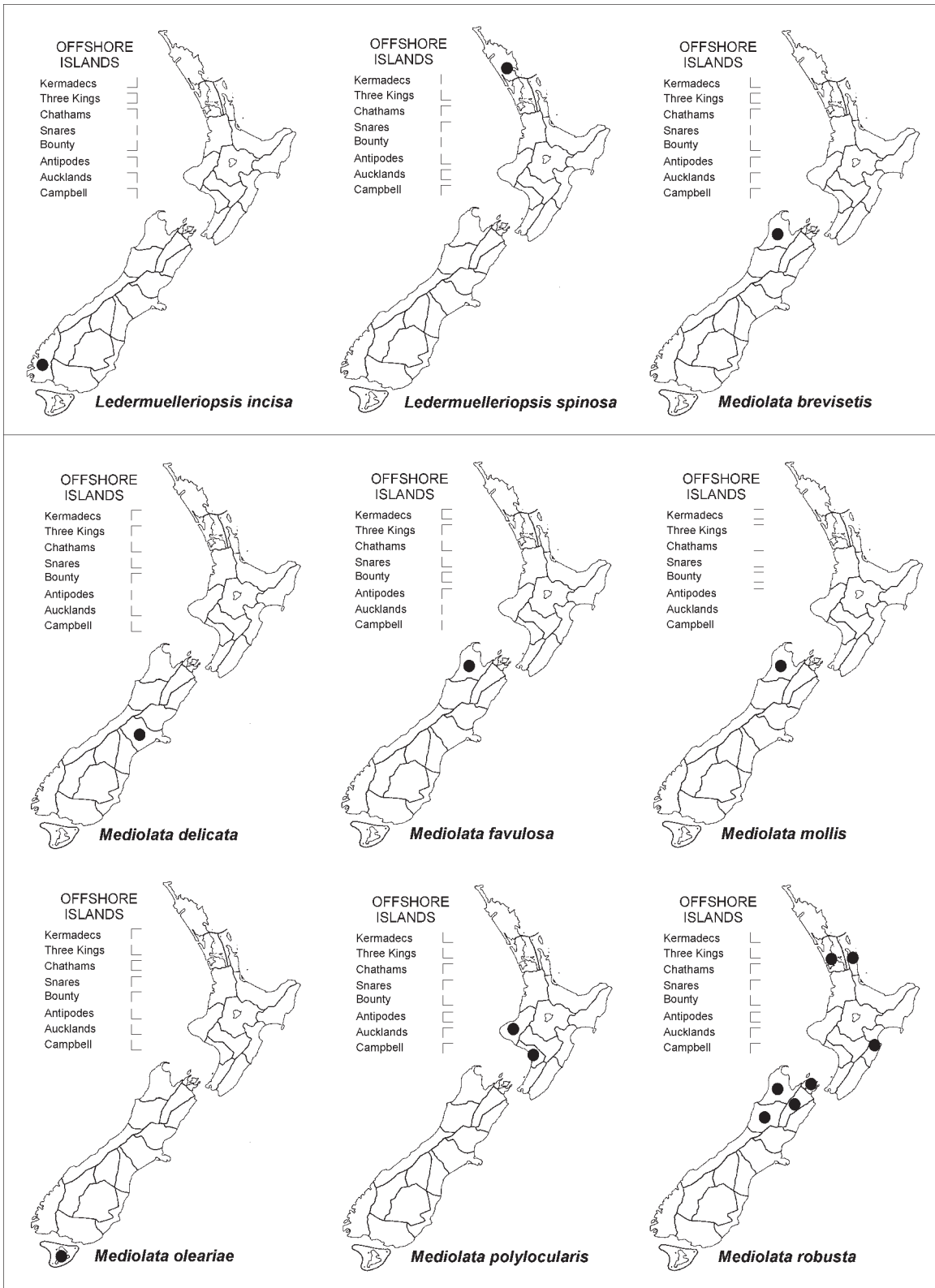
Species distribution maps (pp. 376–384) according to area codes of Crosby *et al.* (1976, 1998); detailed locality information with species descriptions.

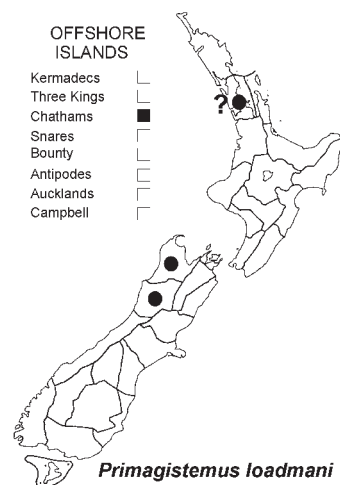
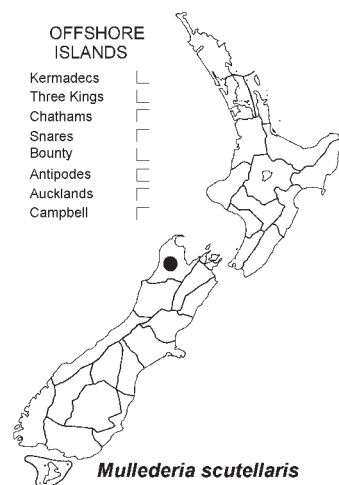
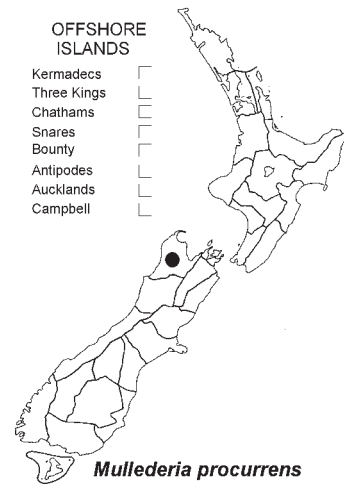
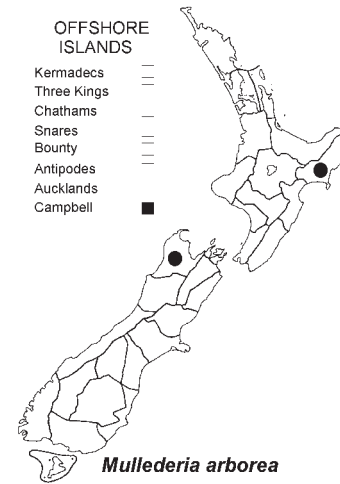
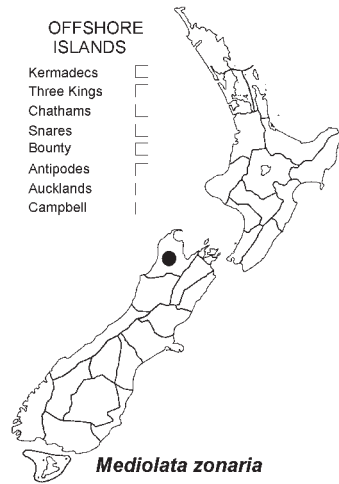
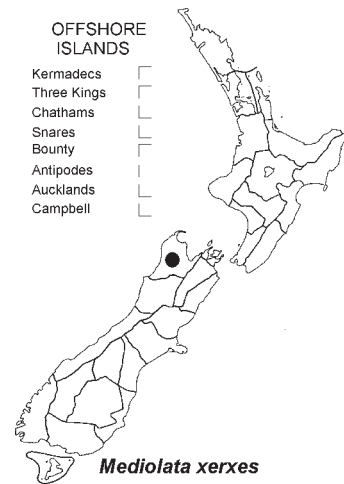
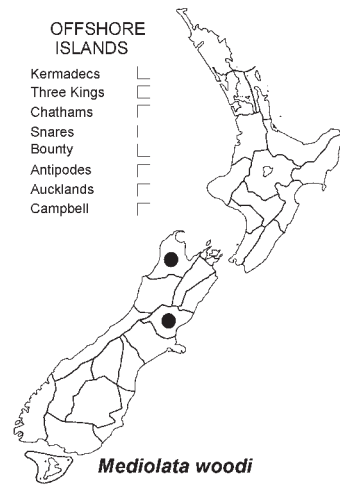
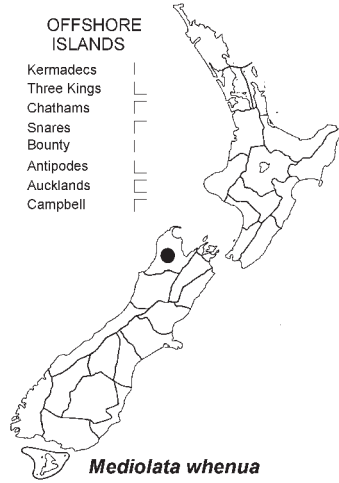
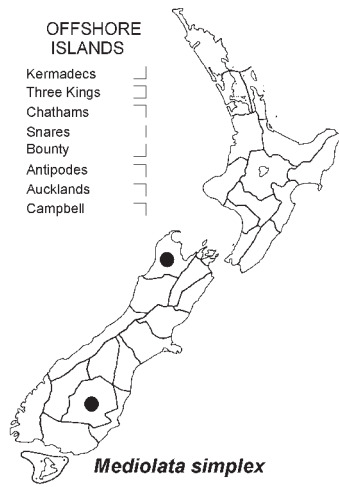


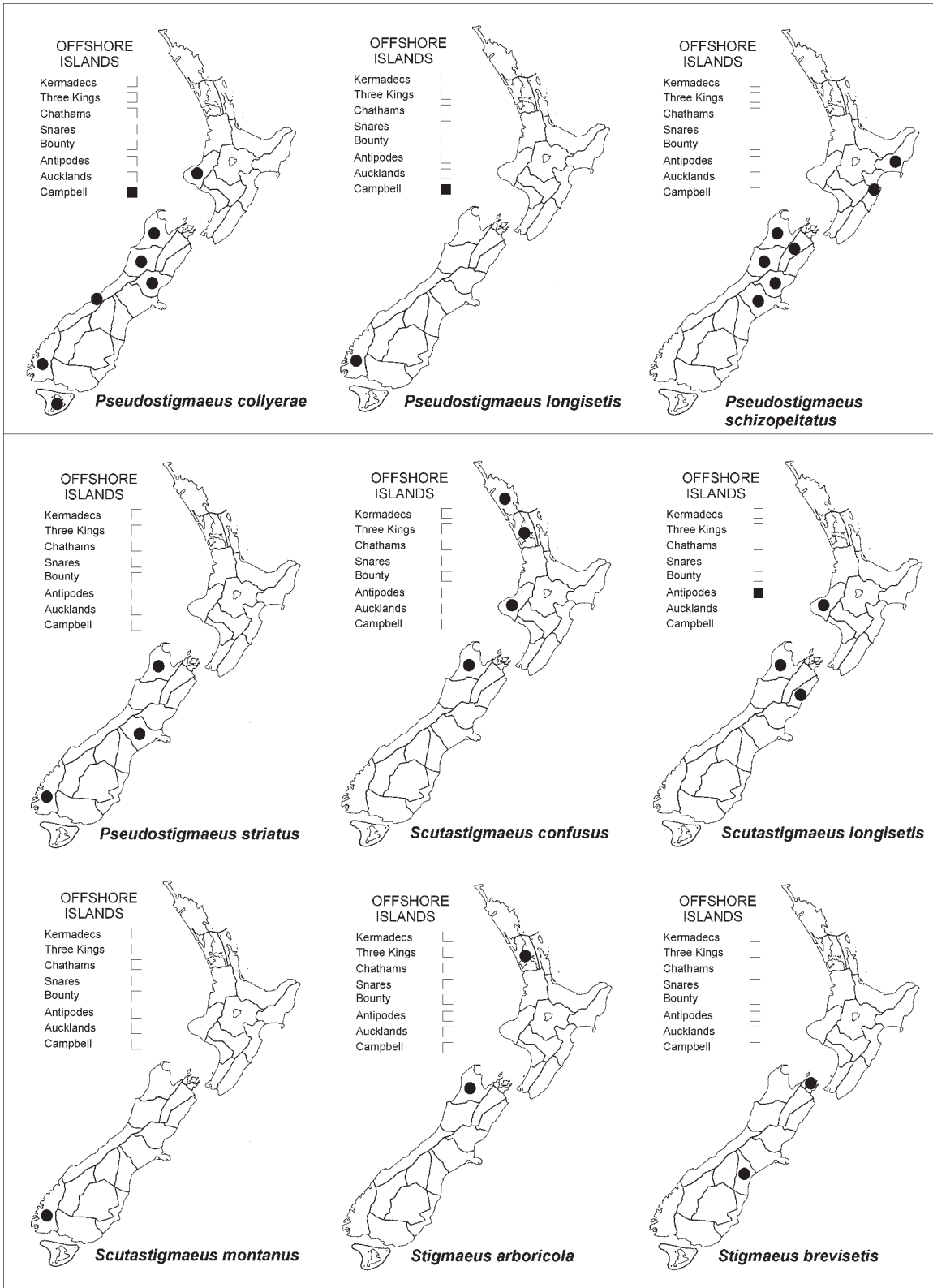


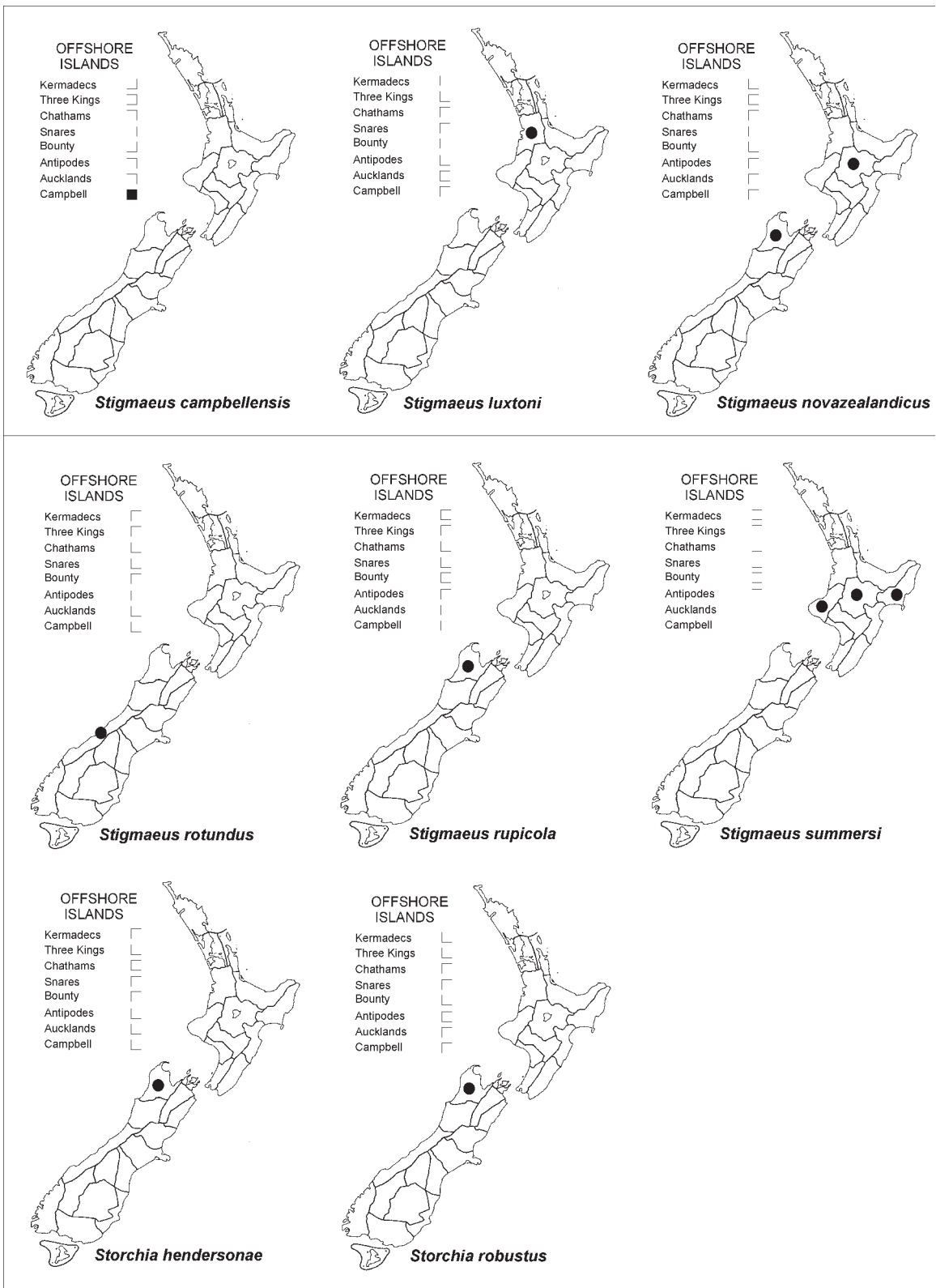


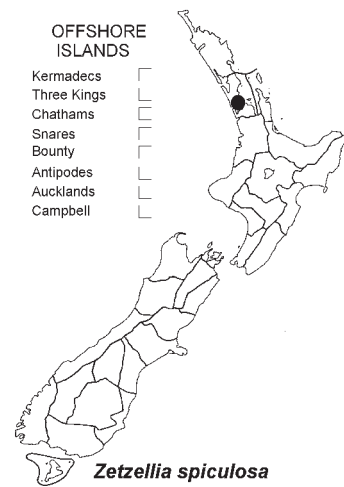
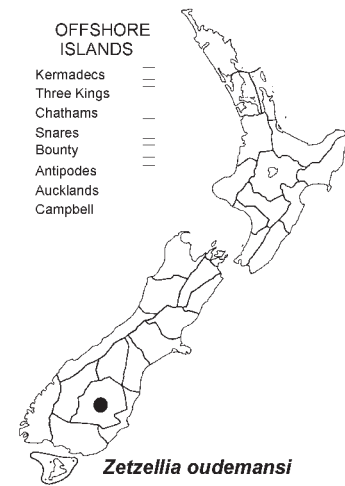
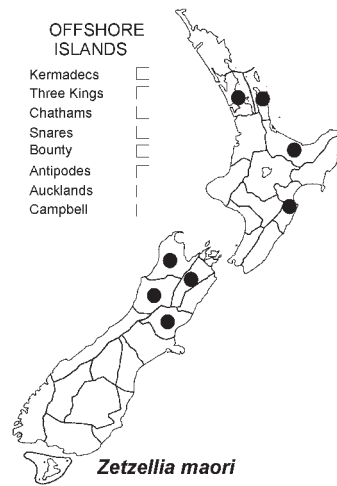
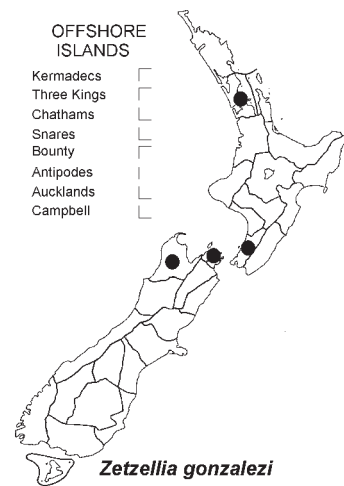
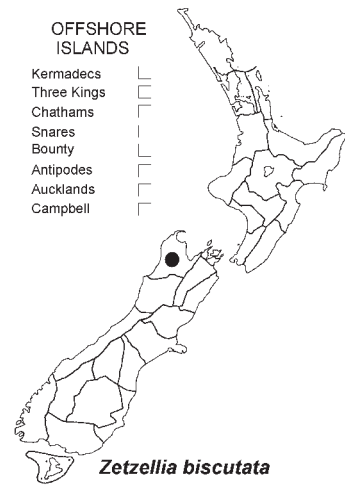
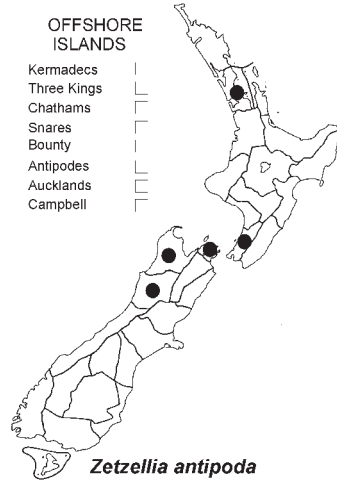
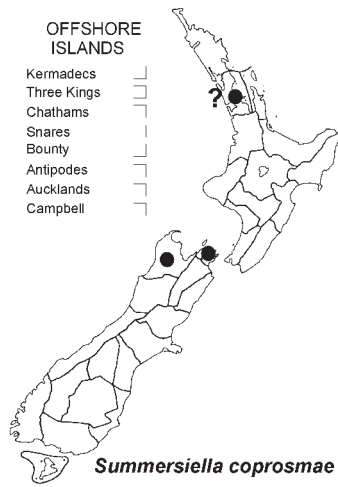














## TAXONOMIC INDEX

This index covers the nominal Acari taxa mentioned in the text, regardless of their current status in taxonomy. Taxa in bold type are those included in the checklist. Page numbers in bold type denote the start of a description, and in *italic* type a figure (pages 130–375) or distribution map (pages 376–384). See also Appendices 1 and 2 (pages 118–124) which are not indexed here.

- Acaciacarus* 29  
*Acaciacarus paradoxus* Gerson, Frost & Swift 29  
Acaridae 13  
Acariformes 11  
*Acarus rubens* Schrank 11  
*Acheles gracilis* Rack 37  
*Acheles mirabilis* Oudemans 34  
*aciculatus* Fan, *Raphignathus* 35  
*Aculus schlechtendali* 15, 17  
*acus* Summers, *Mediolata* 71  
*afra*, *Schotia* 101  
***Agistemus*** 13, 16, 18, 38, 39, 40  
***Agistemus collyerae***  
*González-Rodríguez* 31, 41, 43, 44, 51, 52, 105, 106, 108, 168, 169, 277, 367  
*Agistemus exsertus* 13, 15, 17, 18  
*Agistemus floridanus* 15  
*Agistemus industani* 15  
***Agistemus longisetus***  
*González-Rodríguez* 15, 17, 41, 42, 44, 45, 46, 51, 74, 75, 105, 106, 108, 170–173, 367, 377  
***Agistemus mecotrichus*** 41, 44, 45, 174–177, 377  
***Agistemus novazelandicus***  
*González-Rodríguez* 41, 43, 45, 102, 104, 178, 179, 368, 377  
***Agistemus subreticulatus***  
(Wood) 41, 46, 180, 181, 368, 377  
*Agistemus terminalis* 17, 40  
*ancydactyla* González-R., *Summersiella* 101, 102  
*ancydactyla*, *Pseudostigmaeus* 102  
*Annerosella* 15, 16  
***antipoda*** Wood, ***Zetzellia*** 42, 44, 46, 103, 106, 108, 348–351, 375, 384  
***aotearoa***, ***Tycherobius*** 25, 136, 137, 376  
*Apostigmaeus* 100  
*Apostigmaeus navicella*  
Grandjean 100, 101  
***arborea*** Wood, ***Mullederia*** 79, 80, 81, 282–285, 373, 381  
***arboreus*** Wood, ***Eryngiopus*** 48, 51, 70, 71, 72, 75, 78, 82, 85, 87, 93, 102, 107, 108, 186, 187, 378  
***arboricola*** Wood, ***Stigmaeus*** 49, 75, 91, 92, 314–317, 382  
*Ascarina lucida* 46  
*Ascarina* sp. 106  
Astigmata 13  
***atomatus***, ***Raphignathus*** 34, 35, 158, 159, 377  
*australis* González-Rodríguez, *Zetzellia* 105, 110  
*Barbutia* 16  
Barbutiidae 11, 12, 13, 14, 16, 21, 126–130  
Bdellidae 42  
***bifidus*** Wood, ***Eryngiopus*** 28, 42, 44, 48, 49, 50, 52, 75, 85, 87, 107, 108, 188, 189, 378  
***biscutata***, ***Zetzellia*** 103, 105, 110, 352, 353, 384  
*Bisetulobius* 16, 23  
*Brevipalpus phoenicis* 108  
*Brevipalpus* sp. 43, 44, 46, 108  
***brevisetis*** Wood, ***Mediolata*** 49, 68, 69, 70, 82, 246–249, 372, 380  
***brevisetis*** Wood, ***Stigmaeus*** 92, 93, 318, 319, 374, 382  
*brevisetosa*, *Ledermuelleria*  
Wood 54, 55  
***brevisetosus*** (Wood), ***Eustigmaeus*** 54, 196, 197, 368, 378  
*Bryobia rubrioculus* 44  
*Caligohomus* 15, 16, 22, 38, 40  
*Caligonella* 16  
Caligonellidae 11, 12, 13, 14, 16, 18, 21, 75  
*Caligonus petrobisus* Canestrini 34  
*Caligonus robustus* Berlese 100, 101  
*Caligonus terminalis* Quayle 40  
*Camerobia* 16, 22, 23  
***Camerobiidae*** 11, 12, 13, 14, 15, 16, 18, 21, 22, 23, 126–130  
***campbellensis***, ***Stigmaeus***  
Wood 92, 94, 320, 321, 383  
*Chaudhria* 40, 53  
Cheyletidae 13  
***Cheylostigmaeus*** 15, 16, 22, 38, 40, 47, 97  
*Cheylostigmaeus grandiceps*  
Willmann 47  
***Cheylostigmaeus luxtoni*** Wood 47, 182–185, 378  
*cinnabarinus*, *Tetranychus* 15, 18  
*citri*, *Panonychus* 15, 44  
*clavigera*, *Ledermuelleria* Wood 55, 56  
***clavigerus*** (Wood), ***Eustigmaeus*** 54, 55, 198–201, 368, 378  
***collegiatus*** Atyeo, Baker & Crossley, ***Raphignathus*** 34, 35, 160, 161, 377  
***collyerae*** González-Rodríguez, ***Agistemus*** 31, 41, 43, 44, 51, 52, 105, 106, 108, 168, 169, 367, 377  
***collyerae*** Wood, ***Pseudostigmaeus*** 49, 50, 51, 72, 75, 78, 82, 83, 85, 87, 108, 292–295, 382  
*collyerae*, *Zetzellia* 41  
***confusus*** (Wood), ***Scutastigmaeus*** 89, 90, 308, 309, 382  
***coprosmae*** (Wood), ***Summersiella*** 46, 102, 346, 347, 384  
*coprosmae* Wood, *Stigmaeus*

- 101, 102  
*Coptocheles* 16  
*cornus*, *Yezonychus* 46, 104, 105, 106  
*corticola*, *Ledermuelleria* Wood 56, 57  
*corticolus* (Wood),  
*Eustigmaeus* 31, 53, **56**, 60, 65, 82, 202–205, 369, 378  
*cruentus* Koch, *Stigmaeus* 91  
*crustus*, *Raphignathus* 34, **36**, 37, 162–165, 377  
**Cryptognathidae** 11, 12, 13, 14, 16, 21, **25**, 26, 126–130  
*Cryptognathus* (*Favognathus*) 28  
*Cryptognathus* 16, 25, **26**, 28  
*Cryptognathus cucurbita* Berlese 28  
*Cryptognathus legena* Kramer 26  
*Cryptognathus striatus* Luxton **26**, 138, 139, 366, 376  
*Cryptognathus vulgaris* Luxton 26, **27**, 51, 140, 141, 366, 376  
*cucurbita* Berlese,  
*Cryptognathus* 28  
*cucurbitacearum*, *Tetranychus* 15  
Dasythyreidae 11, 12, 13, 14, 21, 126–130  
*Dasythyreus* 14, 16  
*Decaphyllobius* 16, 23  
*delicata*, *Mediolata* 68, **70**, 71, 250–253, 380  
*distincta*, *Ledermuelleria* Wood 57, 58  
*distinctus* (Wood),  
*Eustigmaeus* 54, **57**, 61, 206–209, 369, 378  
*dumosa*, *Ledermuelleria* Wood 58, 59  
*dumosus* (Wood),  
*Eustigmaeus* **58**, 210–213, 368, 379  
*dyemkoumai* Abonnenc,  
*Eustigmaeus* 14  
*eburneus*, *Eustigmaeus* 54, **59**, 60, 65, 214–217, 369, 379  
*edentatus*, *Eustigmaeus* 54, **60**, 61, 64, 218–221, 370, 379  
*elegans* Berlese,  
*Neophyllobius* 23  
*elongatus* Berlese, *Stigmaeus* 91  
*Eryngiopus* 13, 16, 38, 39, **48**  
*Eryngiopus arboreus* Wood **48**, 51, 70, 71, 72, 75, 78, 82, 85, 87, 93, 102, 107, 108, 186, 187, 378  
*Eryngiopus bifidus* Wood 28, 42, 44, 48, 49, **50**, 52, 75, 85, 87, 107, 108, 188, 189, 378  
*Eryngiopus gracilis* Summers 48  
*Eryngiopus nelsonensis* Wood 42, 48, **51**, 52, 108, 190–193, 378  
*Eryngiopus similis* Wood 48, **52**, 194, 195, 378  
Eupalopsellidae 11, 12, 13, 14, 15, 16, 18, 22, 126–130  
*Eupalopsellus* 13, 16  
*Eupalopsis* 13, 16  
*Eustigmaeus* 14, 15, 16, 38, 39, 40, **53**  
*Eustigmaeus brevisetosus* (Wood) **54**, 196, 197, 368, 378  
*Eustigmaeus clavigerus* (Wood) 54, **55**, 198–201, 368, 378  
*Eustigmaeus corticolus* (Wood) 31, 53, **56**, 60, 65, 82, 202–205, 369, 378  
*Eustigmaeus distinctus* (Wood) 54, **57**, 61, 206–209, 369, 378  
*Eustigmaeus dumosus* (Wood) **58**, 210–213, 369, 379  
*Eustigmaeus dyemkoumai* Abonnenc 14  
*Eustigmaeus eburneus* 54, **59**, 60, 65, 214–217, 369, 379  
*Eustigmaeus edentatus* 54, **60**, 61, 64, 218–221, 370, 379  
*Eustigmaeus frigidus* 15  
*Eustigmaeus gamma* (Chaudri) 14  
*Eustigmaeus gorgasi* (Chaudri) 14  
*Eustigmaeus granulosis* (Wood) 54, **61**, 222–225, 370, 379  
*Eustigmaeus johnstoni* Zhang & Gerson 14  
*Eustigmaeus manapouriensis* (Wood) 54, **62**, 63, 226–229, 370, 379  
*Eustigmaeus mixtus* (Wood) 54, 61, **63**, 88, 230–233, 370, 379  
*Eustigmaeus parasiticus* (Chaudri) 14  
*Eustigmaeus ptilosetus* 54, **64**, 65, 234–237, 371, 379  
*Eustigmaeus simplex* (Wood) 54, **65**, 66, 238–241, 371, 379  
*Eutetranychus orientalis* 15  
*Exothorhis* 13, 16  
*exsertus*, *Agistemus* 13, 15, 17, 18  
*Favognathus* 16, 26, **28**  
*Favognathus leopardus* Luxton **28**, 142, 143, 367, 376  
*favulosa*, Wood *Mediolata* 49, 68, **71**, 107, 254, 255, 372, 380  
*floridanus*, *Agistemus* 15  
*frigidus*, *Eustigmaeus* 15  
*gamma* (Chaudri),  
*Eustigmaeus* 14  
*gonzalezi* Wood, *Zetzellia* 41, 43, 103, 104, **105**, 108, 354, 355, 375, 384  
*gorgasi* (Chaudri), *Eustigmaeus* 14  
*gracilis* (Rack), *Raphignathus* 34, **37**, 38, 166, 167, 377  
*gracilis* Rack, *Acheles* 37  
*gracilis* Summers, *Eryngiopus* 48  
*granati*, *Tenuipalpus* 15  
*grandiceps* Willmann,  
*Cheylostigmaeus* 47  
*granulosa*, *Ledermuelleria* Wood 61, 62  
*granulosus* (Wood),  
*Eustigmaeus* 54, **61**, 222–

- 225, 370, 379  
*guiyanensis* Hu, Jing & Liang,  
*Raphignathus* 35
- hendersonae*, *Storchia* 100,**  
 101, 342, 343, 383
- hirsuta* Wood, *Mecognatha* 29,**  
**30, 31, 32, 41, 57, 82, 108,**  
 144–151, 376
- Homocaligidae 11, 12, 13, 14,  
 15, 16, 22, 126–130
- Homocaligus* 15, 16
- incisa* Wood,**  
***Ledermuelleriopsis* 67, 242,**  
 243, 371, 380
- industani*, *Agistemus* 15
- johnstoni* Womersley,  
*Raphignathus* 18
- johnstoni* Zhang & Gerson,  
*Eustigmaeus* 14
- kermesinus* Koch, *Stigmaeus*  
 53
- lambi*, *Tetranychus* 41, 42
- Ledermuelleria* 53
- Ledermuelleria brevisetosa*  
 Wood 54, 55
- Ledermuelleria clavigera* Wood  
 55, 56
- Ledermuelleria corticola* Wood  
 56, 57
- Ledermuelleria distincta* Wood  
 57, 58
- Ledermuelleria dumosa* Wood  
 58, 59
- Ledermuelleria granulosa*  
 Wood 61, 62
- Ledermuelleria*  
*manapouriensis* Wood 62,  
 63
- Ledermuelleria mixta* Wood 63,  
 64
- Ledermuelleria neomaculata*  
 Meyer & Ryke 79
- Ledermuelleria segnis* Koch 53
- Ledermuelleria simplex* Wood  
 65, 66
- Ledermuelleriopsis* 15, 38, 39,**  
**66, 67**
- Ledermuelleriopsis incisa***  
 Wood 67, 242, 243, 371, 380
- Ledermuelleriopsis spinosa***  
 Wood 67, 244, 245, 371, 380
- Ledermuelleriopsis triscutata*  
 Willmann 66
- legena* Kramer, *Cryptognathus*  
 26
- leopardus*, *Favognathus* Luxton**  
**28, 142, 143, 367, 376**
- loadmani* (Wood),**  
***Primagistemus* 31, 49, 57,**  
 70, 81, 85, 108, 290, 291,  
 381
- loadmani* Wood, *Stigmaeus* 81
- lombardinii* Summers and  
 Schlinger, *Neophyllobius* 25
- longirostris* Berlese, *Stigmaeus*  
 68, 103
- longisetis* (Wood),**  
***Scutastigmaeus* 88, 89, 90,**  
 310, 311, 382
- longisetis* Wood,**  
***Pseudostigmaeus* 83, 85,**  
 296–299, 382
- longisetis* Wood, *Stigmaeus* 88,  
 90
- longisetus* González-Rodríguez,**  
***Agistemus* 15, 17, 41, 42,**  
 44, 45, 46, 51, 74, 75, 105,  
 106, 108, 170–173, 367, 377
- lucida*, *Ascarina* 46
- luxtoni* Wood,**  
***Cheylostigmaeus* 47, 182–**  
 185, 378
- luxtoni* Wood, *Stigmaeus* 92,**  
**94, 322–325, 374, 383**
- Macrostigmaeus* 16, 40
- Macrostigmaeus serpentinus*  
 Berlese 40
- Makilingeria* 16, 38, 40
- mali*, *Zetzellia* 15, 17
- manapouriensis*,  
*Ledermuelleria* Wood 62, 63
- manapouriensis* (Wood),**  
***Eustigmaeus* 54, 62, 63,**  
 226–229, 370, 379
- maori* Gonzalez, *Zetzellia* 31,**  
 42, 44, 49, 51, 52, 57, 75, 77,  
 82, 85, 103, 106, 356–359,  
 384
- Mecognatha* 16, 29, 30**
- Mecognatha hirsuta* Wood 29,**  
**30, 31, 32, 41, 57, 82, 108,**  
 144–151, 376
- Mecognatha parilis* 30, 31, 32,**  
 33, 152–155, 376
- Mecognatha rara* 30, 32, 33,**  
 156, 157, 376
- Mecognathidae* 11, 12, 13, 14,**  
 16, 22, 29, 126–130
- mecotrichus*, *Agistemus* 41,**  
**44, 45. 174–177, 377**
- Mediolata* 13, 16, 38, 39, 68,**  
 103
- Mediolata acus* Summers 71
- Mediolata brevisetis* Wood 49,**  
 68, 69, 70, 82, 246–249,  
 372, 380
- Mediolata delicata* 68, 70, 71,**  
 250–253, 380
- Mediolata favulosa* Wood 49,**  
 68, 71, 107, 254, 255, 372,  
 380
- Mediolata mollis* Wood 50, 68,**  
 71, 85, 256, 257, 380
- Mediolata oleariae* Wood 69,**  
 72, 258–261, 372, 380
- Mediolata polyocularis* 69, 73,**  
 262, 263, 372, 380
- Mediolata robusta* González-**  
 Rodríguez 44, 49, 50, 51, 69,  
 73, 76, 77, 78, 85, 87, 93,  
 107, 108, 264–267, 373, 380
- Mediolata simplex* Wood 69,**  
 73, 74, 75, 268–271, 373,  
 381
- Mediolata whenua* 68, 76, 78,**  
 272, 273, 381
- Mediolata woodi* 68, 76, 77, 78,**  
 274–277, 381
- Mediolata xerxes* 68, 70, 77,**  
 78, 278, 279, 381
- Mediolata zonaria* 49, 68, 75,**  
 78, 280, 281, 381
- Mendanaia* 16, 38, 40
- Mesostigmata 13
- Metaseiulus occidentalis* 17
- methlagli* Oudemans, *Zetzellia*  
 40, 103
- mirabilis* Oudemans, *Acheles*  
 34
- mixta*, Wood *Ledermuelleria* 63,

- 64  
*mixtus* (Wood), *Eustigmaeus* 54, 61, **63**, 88, 230–233, 370, 379  
*mollis* Wood, *Mediolata* 50, 68, **71**, 85, 256, 257, 380  
*Molothrognathus* 13, 14, 16  
*montanus* (Wood), *Scutastigmaeus* 89, **90**, 312, 313, 382  
*montanus* Wood, *Stigmaeus* 90  
*Mullederia* 16, 38, 40, **79**  
*Mullederia arborea* Wood **79**, 80, 81, 282–285, 373, 381  
*Mullederia procurrans* **79**, **80**, 81, 286, 287, 373, 381  
*Mullederia scutellaris* **79**, **80**, 81, 288, 289, 374, 381  
*Mullederiopsis* 16, 38, 40  
*navicella* Grandjean, *Apostigmaeus* 100, 101  
*Neilstigmaeus* 16, 38, 39  
*nelsonensis* Wood, *Eryngiopus* 42, 48, **51**, 52, 108, 190–193, 378  
*Neognathus* 15  
*neomaculata* Meyer & Ryke, *Ledermuelleria* 79  
Neophyllobiidae 11  
*Neophyllobius* 11, 13, 16, 22, **23**  
*Neophyllobius elegans* Berlese 23  
*Neophyllobius lombardinii* Summers and Schlinger 25  
*Neophyllobius sturmerwoodi* Bolland **23**, 131–135, 376  
*Neophyllobius succineus* Bolland & Magowsk 11  
*Neoraphignathus* 16, 34  
*Nonocaligus* 79  
*novazealandicus* Wood, *Stigmaeus* 92, **95**, 326–329, 374, 383  
*novazelandica*, *Zetzellia* 45  
*novazelandicus* González-Rodríguez, *Agistemus* 41, 43, **45**, 102, 104, 178, 179, 368, 377  
*nudus*, *Saniosulus* 15  
*occidentalis*, *Metaseiulus* 17  
*oleariae* Wood, *Mediolata* 69, **72**, 258–261, 372, 380  
*orientalis*, *Eutetranychus* 15  
*oudemansi* Wood, *Zetzellia* 103, **108**, 360–363, 384  
*ovaerialis* De Leon, *Xenocaligonellidus* 14  
*Panonychus citri* 15, 44  
*Panonychus ulmi* 44  
*paradoxus* Gerson, Frost & Swift, *Acaciacarus* 29  
*Paraepalopsellus* 16, 29  
*Paraneognathus* 13, 14, 16  
*parasiticus* (Chaudri), *Eustigmaeus* 14  
*Parastigmaeus* 16, 38, 39  
*Paravillersia* 16, 38, 40  
*parilis*, *Mecognatha* 30, **31**, 32, 33, 152–155, 376  
*paxi* Willmann, *Zetzelliopsis* 40  
*Peltasellus* 16  
*petrobisus* Canestrini, *Caligonus* 34  
*phoenicis*, *Brevipalpus* 108  
Phytoseiidae 13, 15  
*Pilonychiopus* 16, 38, 39  
*polyocularis*, *Mediolata* 69, **73**, 262, 263, 372, 380  
Pomerantziidae 11  
*Postumius* 17, 22, 38, 40  
*Primagistemus* 17, 38, 39, **81**  
*Primagistemus loadmani* (Wood) 31, 49, 57, 70, **81**, 85, 108, 290, 291, 381  
*procurrans*, *Mullederia* **79**, **80**, 81, 286, 287, 373, 381  
*Prostigmaeus* 17, 38, 39  
Prostigmata 13  
*Protorendzina* 28  
*Pseudostigmaeus* 17, 38, 39, **82**, 83, 88  
*Pseudostigmaeus ancydactyla* 102  
*Pseudostigmaeus collyerae* Wood 49, 50, 51, 72, 75, 78, 82, **83**, 85, 87, 108, 292–295, 382  
*Pseudostigmaeus longisetis* Wood 83, **85**, 296–299, 382  
*Pseudostigmaeus schizopeltatus* 49, 50, 51, 75, 83, **86**, 87, 300–303, 382  
*Pseudostigmaeus striatus* Wood 64, 83, **87**, 90, 304–307, 382  
*ptilosetus*, *Eustigmaeus* 54, **64**, 65, 234–237, 371, 379  
Raphignathidae 11, 12, 13, 14, 16, 21, **33**, 34  
Raphignathoidea 11, 13, 14, 15, **21**  
*Raphignathus* 13, 16, **33**, **34**  
*Raphignathus aciculatus* Fan 35  
*Raphignathus atomatus* **34**, 35, 158, 159, 377  
*Raphignathus collegiatus* Atyeo, Baker & Crossley 34, **35**, 160, 161, 377  
*Raphignathus crustus* 34, **36**, 37, 162–165, 377  
*Raphignathus gracilis* (Rack) 34, **37**, 38, 166, 167, 377  
*Raphignathus guiyansensis* Hu, Jing & Liang 35  
*Raphignathus johnstoni* Womersley 18  
*Raphignathus ruberrimus* Dugés 34  
*rara*, *Mecognatha* 30, **32**, 33, 156, 157, 376  
*rhodomelas* Berlese, *Stigmaeus* 91  
*rhytis* Chaudhri, Akbar & Rasool, *Tycherobius* 25  
*robusta* González-Rodríguez, *Mediolata* 44, 49, 50, 51, 69, **73**, 76, 77, 78, 85, 87, 93, 107, 108, 264–267, 373, 380  
*robustus* (Berlese), *Storchia* **101**, 344, 345, 383  
*robustus* Berlese, *Caligonus* 100, 101  
*Rosmarinus* sp. 107, 108  
*rotundus* Wood, *Stigmaeus* 91, 92, **97**, 330, 331, 375, 383  
*rubens* Schrank, *Acarus* 11  
*ruberrimus* Dugés, *Raphignathus* 34  
*rubrioculus*, *Bryobia* 44  
*rupicola* Wood, *Stigmaeus* 91, **97**, 332–337, 383

- Saniosulus* 13, 16, 18  
*Saniosulus nudus* 15  
 Saproglyphidae 13  
*Sarothamnus* sp. 108  
**schizopeltatus**,  
     *Pseudostigmaeus* 49, 50,  
     51, 75, 83, **86**, 87, 300–303,  
     382  
*schlechtendali*, *Aculus* 15, 17  
*Schotia afra* 101  
**Scutastigmaeus** 17, 38, 39, **88**,  
     89  
**Scutastigmaeus confusus**  
     (Wood) **89**, 90, 308, 309, 382  
**Scutastigmaeus longisetis**  
     (Wood) **88**, 89, **90**, 310, 311,  
     382  
**Scutastigmaeus montanus**  
     (Wood) **89**, **90**, 312, 313, 382  
**scutellaris**, *Mullederia* 79, **80**,  
     81, 288, 289, 374, 381  
*segnis* Koch, *Ledermuelleria* 53  
*serpentinus* Berlese,  
     *Macrostigmaeus* 40  
*siculus* Berlese, *Stigmaeus* 11  
*siculus* Berlese, *Stigmaeus* 11  
**similis** Wood, *Eryngiopus* 48,  
     **52**, 194, 195, 378  
**simplex** (Wood), *Eustigmaeus*  
     54, **65**, 66, 238–241, 371,  
     379  
*simplex* Wood, *Ledermuelleria*  
     65, 66  
**simplex** Wood, *Mediolata* 69,  
     73, 74, **75**, 268–271, 373,  
     381  
*sinaei* Swift, *Stigmaeus* 14  
*smileyi* Hu & Liang,  
     *Xenocaligonellidus* 14  
*smithi* (Mitra & Mitra),  
     *Stigmaeus* 14  
**spiculosa**, *Zetzellia* 103, **110**,  
     364, 365, 384  
**spinosa** Wood,  
     *Ledermuelleriopsis* **67**, 244,  
     245, 371, 380  
**Stigmaeidae** 11, 12, 13, 14, 15,  
     16, 18, 22, **38**, 39, 77,  
     91126–130  
*Stigmaeodes* 91  
*Stigmaeus* (*Eustigmaeus*) 53  
*Stigmaeus* (*Stigmaeus*) 91  
**Stigmaeus** 11, 14, 17, 38, 39,  
     89, **91**  
**Stigmaeus arboricola** Wood  
     49, 75, 91, **92**, 314–317, 382  
**Stigmaeus brevisetis** Wood  
     92, **93**, 318, 319, 374, 382  
**Stigmaeus campbellensis**  
     Wood 92, **94**, 320, 321, 382  
*Stigmaeus coprosmae* Wood  
     101, 102  
*Stigmaeus cruentus* Koch 91  
*Stigmaeus elongatus* Berlese  
     91  
*Stigmaeus kermesinus* Koch 53  
*Stigmaeus loadmani* Wood 81  
*Stigmaeus longirostris* Berlese  
     68, 103  
*Stigmaeus longisetis* Wood 88,  
     90  
**Stigmaeus luxtoni** Wood 92,  
     **94**, 322–325, 374, 383  
*Stigmaeus montanus* Wood 90  
**Stigmaeus novazealandicus**  
     Wood 92, **95**, 326–329, 374,  
     383  
*Stigmaeus rhodomelas* Berlese  
     91  
**Stigmaeus rotundus** Wood 91,  
     92, **97**, 330, 331, 375, 383  
**Stigmaeus rupicola** Wood 91,  
     **97**, 332–337, 383  
*Stigmaeus siculus* Berlese 11  
*Stigmaeus siculus* Berlese 11  
*Stigmaeus sinaei* Swift 14  
*Stigmaeus smithi* (Mitra & Mitra)  
     14  
**Stigmaeus summersi** Wood  
     92, **98**, 338–341, 375, 383  
*Stigmaeus youngi* (Hirst) 14  
**Storchia** 17, 38, 39, **100**  
**Storchia hendersonae** **100**,  
     101, 342, 343, 383  
**Storchia robustus** (Berlese)  
     **101**, 344, 345, 383  
**striatus** Luxton, *Cryptognathus*  
     **26**, 138, 139, 366, 376  
**striatus** Wood,  
     *Pseudostigmaeus* 64, 83,  
     **87**, 90, 304–307, 382  
*sturmerwoodi* Bolland,  
     *Neophyllobius* **23**, 131–135,  
     376  
*subreticulata*, *Zetzellia* Wood  
     46  
**subreticulatus** (Wood),  
     *Agistemus* 41, **46**, 180, 181,  
     368, 377  
*succineus* Bolland & Magowsk,  
     *Neophyllobius* 11  
**summersi** Wood, *Stigmaeus*  
     92, **98**, 338–341, 375, 383  
**Summersiella** 17, 38, 39, **101**  
*Summersiella ancydactyla*  
     González-R. 101, 102  
**Summersiella coprosmae**  
     (Wood) 46, **102**, 346, 347,  
     384  
*Syncaligus* 34  
 Tarsonemidae 13  
 Tenuipalpidae 13  
*Tenuipalpus granati* 15  
*terminalis* Quayle, *Caligonus* 40  
*terminalis*, *Agistemus* 17, 40  
 Tetranychidae 13, 15, 21, 22,  
     26, 29, 33, 38  
*Tetranychus cinnabarinus* 15,  
     18  
*Tetranychus cucurbitacearum*  
     15  
*Tetranychus lambi* 41, 42  
*Tetranychus urticae* 15, 17  
*triscutata* Willmann,  
     *Ledermuelleriopsis* 66  
**Tycherobius** 16, 22, 23, **25**  
**Tycherobius aotearoa** **25**, 136,  
     137, 376  
*Tycherobius rhytis* Chaudhri,  
     Akbar & Rasool 25  
 Tydeidae 13, 42, 49, 50, 51, 71,  
     107  
 Tydeus 107  
*Typhlodromus pyri* 17  
*ulmi*, *Panonychus* 44  
*urticae*, *Tetranychus* 15, 17  
*Villersia* 17, 38, 40  
*Villersiella* 17, 22, 38, 39, 40  
**vulgaris** Luxton,  
     *Cryptognathus* **26**, **27**, 51,  
     140, 141, 366, 376

- whenua, Mediolata** 68, **76**, 78, 272, 273, 381  
*Wooderia* 40, 53  
**woodi, Mediolata** 68, **76**, 77, 78, 274–277, 381
- Xanthodasythyreus* 16  
 Xenocaligonellidae 11  
 Xenocaligonellididae 11, 12, 13, 14, 17, 21  
*Xenocaligonellidus* 14, 17  
*Xenocaligonellidus ovaerialis* De Leon 14  
*Xenocaligonellidus smileyi* Hu & Liang 14  
**xerxes, Mediolata** 68, 70, **77**, 78, 278, 279, 381
- yanonensis, Unaspis* 51  
*Yezonychus cornus* 46, 104, 105, 106  
*youngi* (Hirst), *Stigmaeus* 14
- Zetzellia** 13, 17, 18, 38, 39, 40, **103**  
**Zetzellia antipoda** Wood 42, 44, 46, **103**, 106, 108, 348–351, 375, 384  
*Zetzellia australis* González-Rodríguez 105, 110  
**Zetzellia biscutata** 103, **105**, 110, 352, 353, 384  
*Zetzellia collyerae* 41  
**Zetzellia gonzalezi** Wood 41, 43, 103, 104, **105**, 108, 354, 355, 375, 384
- Zetzellia mali* 15, 17  
**Zetzellia maori** Gonzalez 31, 42, 44, 49, 51, 52, 57, 75, 77, 82, 85, 103, **106**, 356–359, 384  
*Zetzellia methlagli* Oudemans 40, 103  
*Zetzellia novazelandica* 45  
**Zetzellia oudemansi** Wood 103, **108**, 360–363, 384  
**Zetzellia spiculosa** 103, **110**, 364, 365, 384  
*Zetzellia subreticulata* Wood 46  
*Zetzelliopsis* 17, 40  
*Zetzelliopsis paxi* Willmann 40  
**zonaria, Mediolata** 49, 68, 75, **78**, 280, 281, 381

**HABITAT AND HOSTS INDEX**

See also Appendix 1, pages 118–122

- Acacia nigrescens* 101  
*acerosa*, *Coprosma* 51, 108  
*Actinidia deliciosa* 31, 32  
*africana* (Newstead),  
*Sergentomyia* 14  
*Agathis australis* 58, 64, 66, 82,  
 90  
*Alaus myops* (F.) 14  
*Albizzia* sp. 31, 44, 108  
*Alectryon excelsum* 42, 44, 46,  
 50, 82, 108  
 Aleyrodidae 13  
*angustifolia*, *Hoheria* 87  
*angustifolia*, *Vicia* 42  
 Apple 17, 24, 31, 32, 41, 42, 43,  
 44, 50, 51, 52, 70, 71, 75, 76,  
 80, 85, 87, 101, 106, 107,  
 108  
*arborea*, *Hedycarya* 76  
*Aristolelia serrata* 42  
*Asparagus* sp. 101  
*Asplenium oblongifolium* 107,  
 108  
*auricula-judae*, *Auricularia* 38  
*Auricularia auricula-judae* 38  
*australis*, *Agathis* 58, 64, 66, 82,  
 90  
*australis*, *Coprosma* 70, 102  
*australis*, *Rubus* 42  
*Azorella* 94
- Banksia* sp. 107, 108  
 Bark 13, 14, 15, 24, 28, 31, 32,  
 36, 37, 38, 51, 57, 64, 70, 71,  
 76, 78, 89, 90, 97, 101, 107,  
 109  
*bergeroti*, *Phlebotomus* 14  
*bidwillii*, *Dacrydium* 71, 85  
*bidwillii*, *Halocarpus* 77, 85  
*bidwillii*, *Libocedrus* 84, 85  
*Bischofia javanica* 36  
 Black scales 76  
*Brachyglottis hectori* 42, 50, 57,  
 85, 105  
*Brachyglottis* sp. 43, 44, 107,  
 108  
 Bush lawyer 104, 105
- caffra*, *Miomantis* 110  
 Caprifoliaceae 13  
*Carmichaelia* sp. 50, 70, 71, 75  
*Carpodetus serratus* 42, 46, 75,  
 102  
*Cassinia* sp. 108  
*Celmisia* sp. 88  
 Chaffinch 57  
*Chionochloa* sp. 87  
 Chironomid fly 58  
*Cinnamomum* sp. 38  
*cissoides*, *Rubus* 104, 105  
*Citrus* sp. 38, 41, 42, 43, 44, 51,  
 107, 108  
*Cladium* 97  
 Coccoidea 13  
 Coconut palm 64  
*coelebs*, *Fringilla* 57  
*colensoi*, *Olearia* 71, 73  
*Combretum* sp. 101  
*communis*, *Pyrus* 51, 108  
*communis*, *Ricinus* 18  
*Coprosma acerosa* 51, 108  
*Coprosma australis* 70, 102  
*Coprosma cuneata* 85  
*Coprosma foetidissima* 50, 85  
*Coprosma propinqua* 85  
*Coprosma pseudocuneata* 84,  
 85  
*Coprosma* sp. 42, 44, 50, 51,  
 52, 80, 85, 87, 88, 102, 107,  
 108  
*Corynocarpus laevigata* 80  
*coulteri*, *Pinus* 38  
*crassifolius*, *Pseudopanax* 74,  
 76  
*Crataegus* sp. 36  
*cuneata*, *Coprosma* 85  
*cupressinum*, *Dacrydium* 82,  
 84, 85, 108  
*Cupressus* sp. 38  
*Cyathea dealbata* 89, 90  
*Cyathea medullaris* 43, 44, 89,  
 90  
*Cyathodes fasciculata* 87  
*Cyathodes* sp. 84, 85, 87  
*Cynodon dactylon* 38
- Dacrycarpus dacrydioides* 49,  
 50, 51, 71, 75, 85, 87, 108  
*dacrydioides*, *Dacrycarpus* 49,  
 50, 51, 71, 75, 85, 87, 108  
*dacrydioides*, *Podocarpus* 50,  
 51, 75  
*Dacrydium bidwillii* 71, 85  
*Dacrydium cupressinum* 82, 84,  
 85, 108  
*Dacrydium intermedium* 82  
*dactylifera*, *Phoenix* 18  
*Dactylis glomerata* 38  
*dactylon*, *Cynodon* 38  
 Dead tree 52, 108  
*dealbata*, *Cyathea* 89, 90  
 Debris 28, 32, 37  
 Decaying organic material 101  
*deliciosa*, *Actinidia* 31, 32  
*dentatus*, *Elaeocarpus* 41, 42,  
 44, 104, 105, 106  
 Diaspididae 13, 51  
*Dimocarpus longan* 38  
*Discaria toumatou* 51, 52, 108  
*Dracophyllum filifolium* 49, 50,  
 70, 84, 85  
*Dracophyllum* sp. 49, 50, 70,  
 72, 73, 82, 85  
*dreyfussi* (Parrot),  
*Sergentomyia* 14  
 Dwarf trees 41, 42, 46  
*Dysoxylum* sp. 109
- Echinopsis* 17  
*Elaeocarpus dentatus* 41, 42,  
 44, 104, 105, 106  
*Elaeocarpus hookerianus* 44,  
 50, 82, 84, 85, 105, 108  
*Erica lusitanica* 107, 108  
*ericoides*, *Kunzea* 49, 50, 75,  
 87, 107, 108  
*ericoides*, *Leptospermum* 50,  
 108  
 Eriophyid leaf galls 42  
 Eriophyidae 13, 44  
 Eriophyoidea 15  
*Eucalyptus* sp. 38, 57, 70, 78,  
 101  
*Eucalyptus tereticornis* 38  
 Euphorbiaceae 13  
 Eves bush 42, 49, 50, 51, 75,  
 77, 78, 85, 87, 90, 102, 108  
*excelsa*, *Knightia* 41, 42, 43, 44,  
 51, 73, 74, 75, 107, 108  
*excelsa*, *Metrosideros* 45  
*excelsum*, *Alectryon* 42, 44, 46,  
 50, 82, 108

- excelsum*, *Macropiper* 108  
*excorticata*, *Fuchsia* 80  
*fasciculata*, *Cyathodes* 87  
*fasciculatus*, *Leucopogon* 87  
*Feijoa sellowiana* 43, 44, 74, 76  
 Ferns 46, 50, 57, 82  
*ferruginea*, *Prumnopitys* 87, 107, 108  
*ferrugineus*, *Podocarpus* 57, 58, 73  
*filifolium*, *Dracophyllum* 49, 50, 70, 84, 85  
*foetidissima*, *Coprosma* 50, 85  
 Foliage 14, 15, 44, 49, 53, 73, 75, 90, 91, 93, 109  
 Forest falls 38  
 Forest litter 66, 90, 97, 100, 101  
*Fringilla coelebs* 57  
*fruticosus*, *Rubus* 41, 42, 43, 44  
*Fuchsia excorticata* 80  
*fusca*, *Nothofagus* 70, 71, 75, 77, 87, 106, 107, 108  
  
*Gaultheria* sp. 87  
*Geniostoma ligustrifolium* 108  
*glomerata*, *Dactylis* 38  
 Grape 46  
 Grapefruit 107  
 Grassy roadside verge 55  
*Grevillea robusta* 38  
*Griselinia lucida* 70  
*guayava*, *Psidium* 38  
 Gum 57, 101  
  
*Hakea* sp. 101  
*Halcyon sancta vagans* 52  
*Halocarpus bidwillii* 77, 85  
*Hebe* sp. 84, 107, 108  
*hectori*, *Brachyglottis* 42, 50, 57, 85, 105  
*Hedycarya arborea* 76  
*Hexathele hochstetteri* 28, 32, 37  
*hochstetteri*, *Hexathele* 28, 32, 37  
*Hoheria angustifolia* 87  
 Homoptera 13  
*hookerianus*, *Elaeocarpus* 44, 50, 82, 84, 85, 105, 108  
 Horse chestnut 36  
 House 14, 15, 36, 38, 64  
*Hymenanthera* sp. 28, 51, 52  
  
*intermedium*, *Dacrydium* 82  
*intermedius*, *Lepidothamnus* 85  
  
*japonica*, *Serissa* 38  
*javanica*, *Bischofia* 36  
*juniperina*, *Leptecophylla* 84, 85, 87  
*juniperina*, *Leptospermum* 84, 85, 87  
  
*Kahikatea* 87  
 Kauri 58, 64, 66, 89, 90  
*Knightia excelsa* 41, 42, 43, 44, 51, 73, 74, 75, 107, 108  
 Kowhai 31, 41, 49  
*Kunzea ericoides* 49, 50, 75, 87, 107, 108  
  
*lacunosa*, *Olearia* 57  
 Lancewood 74  
 Lepidoptera 13  
*Lepidosaphes ulmi* 108  
*Lepidothamnus intermedius* 85  
*Leptecophylla juniperina* 84, 85, 87  
*leptophyllus*, *Ozothamnus* 108  
*Leptospermum ericoides* 50, 108  
*Leptospermum juniperina* 84, 85, 87  
*Leptospermum scoparium* 31, 53, 57, 74, 75, 82, 107, 108, 109  
*Leptospermum* sp. 51, 59, 64, 76  
*Leucodendron* sp. 107, 108  
*Leucopogon fasciculatus* 87  
*Libocedrus bidwillii* 84, 85  
*Libocedrus plumosa* 85  
 Lichen 14, 15, 28, 51, 58, 66, 67, 89, 90, 100  
*ligustrifolium*, *Geniostoma* 108  
 Litter 14, 15, 18, 28, 35, 38, 49, 50, 51, 56, 57, 58, 60, 63, 64, 65, 66, 67, 82, 88, 89, 90, 91, 93, 96, 97, 100, 101  
 Logs 27, 56, 62, 66, 67, 94, 100  
*longan*, *Dimocarpus* 38  
*longicuspis* Nitzulescu, *Phlebotomus* 14  
 Loquat 43, 44, 108  
*lucens*, *Vitex* 42, 43, 44  
  
*lucida*, *Griselinia* 70  
*Luculia* sp. 42, 43, 44, 46  
*lusitanica*, *Erica* 107, 108  
*Lygodium* sp. 42  
  
*Macropiper excelsum* 108  
*magna* (Sinto), *Sergentomyia* 14  
 Manuka 57, 59, 74, 75  
 Margarodidae 13  
*mays*, *Zea* 18  
 Mealybugs 42, 46  
*medullaris*, *Cyathea* 43, 44, 89, 90  
*Melicytus ramiflorus* 49, 50, 74, 75, 80, 108  
*menziesii*, *Nothofagus* 46, 50, 70, 71, 75, 84, 85, 87, 93, 107, 108  
*menziesii*, *Nothofagus* 75  
*Metrosideros excelsa* 45  
*Metrosideros parkinsonii* 75  
*Metrosideros perforata* 42, 49, 50, 75  
*Metrosideros* sp. 50, 87  
*Metrosideros umbellata* 75  
*microphylla*, *Sophora* 31, 41, 42, 46, 49, 50, 85, 87, 108  
*Microsorium scandens* 51, 75, 85, 87  
*Miomantis caffra* 110  
 Mollymawk nests 86  
 Moss 13, 14, 15, 18, 27, 28, 36, 38, 48, 51, 53, 55, 56, 57, 58, 59, 62, 63, 64, 66, 67, 68, 75, 76, 82, 86, 88, 89, 90, 94, 96, 97, 100, 101, 109  
*Muehlenbeckia* sp. 25, 28, 51, 52, 101  
 Mussel shell scale 52  
*myops* (F.), *Alaus* 14  
*Myotis obscordatus* 90  
*Myrtus obcordata* 90  
  
 Nest 14, 57, 64, 101  
*nigrescens*, *Acacia* 101  
 Nikau palm 90  
*nivalis*, *Podocarpus* 87  
*Nothofagus fusca* 70, 71, 75, 77, 87, 106, 107, 108  
*Nothofagus menziesii* 46, 50, 70, 71, 75, 84, 85, 87, 93, 107, 108



- Nothofagus solandri* 42, 44, 49, 50, 75, 78, 85, 107, 108  
*Nothofagus solandri* var. *cliffortioides* 50  
*Nothofagus* sp. 28, 44, 55, 56, 57, 63, 64, 66, 67, 75, 80, 82, 85, 90, 96, 100  
*Nothopanax* sp. 42, 46  
*nummularifolia*, *Olearia* 85, 87  
  
*obcordata*, *Myrtus* 90  
*oblongifolium*, *Asplenium* 107, 108  
*obscordatus*, *Myrtus* 90  
*Olearia colensoi* 71, 73  
*Olearia lacunosa* 57  
*Olearia nummularifolia* 85, 87  
*Olearia paniculata* 107, 108  
*Olearia rani* 75, 106, 108  
*Olearia* sp. 57, 88, 108  
*orientalis*, *Platanus* 38  
*Ozothamnus leptophyllus* 108  
  
Palm 36, 64, 89, 90  
Palmae 13  
*paniculata*, *Olearia* 107, 108  
*papatasi* (Scopoli), *Phlebotomus* 14  
*parkinsonii*, *Metrosideros* 75  
*Parsonsia* sp. 42, 46  
Pasture 38, 95  
Peanut 38  
Pear 51  
*perforata*, *Metrosideros* 42, 49, 50, 75  
*persica*, *Prunus* 43, 44  
Persimmon 33  
*Phlebotomus* 14  
*Phlebotomus bergeroti* 14  
*Phlebotomus longicuspis* Nitzulescu 14  
*Phlebotomus papatasi* (Scopoli) 14  
*Phlebotomus pius* 14  
*Phlebotomus sergenti* 14  
Phoenicococcidae 13  
*Phoenix dactylifera* 18  
*Phyllocladus* sp. 50, 87  
*Phyllocladus trichomanoides* 51  
*Phymatodes* sp. 46, 51, 75, 85, 87  
Pigeons' nests 38  
  
*Pimelia* 91  
*Pinus coulteri* 38  
*Pinus* sp. 27  
*Pittosporum* sp. 107, 108  
*pius*, *Phlebotomus* 14  
Plantation, 27  
*Platanus orientalis* 38  
*plumosa*, *Libocedrus* 85  
Poaceae 13  
Podocarp litter 57, 58  
*Podocarpus dacrydioides* 50, 51, 75  
*Podocarpus ferrugineus* 57, 58, 73  
*Podocarpus nivalis* 87  
*Podocarpus* sp. 31, 64, 66, 85, 89, 90, 97, 100, 107  
*Podocarpus spicatus* 50, 75  
*Podocarpus totara* 49, 50, 51, 64, 75, 77, 78, 93, 108  
*Podocarpus-Dacrydium* 66  
Pohutakawa 45  
*Polytrichum* 64, 88  
*propinqua*, *Coprosma* 85  
*Prumnopitys ferruginea* 87, 107, 108  
*Prumnopitys taxifolia* 49, 50, 75, 106, 107, 108  
*Prunus persica* 43, 44  
*Prunus* sp. 44, 107, 108  
*pseudocuneata*, *Coprosma* 84, 85  
*Pseudopanax crassifolius* 74, 76  
*Psidium guayava* 38  
Pteridophyte 38  
Pyralidae 13  
*pyri*, *Typhlodromus* 17  
*Pyrus communis* 51, 108  
  
*Quercus* sp. 38  
  
*racemosa*, *Weinmannia* 80, 82  
*ramiflorus*, *Melicytus* 49, 50, 74, 75, 80, 108  
*rani*, *Olearia* 75, 106, 108  
*Rhipogonum scandens* 32, 50  
*Rhopalostylis sapida* 89, 90  
*Ricinus communis* 18  
*Ripogonum scandens* 46, 49, 50, 75, 82, 85  
  
Roadside cutting 28, 53, 59, 64, 68  
*robusta*, *Grevillea* 38  
*Rubus australis* 42  
*Rubus cissooides* 104, 105  
*Rubus fruticosus* 41, 42, 43, 44  
*Rubus schmidelioides* 42, 108  
*Rubus* sp. 41, 42, 43, 44, 46, 80, 102  
  
*Salicornia* sp. 93, 98  
*Salix* sp. 31, 57  
Salt marsh 98  
San Jose scales 51, 52, 108  
*sancta vagans*, *Halcyon* 52  
Sandfly 14  
*sapida*, *Rhopalostylis* 89, 90  
*sativa*, *Vicia* 41, 42  
Scale 14, 18, 24, 52, 108  
scales, black 76  
*scandens*, *Microsorium* 51, 75, 85, 87  
*scandens*, *Rhipogonum* 32, 50  
*scandens*, *Ripogonum* 46, 49, 50, 75, 82, 85  
*schmidelioides*, *Rubus* 42, 108  
*scoparium*, *Leptospermum* 31, 53, 57, 74, 75, 82, 107, 108, 109  
Seaweed 80  
Sedge peat 97  
*sellowiana*, *Feijoa* 43, 44, 74, 76  
Senecio 42, 50, 57, 85, 105  
*sergenti*, *Phlebotomus* 14  
*Sergentomyia africana* (Newstead) 14  
*Sergentomyia dreyfussi* (Parrot) 14  
*Sergentomyia magna* (Sinto) 14  
*Sergentomyia* spp. 14  
*Serissa japonica* 38  
*serrata*, *Aristotelia* 42  
*serratus*, *Carpodetus* 42, 46, 75, 102  
Soil 14, 15, 18, 28, 36, 38, 64, 101  
*solandri* var. *cliffortioides*, *Nothofagus* 50  
*solandri*, *Nothofagus* 42, 44, 49, 50, 75, 78, 85, 107, 108  
*Sophora microphylla* 31, 41, 42, 46, 49, 50, 85, 87, 108

*Sophora* sp. 41, 42, 43, 44, 107  
*spicatus*, *Podocarpus* 50, 75  
Stone 25, 32, 56, 64, 100, 101  
Stored products 14, 15, 18  
Straw 38, 101  
Sturmer 24

*Tamarix* sp. 38  
*taxifolia*, *Prumnopitys* 49, 50,  
75, 106, 107, 108  
Tea 108  
*tereticornis*, *Eucalyptus* 38  
Termite nest 64

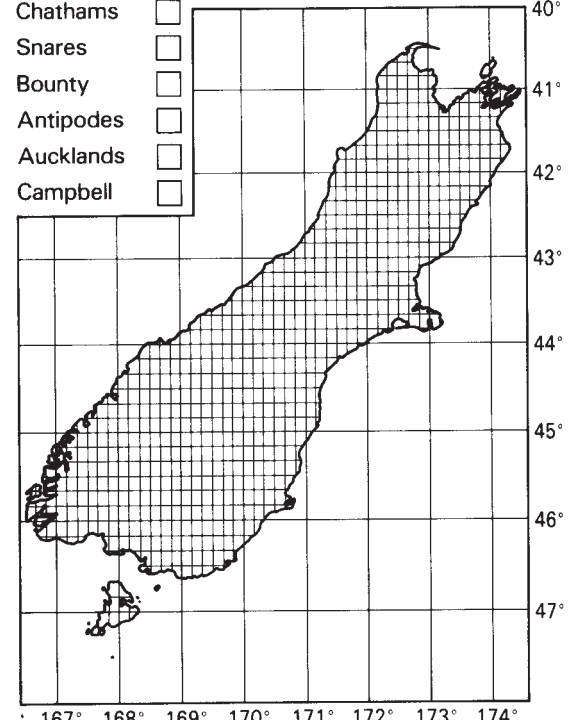
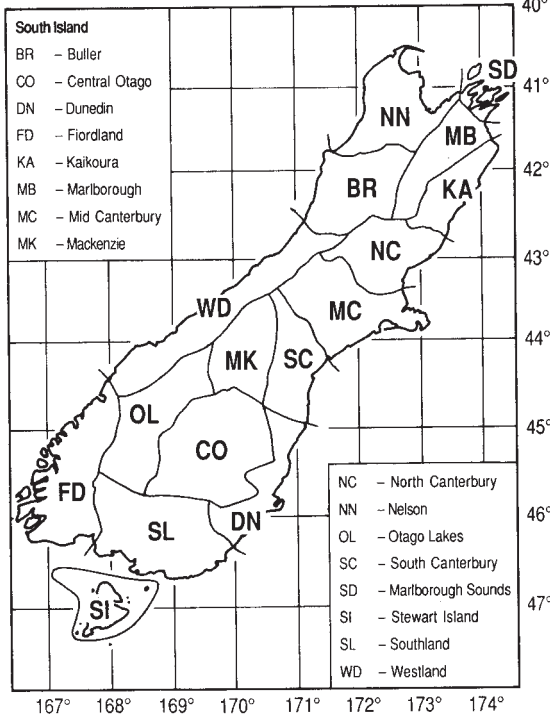
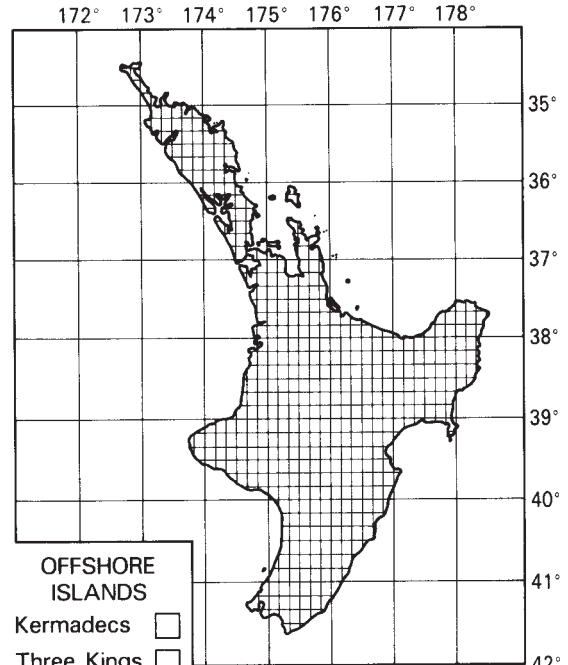
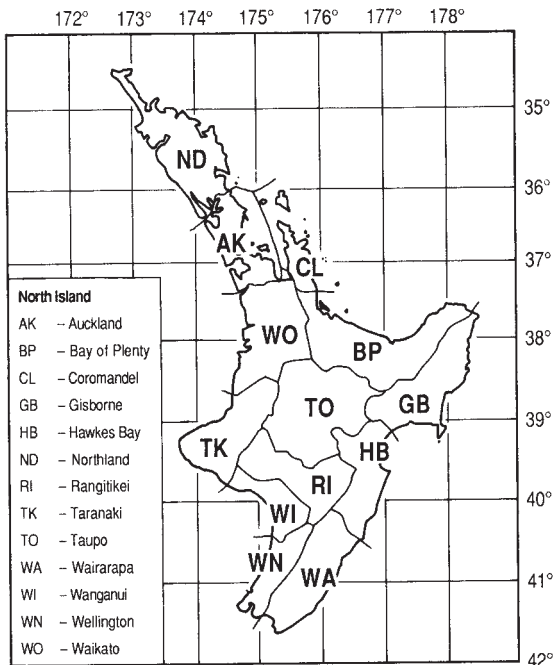
*Tillandsobius* 16, 23  
*totara*, *Podocarpus* 49, 50, 51,  
64, 75, 77, 78, 93, 108  
*toumatou*, *Discaria* 51, 52, 108  
*Tremella* sp. 38  
*trichomanoides*, *Phyllocladus*  
51  
*Trifolium* sp. 107, 108  
Typhaceae 13

*ulmi*, *Lepidosaphes* 108  
*umbellata*, *Metrosideros* 75  
*Unaspis yanonensis* 51

Vetch 41  
*Vicia angustifolia* 42  
*Vicia sativa* 41, 42  
*Vitex lucens* 42, 43, 44

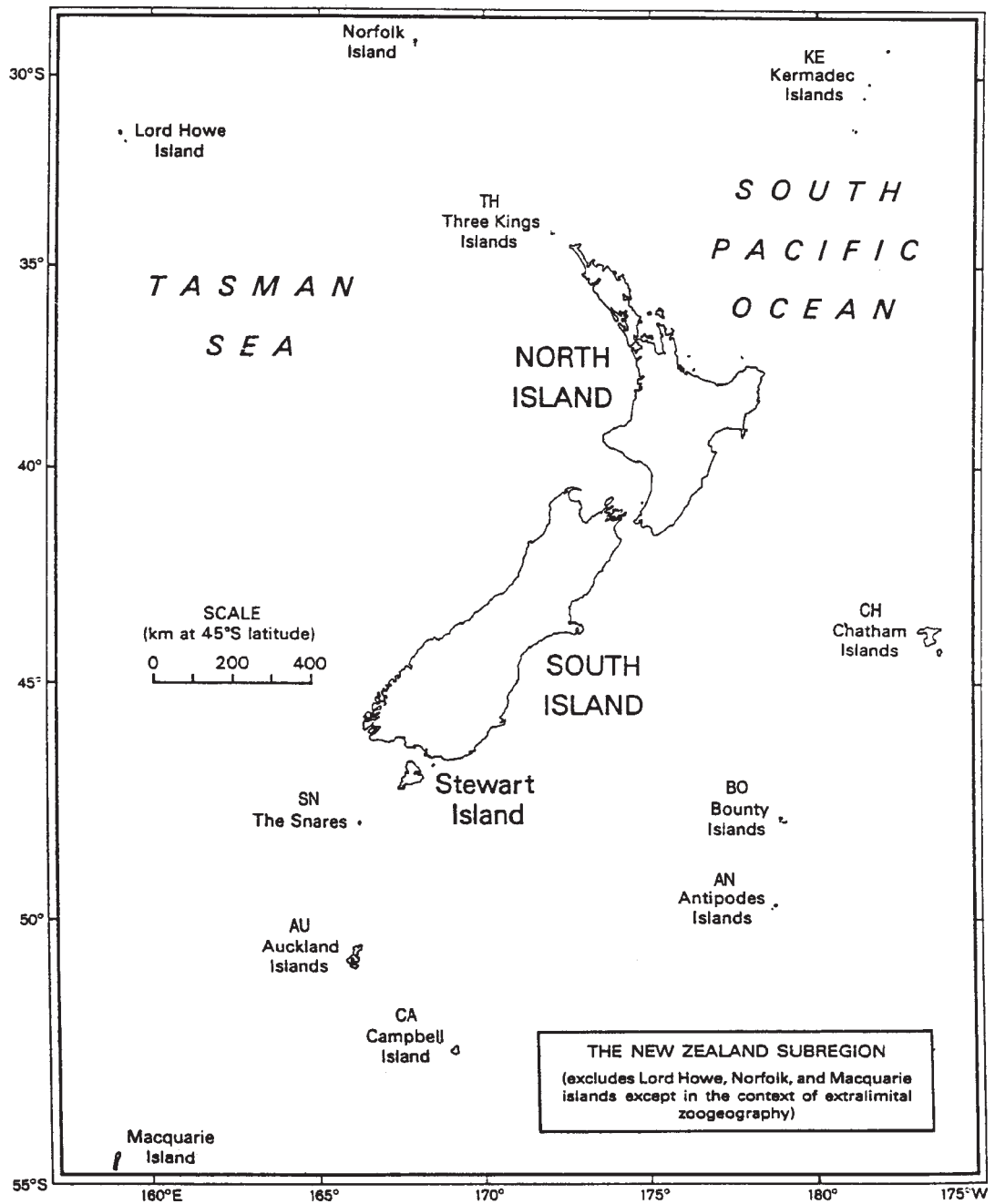
Weed and grass turf 86  
*Weinmannia racemosa* 80, 82  
Willow 28, 31, 57, 101

*Zea mays* 18



Area codes and boundaries used to categorise specimen locality data (after Crosby *et al.* 1976)

Base-map for plotting collection localities; this may be photocopied without copyright release



The New Zealand subregion with area codes (from Crosby *et al.* 1998).

## TITLES IN PRINT / PUNA TAITARA TAA

<b>1 Terebrantia</b> (Insecta: Thysanoptera) • <i>Laurence A. Mound &amp; Annette K. Walker</i> ISBN 0-477-06687-9 • 23 Dec 1982 • 120 pp. ....	\$29.95
<b>2 Osoriinae</b> (Insecta: Coleoptera: Staphylinidae) • <i>H. Pauline McColl</i> ISBN 0-477-06688-7 • 23 Dec 1982 • 96 pp. ....	\$18.60
<b>3 Anthribidae</b> (Insecta: Coleoptera) • <i>B.A. Holloway</i> ISBN 0-477-06703-4 • 23 Dec 1982 • 272 pp. ....	\$41.00
<b>4 Eriophyoidea except Eriophyinae</b> (Arachnida: Acari) • <i>D.C.M. Manson</i> ISBN 0-477-06745-X • 12 Nov 1984 • 144 pp. ....	\$29.95
<b>5 Eriophyinae</b> (Arachnida: Acari: Eriophyoidea) • <i>D.C.M. Manson</i> ISBN 0-477-06746-8 • 14 Nov 1984 • 128 pp. ....	\$29.95
<b>6 Hydraenidae</b> (Insecta: Coleoptera) • <i>R.G. Ordish</i> ISBN 0-477-06747-6 • 12 Nov 1984 • 64 pp. ....	\$18.60
<b>7 Cryptostigmata</b> (Arachnida: Acari) – a concise review • <i>M. Luxton</i> ISBN 0-477-06762-X • 8 Dec 1985 • 112 pp. ....	\$29.95
<b>8 Calliphoridae</b> (Insecta: Diptera) • <i>James P. Dear</i> ISBN 0-477-06764-6 • 24 Feb 1986 • 88 pp. ....	\$18.60
<b>9 Protura</b> (Insecta) • <i>S.L. Tuxen</i> ISBN 0-477-06765-4 • 24 Feb 1986 • 52 pp. ....	\$18.60
<b>10 Tubulifera</b> (Insecta: Thysanoptera) • <i>Laurence A. Mound &amp; Annette K. Walker</i> ISBN 0-477-06784-0 • 22 Sep 1986 • 144 pp. ....	\$34.65
<b>11 Pseudococcidae</b> (Insecta: Hemiptera) • <i>J.M. Cox</i> ISBN 0-477-06791-3 • 7 Apr 1987 • 232 pp. ....	\$49.95
<b>12 Pompilidae</b> (Insecta: Hymenoptera) • <i>A.C. Harris</i> ISBN 0-477-02501-3 • 13 Nov 1987 • 160 pp. ....	\$39.95
<b>13 Encyrtidae</b> (Insecta: Hymenoptera) • <i>J.S. Noyes</i> ISBN 0-477-02517-X • 9 May 1988 • 192 pp. ....	\$44.95
<b>14 Lepidoptera</b> – annotated catalogue, and keys to family-group taxa <i>J. S. Dugdale</i> • ISBN 0-477-02518-8 • 23 Sep 1988 • 264 pp. ....	\$49.95
<b>15 Ambositrinae</b> (Insecta: Hymenoptera: Diapriidae) • <i>I.D. Naumann</i> ISBN 0-477-02535-8 • 30 Dec 1988 • 168 pp. ....	\$39.95
<b>16 Nepticulidae</b> (Insecta: Lepidoptera) • <i>Hans Donner &amp; Christopher Wilkinson</i> ISBN 0-477-02538-2 • 28 Apr 1989 • 92 pp. ....	\$22.95
<b>17 Mymaridae</b> (Insecta: Hymenoptera) – introduction, and review of genera <i>J.S. Noyes &amp; E.W. Valentine</i> • ISBN 0-477-02542-0 • 28 Apr 1989 • 100 pp. ....	\$24.95
<b>18 Chalcidoidea</b> (Insecta: Hymenoptera) – introduction, and review of genera in smaller families <i>J.S. Noyes &amp; E.W. Valentine</i> • ISBN 0-477-02545-5 • 2 Aug 1989 • 96 pp. ....	\$24.95
<b>19 Mantodea</b> (Insecta), with a review of aspects of functional morphology and biology • <i>G.W. Ramsay</i> • ISBN 0-477-02581-1 • 13 Jun 1990 • 96 pp. ....	\$24.95
<b>20 Bibionidae</b> (Insecta: Diptera) • <i>Roy A. Harrison</i> ISBN 0-477-02595-1 • 13 Nov 1990 • 28 pp. ....	\$14.95
<b>21 Margarodidae</b> (Insecta: Hemiptera) • <i>C.F. Morales</i> ISBN 0-477-02607-9 • 27 May 1991 • 124 pp. ....	\$34.95
<b>22 Notonemouridae</b> (Insecta: Plecoptera) • <i>I.D. McLellan</i> ISBN 0-477-02518-8 • 27 May 1991 • 64 pp. ....	\$24.95
<b>23 Sciapodinae, Medeterinae</b> (Insecta: Diptera) with a generic review of the Dolichopodidae • <i>D.J. Bickel</i> • ISBN 0-477-02627-3 • 13 Jan 1992 • 74 pp. ....	\$27.95
<b>24 Therevidae</b> (Insecta: Diptera) • <i>L. Lyneborg</i> ISBN 0-477-02632-X • 4 Mar 1992 • 140 pp. ....	\$34.95
<b>25 Cercopidae</b> (Insecta: Homoptera) • <i>K.G.A. Hamilton &amp; C.F. Morales</i> ISBN 0-477-02636-2 • 25 May 1992 • 40 pp. ....	\$17.95

<b>26 Tenebrionidae</b> (Insecta: Coleoptera): catalogue of types and keys to taxa <i>J.C. Watt</i> • ISBN 0-477-02639-7 • 13 Jul 1992 • 70 pp. ....	\$27.95
<b>27 Antartoperlinae</b> (Insecta: Plecoptera) • <i>I.D. McLellan</i> ISBN 0-477-01644-8 • 18 Feb 1993 • 70 pp. ....	\$27.95
<b>28 Larvae of Curculionoidea</b> (Insecta: Coleoptera): a systematic overview <i>Brenda M. May</i> • ISBN 0-478-04505-0 • 14 Jun 1993 • 226 pp. ....	\$55.00
<b>29 Cryptorhynchinae</b> (Insecta: Coleoptera: Curculionidae) <i>C.H.C. Lyal</i> • ISBN 0-478-04518-2 • 2 Dec 1993 • 308 pp. ....	\$65.00
<b>30 Hepialidae</b> (Insecta: Lepidoptera) • <i>J.S. Dugdale</i> ISBN 0-478-04524-7 • 1 Mar 1994 • 164 pp. ....	\$42.50
<b>31 Talitridae</b> (Crustacea: Amphipoda) • <i>K.W. Duncan</i> ISBN 0-478-04533-6 • 7 Oct 1994 • 128 pp. ....	\$36.00
<b>32 Sphecidae</b> (Insecta: Hymenoptera) • <i>A.C. Harris</i> ISBN 0-478-04534-4 • 7 Oct 1994 • 112 pp. ....	\$33.50
<b>33 Moranilini</b> (Insecta: Hymenoptera) • <i>J.A. Berry</i> ISBN 0-478-04538-7 • 8 May 1995 • 82 pp. ....	\$29.95
<b>34 Anthicidae</b> (Insecta: Coleoptera) • <i>F.G. Werner &amp; D.S. Chandler</i> ISBN 0-478-04547-6 • 21 Jun 1995 • 64 pp. ....	\$26.50
<b>35 Cydnidae, Acanthosomatidae, and Pentatomidae</b> (Insecta: Heteroptera): systematics, geographical distribution, and bioecology • <i>M.-C. Larivière</i> ISBN 0-478-09301-2 • 23 Nov 1995 • 112 pp. ....	\$42.50
<b>36 Leptophlebiidae</b> (Insecta: Ephemeroptera) • <i>D.R. Towns &amp; W.L. Peters</i> ISBN 0-478-09303-9 • 19 Aug 1996 • 144 pp. ....	\$39.50
<b>37 Coleoptera</b> : family-group review and keys to identification • <i>J. Klimaszewski</i> & <i>J.C. Watt</i> • ISBN 0-478-09312-8 • 13 Aug 1997 • 199 pp. ....	\$49.50
<b>38 Naturalised terrestrial Stylommatophora</b> (Mollusca: Gastropoda) • <i>G.M. Barker</i> ISBN 0-478-09322-5 • 25 Jan 1999 • 253 pp. ....	\$72.50
<b>39 Molytini</b> (Insecta: Coleoptera: Curculionidae: Molytinae) • <i>R.C. Craw</i> ISBN 0-478-09325-X • 4 Feb 1999 • 68 pp. ....	\$29.50
<b>40 Cixiidae</b> (Insecta: Hemiptera: Auchenorrhyncha) • <i>M.-C. Larivière</i> ISBN 0-478-09334-9 • 12 Nov 1999 • 93 pp. ....	\$37.50
<b>41 Coccidae</b> (Insecta: Hemiptera: Coccoidea) • <i>C. J. Hodgson &amp; R. C. Henderson</i> ISBN 0-478-09335-7 • 23 Feb 2000 • 264 pp. ....	\$72.50
<b>42 Aphodiinae</b> (Insecta: Coleoptera: Scarabaeidae) • <i>Z. T. Stebnicka</i> ISBN 0-478-09341-1 • 15 Jun 2001 • 64 pp. ....	\$29.50
<b>43 Carabidae</b> (Insecta: Coleoptera): catalogue • <i>A. Larochelle &amp; M.-C. Larivière</i> ISBN 0-478-09342-X • 15 Jun 2001 • 285 pp. ....	\$72.50
<b>44 Lycosidae</b> (Arachnida: Araneae) • <i>C. J. Vink</i> ISBN 0-478-09347-0 • 23 Dec 2002 • 94 pp. ....	\$37.50
<b>45 Nemonychidae, Belidae, Brentidae</b> (Insecta: Coleoptera: Curculionoidea) • <i>G. Kuschel</i> ISBN 0-478-09348-9 • 28 Apr 2003 • 100 pp. ....	\$40.00
<b>46 Nesameletidae</b> (Insecta: Ephemeroptera) • <i>T. R. Hitchings &amp; A. H. Staniczek</i> ISBN 0-478-09349-7 • 14 May 2003 • 72 pp. ....	\$32.50
<b>47 Erotylidae</b> (Insecta: Coleoptera: Cucujoidea): phylogeny and review • <i>R. A. B. Leschen</i> ISBN 0-478-09350-0 • 5 June 2003 • 108 pp. ....	\$42.50
<b>48 Scaphidiinae</b> (Insecta: Coleoptera: Staphylinidae) • <i>I. Löbl &amp; R. A. B. Leschen</i> ISBN 0-478-09353-5 • 18 Nov 2003 • 94 pp. ....	\$37.50
<b>49 Lithinini</b> (Insecta: Lepidoptera: Geometridae: Ennominae) • <i>J. D. Weintraub &amp; M. J. Scoble</i> ISBN 0-478-09357-8 • 29 Apr 2004 • 48 pp. ....	\$24.50
<b>50 Heteroptera</b> (Insecta: Hemiptera): catalogue • <i>M.-C. Larivière &amp; A. Larochelle</i> ISBN 0-478-09358-6 • 14 May 2004 • 330 pp. ....	\$89.00
<b>51 Coccidae</b> (Insecta: Hemiptera: Coccoidea): adult males, pupae and prepupae of indigenous species <i>C. J. Hodgson &amp; R. C. Henderson</i> • ISBN 0-478-09360-8 • 22 June 2004 • 228 pp. ....	\$65.00
<b>52 Raphignathoidea</b> (Acari: Prostigmata) • <i>Qing-Hai Fan &amp; Zhi-Qiang Zhang</i> ISBN 0-478-09371-3 • May 2005 • 400 pp. ....	\$89.00

Visit the Manaaki Whenua Press Website at <http://www.mwpress.co.nz/> for further information, and to gain access to on-line extracts from these publications.

## Taxonomic groups covered in the *Fauna of New Zealand series*

### Insecta

#### Coleoptera

- Family-group review and keys to identification (*J. Klimaszewski & J.C. Watt*, FNZ 37, 1997)
- Anthribidae (*B.A. Holloway*, FNZ 3, 1982)
- Anthicidae (*F.G. Werner & D.S. Chandler*, FNZ 34, 1995)
- Carabidae: catalogue (*A. Laroche & M.-C. Larivière*, FNZ 43, 2001)
- Curculionidae: Cryptorhynchinae (*C.H.C. Lyal*, FNZ 29, 1993)
- Curculionidae: Molytinae: Molytini (*R. C. Craw*, FNZ 39, 1999)
- Curculionoidea: Nemonychidae, Belidae, Brentidae (*G. Kusche*, FNZ 45, 2003)
- Curculionoidea larvae: a systematic overview (*Brenda M. May*, FNZ 28, 1993)
- Erotylidae: phylogeny and review (*Richard A. B. Leschen*, FNZ 47, 2003)
- Hydraenidae (*R.G. Ordish*, FNZ 6, 1984)
- Scarabaeidae: Aphodiinae (*Z. T. Stebnicka*, FNZ 42, 2001)
- Staphylinidae: Osoriinae (*H. Pauline McColl*, FNZ 2, 1982)
- Staphylinidae: Scaphidiinae (*I. Löbl & Richard A. B. Leschen*, FNZ 48, 2003)
- Tenebrionidae: catalogue of types and keys to taxa (*J.C. Watt*, FNZ 26, 1992)

#### Diptera

- Bibionidae (*Roy A. Harrison*, FNZ 20, 1990)
- Calliphoridae (*James P. Dear*, FNZ 8, 1986)
- Dolichopodidae: Sciapodinae, Medeterinae with a generic review (*D.J. Bickel*, FNZ 23, 1992)
- Therevidae (*L. Lyneborg*, FNZ 24, 1992)

#### Ephemeroptera

- Leptophlebiidae (*D.R. Towns & W.L. Peters*, FNZ 36, 1996)
- Nesameletidae (*Terry R. Hitchings & Arnold H. Staniczek*, FNZ 46, 2003)

#### Hemiptera

- Cercopidae (*K.G.A. Hamilton & C.F. Morales*, FNZ 25, 1992)
- Cixiidae (*M.-C. Larivière*, FNZ 40, 1999)
- Coccidae (*C. J. Hodgson & R. C. Henderson*, FNZ 41, 2000); adult males, pupae and prepupae of indigenous species (*C. J. Hodgson & R. C. Henderson*, FNZ 51, 2004)
- Cydnidae, Acanthosomatidae, and Pentatomidae (*M.-C. Larivière*, FNZ 35, 1995)
- Heteroptera: catalogue (*M.-C. Larivière & A. Laroche*, FNZ 50, 2004)
- Margarodidae (*C.F. Morales*, FNZ 21, 1991)
- Pseudococcidae (*J.M. Cox*, FNZ 11, 1987)

#### Hymenoptera

- Chalcidoidea: introduction, and review of smaller families (*J.S. Noyes & E.W. Valentine*, FNZ 18, 1989)
- Diapriidae: Ambositrinae (*I.D. Naumann*, FNZ 15, 1988)
- Encyrtidae (*J.S. Noyes*, FNZ 13, 1988)
- Mymaridae (*J.S. Noyes & E.W. Valentine*, FNZ 17, 1989)
- Pompilidae (*A.C. Harris*, FNZ 12, 1987)
- Pteromalidae: Eunotinae: Moranilini (*J.A. Berry*, FNZ 33, 1995)
- Sphecidae (*A.C. Harris*, FNZ 32, 1994)

#### Lepidoptera

- Annotated catalogue, and keys to family-group taxa (*J. S. Dugdale*, FNZ 14, 1988)
- Geometridae: Ennominae: Lithinini (*Jason D. Weintraub & Malcolm J. Scoble*, FNZ 49, 2004)
- Hepialidae (*J.S. Dugdale*, FNZ 30, 1994)
- Nepticulidae (*Hans Donner & Christopher Wilkinson*, FNZ 16, 1989)

**Mantodea**, with a review of aspects of functional morphology and biology (*G.W. Ramsay*, FNZ 19, 1990)

#### Plecoptera

- Antarctoperlinae (*I.D. McLellan*, FNZ 27, 1993)
- Notonemouridae (*I.D. McLellan*, FNZ 22, 1991)

**Protura** (*S.L. Tuxen*, FNZ 9, 1986)

#### Thysanoptera

- Terebrantia (*Laurence A. Mound & Annette K. Walker*, FNZ 1, 1982)
- Tubulifera (*Laurence A. Mound & Annette K. Walker*, FNZ 10, 1986)

### Arachnida

#### Acari

- Cryptostigmata – a concise review (*M. Luxton*, FNZ 7, 1985)
- Eriophyoidea except Eriophyinae (*D.C.M. Manson*, FNZ 4, 1984)
- Eriophyinae (*D.C.M. Manson*, FNZ 5, 1984)
- Raphignathoidea (*Qing-Hai Fan & Zhi-Qiang Zhang*, FNZ 52, 2005)

#### Araneae

- Lycosidae (*C. J. Vink*, FNZ 44, 2002)

### Crustacea

#### Amphipoda

- Talitridae (*K.W. Duncan*, FNZ 31, 1994)

### Mollusca

#### Gastropoda

- Naturalised terrestrial Stylommatophora (*G.M. Barker*, FNZ 38, 1999)

## NOTICES

This series of refereed publications has been established to encourage those with expert knowledge to publish concise yet comprehensive accounts of elements in the New Zealand fauna. The series is professional in its conception and presentation, yet every effort is made to provide resources for identification and information that are accessible to the non-specialist.

*Fauna of N.Z.* deals with non-marine invertebrates only, since the vertebrates are well documented, and marine forms are covered by the series *Marine Fauna of N.Z.*

**Contributions** are invited from any person with the requisite specialist skills and resources. Material from the N.Z. Arthropod Collection is available for study.

Contributors should discuss their intentions with a member of the Invertebrate Systematics Advisory Group or with the Series Editor before commencing work; all necessary guidance will be given.

**Subscribers** should address inquiries to *Fauna of N.Z.*, Manaaki Whenua Press, Landcare Research, P.O. Box 40, Lincoln 8152, New Zealand.

Subscription categories: 'A' – standing orders; an invoice will be sent with each new issue, as soon after publication as possible; 'B' – promotional fliers with order forms will be sent from time to time.

Retail prices (see 'Titles in print', page 397) include packaging and surface postage. Subscribers in New Zealand and Australia pay the indicated amount in \$NZ; GST is included in the price. Other subscribers pay the listed price in \$US, or its equivalent.

Back issues of all numbers are available, and new subscribers wishing to obtain a full set or a selection may request a discount. Booksellers and subscription agents are offered a trade discount of ten percent.

## NGA PANUI

Kua whakatūria tēnei huinga pukapuka hei whakahau i ngā tohunga whai mātauranga kia whakaputa i ngā kōrero poto, engari he whaikiko tonu, e pā ana ki ngā aitanga pepeke o Aotearoa. He tōtika tonu te āhua o ngā tuhituhi, engari ko te tino whāinga, kia mārāma te marea ki ngā tohu tautuhi o ia ngārara, o ia ngārara, me te roanga atu o ngā kōrero mō tēnā, mō tēnā.

He tītiro whāiti tā tēnei pukapuka ki ngā mea noho whenua, kāore he tuarā; i pēnei ai i te mea kei te mōhio whānuitia ngā mea whai tuarā, ā, ko ngā mea noho moana, koirā te tino kaupapa o te huinga pukapuka *Marine Fauna of N.Z.*

Ka āhei te tangata ki te **whakauru tuhituhinga** mehemea kei a ia ngā tohungatanga me ngā rauemi e tutuki pai ai tana mahi. Heoi anō, e wātea ana te Kohinga Angawaho o Aotearoa hei āta tiro tiro mā te tangata mehemea he āwhina kei reira.

Me whāki te kaituhi i ōna whakaaro ki tētahi o te Kāhui Ārahi Whakarōpūtanga Tuarā-Kore, ki te gītita rānei i mua i te tīmatanga, ā, mā rātou a ia e ārahi mō te wāhi ki tana tuhinga.

Ko te hunga pīrangī **hoko pukapuka**, me tuhi ki *Fauna of N.Z.*, Manaaki Whenua Press, Manaaki Whenua, Pouaka Poutāpeta 40, Lincoln 8152, Aotearoa.

E rua ngā tūmomo kaihoko: "A" – kaihoko tūmau, ka tukua ia pukapuka, ia pukapuka, me te nama, i muri tonu i te tānga; "B" – ka tukua ngā pānui whakatairanga me ngā puka tonu i ōna wā anō.

Te utu (tirohia "Titles in print", whārangi 397). Ko te kōpaki me te pane kuini kei roto i te utu. Me utu te hunga e noho ana i Aotearoa me Ahitereiria ki ngā tāra o Aotearoa. Ko ētahi atu me utu te moni kua tohua, ki ngā tāra Merikana, ki te nui o te moni rānei e rite ana.

E toe ana he pukapuka o ngā putanga katoa o mua. Mehemea e hiahia ana koe ki te katoa o ngā pukapuka, ki ētahi rānei, tonoa mai kia whakaheke te utu. Tekau ōrau te heke iho o te utu ki ngā toa hoko pukapuka.