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New Zealand

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P.O. Box 9741, Wellington, New Zealand

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Anthribidae
(Insecta: Coleoptera)

B. A. Holloway
Entomology Division
Department of Scientific and Industrial Research
Private Bag, Auckland, New Zealand

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To Frank Morton Carpenter
Fisher Professor of Natural History Emeritus, Harvard University
and
Curator of Fossil Insects, Museum of Comparative Zoology, Harvard
on the occasion of his eightieth birthday (6 September 1982)
this work is respectfully dedicated



ABSTRACT

The morphology of New Zealand's Anthribidae is discussed and illustrated. All the previously known genera and species are redescribed, and morphological structures, including male and female genitalia, are figured for every species. The composition and relationships of the anthribid fauna are discussed, and the known distribution of species in the New Zealand subregion is summarised and mapped. Habitats of adults and larvae, flightlessness, life cycles, seasonal occurrence, host plants of larvae, and foods of adults are discussed in general terms and in detail under each species. Keys for the identification of subfamilies, genera, and species are provided.

Fifty-eight endemic species, 2 adventive species, and 1 commonly intercepted species are recognised. They belong in 28 genera, of which 18 are described as new: Anthribinae - *Androporus*, *Caliobius*, *Cerius*, *Dasyanthribus*, *Garyus*, *Gynarchaeus*, *Helmoreus*, *Hoherius*, *Hoplorhaphus*, *Isanthribus*, *Lophus*, *Phymatus*, *Pleosporius*, *Sharpius*, *Tribasileus*; Choraginae - *Liromus*, *Micranthribus*, *Notochoragus*.

Thirteen new species are described: Anthribinae - *Caliobius littoralis*, *Cerius otagensis*, *C. triregius*, *Hoplorhaphus nodifer*, *Isanthribus dracophylli*, *I. phormii*, *Lichenobius maritimus*, *Sharpius chathamensis*, *Tribasileus noctivagus*; Choraginae - *Dysnocryptus balthasar*, *D. gaspar*, *D. melchior*, *Notochoragus chathamensis*.

The genus *Lawsonia* Sharp, 1873 is reinstated from synonymy. The Australian genus *Doticus* Pascoe, 1882 is synonymised under *Araecerus* Schoenherr, 1823. The new name *Perroudius* is proposed for the New Caledonian genus *Tetragonopterus* Perroud, 1864; the latter name is preoccupied by Cuvier, 1817 for a genus of fishes.

The following 29 new combinations are proposed. Anthribinae - *Androporus discedens* (Sharp, 1876); *Cacephatus vates* (Sharp, 1876); *Dasyanthribus purpureus* (Broun, 1880); *Etnalis obtusus* (Sharp, 1886); *Garyus altus* (Sharp, 1876); *Gynarchaeus ornatus* (Sharp, 1876); *Helmoreus sharpi* (Broun, 1880); *Hoherius meinertzhageni* (Broun, 1880); *Hoplorhaphus spinifer* (Sharp, 1876); *Isanthribus proximus* (Broun, 1880); *Lophus cristatellus* (Broun, 1911); *L. lewisi* (Broun, 1909); *L. rudis* (Sharp, 1876); *Phymatus cucullatus* (Sharp, 1886); *P. hetaera* (Sharp, 1876); *P. phymatodes* (Redtenbacher, 1868); *Pleosporius bullatus* (Sharp, 1876); *Sharpius brouni* (Sharp, 1876); *S. imitarius* (Broun, 1914); *S. sandageri* (Broun, 1893); *S. venustus* (Broun, 1914).

Choraginae - *Araecerus palmaris* (Pascoe, 1882); *Dysnocryptus pili-cornis* (Broun, 1911); *Liromus pardalis* (Pascoe, 1876); *Micranthribus atomus* (Sharp, 1876); *Notochoragus crassus* (Sharp, 1876); *N. fungicola* (Broun, 1893); *N. nanus* (Sharp, 1876); *N. thoracicus* (Broun, 1893).

Forty-three species names are reduced to synonymy, as follows (the junior synonym first). Anthribinae - *albiceps* Broun, 1914 = *sharpi* Broun, 1880; *albifrons* Sharp, 1886 = *meinertzhageni* Broun, 1880; *anguliceps* Broun, 1910 = *bullatus* Sharp, 1876; *anxius* Broun, 1893 = *vates* Sharp, 1876; *aspersus* Broun, 1893 = *incertus* White, 1846; *brunneus* Broun, 1893 = *incertus* White, 1846; *concolor* Sharp, 1886 = *inornatus* Sharp, 1886; *cornutellus* Broun, 1913 = *phymatodes* Redtenbacher, 1868; *curvatus* Broun, 1893 = *inornatus* Sharp, 1886; *decens* Broun, 1893 = *hetaera* Sharp, 1876; *deterius* Broun, 1893 = *discedens* Sharp, 1876; *finitimus* Broun, 1893 = *hetaera* Sharp, 1876; *flavipilus* Broun, 1895 = *incertus* White, 1846; *fuscopictus* Broun, 1880 = *phymatodes* Redtenbacher, 1868; *halli* Broun, 1921 = *lewisi* Broun, 1909; *impar* Broun, 1893 = *phymatodes* Redtenbacher, 1868; *laetabilis* Broun, 1893 = *discedens* Sharp, 1876; *lanuginosus* Broun, 1880 = *phymatodes* Redtenbacher, 1868; *levinensis* Broun, 1913 = *phymatodes* Redtenbacher, 1868; *longicornis* Sharp, 1873 = *variabilis* Sharp, 1873; *maurus* Broun, 1910 = *bullatus* Sharp, 1876; *nigrescens* Broun, 1881 = *phymatodes* Redtenbacher, 1868; *nigrofasciatus* Broun, 1893 = *vates* Sharp, 1876; *obscurus* Broun, 1913 = *discedens* Sharp, 1876; *obsoletus* Broun, 1893 = *sandageri* Broun, 1893; *philpotti* Broun, 1909 = *cucullatus* Sharp, 1886; *picipictus* Broun, 1881 = *phymatodes* Redtenbacher, 1868; *pictipes* Broun, 1893 = *conulus* Broun, 1880; *rugifer* Broun, 1910 = *bullatus* Sharp, 1876; *signatus* Broun, 1893 = *meinertzhageni* Broun, 1880; *suspectus* Broun, 1910 = *bullatus* Sharp, 1876; *sylvanus* Broun, 1913 = *proximus* Broun, 1880; *tessellatus* Broun, 1893 = *incertus* White, 1846; *torulosus* Broun, 1881 = *phymatodes* Redtenbacher, 1868; *tuberosus* Sharp, 1886 = *phymatodes* Redtenbacher, 1868; *turneri* Broun, 1913 = *conulus* Broun, 1880; *viridescens* Broun, 1893 = *meinertzhageni* Broun, 1880; *wairi-rensensis* Broun, 1913 = *phymatodes* Redtenbacher, 1868. Choraginae - *minor* Broun, 1893 = *crassus* Sharp, 1876; *nigricans* Broun, 1893 = *rugosus* Sharp, 1876; *plagiatus* Broun, 1893 = *rugosus* Sharp, 1876; *setigerus* Broun, 1921 = *pallidus* Broun, 1893; *testaceus* Broun, 1893 = *inflatus* Sharp, 1876.

The following generic names are deleted from combinations with endemic New Zealand species: *Anthribisomus* Perroud, 1864; *Anthribus* O. F. Müller, 1764; *Araecerus* Schoenherr, 1823; *Brachytarsus* Schoenherr, 1823; *Cratoparis* Schoenherr, 1839; *Exillis* Pascoe, 1860; *Plintheria* Pascoe, 1859; *Proscoporhinus* Montrouzier, 1860; *Xenocerus* Schoenherr, 1833.

The following 4 species are deleted from the New Zealand fauna: *Araecerus greenwoodi* Jordan, 1924; *A. nitidus* Jordan, 1924; *Plesio-basis externa* Wolfrum, 1959; *Proscopus liber* Wolfrum, 1959.



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(*adventive species; †intercepted species)

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INTRODUCTION

The Anthribidae (fungus weevils) are a family of beetles belonging to the superfamily Curculionoidea (weevils and their relatives). The family comprises almost 3000 species (Morimoto 1978), distributed worldwide but most strongly represented in the tropics and subtropics.

The earliest record of an anthribid in New Zealand is that of White (1846), who described *Anthribus* (= *Cacephatus*) *incertus* from a single specimen found at Port Nicholson in the early 1840s. A second species, *Anthribus* (= *Phymatus*) *phymatodes*, was described by Redtenbacher (1868) from a specimen collected by Hochstetter in 1859.

Sharp (1873, 1876, 1886) described 24 new species, and in his 1876 paper remarked that the new species and those already described showed such a range of difference in their structural characters that they would have to be placed in a number of genera, most of which would be new. However, Sharp felt unable to deal with the generic limits "in anything like a satisfactory manner", and simply decided to apply the generic name *Anthribus* to each of his new species. It is a comment on Sharp's perception that the 15 new species he described in 1876 are distributed among 12 genera in the present revision.

Pascoe (1876) described *Araecerus* (= *Liromus*) *pardalis* from New Zealand, erroneously believing it to be the same as an anthribid that he had seen from Ceylon.

Fifty-three new species names and two new 'varieties', a category with no status in insect taxonomy today, were added to the list of New Zealand Anthribidae by Major

Thomas Broun (1880, 1881, 1893, 1895, 1909, 1910, 1911, 1913, 1914a, b, 1921a, b), an enthusiastic coleopterist whose prolific erection of species based mainly on single specimens has led to many synonyms being declared subsequently. Broun also erected four new anthribid genera, although mostly he followed Sharp's example and placed his new species in *Anthribus*.

Towards the end of the nineteenth century T. W. Kirk (1895) reported that the Australian anthribid *Doticus* (= *Araecerus*) *palmaris* had become established in Wellington Province.

At the beginning of the present century there was some confusion among European coleopterists about the limits of the genera *Anthribus* and *Brachytarsus*, and Bovie (1906) transferred to *Brachytarsus* all but two of the New Zealand species formerly placed for convenience in *Anthribus*. *A. brouni* and *A. sharpi* he transferred to *Plintheria*, presumably because Jordan (1894) had suggested that this was the most suitable genus for them at that time. Bovie's arrangement of New Zealand species was followed by Wolfrum (1929) in the Junk Catalogue of Anthribidae except that *brouni* and *sharpi* were listed in both *Plintheria* and *Brachytarsus*. Wolfrum recorded 85 endemic New Zealand species in 10 genera. Seven of the genera he placed in Pleurocerinae (= Anthribinae), two in Anocerinae (= Choraginae), and the anthribine genus *Xenanthribus* he incorrectly associated with *Urodon* (= *Bruchela*) in Urodoninae (= Bruchelinae). In a supplement to the Catalogue Wolfrum (1953) transferred the Urodoninae, including *Xenanthribus*, to

Bruchelidae.

Since Broun's time very few new names have been added to the list of New Zealand anthribids. *Anthribus* (= *Cacephatus*) *aucklandicus* was described by Brookes (1951) from a specimen collected on the Auckland Islands in 1943. Wolfrum (1959) reported the occurrence in New Zealand of the Australian grass stem anthribid, *Euciodes suturalis*, from a specimen collected at Rotorua (misspelt "Rotorus") in 1956, but subsequently the species was found to have been established in Hastings since 1924 (Kuschel 1972). Owing to the mislabelling of material collected in Fiji by G. Frey, Wolfrum (1959) inadvertently recorded two Fijian species of *Araecerus* and two supposedly new species, *Plesiobasis externa* and *Proscopus liber*, from New Zealand. Holloway (1970) erected the genus *Lichenobius* for two flightless species associated with lichens, and transferred to *Cacephatus* five species originally placed in *Anthribus* (Holloway 1971). Larvae of some southern species have been described by May (1971, 1981).

The present revision, based on examination of almost 8500 specimens, including type material of most of the available names, recognises 2 adventive and 58 endemic species of Anthribidae in New Zealand. The endemic species, of which 13 are new, belong in 26 genera. Eighteen of the genera are new. Although not established in New Zealand, the cosmopolitan species *Araecerus fasciculatus* is also included in this revision because of its frequent interception in consignments of imported dried plant products.

With the exception of several Northern Hemisphere species whose larvae feed on females and eggs of certain scale insects (Arnett 1963, Chao 1976), anthribids are phytophagous both as larvae and as adults. A few species develop inside mummified fruits and in lichens, but the larvae of most live inside dying branches and stems of angiosperms and gymnosperms. Although direct evidence is lacking at present, it looks as if the larvae depend on plant-parasitic fungi such as Xylariaceae to convert the host tissue into a form that they can assimilate. Adults of a few New Zealand species have been found to feed on lichen tissue, but most are fungal feeders, ingesting fructifications and hyphae that grow on or near the surface of stems, branches, or leaves of higher plants. The fungal material they eat sometimes comes from rusts, but more commonly it originates from Ascomycetes, particularly the Xylariaceae which attack plants of low vitality. Very few species, either as adults or larvae, have formed an association which involves the saprophytic fungi that are characteristic of rotting logs and forest-floor litter. Even species with atrophied wings tend to remain arboreal as both adults and larvae, and often show some degree of host-plant specificity.

One New Zealand anthribid, *Sharpius brouni*, has been very successful in adapting to the modified environment of suburban gardens, but most of the other endemic species do not occur outside of relatively undisturbed natural habitats. They are hardly ever attracted to their host plants when these are growing in gardens or parks.

A few species are able to develop in introduced plants, but this usually happens only when the exotics are intermingled with native vegetation.

SYSTEMATICS

The name Anthribidae was first used by Billberg in 1820 (Arnett 1963), and is based on the genus *Anthribus* O. F. Müller, 1764, of which the type-species is *A. resinusus* (Scopoli, 1763). Other names by which the family has been known are Anthotribidae, Choragidae, Platyrrhinidae, Platystomatidae, and Platystomidae. Choragidae is the oldest available name for the family, but has not been used since it was proposed by Kirby (1818). Since 1820 the family name has consistently been Anthribidae, and I am following this usage for the sake of stability.

Characterisation of the family

Anthribids can be recognised as members of the superfamily Curculionoidea (Rhyncho-phora) by the following characters. Body usually strongly sclerotised, often clothed with scales. Head produced forwards into a rostrum, with no paired gular sutures on the underside. Antennae with the scape received into a scrobe on the side of the head, and usually with a distinct apical club. Hind coxae without a declivity or concavity against which the femora can be retracted. Tarsi 5-segmented, but 4th segment very small and almost concealed in emargination of deeply lobed 3rd segment.

Abdomen with 5 ventrites and 7 pairs of spiracles.

The following assemblage of adult characters, compiled mainly from keys in Crowson (1955) and Britton (1970), separates Anthribidae from other families of Curculionoidea. Labrum distinct, separated by a groove from rest of head. Maxillae with long, flexible palps and a distinct lacinia. Rostrum flattened, not cylindrical. Antennae not elbowed (exception: somewhat elbowed in males of *Hoherius* new genus); club usually 3-segmented. Pronotum usually with a transverse carina and lateral carinae. Elytra with a supra-costal flange internally, and usually with a scutellary striole. Middle coxal cavities closed outwardly by mesosternum and metasternum. Tibiae lacking spurs. Tarsal claws with a tooth on inner edge. Pygidium exposed beyond elytra. First 4 abdominal ventrites fused together. Male: apex of tegmen never deeply bilobed. Female: hemisternites with an articulated apical part which has strongly sclerotised teeth and a small lateral stylus (exception: *Gynarchaeus* new genus, which lacks an articulated, toothed apical part and has a large apical stylus).

The most important characters of larval Anthribidae are as follows (after Anderson 1947). Body almost white, crescent-shaped, almost cylindrical, fleshy, widest in mid-abdominal region, with fleshy lateral protuberances and with few to many short or long setae on some segments. Head exerted or rarely retracted into prothorax; mouth-parts ventrally directed; epicranial suture and some setae present. Labrum with 4 or

more pairs of setae. Mandibles robust, bidentate or tridentate, usually with molar areas. Maxillae with an undivided cardo, 2- or 3-segmented palps, and a setiferous mala usually bearing a thorn-like lacinia near middle of inner margin. Labium with mentum and submentum distinct; palps 1- or 2-segmented, or absent. Antennae a single, membranous segment. Anterior ocellus present or absent; posterior ocellus absent. Clypeus narrower than frons, often not distinct from it. Legs, if present, of 1-3 segments, without claws. Abdomen 9-segmented, typically with 2 folds on each segment; 9th segment smaller than 8th. Spiracles bicameral, unicameral, or without air tubes; 8 pairs on abdomen.

Arrangement of taxa

The family consists of the subfamilies Anthribinae and Choraginae, and possibly the Bruchelinae. In the past these three subfamilies have sometimes been referred to as Pleurocerinae, Anocerinae, and Urodoninae respectively. The position within Coleoptera of *Bruchela*, the genus on which the subfamily Bruchelinae is based, has been disputed for many years. Jordan (1925) and Wolfrum (1953) consider it to belong in Bruchidae, but later authors place it in Curculionoidea, either as a subfamily of Anthribidae (Crowson 1955) or as a separate family (Valentine 1960). Bruchelinae do not occur in New Zealand, so their taxonomic status need not be further dealt with here.

Separation of the Anthribinae and Choraginae is based mainly on the position of the antennal scrobe and the shape of the

first two antennal segments, but there are also major differences in the form of the female genitalia. With their lateral or dorsolateral scrobes, almost cylindrical and bilaterally symmetrical scape and pedicel, and usually well defined rostrum the Anthribinae are more similar in appearance to other Curculionoidea than are the Choraginae, which always have dorsal scrobes, an arched, asymmetrical scape and pedicel, and an ill defined rostrum. Taking typical curculionoids as a standard, the female genitalia of Anthribinae are less modified than those of Choraginae (compare Figures 29 and 30). Because the Anthribinae seem to be morphologically closer to the generalised Curculionoidea I have placed them before Choraginae in this revision.

It is appropriate to place the New Zealand anthribine genus *Gynarchaeus* at the very beginning of Anthribidae because of its unmodified curculionid-type hemisternites (Figure 589). Other morphological features of *Gynarchaeus* that can probably be regarded as primitive rather than derived, and therefore confirm its special position in Anthribidae, are its very slight sexual dimorphism; completely lateral scrobes; simple, rather short antennae; entire eyes; only moderately long rostrum (Figure 39); relatively complete wing venation, including a closed anal cell (Figure 16); extensively sclerotised ninth abdominal segment in the female (Figure 588); large apodeme of sternite 8 in the male (Figure 291); and apparent vestiges of a pair of parameres near the apex of the tegmen in the male (see the pair of very

small preapical lobes in Figure 292). By taking *Gynarchaeus* (Figure 39) as the starting point in the system and noting the major morphological changes that have occurred in the family it has been possible to arrange the New Zealand genera of Anthribinae in the somewhat evolutionary sequence adopted for Figures 39-60.

Morphological changes that have been regarded as significant are as follows.

1. Either lengthening and narrowing of the rostrum to produce eventually genera such as *Hoplorhaphus* and *Helmoreus* (see successively Figures 40-44) or shortening and broadening of the rostrum to produce the sequence of genera shown in Figures 45-50.
2. Excavation of the dorsal surface of the rostrum, at the level of the antennal insertion, so that the scrobe becomes dorsolateral or dorsal and part of its floor and sides becomes visible in dorsal aspect (Figures 52-58).
3. Development of a notch, and subsequently a deep indentation, on the anterior margin of the eye (Figures 52-58). This modification is usually linked with the change in position of the scrobes from lateral to dorsolateral or dorsal.
4. Lengthening of the antennae, especially in males. This change (Figures 52-60) is linked with the previous two modifications, and is frequently a feature of genera in which the rostrum shows strong sexual dimorphism (Figures 57-59).
5. Decrease in size of the teeth and stylus at the apex of the hemisternites of the female genitalia, and movement of some

of the teeth to a ventral position (Figures 32-35). In their simplest form the teeth are all rather large, similar in shape, and in the same plane, forming a large 'open hand' structure which bears a large stylus laterally (Figure 32).

Etnalis (Figure 51) can be regarded as a form of *Eugonissus* (Figure 50) in which the eyes have become deeply emarginate but the scrobes have remained lateral. *Dasyanthribus* (Figure 61) has been placed at the end of the New Zealand Anthribinae, where it forms a link between this subfamily and Choraginae. Its anthribine features are the transverse bar at the base of the body of the hemisternites (Figure 673) and the pyriform antennal scape (Figure 210), which is typical of anthribines that have a dorsolateral scrobe. However, the protruding eyes are very much like those of Choraginae, and the curved second antennal segment (Figure 211) seems to foreshadow the strongly arched choragine pedicel.

The Choraginae are much less diverse morphologically than the Anthribinae. In particular the form of the scrobes, length of antennae, development of the rostrum, and shape of the eyes are essentially the same throughout the subfamily. The five New Zealand genera are arranged in order according to the form of the female genitalia and the extent of sexual dimorphism. *Liromus* (Figure 62) shows very little sexual dimorphism, and the hemisternites are robust and rather like those of Anthribinae. *Notochoragus* (Figure 66) shows greater development of sexual dimorphism, and the hemisternites are extremely slender, with the stylus reduced to a

single seta (Figures 38 and 710). The three other genera (Figures 63-65) fall between these extremes.

The arrangement of species within each genus is alphabetical.

FAUNAL COMPOSITION AND RELATIONSHIPS

The world fauna of Anthribidae is divided very unevenly among three subfamilies (Crowson 1955): Bruchelinae with about 50 species; Choraginae with about 400 species; and Anthribinae with the remainder. New Zealand, with 2 adventives and 58 endemic species, has about two percent of the present known world fauna. By comparison, Chile has only 13 species (Wolf-rum 1929, 1953), Australia has 57 (Britton 1970), America north of Mexico has 87 (Valentine 1960), and Japan has 99, of which about 68 are endemic (Morimoto 1978, 1979, 1980).

All the New Zealand species are small, ranging in length (excluding the rostrum) from 0.8 mm in *Micranthribus atomus* to about 7 mm in *Cacephatus aucklandicus*. Exotic anthribids range in length from about 1 mm in a species of *Cisanthribus* from New Caledonia to 35 mm in males of *Deuterocrates griseopictus* from Brazzaville. Large specimens of *D. griseopictus* have antennae measuring as much as 90 mm in length. Most New Zealand anthribids have only moderately long antennae. A few of the New Zealand species have greenish integument, but most are brown or black and rather drab-looking - they lack the striking colour patterns that are a feature of many tropical and subtropical

anthribids.

The subfamily Bruchelinae is not represented in New Zealand; the endemic species of Anthribidae in New Zealand are divided between Anthribinae, with 42 species, and Choraginae with 16.

The endemic Anthribinae belong in 22 genera, which can be grouped in the following 3 major categories according to overall body form, length and insertion of the antennae, and shape and position of the eyes.

1. Stout-bodied forms with a conspicuous rostrum, laterally inserted antennae which are shorter than the body, and lateral, widely spaced, entire or barely emarginate eyes: *Cacephatus*, *Caliobius*, *Garyus*, *Gynarchaeus*, *Helmoreus* (eyes slightly dorsal), *Hoplorhaphus*, *Lichenobius*, *Lophus*, *Pleosporius*, *Sharpus*, *Xenanthribus*.
2. Stout-bodied forms with a rather inconspicuous rostrum, dorsally or dorso-laterally inserted antennae which are shorter than the body, and lateral, widely spaced, notched to quite deeply emarginate eyes: *Dasyanthribus*, *Etnalis*, *Eugonissus*, *Isanthribus*.
3. Somewhat fragile forms (except if flightless) with an inconspicuous rostrum (except in males of sexually dimorphic species), dorsally or dorso-laterally inserted antennae which usually are longer than the body, and eyes that are either notched and widely spaced or deeply emarginate and more closely approximated: *Androporus*, *Arecopais*, *Cerius*, *Hoherius*, *Lawsonia*, *Phymatus*, *Tribasileus*.

Two groups of Anthribinae, very characteristic of the tropics, are not represented in New Zealand.

1. Compact-bodied forms with a conspicuous rostrum, laterally inserted, short, and usually slender antennae, and large, very finely faceted, entire, closely approximated, dorsal eyes. Genera such as *Acorynus*, *Litocerus*, *Nessiiodocus*, and *Tropideres* which are included in this category occur in tropical areas of the Pacific, and may extend their range through Malaysia to Japan and other parts of Asia.
2. Elongate, depressed forms with a conspicuous rostrum, dorsolaterally inserted antennae which usually are stout and very much longer than the body, and large, finely faceted, entire, lateral eyes. Typical genera in this category are *Cerambyrhynchus* from Fiji and Samoa, *Deuteroocrates* from equatorial Africa, and *Ptychoderes* from Central America and Brazil.

Eleven genera of New Zealand Anthribinae are endemic and not closely related to one another nor, apparently, to anthribines elsewhere. For the present, at least, they must be regarded as part of the archaic (endemic) element of the New Zealand biota. Eight of these genera - *Arecoapis*, *Caliobius*, *Eugonissus*, *Garyus*, *Gynarchaeus*, *Pleosporius*, *Tribasileus*, and *Xenanthribus* - are monotypic. The other three - *Cerius*, *Etnalis*, and *Phymatus* - have two or three species each. *Gynarchaeus ornatus* occupies a special position within the family as the only known species in which the hemi-

sternites are of the curculionid type, i.e., have a large apical stylus.

Eight genera of New Zealand Anthribinae are either shared with the region extending northwards from New Caledonia to Malaysia or have affinities with genera occurring in that area, as follows. *Androporus* has one species in New Zealand and an undescribed species in New Caledonia; *Dasyanthribus* has a vestigial-winged New Zealand species and an apterous New Caledonian species; *Helmoresus* has one New Zealand and one New Caledonian species and is also related to *Plintheria* in New Guinea; *Hoherius* resembles in some of its features *Proscoporphinus* from New Caledonia; *Hoplorhaphus* has affinities with *Eczesaris* from New Guinea and Malaysia; *Lawsonia* has one New Zealand species and probably a New Caledonian species; and *Lophus* shares many of its characters with *Perroudius* (formerly *Tetragonopterus*) from New Caledonia.

Only two anthribine genera (apart from the adventive genus *Euciodes*, which arrived in New Zealand within the last 80 years) can be linked with the Australian fauna. These are *Cacephatus*, which has six species (including a flightless subantarctic one) in the New Zealand subregion, one species in south-eastern Australia, and an undescribed species on each of Lord Howe and Norfolk islands; and *Lichenobius*, with a flightless species on each of the Bounty, Snares/Stewart, and Chatham islands which may be distantly related to *Xynotropis* from Tasmania.

The remaining anthribine genus, *Sharpius*, has five species, including two that are flightless; it seems to be most closely related to *Allandrus*, particularly

the North American and Japanese species of this genus.

The 16 endemic species of Choraginae belong in four genera which can be grouped as follows on external characters.

1. Black, rather parallel-sided forms with sexually dimorphic mandibles and very slender antennae: *Notochoragus*.
2. Black or brown, somewhat ovate forms with similar mandibles in the two sexes and with somewhat robust antennae: *Dysnocryptus*, *Liromus*, *Micranthribus*.

These two categories also seem to encompass the world fauna of Choraginae.

Dysnocryptus, with nine apterous species, is the only choragine genus that can be considered to belong to the archaic New Zealand element. *Liromus*, represented in New Zealand by a single species, possibly occurs in New Caledonia also. *Micranthribus* has a vestigial-winged New Zealand species and one that is fully winged in New Caledonia. *Notochoragus*, with five endemic species of which two are flightless, has affinities with *Choragus* and *Melanopsacus*. *Choragus* is an essentially Northern Hemisphere genus that occurs in Europe, North America, and Asia, and *Melanopsacus* has a range extending from Fiji and Queensland to Japan.

The absence of any relationships between New Zealand and Chilean species can be explained partly by the impoverished and apparently recent nature of the Chilean anthribid fauna. Of the four genera that contain the 13 endemic Chilean species only *Sistellorhynchus*, with two species, is

endemic. The other three - *Corrhecerus*, *Hylotribus*, and *Ormiscus* - are shared with the Neotropical region to the north.

Altogether 27 species, or about 47 percent of the endemic New Zealand Anthribidae, are either apterous or vestigial-winged. Fifteen of these are distributed among the anthribine genera *Cacephatus*, *Caliobius*, *Cerius*, *Dasyanthribus*, *Eugonissus*, *Isanthribus*, *Lichenobius*, *Lophus*, *Sharpius*, *Tribasileus*, and *Xenanthribus*; the remaining 12 are choragines belonging to *Dysnocryptus*, *Micranthribus*, and *Notochoragus*. The single species of *Eugonissus* is unusual, and perhaps unique, among Anthribidae because it has fully winged and vestigial-winged forms in both sexes. In a worldwide context the degree of flightlessness seems high, but it does not compare with that recorded by Basilevsky (1972) for the Anthribidae of the South Atlantic island of St Helena, where 24 of the 27 species are apterous. Apparently all the Japanese anthribids are fully winged (Morimoto 1978, 1979, 1980).

The two adventive species of Anthribidae in New Zealand must have been transported in the late nineteenth and early twentieth century on ships from Australia. *Euciodes suturalis*, a small anthribine whose larvae live in grass stems, is known to have been established in Hawke's Bay by 1924 (Kuschel 1972), and the choragine *Araecerus palmaris*, which could have been transported either in various mummified fruits or on acacia stems, was first noticed in Wellington in the summer of 1894-95 (Kirk 1895).

MORPHOLOGY AND TERMINOLOGY

In this section emphasis is placed on the morphology of the New Zealand species. A more general treatment is available in Valentine (1960) and Arnett (1963).

HEAD

The head (Figures 1-7) lacks longitudinal sutures on the gula (Figure 2) and is not conspicuously retracted into the prothorax. Throughout the text the upper surface is referred to as dorsal even when the head is directed anteroventrally in relation to the pronotal surface.

ROSTRUM. This is depressed and never cylindrical, rarely moderately long and slender (Figures 3 and 4) but more commonly short and broad (Figures 5 and 6) or indistinct (Figure 7). Its dorsal surface often has pits (Figure 1), tubercles (rounded or conical elevations), longitudinal carinae (keels) (Figures 3 and 4), or depressed areas (Figure 6), or a combination of these (Figure 5). The presence, form, and disposition of depressions and carinae is constant within genera. The rostrum is often longer, larger, and more conspicuously contoured on the dorsal surface in males than in females.

ANTENNAE (Figures 1, 2, and 5-11). These are 11-segmented, short to very long, and not elbowed, except in large males of *Hoherius* (Figure 194). The scape (segment 1) is cylindrical, almost bilaterally symmetrical, and has a basal stalk in about the same plane as the rest of the segment (Figures 3 and 9 - Anthribinae); or is somewhat pear-shaped, obliquely truncate at the base, and has the stalk

inserted at right angles to the rest of the segment (Figure 10 - Anthribinae); or is arched, with the external margin much more convex than the internal margin (when the antenna is folded against the body), and has the stalk almost in the same plane as the rest of the segment (Figures 7 and 11 - Choraginae). The pedicel (segment 2) is shorter or longer than the scape and is either cylindrical and almost bilaterally symmetrical (Figures 9 and 10 - Anthribinae) or arched, with the external margin more convex than the internal margin (Figures 7 and 11 - Choraginae). The funicle comprises 6 rather similar, usually symmetrical segments. The club is composed of 3 segments most commonly broad and compact, but sometimes narrow and loosely articulated, or with the first segment not very different from the funicle segments. Relative proportions of the scape and pedicel, and the overall appearance of the antenna, are constant within genera. Males usually have longer antennae than females.

MOUTHPARTS. The labrum (Figures 1, 3, and 4) is separated from the rostrum by a groove. The mandibles (Figures 1-3) are large and exposed. The maxillae (Figure 2) consist of a pair of laciniae and a pair of 4-segmented, slender, flexible palps which have their basal segment concealed by the mentum. The labium (Figure 2) is composed of an exposed, bilobed, sclerotised ligula, a pair of 3-segmented, slender, flexible palps, and a large, strongly sclerotised, bilobed mentum.

EYES. These are lateral (Figures 1-7) or rarely dorsolateral (Figure 107), round (Figure 7), oval (Figure 1), kidney-shaped

(Figure 152), or horseshoe-shaped (Figure 207), with the anterior margin entire (Figure 4), truncate, notched (Figure 6), or deeply incised (Figure 203). They are often reduced in size in flightless species (Figure 6). The hairs between the facets are usually visible at low magnifications (about $\times 50$). Males often have more closely approximated and more deeply notched eyes than females. The general shape of the eyes is diagnostically useful at the generic level.

ANTENNAL SCROBES. These are grooves on the side of the rostrum that contain the base of the scape. They may be lateral (Figures 1-4 - Anthribinae), with no part of their floor or walls visible in dorsal aspect; or dorsolateral (Figure 6 - Anthribinae), with part of their floor and walls visible in dorsal aspect; or dorsal (Figure 7 - Choraginae), with their floor and walls almost totally visible in dorsal aspect. The interscrobal distance compared with the interocular distance is important for separating genera.

THORAX

PROTHORAX. The pronotum (Figure 1) usually has a transverse carina near the base and lateral carinae at the sides. The transverse carina may be basal (Figure 12), sub-basal (Figure 13), or antebasal (Figure 14), and either entire (Figures 12 and 13) or fragmented (Figure 14). The lateral carinae are variably developed but rarely extend anteriorly beyond the pleural suture. The disc (central part) of the pronotum sometimes has tubercles, and the declivity behind the transverse carina may

have denticles (Figure 13) or secondary carinae (Figure 14). The position of the transverse carina varies within genera but not within species; its curvature may vary slightly within species. Fragmentation of the transverse and lateral carinae occurs commonly but not exclusively in flightless species. The prosternum (Figure 19) has a pleural suture - perhaps more correctly termed a pleural apophyseal invagination (Hlavac 1972) - running forward obliquely from the outer edge of the coxal cavity to the sides or dorsal surface of the prothorax.

MESOTHORAX. The scutellum (Figure 1) is usually visible and always small. The elytra (Figure 1) do not completely cover the pygidium (last abdominal tergite). They usually have a scutellary striole and other striae (depressed lines often containing punctures) (Figure 15); sub-basal, median, and preapical tubercles and a humeral callus may be present in fully winged species (Figure 1). The outer edge of the elytron is bent under to form an epipleural fold (Figure 20), which is narrow except near the base; also on the underside is a supra-costal flange (Figure 15). The mesepisternum and mesepimeron do not reach the middle coxal cavity, which is closed outwardly by the junction of the mesosternum and metasternum (Figure 20).

METATHORAX. The hindwings are fully developed (Figures 16-18), vestigial (Figures 277-290), or absent. Veins of fully developed wings vary from moderately complete and strongly sclerotised (Figures 16 and 17) to very incomplete and weakly sclerotised (Figure 18). The metepisternum

(Figure 20) is broad, elongate, and partly covered by the elytral margin; the metepimeron (Figure 20) is narrow, elongate, and almost entirely obscured by the elytral margin.

LEGS. The front and middle coxae are globular and the hind coxae are transverse (see coxal cavities, Figures 19 and 20). The femora and tibiae (Figure 1) lack spurs and spines; they often have conspicuous transverse rings or bands of vestiture whose colour and position are important for separating genera. The tarsi (Figure 21) are 5-segmented but with the fourth segment very small and often hard to see; the second segment is almost always emarginate at the apex; the third is bilobed; and the fifth bears a pair of apical claws with a variably developed tooth on their inner edge.

ABDOMEN

DORSAL SURFACE. There are 7 tergites (segmental plates), of which the first to sixth are covered by the elytra and the seventh (pygidium) is partly exposed (Figure 1). There are usually marked sexual differences in the shape, surface texture, and vestiture of the pygidium.

VENTRAL SURFACE (Figure 20). There are 5 ventrites (segmental plates); the first 4 are fused together but have the sutures showing, and the fifth is slightly movable on the fourth. Sexual differences may be apparent in the surface contours of the ventrites; the fifth ventrite of females is often longer and more strongly deflected than in males, and frequently has asperities (dot-like swellings) on part of its surface.

VESTITURE

This consists of variably developed fine hairs and small, usually linear scales or thickened scale-like hairs. The angle of inclination of the vestiture (Figure 22) varies from appressed to erect, and the scales or hairs may be straight or curved. Any vestiture that is not pressed against the integumental surface may be referred to as standing vestiture. In all the New Zealand species the tips of the scales and hairs are directed forwards on the head and pronotum and backwards on the elytra.

GENITALIA

These include the modified eighth and ninth abdominal segments. In repose they are contained within the abdomen.

MALE. Segment 8 (Figure 23) consists of a variably developed tergite and a pair of sternal lobes. A short apodeme (a rod for the attachment of muscles) belonging to sternite 8 may be present. Sternite 9, sometimes called the spiculum gastrale (Figure 23), is represented by a long apodeme which is usually divided distally into two short arms. The tegmen (Figures 24 and 25) consists of a ventral, proximal apodeme and a large sclerotised ring which is divided dorsally near the apex by a transverse preapical flange. The tapering part beyond the flange bears stiff hairs at its apex; it represents the fused parameres of other Curculionoidea. In repose the ring encloses the aedeagus (Figures 26 and 27), which consists of a body, a pair of apodemes, and an eversible internal sac. The body is beak-like and comprises a ventral plate (pedon) and a dorsal plate (tectum) joined by lateral membranes.

Jordan (1942) has used the term hypophallite and epiphallite respectively for these plates, but I consider the terms pedon and tectum, used in one of my earlier papers (Holloway 1970), to fit in better with the terminology recommended by Lindroth (1957) for the male genitalia of Coleoptera. The apodemes are usually connected dorsally by a cross-piece (bridge), and are continuous with - or, rarely, articulated on - the pedon. The male genitalia embody many important specific and generic characters.

FEMALE. Segment 8 (Figure 28) consists of a variably developed tergite and a sternite which has a proximal apodeme. Tergite 9 is represented by a weakly sclerotised plate which is associated with the rectum. The hemisternites (Figures 29 and 30) are composed of a somewhat cylindrical distal body and two pairs of apodemes, the lateral and median rods. The lateral rods either articulate on a transverse bar on the ventral surface of the body of the hemisternites (Figure 29 - Anthribinae) or are continuous with the body (Figure 30 - Choraginae). Each hemisternite usually has a strongly sclerotised, articulated, apical toothed plate which partially encloses a small, lateral, setose stylus. *Gynarchaeus* (Figure 31) has retained the unmodified curculionid type of hemisternite which lacks sclerotised teeth and has a large apical stylus. Other forms of anthribid hemisternite apex are shown in Figures 32-38, which depict the sequence of changes that can occur in the teeth and stylus; the latter is reduced to a single long bristle in *Notochoragus* (Figure 38). The

vulva is usually enclosed by a dorsal and two ventral membranous lobes, though these are reduced or absent in some genera, of Choraginae especially. The vagina extends from the vulva to the level of entry of the median oviduct. The bursa copulatrix is a simple or lobed sac often with sclerites or patches of spinules near the insertion of the spermathecal duct. The spermatheca is strongly sclerotised and usually sickle-shaped, rarely annulate. The spermathecal gland duct enters the spermatheca through a small atrium - or rarely a slit - at its base or outer basal edge. The spermathecal duct inserts on this atrium or slit. The genitalia of females have very distinctive features, especially at the generic level.

FORM AND FUNCTION OF SOME INTEGUMENTAL STRUCTURES

Sensory structures of several kinds are obvious on the body surface of many anthribids, but virtually nothing is known of their fine structure or function. Those occurring only in males can be assumed to have a purely sexual function, but some of those found in females could be involved in oviposition as well as mating behaviour.

The most conspicuous sensory structures in males are oval or circular pits bordered by a shiny rim and containing dense, erect, pale hairs. These are very likely to be sites for the production and release of sex pheromones. An oval pit of this type is present on the underside of the hind femur in males of *Androporus discedens* (Figure 176), and an undescribed New Caledonian species of this genus has a smaller circular pit on the hind femur.

Keels and tubercles on the midline of some abdominal ventrites in males of several species are also likely to be involved in the dispersal of sex attractants. The tubercles in *Sharpius chathamensis* (Figure 91) are conical and rather small, but in *Liromus pardalis* (Figure 216) they are large and have a conspicuous concavity on the posterior face. Males of all species of *Dysnocyrtus* have a narrow, often deep keel on the midline of several of the ventrites. These keels are capped by a tuft or row of erect hairs, and are distinctive for each species (Figures 223, 227, 231, 235, 239, 243, 247, 251, and 255).

Females of many species have part or all of the surface of the pygidium covered with conspicuous asperities, each one usually bearing a very small scale or short hair. Asperities and dense tufts of hairs are present on the fifth abdominal ventrite in both sexes of many species. In the males and females of a given species they are always differently developed.

The tubercles, ridges, pits, pores, grooves, and depressed areas that are variously distributed over the integument form part of what Lawrence & Hlavac (1979) refer to as the "family of adaptations for controlling the flow and storage of materials on cuticular surfaces". The functions of cuticular secretions are diverse; they include defence against bacteria and fungi and protection from water loss as well as sexual attraction. Tubercles (Figure 181), ridges (Figure 177), and grooves (Figure 186) on the upper surface of the head and rostrum of anthribids, particularly males,

almost certainly serve to channel the flow of secretions. Because of the downward tilt of the head in most species, and the direction of the vestiture, the substances will move towards the anterior margin of the head. In males of *Lawsonia variabilis* (Figure 202) the base of the mandible has a small, deep pit in which these materials could be trapped. Both males and females of *Gynarchaeus ornatus* (Figure 67), *Garyus altus* (Figure 128), and *Euciodes suturalis* (Figure 207) have small, deep, shiny pits along the dorsal midline of the rostrum, often with a groove opening into them from behind, and these too perhaps serve as reservoirs for surface secretions.

The fine structure and function of the transverse and lateral carinae margining the pronotum (Figure 69) have not been studied. In some species, especially those with fully developed wings, the carinae consist of a row of small, similar-sized, contiguous asperities which usually bear a minute apical scale or hair. On the transverse carina the asperities are directed upwards or slightly forwards, and those of the lateral carinae lean slightly towards the midline of the pronotum. Cuticular secretions originating from in front of the transverse carina would therefore be confined to the anterior part of the pronotum, and would tend to flow towards the head because of the direction of the vestiture. The surface of the pronotal disc is often moulded into tubercles (Figure 69) or quite deep depressions which could also assist in channelling or retaining these substances. Why the transverse carina should tend to fragment or disappear entirely in flight-

less species is not clear.

In many species the elytra have tubercles, swellings, and sunken areas similar to those on the pronotum, equally developed in males and females. The tubercles are evaginations of the cuticle, and usually are capped by a tuft of erect, black hairs. When more than one pair of tubercles is present (excluding the humeral callus), the anterior ones are the larger (Figure 190). In general, all elytral tubercles have the apices directed posteriorly (Figure 195). As the tips of the scales and hairs also point in this direction the flow of cuticular secretions on the elytra will be towards the pygidium.

BIOLOGY

Habitats of adults and larvae

All New Zealand's Anthribidae are phytophagous, and most species occur only in natural plant communities. The plant habitats do not have to be extensive areas of original forest - a small patch of mainly second-growth vegetation or a few clumps of *Muehlenbeckia* and New Zealand flax in an unmodified coastal setting can support anthribids. Species that may be abundant in pockets of bush on the outskirts of suburban housing developments are rarely attracted to their known host plants growing in adjacent gardens and parks. The one exception is *Sharpius browni*, which is common through much of New Zealand. Larvae of a few endemic species are able to develop in exotic plants, particularly when these are intermingled with native trees and shrubs.

Most species are associated with standing vegetation, and have larvae that are endophytic in dead and dying branches of trees and shrubs. The adults feed mainly on fungal material growing on the bark of weakened woody plants. Adults of a few species with arboreal larvae have been extracted from leaf litter as well as being beaten from vegetation. Whether these adults were actually feeding on saprophytic fungi of the forest floor or had recently emerged from fallen twigs is not known.

Adults of *Notochoragus chathamensis*, *Xenanthribus hirsutus*, and a few species of *Dysnocryptus* have only ever been found in leaf litter (or, very rarely, under wrack). Their larvae are unknown, but will perhaps be found to develop inside rotting twigs and branches lying on the forest floor. Adults of *Caliobius littoralis* occur in litter associated with ground-nesting seabirds, and the larvae will doubtless be found in the same habitat.

A few species of *Dysnocryptus* are associated with monocotyledons growing in swamps or close to the sea, where they may be submerged from time to time, but in general anthribids do not live in places that are frequently exposed to water. The two exceptions are *Lichenobius littoralis*, which has larvae that live inside rock-encrusting lichens of the spray zone and adults that move freely over the surface of this lichen; and *L. maritimus*, adults of which have been collected from encrusting plant material on wave-washed rocks of the Bounty Islands.

The habitat preferences of adults and larvae are summarised in Appendix 3.

Host plants of larvae

Label data of reared specimens indicate host plants of the larvae of 39 species. For a further six species larval host-plant relationships can be assumed from the occurrence of adults on various plant species; males and females are often abundant on weakened and cut branches of the food plants of their larvae.

Altogether 2 species of lichens, a genus of ascomycete fungi, a genus of basidiomycete fungi, a genus of ferns, 7 genera (representing 4 families) of gymnosperms, 15 genera (representing 7 families) of monocotyledons, and 55 genera (representing 35 families) of dicotyledons are known to serve as host plants for anthribid larvae in New Zealand.

The actual relationship between the larvae and their host plants has not been studied in detail, but it seems likely that nutriment is obtained not directly from the plant tissue itself but from fungi, such as Xylariaceae, that have invaded the host plant. The larval food could consist either of fungal material alone or of host-plant tissue that has been altered by the presence of parasitic fungi. Penman (1978) has suggested that third-instar larvae of *Euciodes suturalis* may be feeding on fungi that commonly infest the interior of the dried seed-head stems of cocksfoot where they live, although first and second instars are present in developing seed-head stems, presumably without this fungal growth. In an *Arecopais spectabilis* larva that I examined the hindgut contained numerous ascospores and fragments of fungal fructifications in addition to tissue of

the dead nikau palm frond in which the larva was found.

Lichenobius is the only New Zealand genus with lichenivorous larvae, and it is doubtful whether these larvae could develop in any other plants.

The endemic choragine *Notochoragus crassus* and two endemic anthribines, *Lophus rudis* and *Pleosporius bullatus*, have been reared from ascomycete fruiting bodies growing on beech and tawa, but they have also been reared from dicotyledons showing no obvious fungal growths. The only basidiomycete fungus with which larval anthribids in New Zealand are known to be associated is a rust that induces galls on acacias. It is Australian in origin, and the choragine *Araecerus palmaris* that develops inside the galls is an Australian species established here. *A. palmaris* can also develop inside mummified fruits of various dicotyledons.

Tree ferns may be among the larval host plants of *Dysnocryptus rugosus*, as relatively large numbers of adults have been beaten from their fronds, but larvae are known to develop in old stems of *Gahnia*, a monocotyledon.

Nine endemic anthribines have been reared from gymnosperms. Larvae of *Cacephatus incertus* and *C. inornatus* apparently are confined to gymnosperms, but do not discriminate between endemic and exotic species. *Androporus discedens*, *Helmorus sharpi*, *Phymatus cucullatus*, *P. phymatodes*, and *Sharpius brouni* have also been reared from dicotyledons; *Cacephatus aucklandicus* and *Phymatus hetaera* have been reared from gymnosperms as well as

monocotyledons and dicotyledons.

Monocotyledons seem to be the only group of plants selected as hosts by larvae of three anthribine species. *Arecopais spectabilis*, an endemic species, has been reared only from nikau palm fronds; *Isanthribus phormii*, also endemic, is probably confined to New Zealand flax; and the adventive grass stem anthribid *Euciodes suturalis* has been reared only from seed-head stems of introduced grasses. Of the endemic choragines, *Dysnocryptus* and *Micranthribus* probably develop in native Cyperaceae and in both New Zealand and South American species of *Cortaderia* (Poaceae) as well as being associated with plants of several dicotyledonous families.

Not surprisingly, dicotyledons provide host species for a large number of larval anthribids. Seventeen endemic species have been reared from dicotyledons, and at least some of these have larvae that seem to be confined to a single plant family or genus. For example, *Hoherius meinertzhageni* has been reared only from endemic Malvaceae, *Lophus lewisi* from *Nothofagus* (Fagaceae), and *Liromus pardalis* from *Coprosma* (Rubiaceae). However, most of the New Zealand anthribids whose larvae are associated with dicotyledons have been reared from several genera distributed among unrelated families.

The greatest number of larval host-plant records is for *Sharpus brouni*, which has been reared from plants belonging to 14 genera of dicotyledons, representing 11 families, and from 2 genera of gymnosperms belonging to different families.

Very little information is available about the sites selected by larvae within

the host plants. Larvae of *Cacephatus incertus*, *C. inornatus*, and *C. vates* are often found deep in the sapwood, and *C. huttoni* larvae feed in the pithy rays of dead stems. *Sharpus brouni* has been reared from dead, but intact, twigs as well as from rotten stumps of trees. In twigs its larvae feed in the subcortical zone. The larvae of *Helmoreus sharpi* and *Hoherius meinertzhageni* feed subcortically and in the bark of dying twigs and branches, and larvae of *Dasyanthribus purpureus* have been found under bark flakes of living trees. *Lichenobius littoralis* larvae form feeding tunnels just below the surface of rock-encrusting lichens, whereas *L. silvicola* larvae apparently extend their workings down into the bark on which their host lichen is growing.

Host plants of endemic and adventive Anthribidae of New Zealand are listed in Appendix 4.

Food of adults

The diet of adult anthribids can be determined by examination of hindgut contents, obtained by macerating the abdomen.

The plant material most commonly found in New Zealand species was fragments of fungi, mainly ascomycetes and Fungi Imperfecti. Spores and hyphae of rusts (Basidiomycetes) were identified from *Araecerus palmaris*, *Euciodes suturalis*, and *Cacephatus propinquus*. Lichen tissue was present in *Lichenobius littoralis*, *L. silvicola*, and *Cacephatus aucklandicus*. Fragments of bark and epidermal tissue, presumably from part of the fungal substrate, were present in some preparations.

No pollen grains were found.

The fungal material consisted of spores, apparently unaltered externally during digestion, and fragments of hyphae and ruptured fruiting bodies. Some of the preparations contained hundreds - even thousands - of spores, often of a single species, but in others there were only small numbers of spores, frequently representing several species. The hindgut of some specimens contained only fragments of fungal fruiting bodies and hyphae. Few preparations contained no fungal material at all.

The beetles probably derive most of their nutriment from vegetative hyphae and from mucilaginous material inside the fungal fructifications. From the amount of vegetative fungal material present in most preparations it is evident that whole fruiting bodies are eaten, often with some of the supporting fungal tissue (stroma). The extent to which spore contents may be digested is not known. Many spores have thick walls that are continuous except for localised thinning at the sites of germination pores and slits. Some of the conidia (asexual spores of Fungi Imperfecti) had their end cells digested away.

The most common ascomycete spores identified in the preparations belonged to Xylariaceae, but ascospores of Sordariaceae were present in the two species of *Hoplorhaphus*. Hyphae and ascospores of Euantennariaceae (true sooty moulds) were identified in the gut of *Cacephatus inornatus*, *Dasyanthribus purpureus*, *Garyus altus*, and *Pleosporius bullatus*; the last-named also contained ascospores of

Pleosporaceae. These moulds grow on the honey dew deposited by some scale insects (Coccoidea). Knowing of the association of some adult anthribids with true sooty moulds, it is now not difficult to see how larvae of a few Northern Hemisphere species could have become predators of the sessile scale insects that produce honey dew (and their eggs). Pirozynski & Weresub (1979) consider the Euantennariaceae to be a relict group of fungi, the present-day distribution of which results from over-land migrations of biotas in the early Cretaceous, more than 80 million years ago. If, as seems likely, some adult anthribids are very slow to change their feeding habits, then anthribid/euantennariacean associations could be extremely ancient.

All the basiodiomycetes identified in the hindgut preparations were rusts (Uredinales). Rust spores ingested by adults of *Araecerus palmaris* belonged to the same species that induces the acacia galls in which their larvae develop. Those found in the gut of the grass stem anthribid *Euciodes suturalis* belonged to *Puccinia*, a genus commonly found on grasses and weeds.

It was expected that the gut contents of the two specimens of *Lichenobius maritimus* collected on encrusting plant material in a wave-washed crevice on the Bounty Islands would include fragments of algae or lichens, but only fungal spores and hyphae - apparently not associated with lichens - were present, so presumably these beetles had been feeding on a marine fungus.

The plant material found in hindgut preparations of adults of New Zealand's Anthribidae is summarised in Appendix 5.

Life cycles

There are no published accounts of the life history of any endemic species, but Gourlay (1929, 1960) and Penman (1978) have studied the life histories in New Zealand of the two adventive Australian species, *Araecerus palmaris* and *Euciodes suturalis*.

Gourlay found that *Araecerus palmaris* could develop continuously in mummified lemons in the laboratory, but that there was a main emergence period at the beginning of summer. Some adults overwintered inside the dried fruit. The rearing records I have for this species suggest that in the field there is an emergence period from September to November followed by a second emergence in March and April.

Penman found that *Euciodes suturalis* produces a single generation annually. The eggs are laid singly inside grass stems during December and January, and the first two larval instars are present inside the stems from January till March. Third-instar larvae appear in February or March and overwinter in the stems until September or October, when they pupate. On emergence in November the adults leave the plant through a hole chewed in the stem. Penman found adults only between the beginning of November and the end of February, which corresponds with the dates accompanying all the specimens I have examined except for one male collected in Nelson in August.

Specimen label data indicate a lack of clearly defined seasonal occurrence for

most of the endemic species. Adults of *Araecerus spectabilis*, *Dysnocryptus dignus*, *D. inflatus*, *D. pallidus*, *Isanthribus proximus*, *Lophus rudis*, *Micranthribus atomus*, *Notochoragus crassus*, *Phymatus phymatodes*, *Pleosporius bullatus*, and *Sharpius brouni* have been collected throughout the year, and those of *Cacephatus aucklandicus*, *C. inornatus*, *Dasyanthribus purpureus*, *Etnalis spinicollis*, *Gynarchaeus ornatus*, *Lawsonia variabilis*, *Lophus cristatellus*, *L. lewisi*, *Sharpius venustus*, and *Xenanthribus hirsutus* have been taken in June or July or both, as well as in the summer months.

It is clear from label data that the emergence of adults of many of the endemic species may extend over several months, usually from mid August till the end of January. This even applies to specimens reared from a single source of host-plant material. For instance, adults of *Phymatus cucullatus* emerged from the end of August 1965 until January 1966 from dying *Hedycarya* branches collected in June 1965, and a series of *Sharpius brouni* adults emerged between 30 November 1974 and 8 August 1975 from a single batch of *Ulex* twigs collected in September 1974. Males and females of some species have been observed to aggregate, presumably to mate and lay eggs, on recently cut branches of their larval host plants from mid August until the end of January.

The duration of the larval and pupal stages of endemic species is not known precisely, but adults of *Phymatus hetaera* emerged in the laboratory in December 1967 and January 1968 from dying branches of *Sophora* collected in February 1967. The

longest pre-adult period recorded for any endemic species is that of *Isanthribus dracophylli*. The only known specimen emerged in May 1973 from a dead branch of *Dracophyllum* collected on 2 December 1971.

GEOGRAPHICAL DISTRIBUTION

The New Zealand subregion is mapped on the inside front cover. No Anthribidae are known from the Kermadecs nor from Antipodes, Campbell, or Macquarie islands.

The Three Kings group have five endemic species, of which four are flightless. They share *Dasyanthribus purpureus*, a flightless species, with the North Island, and the fully winged species *Lawsonia variabilis* with the North Island and northern South Island.

Six species are confined to the North Island. Three of these are flightless, and a fourth, *Eugonissus conulus*, has both macropterous and brachypterous forms. Of the exclusively North Island species, only *Garyus altus* is distributed from Northland to Wellington; the others have so far been collected only in the northern half of the North Island.

Seven species have been collected only in the South Island, and four of these are flightless. The fully winged species *Etnalis obtusus* and *Isanthribus dracophylli* have not been found outside the Nelson region, and the flightless *Isanthribus phormii* is known only from Nelson and the west coast as far south as Bruce Bay, Westland. *Dysnocryptus maculifer* and

Xenanthribus hirsutus, both flightless, do not occur west of the Southern Alps. *Cerius otagensis*, the fourth flightless species, is known only from two localities in Central Otago; it is congeneric with a fully-winged species endemic to the Three Kings.

The Chatham Islands have six endemic species, all flightless, plus four fully winged species that occur also in the North Island and northern South Island.

Twenty-two of the 58 endemic New Zealand species are shared by the North and South islands, and all but five of these are fully winged. One of the flightless species, *Sharpius sandageri*, has been found in southern Wellington and down the east coast of the South Island as far as Dunedin. *S. imitarius*, which is fully winged, is sympatric with *S. sandageri* in Wellington but in the South Island is confined to areas west and south of the Southern Alps, occurring also in the Stewart Island area. *Calibobius littoralis*, a second flightless species, is associated with nests of seabirds on islands and in coastal situations over a disjunct range from the Coromandel area to Nelson. The fully winged species *Arecopais spectabilis* and *Cacephatus huttoni* and the flightless *Notochoragus thoracicus* are widely distributed throughout the North Island, but in the South Island have not been found south of the Marlborough Sounds and Nelson. For five others that occur in both main islands, including the flightless species *Micranthribus atomus* and *Dysnocryptus maculifer*, mid Canterbury is the present known southern limit.

The most widespread anthribid is the fully winged *Lophus rudis*, which occurs throughout the North and South islands and on Stewart Island and the Chathams.

Stewart Island lacks endemic species, but has two flightless species in common with islands to the south: *Lichenobius littoralis*, which lives in the broad supra-littoral band of lichens that is characteristic of many of the muttonbird islands and also The Snares; and *Cacephatus aucklandicus*, which is found as far south as the Auckland Islands.

The small, flightless anthribid *Lichenobius maritimus* is known only from the wave-washed rocks of the Bounty Islands.

The Australian species *Euclodes suturalis* and *Araecerus palmaris* are established over much of the North and South islands but do not seem to have reached the Three Kings, the Chathams, or Stewart Island.

The distribution of Anthribidae in New Zealand is summarised in Appendix 1. Locality records are marked on the distribution maps given for most species; the solid circles denote grid squares from which specimens have been recorded.

Altitudinal range

The altitudinal range of every species (except perhaps *Isanthribus dracophylli*, which is known from a single specimen found in the mountains of north-west Nelson) extends into lowland areas, and most species have been found at or close to sea level. *Lichenobius littoralis* and *L. maritimus* are exclusively maritime, and

Caliobius littoralis and several species of *Dysnocryptus* always occur in coastal situations, although not below high water mark. *Xenanthribus hirsutus*, a small apterous species, has been found under wrack on a Dunedin beach but is more typical of inland places, where it has been recorded at altitudes up to 400 m.

Twenty-nine of the 60 species have never been collected above 500 m. Of these, 23 are flightless and 15 are confined to low-lying islands. Nineteen species representing both Anthribinae and Choraginae have ranges that extend from near sea level to between 500 and 1000 m. Three of these are flightless, but except for *Sharpius sandageri*, which has been collected at 1000 m, there are no records of flightless species occurring above 650 m.

Twelve fully winged anthribine species have been found above 1000 m. The greatest altitude at which any endemic anthribid has been collected is 1525 m; the species in question, *Sharpius venustus*, has been found near sea level at the southern limit of its range. The adventive grass stem anthribid *Euclodes suturalis* occurs from sea level to 1700 m in New Zealand.

The altitudinal ranges of New Zealand's Anthribidae are presented in Appendix 2.

METHODS OF STUDY

Collecting

Summer is the most productive time for collecting adult anthribids, although at least a third of the species occur all year round. The endemic species are mostly

confined to areas of exclusively or predominantly native vegetation; only *Sharpius brouni* is common in suburban gardens and similarly modified habitats. Apart from *Tribasileus noctivagus*, which seems to be strictly nocturnal, all the New Zealand anthribids are essentially diurnal.

Adults of most species can be beaten from live, dying, or dead foliage and branches of trees and shrubs, but some are extremely abundant in clumps of monocotyledons. Branches that have black vegetative growths and fruiting bodies of ascomycete fungi on or protruding through the bark are especially worth beating, as this fungal material is eaten by many adult anthribids. A few species - mainly those that are flightless and very small - occur in litter on the forest floor or under low-growing coastal shrubs or in nests of gulls and other seabirds. The anthribids associated with encrusting lichens walk about slowly on the surface of these plants, and are easy to catch because they do not fly or jump. Throughout the year adults of *Arecopais spectabilis* can be beaten in considerable numbers from the bases of fallen nikau palm fronds. Sweeping introduced grasses such as cocksfoot, tall fescue, and Yorkshire fog in summer yields the common and widespread Australian species *Euclodes suturalis*. The other adventive anthribid, *Araecerus palmaris*, is found in or on the conspicuous fungus-induced galls seen on various acacias as well as in mummified fruits such as apples, peaches, and lemons.

Larvae should be searched for in dying and dead (but intact) twigs and branches of

shrubs and trees, and in flower stems of grasses and other monocotyledons. Larvae of *Lichenobius* can be found inside their shallow feeding burrows in lichens, and those of *Araecerus palmaris* feed inside the galls and fruits with which the adults are associated. Plant material containing larvae can be kept indoors for many months until the adults emerge. It is sometimes possible to confirm suspected larva/plant relationships by leaving bundles of cut branches and twigs of a particular plant in the bush for several months, to allow time for oviposition, and then completing the rearing indoors in plastic bags.

Preparation of specimens

Adults of the New Zealand species are not very large, and should be mounted on cardboard points rather than pinned. The glue used should be water-soluble, and the specimen must be fixed by its right side, so that the dorsal and ventral structures of the left side are clearly visible.

Mounted specimens from which genitalia preparations are to be made must be boiled for a few minutes until the glue dissolves and the body softens. The abdomen can then be removed and allowed to macerate in a small tube containing a 10 percent solution of potassium hydroxide, which is kept warm in a small waterbath. Maceration takes 10 minutes or more, depending on the size of the specimen; the abdomen should then be rinsed carefully in water in a small dish. The genitalia and associated structures are dissected out under a stereoscope, using fine needles, forceps, and a fine artist's brush.

Parts to be studied or drawn immediately should be transferred to a small dish of 70 percent ethanol. Later, if necessary, they can be temporarily mounted in glycerine on a slide for examination under a compound microscope. Part of the hindgut should be removed and mounted temporarily in glycerine so that its contents can be examined at high magnification. The macerated abdomen, genitalia, and any other dissected structures must be stored in a small amount of thinned glycerine in a minivial pinned under the labels accompanying the specimen.

Illustrations

The habitus drawings (Figures 39-66) have been prepared by D. W. Helmore, scientific illustrator at DSIR's Entomology Division. The other line drawings were made by me with the aid of a camera lucida. Figures which include both the head and the pronotum have been drawn as if these two parts were in the same plane, which is not necessarily so. Setae and hairs have been omitted from most of the line drawings, including those showing the toothed apical part of the hemisternites.

Measurements

The body measurements have been taken as follows. Length is the projected length, measured in lateral aspect, from the level of the middle of the eye to the apex of the pygidium, and width is that of the pronotum or of the combined elytra, whichever is greater. Rostral length has been measured in dorsal aspect from the base of the labrum to the level of the middle of the eye. Interscrobial distance is the minimum distance between the antennal

scrobes, measured dorsally, and interocular distance is the minimum distance between the eyes on the dorsal surface of the head.

Material examined

More than 8000 specimens were examined for this revision. They are deposited in the collections of the following institutions, which are referred to throughout the text by the four-letter abbreviations proposed by Watt (1979).

- AMNZ Auckland Institute and Museum, Auckland, N.Z.
- BMNH British Museum (Natural History), London, England
- CMNZ Canterbury Museum, Christchurch, N.Z.
- FRNZ Forest Research Institute, Rotorua, N.Z.
- NHMW Naturhistorisches Museum, Vienna, Austria
- NMNZ National Museum, Wellington, N.Z.
- NZAC Entomology Division, DSIR, Auckland, N.Z.
- OMNZ Otago Museum, Dunedin, N.Z.
- UCNZ University of Canterbury (Zoology Department), Christchurch, N.Z.

The label data, sex, and repository of every specimen examined have been recorded on species data sheets which are deposited with Systematics Section, Entomology Division, DSIR. They can be seen by arrangement with the Curator. Individual entries from the sheets are included here only for type material. For all other specimens the data have been combined and summarised to give an overall picture of distribution, plant associations, and monthly incidence for each species. Two-letter area codes used to denote species distributions are those proposed by Crosby *et al.* (1976).

**KEY TO SUBFAMILIES OF ANTHRIBIDAE
OCCURRING IN NEW ZEALAND**

First and second antennal segments not arched, instead usually symmetrical (if asymmetrical, then antennae very slender, reaching back well past middle of elytra), not more convex on external margin than on internal margin when antennae folded against body (Figure 9); scrobes either lateral or dorsal, if lateral (Figure 5) then first antennal segment cylindrical and gradually expanded beyond stalk, if dorsolateral (Figure 6) then first antennal segment pyriform or obliquely truncate at base. Female genitalia: body of hemisternites separated from lateral rods by a pair of transverse bars (Figure 29). [Antennae longer or shorter than elytra; eyes entire to very deeply emarginate; rostrum short to very long, sometimes with conspicuous horns, carinae, pits, grooves, or lobes on dorsal surface; hemisternites robust.] ANTHRIBINAE

First and second antennal segments arched, asymmetrical, and much more convex on external margin than on internal margin when antennae folded against body (Figure 11); scrobes always dorsal (Figure 7). Female genitalia: body of hemisternites continuous with lateral rods, i.e., no transverse bars (Figure 30). [Antennae never reaching past middle of elytra; eyes entire or at most with a small notch on anteromedial edge; rostrum short, never with horns, conspicuous carinae, pits, grooves, or lobes; hemisternites very slender (somewhat robust in *Liromus*).] ... CHORAGINAE

**KEY TO GENERA OF ANTHRIBINAE
OCCURRING IN NEW ZEALAND**

- 1 Antennae inserted on sides of rostrum, so that no part of floor or walls of scrobe visible in dorsal aspect (Figure 5); anterior margin of eye entire (Figure 4) or indistinctly indented (exception: *Lichenobius* (Figure 143), which has a small notch on anterior margin) 2
 - Antennae inserted on dorsal or dorso-lateral surface of rostrum, so that at least part of floor or walls of scrobe visible in dorsal aspect (Figure 6); anterior margin of eye notched (Figure 6) to deeply emarginate (Figure 191) 12
- 2 Dorsal surface of body with dense, long, standing hairs in addition to short, appressed or decumbent vestiture; wings absent 3
 - (1) --Dorsal surface of body with at most a few moderately long, standing hairs or tufts of hairs in addition to short, appressed or decumbent vestiture; wings fully developed or vestigial 4
- 3 Tibiae with very long, erect, curly-tipped, brown hairs on proximal half and shorter, decumbent, cream scales on distal half; elytra with several small tufts of pale, linear scales (Figure 47). *Xenanthribus*
 - (2) --Tibiae with 2 bands of short, decumbent, cream scales alternating with 2 bands of short, decumbent, brown scales; elytra without tufts (Figure 48) *Calibius*

- 4 (2) Rostrum with a conspicuous, naked, shiny pit on dorsal midline (Figures 67 and 128) 5
 --Rostrum without a conspicuous, naked, shiny pit on dorsal midline 6
- 5 (4) Integument of dorsal surface entirely green; pronotum with a pair of discal tubercles; each elytron with a humeral callus and sub-basal, median, and pre-apical tubercles (Figure 39).
 *Gynarchaeus*
 --Integument of dorsal surface predominantly brown, with at most a greenish tint; pronotum with a median discal tubercle; each elytron with a humeral callus and a sub-basal tubercle only (Figure 46) *Garyus*
- 6 (4) Eighth antennal segment with conspicuous, dense, white vestiture; elytral suture with a rounded or 2-spined, tufted tubercle (Figure 43)
 *Hoplorhaphus*
 --Eighth antennal segment without conspicuous white vestiture; elytral suture without a tubercle 7
- 7 (6) Pronotal disc with a small or large median tuft of erect scales (Figures 72, 75, and 78); pronotal surface immediately in front of transverse carina with a conspicuous median patch or streak of white or cream vestiture (Figure 40) *Lophus*
 --Pronotal disc without a median tuft of erect scales; pronotal surface immediately in front of transverse carina without a conspicuous median patch or streak of white or cream vestiture 8
- 8 (7) Elytral tubercles capped with thick, black, standing hairs (Figure 41) *Pleosporius*
 --Elytral tubercles, when present, not capped with thick, black, standing hairs 9
- 9 (8) Second antennal segment at least twice as long as first (Figure 108); head with a somewhat H-shaped patch of dense, creamish vestiture between eyes; eyes more dorsal than lateral (Figure 44) *Helmoreus*
 --Second antennal segment less than twice as long as first (Figures 83, 126, and 144); head without an H-shaped patch of creamish vestiture between eyes; eyes more lateral than dorsal (Figures 82, 113, and 137) 10
- 10 (9) Rostrum distinctly constricted near middle (Figure 85); apex of eighth antennal segment broader and more truncate than that of seventh (Figure 83); tibiae with a band of pale scales near middle (Figure 42) *Sharpius*
 --Rostrum more or less parallel-sided (Figures 113 and 143); apex of eighth antennal segment similar to that of seventh (Figures 114 and 141); tibial vestiture unicolorous 11
- 11 (10) Vestiture predominantly silvery or bronze; antennae robust, not reaching to base of pronotum, with setae of funicle segments as long as individual segments; eyes distinctly notched anteriorly, with some very long hairs (Figures 137, 140, and 143); rostrum

- with at most an obsolete median carina not set in a depression; length 1.7-2.6 mm (Figure 49) *Lichenobius*
- Vestiture neither predominantly silvery nor bronze; antennae slender, reaching at least to base of pronotum, with setae of funicle segments much shorter than individual segments; eyes not distinctly indented anteriorly, with moderately short hairs (Figures 110, 116, and 122); rostrum usually with a distinct median carina partially set in a depression; length 2.9-6.9 mm (Figure 45) *Cacephatus*
- 12 Dorsal surface of body with dense, (1) long, standing hairs in addition to short, appressed or decumbent vestiture (Figure 61) *Dasyanthribus*
- Dorsal surface of body with at most a few long, standing hairs in addition to short, appressed or decumbent vestiture 13
- 13 Rostrum with both a median carina and (12) a pair of mid-lateral longitudinal carinae dorsally 14
- Rostrum not with both a median carina and a pair of mid-lateral longitudinal carinae 15
- 14 Eyes small, with a shallow notch on (13) anterior margin; distance between eyes slightly greater than distance between scrobes; transverse carina of pronotum antebasal, broken; tibial integument brown; elytra without sub-basal tubercles (Figure 53); wings vestigial. Confined to Three Kings Islands *Tribasileus*
- Eyes large, with a deep indentation on anterior margin; distance between eyes much less than distance between scrobes; transverse carina of pronotum sub-basal, entire; tibial integument green; elytra with sub-basal tubercles (Figure 59); wings fully developed. Not confined to Three Kings Islands *Lawsonia*
- 15 Integument greenish; pronotum with a (13) conspicuously wavy transverse carina (Figure 197); tibiae with a fringe of very long, coarse, white hairs or scales (longer than diameter of tibiae) (Figure 58) *Hoherius*
- Integument brown or black; pronotum with a straight, barely sinuous, or curved transverse carina; tibiae not fringed with long, white vestiture 16
- 16 Rostrum directed at right angles to (15) vertex, strongly concave on dorsal surface; vestiture of body predominantly silvery (Figure 60) *Euciodes*
- Rostrum directed at an oblique angle to vertex, not strongly concave on dorsal surface; vestiture of body not predominantly silvery 17
- 17 Pronotal surface rather dull, with (16) uniformly granulate minisculpture and minute, barely discernible punctures (Figure 56) *Arecopais*
- Pronotal surface shiny, without granulate minisculpture, and with dense, rather coarse punctures 18

- 18 Tibiae with cream scales on proximal
(17) half, brown hairs on distal half (Figure 50) *Eugonissus*
--Tibiae either with unicolorous vestiture or with more than 2 colour bands
..... 19
- 19 Distance between eyes less than distance
(18) between scrobes 20
--Distance between eyes equal to or greater than distance between scrobes
..... 22
- 20 Rostrum with a pair of horns or tubercles near eyes in males; pronotal surface very uneven; elytra with a large, conical, sub-basal tubercle, a variably developed median tubercle, and sometimes one or more preapical tubercles (Figure 57) *Phymatus*
--Rostrum with neither horns nor tubercles; pronotal surface smooth; elytra with the sub-basal tubercle, when present, only moderately large and rounded, and with neither median nor preapical tubercles 21
- 21 Eyes very large, deeply emarginate,
(20) the upper lobe at least as long as the lower; sub-basal tubercle of elytra moderately large (Figure 51)
..... *Etnalis*
--Eyes small, shallowly notched, the upper lobe shorter than the lower; sub-basal tubercle of elytra absent or very low (Figure 54) *Cerius*
- 22 Centre of pronotal disc with a pair of
(20) low, conical tubercles; each elytron with a large, angulate, sub-basal tubercle, a small median tubercle, and low, elongate crests of scales on some

- interstriae (Figure 55); underside of hind femur of male with a large, oval, sensory pit filled with yellow hairs (Figure 176) *Androporus*
--Centre of pronotal disc uniformly convex; each elytron with a low, rounded or barely discernible sub-basal tubercle, no median tubercle, and no crests on interstriae (Figure 52); underside of hind femur of male without a sensory pit *Isanthribus*

**KEY TO GENERA OF CHORAGINAE
OCCURRING IN NEW ZEALAND**

- 1 Antennal segments 5-7 asymmetrical, more convex on external margin than on inner side when antennae folded against body (Figure 214); humeral callus with yellow, somewhat translucent integument (Figure 62); abdominal ventrite 3 of male with a large, median, keel-like tubercle near posterior margin (Figure 216) *Liromus*
--Antennal segments 5-7 symmetrical (Figure 218); humeral callus (when present) with brown or black, opaque integument; abdominal ventrite 3 without a tubercle 2
- 2 Antennal segments 3-8 rather stout,
(1) each usually expanded distally, with a conspicuous whorl of very long setae, most of them longer than individual segments; antennal club short, broad, compact (Figure 218); elytra without tubercles and swellings (Figures 63 and 64); wings vestigial or absent
..... 3

--Antennal segments 3-8 very slender, each almost parallel-sided, with an inconspicuous whorl of rather short setae, few of them as long as individual segments; antennal club elongate, slender, loosely articulated (Figure 266); elytra with at least 1 pair of tubercles or swellings (humeral, sub-basal, or other) (Figures 65 and 66); wings fully developed or absent 4

3 (2) Metepisternum with a narrow band of dense, minute, oval, silver scales along entire lateral margin; wings vestigial; abdominal ventrite 1 without a keel; pygidium not asperate

.... *Micranthribus*

--Metepisternum without a band of dense, silver scales, at most with scattered scales and setae; wings absent; abdominal ventrite 1 of male with a setose keel on midline (Figure 223); pygidium of female asperate *Dysnocryptus*

4 (2) Mandibles normal at outer edge near base in both sexes (Figure 259); rostrum with a short carina running forward obliquely toward midline from near anteromedial edge of eye (Figure 256); antennal segment 2 conspicuously shorter than segment 1; anteromedial edge of eye with a small notch containing a dense cluster of pale hairs; middle and hind tibiae with alternating pale and dark bands of scales (bands not conspicuous in brown and teneral specimens) (Figure 65); pygidium with asperities *Araecerus*

--Mandibles conspicuously concave on outer edge near base in females (Fig-

ure 265), normal in males; rostrum without an oblique carina near anteromedial edge of eye; antennal segment 2 about as long as segment 1; anteromedial edge of eye entire, not associated with a dense cluster of pale hairs; middle and hind tibiae unicolorous (Figure 66); pygidium without asperities *Notochoragus*

— ☉ —

The identity of specimens may also be sought by means of the synoptic keys commencing on page 177.

— ☉ —

DESCRIPTIONS

Subfamily ANTHRIBINAE

The diagnostic characters of this subfamily are given in the key on page 34. In particular it should be noted that the first two segments of the antennae are never arched, and that the hemisternites of the female have a pair of transverse bars separating the body from the lateral rods. In a tentative key to subfamilies of Anthribidae, Crowson (1955) gives the lateral insertion of the antennae as a diagnostic character for Anthribinae, but in many of the New Zealand anthribines the antennae are inserted dorsolaterally.

In New Zealand the subfamily is represented by 23 genera, which may be separated using the key on page 34.

Gynarchaeus new genus

TYPE-SPECIES *Anthrribus ornatus* Sharp, 1876.

(The name *Gynarchaeus* is derived from the Greek 'gyné', meaning 'woman, female', and 'archaios', meaning 'primitive, old', and alludes to the primitive condition of the female genitalia; gender masculine.)

Small to medium-sized anthribids (length about 3.0-6.5 mm). Integument predominantly green; upper surface with dense, fine punctures and appressed, cream, yellow, and black hairs and fine scales. Rostrum transverse; dorsal surface without carinae but with a median pit and groove; ventral surface without carina. Antennae short, inserted laterally. Eyes entire or nearly entire. Pronotum tuberculate; transverse carina sub-basal to basal, entire; lateral carina well defined. Elytra strongly tuberculate; sutural angle of elytron rounded, not touching scutellum. Wings fully developed. Femora green with cream vestiture. Tibiae green with cream vestiture, except apices, which have brownish integument and black vestiture. Sexual dimorphism very slight.

HEAD. Rostrum nearly parallel-sided, not elevated at scrobes, its anterior margin excavated, not rimmed; dorsum with a broad median depression containing a small, dark, shiny, somewhat triangular pit at level of antennae and a narrow groove with raised, glossy margins extending from pit to frons. Antennae similar in both sexes, barely reaching base of pronotum; club compact, much wider than funicle, about as long as preceding 4 funicle segments. Eyes very widely separated, almost circular, protruding, with truncate or barely indented anterior margin, fine facets, and minute hairs.

THORAX. Pronotum transverse, widest at base, its sides slightly sinuous and gently convergent anteriorly except for a strong constriction on anterior 0.3; transverse carina strongly elevated, finely denticulate, slightly arcuate; lateral carina strongly elevated, finely denticulate, about 0.6× as long as lateral margin, meeting transverse carina at a right angle; disc with a pair of large tubercles; declivity strongly oblique, with short secondary carinae and with denticles on lateral and basal margins. Pleural suture

well developed, concealed by vestiture. Scutellum large, elongate, extending upwards above elytral bases. Elytra widest at humeral angles, their sides slightly convergent posteriorly; basal margin proclinate, with a low, glossy rim and a broadly rounded sutural angle; sutural margin elevated immediately behind scutellum; striole short, indistinct; striae, except sutural stria, weakly indicated; declivity short, almost vertical; humeral callus large, elongate, rather angulate; sub-basal, median, and preapical tubercles large, elongate, slightly reclinate. Tibiae moderately slender. Tarsi robust, dark; segment 1 about as long as segments 2 and 3 together; segment 2 strongly emarginate.

ABDOMEN. Pygidium longer than wide, its base much wider than its apex; sides strongly raised; surface roughened but not asperate; apex weakly emarginate in male, broadly rounded in female. Ventrites impressed along midline, densely clothed with appressed, yellow, linear scales; apical half of ventrite 5 of male with a pair of contiguous patches of moderately long, erect, brown, peg-like setae; ventrite 5 of female with vestiture as on other ventrites but with fine, sparse asperities.

MALE. Tergite 8 with a pair of large, rounded, setulose lobes. Sternite 8 with a pair of small, transverse, setose plates; apodeme well developed, with very long, slender arms. Sternite 9 apodeme long, with well developed arms. Tegmen with a slender apodeme shorter than the ring; apex trilobed in dorsal aspect, the median lobe very much larger than the lateral lobes, slightly expanded apically in lateral aspect, with a fringe of setae; lateral lobes each with a tuft of setae; preapical flange divided into a pair of very small, longitudinal, crescentic lobes. Aedeagus about 0.6× as long as elytron; apodemes continuous with pedon; bridge robust, not strongly arched, close to base of pedon; pedon divided transversely near middle, its apical half parallel-sided and with an obliquely truncate tip; tectum moderately long, with pointed apex; internal sac almost reaching free end of apodemes, lobed, lined with very fine spinules, with a pair of small sclerites near level of bridge; ejaculatory duct inserted dorsally near apex of internal sac.

FEMALE. Segment 8 slightly longer than hemisternites; tergite notched apically, with lateral sclerotised and median membranous areas; sternite notched apically, uniformly sclerotised; apodeme without distinct arms; apices of tergite and sternite setose. Hemisternites very small, about 0.2× as long as elytra; body distinct from lateral rods, which are about 0.6× as long as entire hemisternites; apical part continuous with rest of hemisternite, not toothed, instead sclerotised normally, with an obliquely truncate tip and a large, pre-apical stylus; median rods fused on midline. Vulva enclosed by a sclerotised dorsal plate and a pair of membranous ventral lobes. Bursa copulatrix about twice as long as hemisternites, lacking sclerites. Spermatheca large, annulate basally; spermathecal gland oval, about half as long as spermatheca, with a short stalk; ducts of spermatheca and spermathecal gland inserted close together on small atrium at base of spermatheca.

RANGE. New Zealand.

REMARKS. *Gynarchaeus* is easily recognizable by its uniformly green colour, strongly tuberculate pronotum and elytra, and rounded sutural angle of the elytron. A similarly rounded sutural angle occurs in the unrelated *Mycteis marginicollis* Pascoe, from the Celebes. The curculionid-like hemisternites lacking sclerotised apical teeth are a primitive feature of the female genitalia, and are unknown in any other Anthribidae. Other unusual features of the female genitalia and associated structures are the very small size of the hemisternites in relation to the length of the elytra, the presence of a sclerotised plate instead of a membranous lobe above the vulva, and the large and relatively unmodified eighth segment. The male genitalia are distinctive in having a transversely divided pedon with an asymmetrical apex. *Gynarchaeus* has no close relatives within New Zealand, nor apparently elsewhere, and its single species can be considered part of the New Zealand endemic (archaic) element.

Gynarchaeus ornatus (Sharp) new combination

Figures 1, 2, 9, 16, 19, 20, 21, 31, 39, 67-69, 291-295, 588, and 589

Sharp, 1876, Annals and magazine of natural history (4) 17: 437-438 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 552-553 (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 314 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 124, plate 14 figure 1 (*Anthribus*).

Integument olive green except for brownish or black mouthparts, anterior margin of rostrum, antennae, undersurface of head, apices of tibiae, and tarsi. Dorsal surface appearing somewhat shagreened. Length 3.3-6.3 mm; width 1.8-3.4 mm.

HEAD (Figures 1, 2, 39, and 67). Vestiture creamish and dense on middle of rostrum, yellow and sparser elsewhere. Rostrum 1.37-1.48× wider than long. Antennae (Figures 9 and 68) with blackish vestiture on club. Eyes separated by 0.63-0.73× (male) or 0.70-0.78× (female) width of rostrum. Eye and scrobe separated by about 0.2× length of eye.

THORAX (Figures 19, 20, and 69). Pronotum about 1.4× wider than long; vestiture black and dense on apices of tubercles, creamish and dense on most of undersurface, midline of declivity, midline of disc in front of tubercles, and lateral margin anterior to lateral carina, yellowish and dense on sides of tubercles and in front of transverse carina, yellowish and rather sparse elsewhere. Elytra about 2.2× longer and 1.2× wider than pronotum, together about 1.3× longer than wide; vestiture (Figure 39) black and dense on apices of tubercles and immediately behind scutellum, yellowish and moderately dense elsewhere. Wing (Figure 16) about 3.0× longer than wide, about 2.0× longer than elytron, with anal cell and well developed anal veins but without an anal lobe.

ABDOMEN (Figure 20). Pygidium about 1.2× longer than wide, with dense, rather coarse punctures and dense, cream scales. Ventrites impressed strongly along midline in male, less strongly impressed in female, densely clothed with cream hairs.

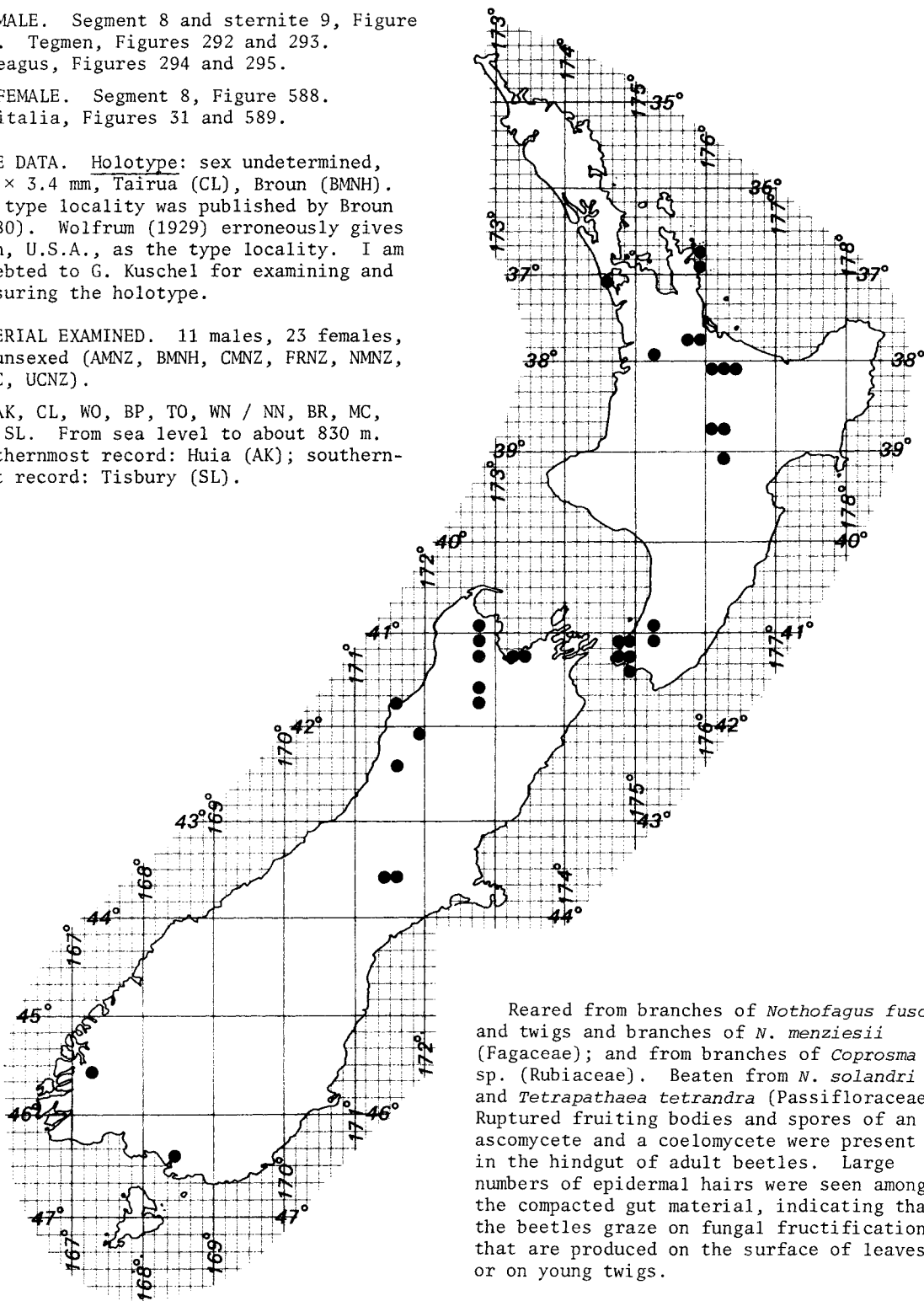
MALE. Segment 8 and sternite 9, Figure 291. Tegmen, Figures 292 and 293. Aedeagus, Figures 294 and 295.

FEMALE. Segment 8, Figure 588. Genitalia, Figures 31 and 589.

TYPE DATA. Holotype: sex undetermined, 6.3 × 3.4 mm, Tairua (CL), Broun (BMNH). The type locality was published by Broun (1880). Wolfrum (1929) erroneously gives Utah, U.S.A., as the type locality. I am indebted to G. Kuschel for examining and measuring the holotype.

MATERIAL EXAMINED. 11 males, 23 females, 41 unsexed (AMNZ, BMNH, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

AK, CL, WO, BP, TO, WN / NN, BR, MC, FD, SL. From sea level to about 830 m. Northernmost record: Huia (AK); southernmost record: Tisbury (SL).



Reared from branches of *Nothofagus fusca* and twigs and branches of *N. menziesii* (Fagaceae); and from branches of *Coprosma* sp. (Rubiaceae). Beaten from *N. solandri* and *Tetrapathaea tetrandra* (Passifloraceae). Ruptured fruiting bodies and spores of an ascomycete and a coelomycete were present in the hindgut of adult beetles. Large numbers of epidermal hairs were seen among the compacted gut material, indicating that the beetles graze on fungal fructifications that are produced on the surface of leaves or on young twigs.

REMARKS. The combination of green integument, bituberculate pronotum, strongly tuberculate elytra, short antennae, and entire or nearly entire eyes does not occur in any other New Zealand anthribid.

G. ornatus is one of the few species with finely faceted eyes, and must be very active diurnally. Nothing is known of its oviposition behaviour, but as the hemisternites lack apical teeth they cannot be used to form oviposition holes. The eggs must therefore be laid either in naturally occurring crevices or in holes chewed by the female.

Lophus new genus

TYPE-SPECIES *Anthribus rudis* Sharp, 1876.

(The name *Lóphus* is derived from the Greek 'lóphos', meaning 'tuft', and refers to the tufts of scales on the pronotum and elytra; gender masculine.)

Small to medium-sized anthribids (length about 2.5-6.5 mm). Integument black or brown; upper surface with fine to moderately coarse, dense punctures and appressed to erect, white, yellow, orange, brown, and black hairs and scales. Rostrum elongate to transverse; dorsal surface with a variably developed median carina extending into a small, oval depression between eyes; ventral surface with a short median carina. Antennae short, inserted laterally. Eyes entire or nearly entire. Pronotum with a small or large tuft of scales near middle of disc, a streak or patch of white scales on midline between tuft and transverse carina, a rectangular or oval black patch on posterior half of disc between lateral carina and midline and extending on to declivity, and sometimes a median tubercle; transverse carina sub-basal or antebasal, entire or broken; lateral carina well defined. Elytra each with at least 3 tufts of standing scales, sometimes with tubercles. Wings fully developed or vestigial. Femoral surface dark, with streaks, patches, or spots of white vestiture on apical half. Tibiae dark, with a broad or narrow band of white vestiture near middle, a cream or yellow band at apex, and sometimes an incomplete white band near base. Sexual dimorphism slight.

HEAD. Rostrum almost parallel-sided, slightly elevated at scrobes, slightly constricted behind scrobes, its anterior edge slightly to moderately emarginate, not rimmed; dorsum with density of scales varying greatly. Antennae of similar length in both sexes, not reaching base of pronotum; club moderately compact, much wider than funicle, about as long as preceding 3.5 funicle segments. Eyes widely separated, oval, protruding, with obliquely truncate or slightly notched anterior margin, dorsal anterior angle, moderately fine facets, and minute hairs.

THORAX. Pronotum slightly longer or slightly shorter than wide, widest near middle, its sides gently convergent anteriorly and posteriorly; transverse carina strongly elevated, finely denticulate, sinuate to slightly arcuate; lateral carina strongly elevated, finely denticulate, slightly to prominently sinuate, reaching middle of pronotum, meeting transverse carina in an obtusely rounded angle; disc almost flattened or with tubercles; declivity moderately oblique to almost vertical, with at least 1 pair of secondary carinae and with denticles on lateral and basal margins. Pleural suture well developed, partly obscured by vestiture. Scutellum very small, triangular, about level with base of elytra. Elytra widest near middle; basal margin vertical or proclinate, sometimes with a rim; sutural margin not conspicuously elevated; striae absent; striae conspicuous, with large, discrete punctures; declivity shallow or deep, gently sloping to almost vertical; humeral callus large and rounded, or absent; tubercles, when present, never very large. Tibiae rather slender. Tarsi slender, unicolorous or with apical half darker; segment 1 as long as segments 2 and 3 together; segment 2 strongly emarginate.

ABDOMEN. Pygidium longer than wide, parallel-sided or distinctly tapering towards apex; sides raised; surface moderately to very densely scaly, not asperate; apex slightly emarginate to slightly convex. Ventrites not impressed along midline; ventrite 5 showing moderate to prominent sexual dimorphism, not asperate in either sex.

MALE. Tergite 8 with a pair of short or long setose lobes. Sternite 8 with a pair

of elongate plates; apodeme vestigial or absent. Sternite 9 apodeme long, slender, with well developed arms. Tegmen elliptical, its ring at least as long as apodeme, which widens conspicuously from base to ring; apex entire or divided, narrow in dorsal aspect, tapering or slightly expanded in lateral aspect, with few setae; preapical flange divided into a pair of transverse, crescentic lobes. Aedeagus 0.5-0.9× as long as elytron; apodemes continuous with pedon; bridge robust, short, strongly arched, distant from base of pedon; pedon entire, tapering gradually or strongly constricted, with a pointed apex; tectum moderately long, pointed at apex; internal sac reaching free end of apodemes, with coarse spinules and sometimes with sclerites internally; ejaculatory duct inserted on a small lobe at apex of internal sac.

FEMALE. Segment 8 at least 0.75× as long as hemisternites; tergite with an entire apex and with a large membranous median area; sternite large, uniformly sclerotised, sparsely setose. Hemisternites 0.3-0.4× as long as elytra; body distinct from lateral rods, which are about 0.6× as long as entire hemisternites; apical part with 4 large teeth and a conspicuous stylus; median rods not fused along midline, tapering and divergent at proximal end. Vulva enclosed by hyaline membranous lobes, 1 dorsomedially, a pair ventrally, and 1 ventromedially. Bursa copulatrix reaching well beyond lateral rods, sometimes with sclerotised areas internally. Spermatheca large, not annulate; spermathecal gland elongate-oval, at least as long as spermatheca, with a distinct stalk; ducts of spermatheca and spermathecal gland inserted on a short, pale atrium at or near base of spermatheca.

RANGE. New Zealand.

REMARKS. *Lophus* is distinguishable externally from other New Zealand anthribid genera by the tuft of scales on the pronotal disc, the elytral tufts, the patches of black scales and white scales on the posterior half of the pronotum, and the distribution of pale vestiture on the femora and tibiae. The female genitalia are distinctive in having free, tapering median rods, an elongate spermathecal gland, a conspicuous stylus, and large

teeth at the apex of the hemisternites. The elliptical tegmen is a characteristic feature of the male genitalia; only two other New Zealand genera (*Gynarchaeus* and *Pleosporius*) have the eighth tergite of the male strongly bilobed at the apex.

The male and female genitalia of *Lophus* are very similar to those of *Tetragonopterus* Perroud, from New Caledonia, and the two genera probably are closely related. Since the name *Tetragonopterus* is pre-occupied by a genus of fishes (see Neave 1940), I now propose and use the name *Perroudius* for the New Caledonian anthribid genus. *Lophus* and *Perroudius* have a similar-shaped aedeagus and tegmen, except that the tegmen of *Perroudius* has a bifurcate apex. In both genera the female genitalia have the same general shape, but in *Perroudius* the spermatheca is less bulbous and the ninth sternite lacks a distinct apodeme. External characters such as the pronotal tuft, rostral carina, black markings on the pronotum, and the distribution of white scales on the femora and tibiae are more or less the same in both genera. However, *Perroudius* has more elongate antennae, different-shaped transverse and lateral carinae on the pronotum, and rectangular, somewhat depressed elytra with 3 conspicuous tubercles, and it lacks white vestiture on the midline of the pronotum.

KEY TO SPECIES OF *Lophus*

- 1 Transverse carina of pronotum sub-basal (Figure 72); humeral callus absent; elytra each with not more than 4 tufts of scales; wings vestigial. (Confined to Chatham Islands)

.... *cristatellus*

- Transverse carina of pronotum ante-basal (Figures 75 and 78); humeral callus present; elytra each with more than 4 tufts of scales; wings fully developed. (Not confined to Chatham Islands) 2

2 Scales of rostrum overlapping, much more dense than on remainder of head; pronotal disc with median tubercle only (Figure 75); lateral carina of pronotum barely sinuate; preapical tubercle of elytron absent; pygidium with white or cream scales that overlap *lewisi*

--Scales of rostrum not overlapping, no more dense than on remainder of head; pronotal disc with a median tubercle and a pair of lateral tubercles (Figure 78); lateral carina of pronotum strongly sinuate; preapical tubercle of elytron present; pygidium with mainly yellow scales that do not overlap *rudis*

***Lophus cristatellus* (Broun) new combination**

Figures 70-72, 277, 296-300, 590, and 591

Broun, 1911, Transactions of the New Zealand Institute 43 (1910): 111

(*Anthrribus*); Wolfrum, 1929, Coleopterorum catalogus 26 (102): 96 (*Brachytarsus*).

Integument reddish-brown. Length 2.5-4.2 mm; width 1.1-1.9 mm.

HEAD (Figure 70). Vestiture usually dense, consisting of cream, yellow, and orange linear scales, overlapping, in a variegated pattern and a patch of pale scales near anterior angle of eye. Integument of dorsal surface depressed between eyes, uneven elsewhere. Rostrum 1.5-1.7× wider than long; carina well developed in large specimens, weak in small specimens. Antennae, Figure 71. Eyes obliquely linear, separated by about 0.5× (male) or 0.6× (female) width of rostrum. Eye and scrobe separated by about 0.2× length of eye.

THORAX. Pronotum (Figure 72) very slightly longer than wide; integument of disc even

or with a minute median tubercle; vestiture dense, consisting of overlapping white, creamish, orange, tawny, and black linear scales in a somewhat variegated pattern, but always with some uniformly black and uniformly tawny patches, with a conspicuous orange and cream patch at anterolateral angle, a small, erect tuft of cream or orange scales near centre of disc, a white stripe on midline between carina and tuft, and a pair of black patches lateral to white stripe; transverse carina sub-basal, slightly sinuate, entire; lateral carina barely sinuate. Scutellum densely covered with creamish scales. Elytra about 1.7× longer and 1.1× wider than pronotum, together about 1.3× longer than wide; surface uneven; vestiture dense, consisting of overlapping, linear, intermingled cream and orange scales and some patches and spots of black scales; elytra each with 3 small orange and cream tufts in an obliquely longitudinal row near suture, and sometimes with a similar but smaller tuft between and lateral to the 2 posterior tufts; humeral callus absent; declivity shallow, gently sloping. Wing (Figure 277) vestigial, about 2.5× longer than wide, about 0.2× as long as elytron. Femora with a broad irregular, apical band of yellowish scales. Tibiae with 2 broad bands of brown hairs alternating with 2 broad bands of cream scales, the basal brown, the apical band cream.

ABDOMEN. Pygidium densely clothed with overlapping yellow and orange scales. Ventrites uniformly and densely covered with overlapping creamish scales; surface of ventrite 5 slightly convex in female, but in male with a pair of large tubercles separated by a narrow groove.

MALE. Segment 8 and sternite 9, Figure 296. Tegmen, Figures 297 and 298; apodeme moderately long and narrow. Aedeagus (Figures 299 and 300) 0.9× as long as elytron; apex of pedon with a short point; internal sac with coarse spinules; ejaculatory duct inserted on small lobe of internal sac.

FEMALE. Segment 8, Figure 590. Genitalia, Figure 591; hemisternites small, about 0.4× as long as elytra; bursa copulatrix lacking sclerites.

TYPE DATA. Lectotype: female, 3.7 × 1.5 mm, Pitt Island, Chatham Islands, T. Hall (BMNH).

● Chatham Islands (44°S, 176°W)

MATERIAL EXAMINED. Lectotype, 19 males, 16 females, 5 unsexed (AMNZ, BMNH, NZAC).

Chatham Islands - Chatham I., Pitt I., South East I. From near sea level to 137 m.

Reared from dead branches of *Olearia traversii* (Asteraceae) and an old branch of *Myrsine chathamica* (Myrsinaceae). Unidentifiable ascospores and fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected in January, February, June, and November.

REMARKS. *L. cristatellus* is easily recognisable by the characters given in the key and by the shape of the transverse carina of the pronotum. The 2 smallest specimens examined have barely discernible tufts on the pronotum and elytra, and purplish-brown markings instead of the usual black markings on the upper surface of the body. The hindwings are very greatly reduced in size in this species.

***Lophus lewisi* (Broun) new combination**

Figures 73-75, 301-305, 592, and 593

Broun, 1909, Annals and magazine of natural history (8) 4: 159-160 (*Anthribus*); Wolfrum, 1929, Coleopterorum catalogus 26 (102): 98 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 125-126 (*Anthribus*); May, 1967, Transactions of the Royal Society of New Zealand, zoology 9: 179 (*Anthribus*); Harrison, 1969, in The natural history of Canterbury: 375 (*Anthribus*).

halli Broun, 1921, Bulletin of the New Zealand Institute 1 (6): 586-587 (*Anthribus*); Wolfrum, 1929: 98 (*Brachytarsus*). NEW SYNONYMY.

Integument black or dark brown, with slightly paler mouthparts, rostrum, antennae, and legs. Length 3.1-4.9 mm; width 1.5-2.4 mm.

HEAD (Figure 73). Vestiture consisting of intermingled white, cream, and orange linear scales which are dense and overlapping on most of rostrum and anterior part of frons but sparser, finer, and intermingled with brown scales elsewhere. Rostrum 1.1-1.2× (male) or about 1.3× (female) wider than long; carina well developed; surface on either side of carina slightly depressed. Antennae, Figure 74. Eyes obliquely transverse, very protruding, separated by 0.50-0.56× (male) or 0.60-0.64× (female) width of rostrum.

THORAX. Pronotum (Figure 75) about as wide as long; integument of disc even, except for elongate median tubercle and depression behind this; median tuft small, composed of white, orange, and black scales; other vestiture dense, consisting of mostly overlapping white, orange, brown, and black linear scales in a somewhat variegated pattern, but always with an elongate white patch behind tubercle, a pair of black patches on either side of this, and a broad, continuous or broken transverse band of orange and white scales anterior to tuft; transverse carina antebasal, usually entire, rarely weakened at midline, slightly sinuate; lateral carina slightly sinuate. Scutellum densely covered with white scales. Elytra 1.6-1.7× longer and about 1.2× wider than pronotum, together about 1.4× longer than wide; surface rather uneven anteriorly but without distinct tubercles; vestiture dense, consisting of white, cream, orange, brown, and black scales, mostly in a variegated pattern; elytra each with 3 large, variegated tufts in an obliquely longitudinal row near suture and about 6 much smaller, variegated or black tufts elsewhere on disc; humeral callus moderately large; declivity moderately deep. Wing about 3.0× longer than wide, about 2.0× longer than elytron, with anal veins and a distinct anal lobes. Femora with extensive white patches and bands, especially on apical half. Tibiae with an incomplete white band proximally, a broad cream band just before middle, and a similar band at apex, these bands alternating with 2 bands of brown hairs.

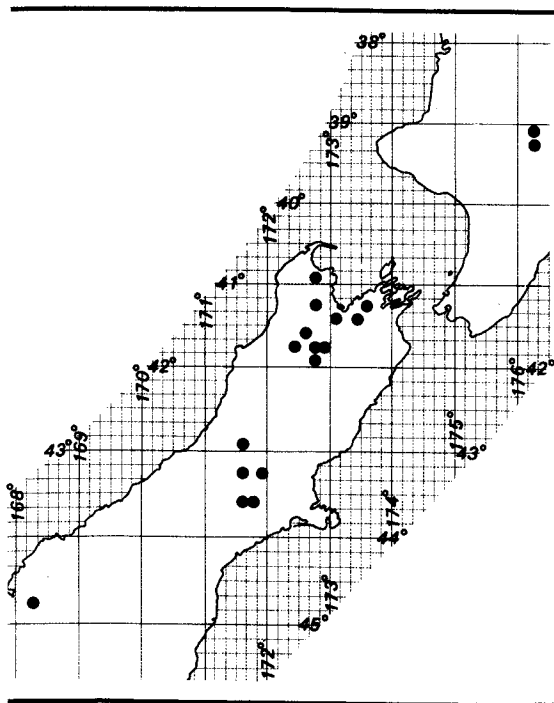
ABDOMEN. Pygidium densely clothed with overlapping white scales, except for a few orange scales on midline. Ventrites with a large, triangular patch of white scales at lateral margin and inconspicuous short,

yellowish hairs elsewhere; surface of ventrite 5 somewhat concave in female, flattened in male.

MALE. Segment 8 and sternite 9, Figure 301. Tegmen, Figures 302 and 303; apodeme rather short and broad. Aedeagus (Figures 304 and 305) 0.6× as long as elytron; apex of pedon elongate, acuminate; internal sac with coarse spinules; ejaculatory duct inserted on small lobe of internal sac.

FEMALE. Segment 8, Figure 592. Genitalia, Figure 593; hemisternites small, about 0.4× as long as elytra; bursa copulatrix without distinct sclerites but with a colourless, elongate, shiny patch on wall near insertion of spermathecal duct.

TYPE DATA. Holotype of *Lewis* Broun: sex undetermined, 3.9 x 1.8 mm, Broken River (MC), J. H. Lewis (BMNH). Holotype of *halli* Broun: sex undetermined, 3.8 x 1.75 mm, Glenhope (NN), 16 May 1915, T. Hall (BMNH). The legs of the right side of the body are missing in both holotypes, which are almost identical. When Broun described *halli* he compared it with *Anthribus brouni* Sharp and *A. rudis* Sharp but not with *Lewis*.



MATERIAL EXAMINED. Holotypes of *Lewis* and *halli*, 7 males, 6 females, 16 unsexed (AMNZ, BMNH, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

TO / NN, MB, BR, NC, MC, OL. From 150 m to 1500 m, mainly above 750 m. Northernmost record: State Forest 90, East Taupo (TO); southernmost record: Upper Routeburn (OL).

Reared from *Nothofagus fusca* and *Nothofagus* sp. (Fagaceae). Leaf fragments, unidentifiable fungal spores, tissue of fungal fructifications, and hyphae of a surface-growing fungus were present in the hindgut of dissected adults.

Adults have been collected in May and June and from October to January.

REMARKS. *L. Lewis* is a very distinctive species that obviously is closely related to *L. rudis*. In addition to the characters given in the key, it is distinguished from *rudis* by its smaller elytral tufts and smaller, less conspicuous black and white patches in front of the pronotal transverse carina. *L. Lewis* has relatively smaller wings and a less prominent humeral callus than *rudis*, but apparently is still a good flier. It is poorly represented in collections, and seems to be almost entirely montane in distribution. Harrison (1969) states that it is fairly common in Canterbury.

Lophus rudis (Sharp) new combination

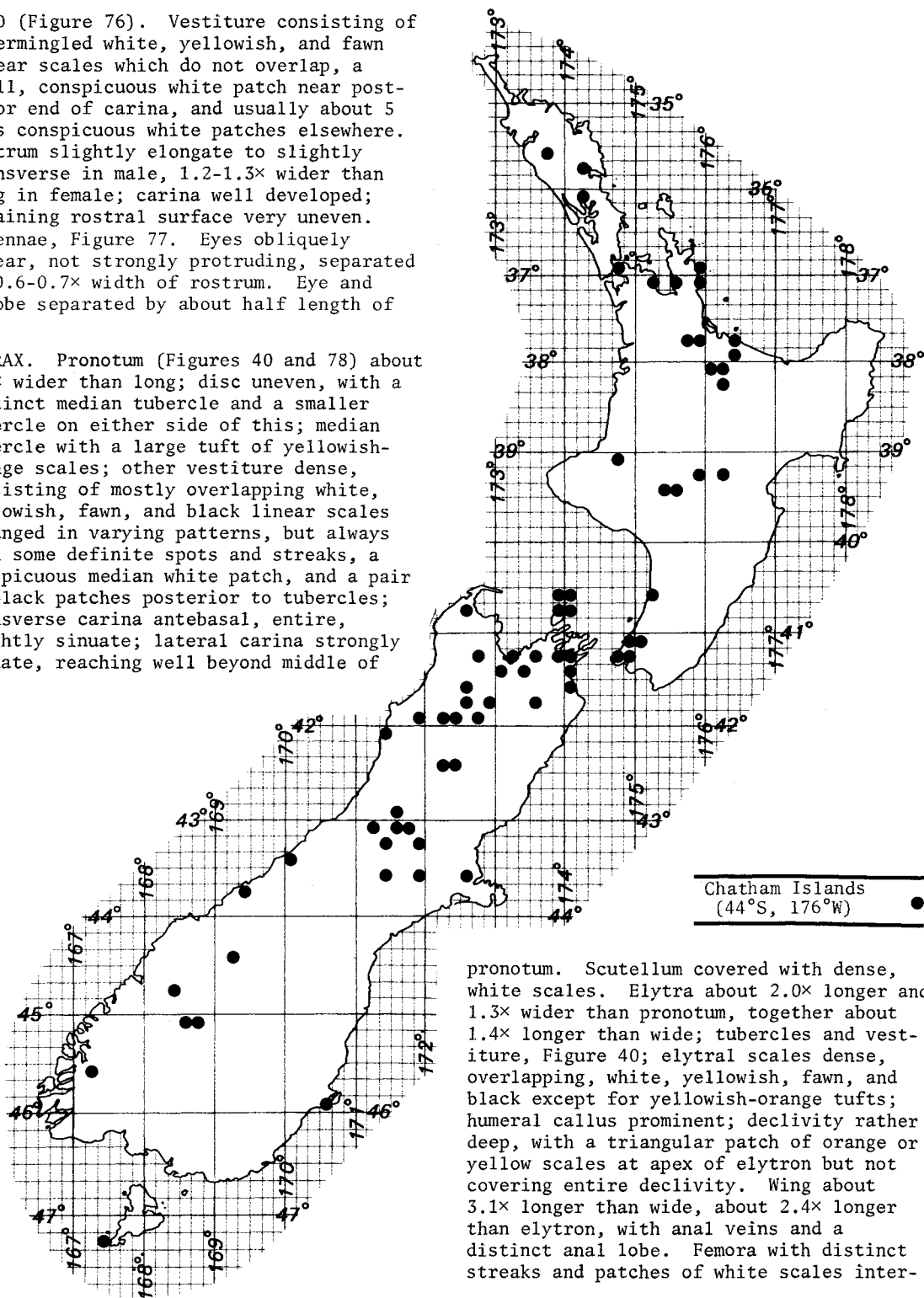
Figures 32, 40, 76-78, 306-310, 594, and 595

Sharp, 1876, Annals and magazine of natural history (4) 17: 438-439 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 547-548 (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 314 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 125 (*Anthribus*).

Integument uniformly black, or a shade of brown, or somewhat variegated. Length 2.9-6.5 mm; width 1.4-3.0 mm.

HEAD (Figure 76). Vestiture consisting of intermingled white, yellowish, and fawn linear scales which do not overlap, a small, conspicuous white patch near posterior end of carina, and usually about 5 less conspicuous white patches elsewhere. Rostrum slightly elongate to slightly transverse in male, 1.2-1.3× wider than long in female; carina well developed; remaining rostral surface very uneven. Antennae, Figure 77. Eyes obliquely linear, not strongly protruding, separated by 0.6-0.7× width of rostrum. Eye and scrobe separated by about half length of eye.

THORAX. Pronotum (Figures 40 and 78) about 1.1× wider than long; disc uneven, with a distinct median tubercle and a smaller tubercle on either side of this; median tubercle with a large tuft of yellowish-orange scales; other vestiture dense, consisting of mostly overlapping white, yellowish, fawn, and black linear scales arranged in varying patterns, but always with some definite spots and streaks, a conspicuous median white patch, and a pair of black patches posterior to tubercles; transverse carina antebasal, entire, slightly sinuate; lateral carina strongly sinuate, reaching well beyond middle of



pronotum. Scutellum covered with dense, white scales. Elytra about 2.0× longer and 1.3× wider than pronotum, together about 1.4× longer than wide; tubercles and vestiture, Figure 40; elytral scales dense, overlapping, white, yellowish, fawn, and black except for yellowish-orange tufts; humeral callus prominent; declivity rather deep, with a triangular patch of orange or yellow scales at apex of elytron but not covering entire declivity. Wing about 3.1× longer than wide, about 2.4× longer than elytron, with anal veins and a distinct anal lobe. Femora with distinct streaks and patches of white scales inter-

mingled with brown scales. Tibiae with a narrow, incomplete, transverse, white band at 0.3 and a similar band at 0.6 alternating with brown hairs, and with a narrow band of stiff yellow hairs at apex.

ABDOMEN. Pygidium clothed with moderately dense but not overlapping brownish scales, except for a few white scales on midline and in outer basal angles. Ventrites with a minute patch of white scales near lateral margin and inconspicuous short, yellowish hairs elsewhere; surface of ventrite 5 flattened or slightly convex in male, concave in female.

MALE. Segment 8 and sternite 9, Figure 306. Tegmen, Figures 307 and 308; apodeme very short and broad. Aedeagus (Figures 309 and 310) almost half as long as elytron; apex of pedon tapering gently; internal sac with coarse and fine spinules and a pair of toothed sclerites; ejaculatory duct inserted on distinct lobe of internal sac.

FEMALE. Segment 8, Figure 594. Genitalia, Figures 32 and 595; hemisternites small, about 0.3× as long as elytra; bursa copulatrix with a large, bilobed sclerite on invagination of ventral wall.

TYPE DATA. Holotype: sex undetermined, 4.0 × 1.8 mm, Tairua (CL), T. Broun (BMNH). The precise type locality was published by Broun (1880). I am indebted to G. Kuschel for examining and measuring the holotype.

MATERIAL EXAMINED. 42 males, 39 females, 158 unsexed (AMNZ, BMNH, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

ND, AK, CL, WO, BP, TO, TK, WN / SD including Stephens I., NN, MB, BR, NC, WD, MC, OL, FD, DN, SL, SI including Big South Cape I. / Chatham Islands - Chatham I., Pitt I. From sea level to 1220 m. Northernmost record: Waimatenui (ND); southernmost record: Big South Cape Island (SI).

Reared from *Dracophyllum longifolium* and dead flower stalks of *D. traversii* (Epacridaceae); dead branches of *Nothofagus solandri* var. *cliffortioides*, *N. fusca* and *N. menziesii* (Fagaceae); fruiting body of *Hypoxylon* (Ascomycetes: Xylariaceae) on *N. cliffortioides*; and dead bole of *Myrsine coxii* (Myrsinaceae). Collected from *Olearia* sp. (Asteraceae); *Dracophyllum* at night; *N. cliffortioides* at night, *N.*

fusca, *N. menziesii*, and *N. solandri* var. *solandri*; thick trunk of recently dead *Dysoxylum spectabile* (Meliaceae); and dead *Myrsine chathamica* (Myrsinaceae). Spores of *Diplodia* (Fungi Imperfecti: Sphaeropsidales) and of Xylariaceae were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. *L. rudis* is recognisable by the median and lateral tubercles on the pronotal disc, the sharply demarcated, large white patch and pair of black patches in front of the pronotal transverse carina, and the well developed tubercles and tufts of the elytra. It is a widespread, common, lowland and montane species.

***Pleosporius* new genus**

TYPE-SPECIES *Anthribus bullatus* Sharp, 1876.

(The name *Pleospórius* is derived from Pleosporaceae, one of the families of ascomycete fungi of which the fruiting bodies are eaten by adult beetles of this genus; gender masculine.)

Small anthribids (length about 2.0-4.0 mm). Integument black or brownish; upper surface densely covered with coarse punctures and appressed, white, cream, yellow, fawn, and black linear scales and thick hairs. Rostrum transverse; dorsal surface without a median carina or groove; ventral surface without a median carina. Antennae moderately long, inserted laterally. Eyes entire. Pronotum without tubercles or tufts but with a distinctive white patch on midline of declivity; transverse carina antebasal, entire; lateral carina indistinct. Elytra with low tubercles capped with thick, black hairs; declivity clothed with tawny scales. Wings fully developed. Femoral surface dark, with uniformly pale vestiture. Tibiae with dark integument and vestiture except for a broad antebasal band of pale scales. Sexual dimorphism moderately pronounced.

HEAD. Rostrum almost parallel-sided, not elevated at scrobes, slightly constricted behind scrobes, its anterior edge deeply notched, not rimmed; dorsal surface depressed in middle, sometimes with a conspicuous bilobed patch of white or cream vestiture in males. Antennae similar in both sexes, reaching to (female) or slightly beyond (male) base of pronotum; club compact, much wider than funicle, about as long as preceding 4 funicle segments. Eyes widely separated, elongate-oval, protruding, with obliquely truncate anterior margin, dorsal anterior angle, moderately coarse facets, and minute hairs; a small but conspicuous patch of yellowish scales adjacent to dorsal anterior angle in females and some males.

THORAX. Pronotum wider than long, widest at anteriormost margin of transverse carina, its sides gently convergent anteriorly and posteriorly; transverse carina strongly elevated, finely denticulate, sinuate, curving forward at the side for a short distance as an indistinct lateral carina; disc very slightly convex, with a conspicuous oval patch of yellowish-brown scales on midline behind anterior margin; declivity slightly oblique, with a secondary carina and with denticles on lateral and basal margins. Pleural suture well developed, partly concealed by vestiture. Scutellum small, triangular, level with base of elytra or slightly lower. Elytra almost parallel-sided, slightly widened near middle; basal margin vertical, sometimes with a rim; sutural margin not conspicuously elevated; striole conspicuous, almost $0.3\times$ length of elytron; striae distinct, with large, close, discrete punctures; declivity deep, almost vertical; humeral callus large, rounded; elytra each with a sub-basal, a median, and a preapical tubercle. Tibiae robust. Tarsi pale brown with yellowish hairs; segment 1 as long as segments 2 and 3 together; segment 2 strongly emarginate.

ABDOMEN. Pygidium longer than wide, almost parallel-sided in male, distinctly widest basally in female; surface puncto-asperate in female, without asperities in male; sides raised; apex truncate or weakly emarginate in male, slightly rounded in female. Ventrites not impressed along midline; ventrite 5 of female with surface finely asperate and uniformly flattened or slightly convex; ventrite 5 of male without

asperities and with a large, triangular concavity on apical half.

MALE. Tergite 8 with a pair of large, elongate, setulose lobes. Sternite 8 with a pair of small, transverse, setose lobes; apodeme small, with short arms. Sternite 9 apodeme very long, with well developed arms. Tegmen with ring longer than apodeme, which is slender and parallel-sided; apex entire, broadly rounded in dorsal aspect, not expanded in lateral aspect, with a fringe of hairs on upper and lower margins; preapical flange absent. Aedeagus about $0.6\times$ as long as elytron; apodemes continuous with pedon; bridge long, slender, arched, close to base of pedon; pedon entire, its apical 0.3 strongly constricted, carinate, and with a sharp, recurved tip; tectum with a slender, pointed tip; internal sac short, not reaching free end of apodemes, with coarse spinules and a large, brown sclerite at level of bridge; ejaculatory duct inserted ventrally on a small lobe near apex of internal sac.

FEMALE. Segment 8 about $0.75\times$ as long as hemisternites; apodeme with divergent arms continuous with the large, paired sclerites of sternite 8; tergite with an entire apex and with a large, membranous median area; setae long, mainly marginal. Hemisternites about $0.4\times$ as long as elytra; body distinct from lateral rods, which are about $0.6\times$ as long as entire hemisternites; apical part with 4 large teeth and a large, subapical stylus; median rods fused on midline for about 0.3 of their length, neither expanded nor divergent at proximal end. Vulva enclosed by hyaline membranous lobes, 1 dorsomedially and a pair ventrally. Bursa copulatrix reaching well beyond base of lateral rods, lacking sclerites. Spermatheca large, not annulate; spermathecal gland spherical, less than $0.25\times$ length of spermatheca, distinctly stalked; ducts of spermatheca and spermathecal gland inserted close together on a large atrium located on outer edge, distant from base of spermatheca.

RANGE. New Zealand.

REMARKS. *Pleosporius* is the only New Zealand anthribid genus in which the elytral declivity is entirely clothed with pale vestiture. Distinctive features of the male are the compressed apical part of

the pedon, the absence of a preapical flange on the tegmen, and the large, angulate lobes of the eighth tergite. Important generic features of the female genitalia are the large stylus, very small spermathecal gland, and absence of sclerites in the bursa copulatrix.

Pleosporius is not closely related to any New Zealand genus nor to any genera that I have examined from Australia, Chile, or the Pacific islands. With its single species, therefore, this genus forms part of the archaic element of the New Zealand fauna.

***Pleosporius bullatus* (Sharp) new combination**

Figures 41, 79-81, 311-315, 596, and 597

Sharp, 1876, Annals and magazine of natural history (4) 17: 425 (key) and 427 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 548 (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 311 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 125 (*Anthribus*).

anguliceps Broun, 1910, Bulletin of the New Zealand Institute 1 (1): 72 (*Anthribus*); Wolfrum, 1929, Coleopterorum catalogus 26 (102): 96 (*Brachytarsus*). NEW SYNONYMY.

maurus Broun, 1910: 72-73 (*Anthribus*); Wolfrum, 1929: 98 (*Brachytarsus*); Hudson, 1934: 125 (*Anthribus*). NEW SYNONYMY.

rugifer Broun, 1910: 72 (*Anthribus*); Wolfrum, 1929: 100 (*Brachytarsus*). NEW SYNONYMY.

suspectus Broun, 1910: 73 (*Anthribus*); Wolfrum, 1929: 100 (*Brachytarsus*); Wolfrum, 1959, Entomologische Arbeiten aus dem Museum Frey 10: 157 (*Plintheria*). NEW SYNONYMY.

Integument of dorsal surface entirely black or a shade of brown or variegated black and brown, that of ventral surface uniformly black or brown, that of antennae pale brown, sometimes darker on club segments. Length 2.0-4.0 mm; width 0.9-2.0 mm.

HEAD (Figures 41 and 79). Vestiture consisting of cream, yellow, fawn, and black hairs and scales in varying patterns; females and some males with these hairs intermingled on entire dorsal surface, with a small patch of yellowish scales adjacent to anteromedial edge of eye, on midline of vertex, and sometimes adjacent to postero-medial edge of eye; some males with additional yellowish scales or a dense, H-shaped patch of creamish scales on rostrum (Figure 41). Rostrum 1.30-1.43× (male) or 1.45-1.54× (female) wider than long; dorsum more prominently depressed in female. Antennae, Figure 80. Eyes separated by 0.60-0.71× (male) or 0.60-0.65× (female) width of rostrum. Eye and scrobe separated by about 0.3× length of eye.

THORAX. Pronotum (Figures 41 and 81) about 1.1× wider than long; vestiture consisting of yellow, fawn, and black hairs and scales in varying amounts and arrangements, but always with a patch of yellow scales on midline anteriorly, on midline of declivity, and towards sides of declivity, and a pair of small, submarginal patches of cream scales near middle of disc. Scutellum densely covered with white or creamish scales. Elytra about 1.9× longer and 1.3× wider than pronotum, together about 1.4× longer than wide; tubercles and vestiture, Figure 41; elytral vestiture consisting of varying amounts of cream, fawn, and black scales and hairs, sometimes also with yellowish-orange scales on humeral callus, always with tufts of black scales and hairs on tubercles, the overall colour pattern very dark in some specimens; uniformly tawny scales of declivity always conspicuous. Wing about 2.7× longer than wide, about 2.1× longer than elytron, with anal veins and a distinct anal lobe. Tibial bands conspicuous.

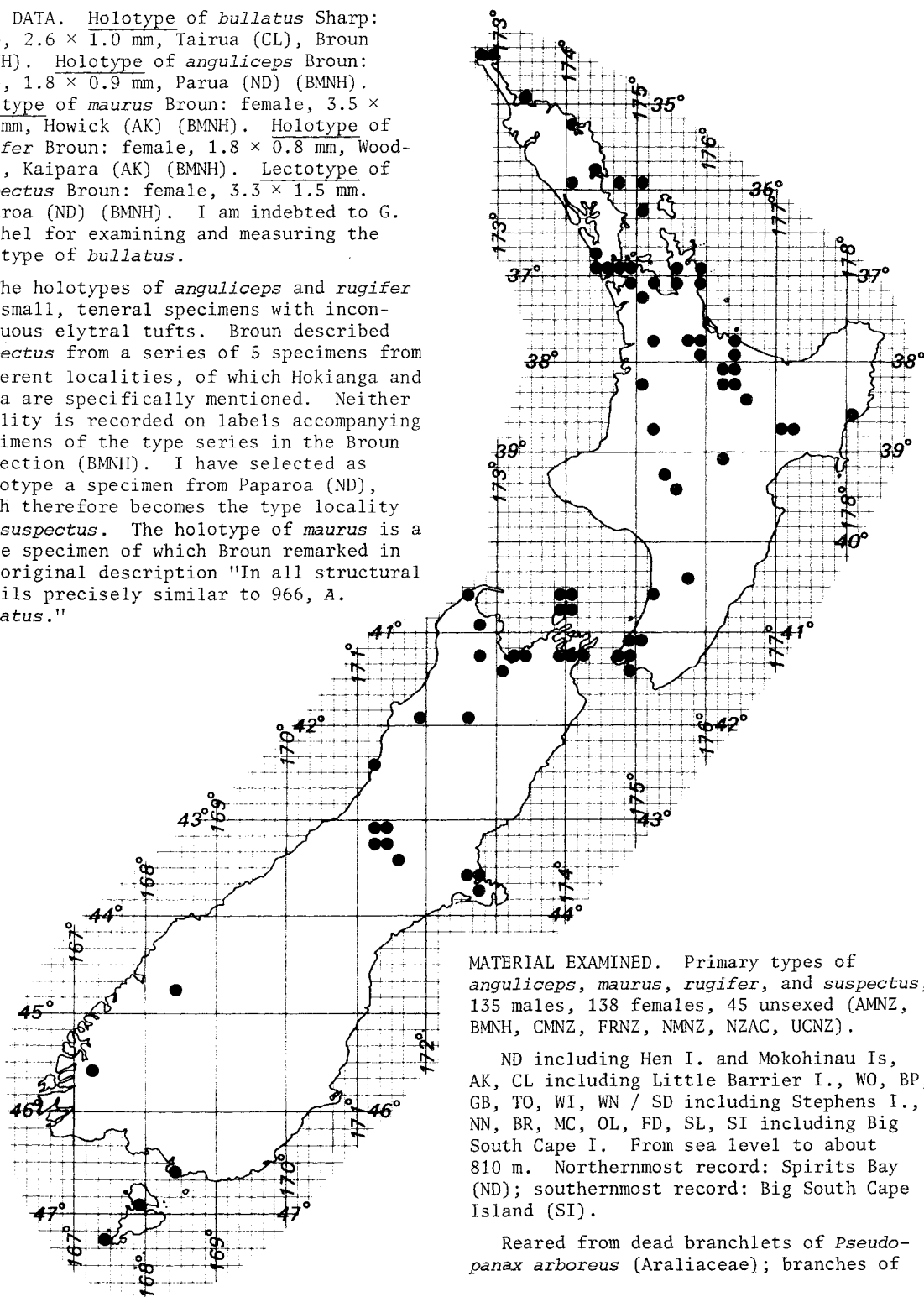
ABDOMEN. Pygidium about 1.2× longer than wide; vestiture dense, consisting of overlapping tawny scales. Ventrites densely clothed with non-overlapping yellowish scales.

MALE. Segment 8 and sternite 9, Figure 311. Tegmen, Figures 312 and 313. Aedeagus, Figures 314 and 315.

FEMALE. Segment 8, Figure 596. Genitalia, Figure 597.

TYPE DATA. Holotype of *bullatus* Sharp: male, 2.6 × 1.0 mm, Tairua (CL), Broun (BMNH). Holotype of *anguliceps* Broun: male, 1.8 × 0.9 mm, Parua (ND) (BMNH). Holotype of *maurus* Broun: female, 3.5 × 1.7 mm, Howick (AK) (BMNH). Holotype of *rugifer* Broun: female, 1.8 × 0.8 mm, Woodhill, Kaipara (AK) (BMNH). Lectotype of *suspectus* Broun: female, 3.3 × 1.5 mm, Paparua (ND) (BMNH). I am indebted to G. Kuschel for examining and measuring the holotype of *bullatus*.

The holotypes of *anguliceps* and *rugifer* are small, teneral specimens with inconspicuous elytral tufts. Broun described *suspectus* from a series of 5 specimens from different localities, of which Hokianga and Parua are specifically mentioned. Neither locality is recorded on labels accompanying specimens of the type series in the Broun Collection (BMNH). I have selected as lectotype a specimen from Paparua (ND), which therefore becomes the type locality for *suspectus*. The holotype of *maurus* is a large specimen of which Broun remarked in the original description "In all structural details precisely similar to 966, *A. bullatus*."



MATERIAL EXAMINED. Primary types of *anguliceps*, *maurus*, *rugifer*, and *suspectus*, 135 males, 138 females, 45 unsexed (AMNZ, BMNH, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

ND including Hen I. and Mokohinau Is, AK, CL including Little Barrier I., WO, BP, GB, TO, WI, WN / SD including Stephens I., NN, BR, MC, OL, FD, SL, SI including Big South Cape I. From sea level to about 810 m. Northernmost record: Spirits Bay (ND); southernmost record: Big South Cape Island (SI).

Reared from dead branchlets of *Pseudo-panax arboreus* (Araliaceae); branches of

Nothofagus fusca and *N. menziesii*, and from fruiting body of *Hypoxylon* (Ascomycetes: Xylariaceae) on *N. solandri* var. *cliffortioides* (Fagaceae); twigs of *Ficus* sp. (Moraceae); dead branches of *Pittosporum eugenioides* and *P. tenuifolium* (Pittosporaceae); subcortical dead wood of *Crataegus* sp. (Rosaceae); wood of *Solanum mauritianum* (Solanaceae); and dead *Meliccytus* sp. (Violaceae). Collected from *Olearia colensoi* var. *grandis* and *Senecio* sp. (Asteraceae); *Nothofagus solandri* var. *solandri*; dead *Corynocarpus laevigatus* (Corynocarpaceae); and numerous other native trees and shrubs. Spores and ruptured fruiting bodies of the ascomycete families Pleosporaceae and Euantennariaceae were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. Specimens of *P. bullatus* vary greatly in size and colour. The rostral vestiture of males varies geographically. Males from Banks Peninsula (MC) and from all the North Island except Little Barrier Island (CL) have very dense, creamish scales on the rostrum. In the Little Barrier Island males the rostral vestiture is yellow and not very dense. The remaining South Island males resemble females in having sparse, yellowish hairs and scales on the rostrum. All the specimens from Big South Cape Island (SI) have very dark integument and vestiture. The elytral tufts and tubercles are sometimes inconspicuous in small specimens.

***Sharpius* new genus**

TYPE-SPECIES *Anthribus brouni* Sharp, 1876.

(The genus *Shárpius* is named after the late Dr David Sharp, in recognition of his outstanding pioneer work on New Zealand Anthribidae; gender masculine.)

Small anthribids (length about 2.0-4.0 mm). Integument black or brownish; upper surface of head and pronotum with dense, fine or coarse punctures and appressed, mainly overlapping, white, cream, fawn, orange, brown, and black scales and hairs.

Rostrum elongate or slightly transverse; dorsal surface with a low median carina terminating in a small depression between eyes; ventral surface with a median carina. Antennae short to moderately long, inserted laterally. Eyes entire or barely emarginate. Pronotum without tubercles or tufts; transverse carina sub-basal or antebasal, entire or broken; lateral carina well developed and reaching pleural suture or very short and barely discernible. Elytra puncto-striate, sometimes with sub-basal tubercles, with varying proportions of pale and dark scales, sometimes with a conspicuous median, transverse, or elongate band, patch, or triangle of dark scales. Wings fully developed or vestigial. Femoral surface brown or blackish, sometimes darker near middle or at apex, clothed mainly with pale scales. Tibiae brown or blackish except for a broad, transverse median band with paler integument and cream vestiture. Sexual dimorphism slight.

HEAD. Rostrum widened anteriorly, not elevated at scrobes, its anterior margin slightly indented and not elevated; surface behind anterior margin uneven but not conspicuously depressed. Antennae reaching beyond base of elytra in male (exception: *S. chathamensis* new species), but not reaching as far as base of elytra in female; club compact, much wider than funicle, as long as preceding 2.0-3.5 funicle segments; segment 8 truncate apically, somewhat triangular. Eyes widely separated, small, obliquely longitudinal, oval or pear-shaped, with a lateral or very slightly dorsal anterior angle, moderately fine facets, and minute hairs.

THORAX. Pronotum longer or shorter than wide, widest at level of transverse carina, its sides gently convergent anteriorly and posteriorly; transverse carina strongly elevated, weakly denticulate, sinuate or uniformly arched; lateral carina (when discernible) strongly elevated, weakly denticulate, meeting transverse carina in an obtusely rounded angle; disc flattened or slightly uneven; declivity gently sloping to almost horizontal, with a secondary carina, sometimes with denticles at sides, and with a median band and a pair of lateral or sublateral bands of pale scales. Pleural suture conspicuous or obscure. Scutellum very small,

triangular, about level with base of elytra, with dense, curved, white scales. Elytra widest near middle; basal margin vertical or proclinate, with a rim; sutural margin slightly elevated; striole about 0.28× length of elytron; striae with small to moderately large, discrete punctures; declivity shallow, gently sloping; humeral callus moderately large, small, or absent; sub-basal tubercle (when present) very low. Tibiae slender. Tarsi with white scales on entire dorsal surface and darker integument apically on segments 1 and 2; segment 1 slightly longer than segments 2 and 3 together; segment 2 deeply emarginate.

ABDOMEN. Pygidium wider than long, distinctly tapering towards apex; margins not raised; surface asperate in female, rugose, coarsely punctate or smooth in male, and with decumbent or appressed scales; apex rounded in both sexes. Ventrites at most barely impressed along midline, sometimes carinate on midline, with shiny integument and rather sparse, cream scales; ventrite 5 with asperities in female only.

MALE. Tergite 8 with or without lobes. Sternite 8 with a pair of elongate plates; apodeme small or absent. Sternite 9 apodeme long, slender, with well developed arms. Tegmen with ring longer than apodeme, which is parallel-sided or narrower towards base; apex entire, broadly rounded in dorsal aspect, slightly expanded in lateral aspect, with a few rather long setae; preapical flange entire. Aedeagus 0.4-0.9× as long as elytron; apodemes continuous with pedon; bridge slender, short, slightly arched, distant from base of pedon; pedon entire, its apical part gradually tapering or strongly constricted, sometimes terminating in a sharp point; tectum with a pointed apex; internal sac lobed, not reaching free end of apodemes, with fine and coarse spinules but no sclerites; ejaculatory duct inserted dorsally or apically between 2 lobes of internal sac.

FEMALE. Segment 8 0.5-0.7× as long as hemisternites; tergite weakly sclerotised, with few if any setae; sternite weakly trilobed at apex, with setae on lateral lobes and with a long, slender apodeme. Hemisternites about half as long as elytra; body distinct from lateral rods, which are

about 0.6× as long as entire hemisternites; apical part with 4 moderately large teeth and a broad stylus; median rods partly joined together along midline, tapering slightly, not divergent at proximal end. Vulva partly enclosed ventrally by a median lobe and a pair of membranous lobes of about equal length. Bursa copulatrix reaching well beyond base of lateral rods, with a single sclerite or a pair of sclerites at point of insertion of spermathecal duct. Spermatheca large, very globose basally, not annulate; spermathecal gland spherical or oval, smaller or larger than spermatheca, with a short stalk; ducts of spermatheca and spermathecal gland inserted on a dark atrium at base of spermatheca.

RANGE. New Zealand.

REMARKS. *Sharpius* is distinguishable from other New Zealand anthribids which lack tufts and tubercles on the pronotum and elytra by the combination of entire, lateral eyes, apically dilated rostrum with a strong median carina dorsally and a low carina ventrally, and the somewhat triangular eighth segment of the antennae. The only New Zealand genus with which it might be confused is *Helmoreus*, which, however, is immediately recognisable by its somewhat dorsal eyes, elongate second segment of the antennae, and H-shaped patch of creamish scales between the eyes. The internal sac of the male of *Sharpius* lacks sclerites but has a very characteristic arrangement of coarse spinules near the point of entry of the ejaculatory duct. Distinctive features of the female genitalia are the large, globose spermatheca, spherical or oval spermathecal gland, sclerites of the bursa copulatrix, and tapered median rods of the hemisternites.

Sharpius bears some resemblance to the North American genus *Allandrus* Leconte in the overall appearance of the head, including the shape of the rostrum and the presence on it of both dorsal and ventral median carinae. However, there are major differences both externally and internally between these genera. In *Allandrus* (type-species *A. bifasciatus* Leconte, 1876 examined) the dorsal keel of the rostrum is very high especially in the male, the eighth antennal segment is not conspicuously widened apically, the front tibia of the male is arched and has a strong basal

constriction, and there is a sensory pit on the midline of the first abdominal ventrite of the male. The ejaculatory duct of *Allandrus* inserts ventrally on the internal sac, which has a pale but distinct sclerite inside its dorsal lobe. The female has a very small, concealed stylus on the hemisternites and apparently lacks a sclerite in the bursa copulatrix.

Of the 5 species belonging to *Sharpius*, 2 - including a species that is confined to the Chatham Islands - have become flightless.

KEY TO SPECIES OF *Sharpius*

- 1 Transverse carina of pronotum entire or with no more than 2 breaks (Figures 84 and 100); elytral disc without a triangular or inverted V-shaped patch of dark scales 2
 --Transverse carina of pronotum with more than 2 breaks (Figures 87, 94, and 97); elytral disc with a somewhat triangular or inverted V-shaped patch of dark scales at or behind middle (Figures 88-90) 3
- 2 Integument jet black; pronotum with 2 large patches of entirely white or cream scales and 1 large patch of entirely brownish-orange scales on the disc (Figure 100); elytral disc without a rectangular or hour-glass-shaped patch of pale scales (Figure 42) *venustus*
 --Integument reddish-brown; pronotum without large patches of entirely cream or entirely orange scales; elytral disc with an elongate, rectangular or hour-glass-shaped patch of pale scales on centre of disc (this patch sometimes ill defined in very small specimens) *brouni*
- 3 Ventrolateral border of prothorax (in line with eye) with very dense, overlapping, dark brown or (rarely) cream hairs; humeral callus absent; ventrites 1-4 without median carinae *sandageri*
 --Ventrolateral border of prothorax (in line with eye) with sparse, brown or cream hairs; humeral callus small or moderately large; ventrites 1-4 with a very short, low carina on midline near posterior margin (often very weak in females) 4
- 4 Humeral callus moderately large; wings fully developed. (Not on Chatham Islands) *imitarius*
 --Humeral callus very small; wings vestigial. (Only on Chatham Islands) *chathamensis*

Sharpius brouni (Sharp) new combination

Figures 15, 82-84, 316-320, 598, and 599

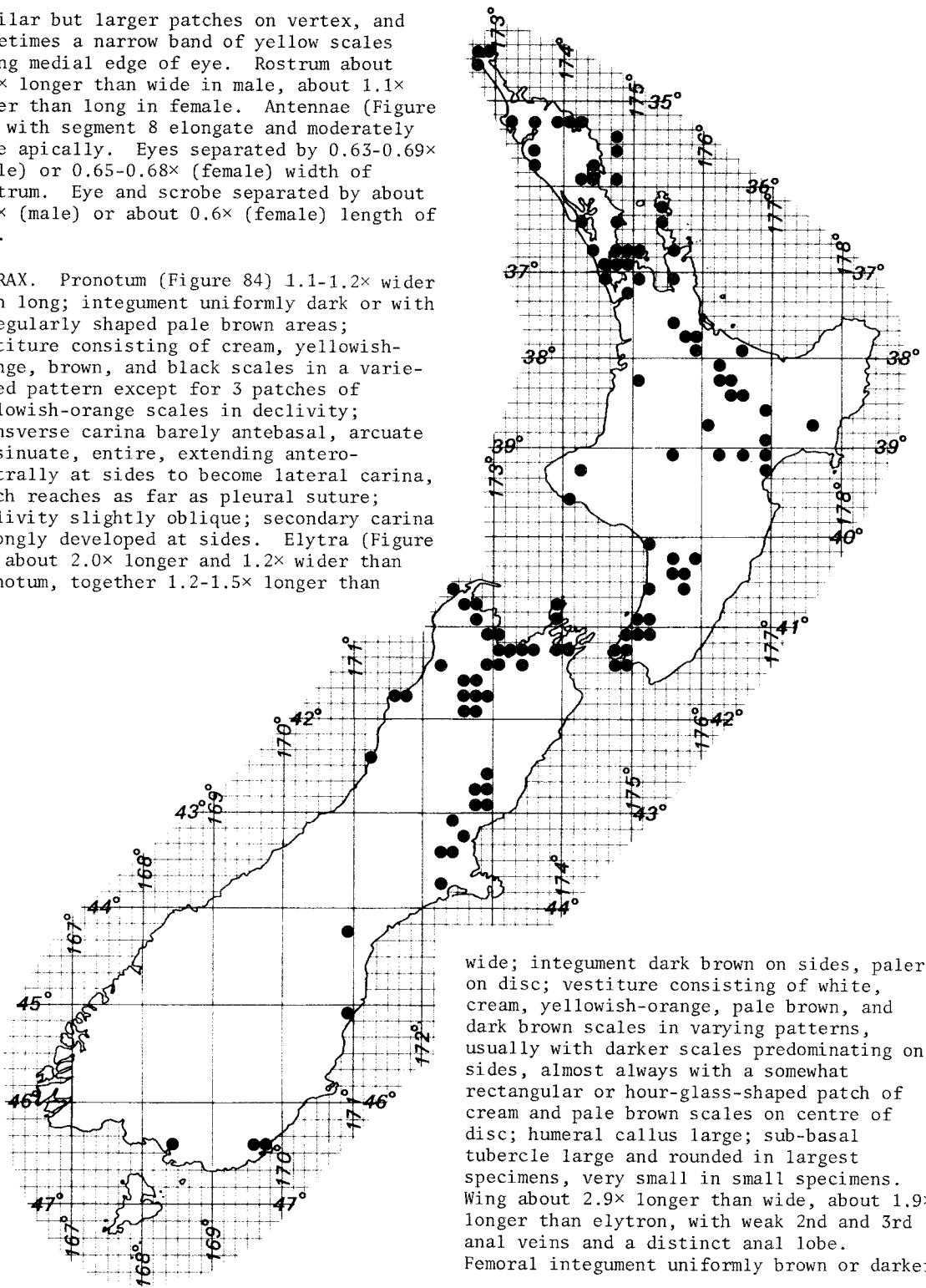
Sharp, 1876, Annals and magazine of natural history (4) 17: 425 (key) and 426-427 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 547 (*Anthribus*); Jordan, 1894, Novitates zoologicae 1: 636 (*Plintheria*); Wolfrum, 1929, Coleopterorum catalogus 26 (102): 33 (*Plintheria*) and 96 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 125 (*Anthribus*); Cumber, 1959, New Zealand journal of agricultural research 2: 770 (*Plintheria*).

Integument pigmented in shades of dark and pale brown. Length 1.9-3.6 mm; width 0.9-1.6 mm.

HEAD (Figure 82). Vestiture consisting mainly of rather sparse, cream and yellowish-orange linear scales which rarely overlap; a small, dense patch of yellowish scales near anteromedial edge of eye, 3

similar but larger patches on vertex, and sometimes a narrow band of yellow scales along medial edge of eye. Rostrum about 1.1× longer than wide in male, about 1.1× wider than long in female. Antennae (Figure 83) with segment 8 elongate and moderately wide apically. Eyes separated by 0.63-0.69× (male) or 0.65-0.68× (female) width of rostrum. Eye and scrobe separated by about 0.9× (male) or about 0.6× (female) length of eye.

THORAX. Pronotum (Figure 84) 1.1-1.2× wider than long; integument uniformly dark or with irregularly shaped pale brown areas; vestiture consisting of cream, yellowish-orange, brown, and black scales in a variegated pattern except for 3 patches of yellowish-orange scales in declivity; transverse carina barely antebasal, arcuate to sinuate, entire, extending antero-ventrally at sides to become lateral carina, which reaches as far as pleural suture; declivity slightly oblique; secondary carina strongly developed at sides. Elytra (Figure 15) about 2.0× longer and 1.2× wider than pronotum, together 1.2-1.5× longer than



wide; integument dark brown on sides, paler on disc; vestiture consisting of white, cream, yellowish-orange, pale brown, and dark brown scales in varying patterns, usually with darker scales predominating on sides, almost always with a somewhat rectangular or hour-glass-shaped patch of cream and pale brown scales on centre of disc; humeral callus large; sub-basal tubercle large and rounded in largest specimens, very small in small specimens. Wing about 2.9× longer than wide, about 1.9× longer than elytron, with weak 2nd and 3rd anal veins and a distinct anal lobe. Femoral integument uniformly brown or darker

towards apex; tibial integument yellowish-brown or reddish-brown, with a median band of pale scales.

ABDOMEN. Pygidium with coarse honeycomb punctures in male, asperate in female, with decumbent, fine, brown scales on midline and coarser, yellowish scales laterally. Ventrites 1-4 not carinate; ventrite 5 with dense, fine asperities in female.

MALE. Segment 8 and sternite 9, Figure 316. Tegmen, Figures 317 and 318. Aedeagus (Figures 319 and 320) about half as long as elytron; apex of pedon tapering gently; internal sac with very fine, pale spinules except for a patch of coarser brown spinules near insertion of ejaculatory duct.

FEMALE. Segment 8, Figure 598. Genitalia, Figure 599; bursa copulatrix with a colourless, weakly divided sclerite; spermathecal gland small, spherical.

TYPE DATA. Lectotype: male, 3.3 × 1.4 mm, Auckland (AK), Lawson (BMNH). The species was described from a series of specimens collected in Auckland and Tairua (CL) by Lawson and Broun respectively. None of the 4 specimens of the series bears a precise locality nor a collector's label. Auckland has been fixed as the type locality, as the species is common throughout the Auckland area. The lectotype is a somewhat teneral specimen.

MATERIAL EXAMINED. Lectotype, 300 males, 349 females, 66 unsexed (AMNZ, BMNH, CMNZ, FRNZ, NMNZ, NZAC, OMNZ, UCNZ).

ND including Hen I. and Poor Knights Is, AK, CL including Great Barrier I., WO, BP, GB, TO, TK, HB, WI, WN / SD including D'Urville I., NN, MB, BR, NC, MC, SC, DN, SL. From sea level to about 930 m, mainly lowland. Northernmost record: Spirits Bay (ND); southernmost record: Owaka (SL).

Reared from dead branches of *Pseudo-panax arboreus* (Araliaceae); dead branches of *Agathis australis* (Araucariaceae); dead stems of *Cassinia* sp. (Asteraceae); dead twigs of *Olearea furfuracea* (Asteraceae); twigs of *Cytisus* sp. (Fabaceae); dead twigs of *Ulex europaeus* (Fabaceae); branches of *Nothofagus menziesii* and *N. solandri* (Fagaceae); dead branches of *Dysoxylum spectabile* (Meliaceae); seed pods of *Acacia* sp. and dead branches of *A. mearnsii*,

A. melanoxydon, and *A. verticillata* (Mimosaceae); old stump of *Albizia lophantha* (Mimosaceae); twigs of *Ficus* sp. (Moraceae); dead *Pinus radiata* (Pinaceae); dead branches of *Coprosma robusta* (Rubiaceae); dead branchlets of *Calodendrum capense* (Rutaceae); subcortical layer in branches of *Alectryon excelsus* (Sapindaceae); and dead branches of *Ulmus* sp. (Ulmaceae). Adults have been beaten from a wide range of native and exotic trees and shrubs, and extracted from leaf litter and from nest material of gulls. *Diplodia*-like conidia, truncate phaeophragmoconidia (with the end cells digested away) similar to those of *Pestalotia*, and fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. *S. brouni* can be recognised by the patch of pale scales on the centre of the elytral disc. It is a widespread and very common species, and one of the few endemic anthribids that is common in suburban gardens and other modified habitats. The adults fly during the day, and often land on outside walls and windows. They are occasionally attracted to lights at night.

Cumber (1959) incorrectly assigned *S. brouni* to Curculionidae. Jordan (1894), Bovie (1906), Wolfrum (1929, 1959), and Valentine (1960) have referred this species and *Anthribus sharpi* Broun to *Plintheria* Pascoe. The two species are in fact not congeneric, and only *sharpi* has affinities with *Plintheria*.

Sharpus chathamensis new species

Figures 85-91, 278, 321-325, 600, and 601

Integument mainly reddish brown. Length 1.6-3.0 mm; width 0.75-1.5 mm.

HEAD (Figure 85). Vestiture consisting of yellowish-brown scales, dense and overlapping on large specimens, sparse and not overlapping on small specimens, sometimes with fine, brown scales on vertex. Rostrum slightly shorter to slightly longer than wide, relatively longer in largest specimens. Antennae (Figure 86) short in both

sexes, not reaching base of pronotum, with segment 8 short and broad. Eyes separated by 0.7-0.8× width of rostrum. Eye and scrobe separated by 1.0-1.5× length of eye, the separation greatest in the largest specimens.

THORAX. Pronotum (Figure 87) 1.1× wider than long; integument brown; vestiture dense, consisting of yellowish-brown scales with varying proportions of deeper brown scales intermingled and a pair of large, irregularly shaped, sublateral patches of dark vestiture on declivity; a dark brown, shiny area on ventrolateral border of prothorax barely extending on to dorsal surface except on declivity, and with sparse dark or pale hairs; transverse carina strongly antebasal, arcuate or sinuous, broken symmetrically or asymmetrically in 3-9 places; lateral carina indistinguishable; declivity almost horizontal; secondary carina not reaching lateral margins of declivity. Elytra 1.5-1.7× (male) or 1.7-1.8× (female) longer and about 1.2× wider than pronotum, together 1.2-1.3× longer than wide; integument brown; vestiture consisting of overlapping, mainly yellowish-brown scales, densest in the largest specimens, with some intermingled cream and brown scales, always with a transverse, triangular or inverted V-shaped brown patch near middle of disc, usually with an oblique, broken band of scales at the base of elytron extending outwards from centre (Figures 88-90); humeral callus very small; sub-basal tubercle absent. Wing vestigial (Figure 278), about 5.0× longer than wide, 0.43-0.47× length of elytron. Femoral integument brown, with a wide darker band near middle; tibial integument brown, with a median band of pale scales. Inner tooth of front claw of male reaching almost to apex of claw.

ABDOMEN. Pygidium finely punctate in male, finely asperate in female; vestiture consisting of appressed, coarse, yellowish scales. Ventrites 1-4 each with a low, short, median carina near posterior margin, the carinae better developed in male than in female (Figure 91); ventrite 5 finely asperate in female.

MALE. Segment 8 and sternite 9, Figure 321. Tegmen, Figures 322 and 323. Aedeagus (Figures 324 and 325) about 0.9× length of elytron, very slender; apex of pedon acuminate; internal sac with rather fine, pale spinules.

FEMALE. Segment 8, Figure 600. Genitalia, Figure 601; bursa copulatrix with a pair of narrow, contiguous sclerites; spermathecal gland large, spherical.

TYPE DATA. Holotype: male, 2.9 × 1.3 mm, Limestone Quarry, Chatham Island, in litter, 11 February 1967, G. Kuschel (NZAC). Paratypes (21 males, 16 females, in NZAC unless otherwise stated). Chatham I. - 1 male, 1 female, same data as holotype, and 1 male, same data but collected by G. W. Ramsay; 1 male, Waitangi, forest at night, 12 Feb 1967, G.K.; 2 males, 1 female, Awatotara, 137 m, beating, 21 Feb 1967, G.K.; 2 males, 1 female, Awatotara, on bush, 22 Feb 1967, G.K.; 1 female, Awatotara, 23 Feb 1967, G.K.; 1 male, 1 female, Rotoparaoa, litter, 12 Feb 1967, A. K. Walker. Pitt I. - 6 males, 1 female, 16-26 Jan 1944, E. S. Gourlay (1 male BMNH, female AMNZ); 1 male, T. Hall (BMNH). South East I. (collected J. I. Townsend) - 2 females, 2 Nov 1970, beating; 3 females (2 beaten *Myoporum laetum*), 3 Nov 1970; 2 males, beaten *Muehlenbeckia australis*, 9 Nov 1970; 4 males, 4 females, 10 Nov 1970; 1 female, 11 Nov 1970, litter sample 70/173.

● Chatham Islands (44°S, 176°W)

MATERIAL EXAMINED. Type series only (AMNZ, BMNH, NZAC).

Chatham Islands - Chatham I., Pitt I., South East I. From sea level to 137 m.

S. chathamensis has not been reared. Adults have been beaten from *Myoporum laetum* (Myoporaceae) and *Muehlenbeckia australis* (Polygonaceae), and extracted from leaf litter. Unidentifiable conidia and fragments of fungal fructifications and higher plant tissue were present in the hindgut of dissected adults.

Adults have been collected in January, February, and November.

REMARKS. *S. chathamensis* is very similar externally and internally to *S. imitarius*. It differs mainly in having a shorter rostrum, shorter antennae, vestigial wings, a very small humeral callus, and no sub-basal tubercle on the elytron. Differences in the genitalia are very slight: the spinules lining the internal sac are finer and sparser in *chathamensis* than in

imitarius, and the spermatheca is relatively smaller. Incongruously, *chathamensis* appears to be more closely related to *imitarius*, which occurs mainly in the west and south of the South Island, than to *sandageri*, which is distributed along the east coast of the South Island from the Marlborough Sounds to Dunedin.

***Sharpus imitarius* (Broun) new combination**

Figures 14, 23-29, 92-94, 326-330, 602, and 603

Broun, 1914, Bulletin of the New Zealand Institute 1 (2): 139-140 (*Anthribus*); Wolfrum, 1929, Coleopterorum catalogus 26 (102): 98 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 126-127 (*Anthribus*).

Integument mainly reddish-brown. Length 2.1-4.0 mm; width 1.0-1.9 mm.

HEAD (Figure 92). Vestiture dense, consisting of overlapping yellowish-brown scales, with a pair of minute, interocular, cream spots and sometimes several small, black spots on vertex; vestiture less dense in very small specimens. Rostrum 1.1-1.4× longer than wide in both sexes. Antennae (Figure 93) with segment 8 short and broad. Eyes separated by 0.76-0.81× (male) or 0.74-0.78× (female) width of rostrum. Eye and scrobe separated by 0.86-1.10× (male) or 0.89-1.30× (female) length of eye, the separation greatest in the largest specimens.

THORAX. Pronotum (Figures 14 and 94) 1.1-1.2× wider than long; integument brown; vestiture dense, consisting of overlapping yellowish-brown scales, sometimes with a few dark brown scales intermingled, always with a pair of large, irregularly shaped, sub-lateral, dark patches on declivity; a dark brown, shiny area on ventrolateral border of prothorax, barely extending on to dorsal surface, with sparse, dark or pale hairs; transverse carina strongly antebasal, arcuate, broken asymmetrically in 3-8 places; lateral carina indistinguishable; declivity almost horizontal; secondary carina not reaching lateral margins of declivity. Elytra about 1.9× longer and

1.2-1.3× wider than pronotum, together 1.3-1.4× longer than wide; integument brown; vestiture dense, consisting of overlapping scales, mainly yellowish-brown but with cream scales intermingled, and dark brown scales in a line running obliquely outwards from sub-basal tubercle and in a transverse, triangular or inverted V-shaped patch just behind centre of disc; humeral callus large; sub-basal tubercle low. Wing fully developed, 3.0-3.2× longer than wide, about 2.1× longer than elytron, with weak 2nd and 3rd anal veins and an anal lobe. Femoral integument brown, with a broad, dark band near middle; tibial integument brown, with a transverse, median band of pale scales. Inner tooth of front claw of male reaching almost to apex of claw.

ABDOMEN. Pygidium finely punctate in male, finely asperate in female; vestiture consisting of appressed, coarse, yellow scales. Ventrites 1-4 each with a very short, low, median carina near posterior margin, the carinae slightly larger in males; ventrite 5 finely asperate in female.

MALE. Segment 8 and sternite 9, Figures 23 and 326. Tegmen, Figures 24, 25, 327, and 328. Aedeagus (Figures 26, 27, 329, and 330) about 0.7× length of elytron, very slender; apex of pedon acuminate; internal sac with rather fine, pale spinules.

FEMALE. Segment 8, Figures 28 and 602. Genitalia, Figures 29 and 603; bursa copulatrix with a pair of small, pale, contiguous sclerites; spermathecal gland very large, oval.

TYPE DATA. Holotype: sex undetermined, 2.3 × 1.2 mm, Invercargill (SL), August 1911 (BMNH).

MATERIAL EXAMINED. Holotype, 75 males, 71 females, 2 unsexed (AMNZ, BMNH, FRNZ, NMNZ, NZAC).

?WN / NN, NC (near Arthurs Pass), WD, SC, FD, DN, SL, SI including Big South Cape I. and Owen I. From sea level to 1036 m. Northernmost record: Flora Stream, Mt Arthur (NN); southernmost record: Big South Cape Island (SI).

Reared from branches of *Senecio reinoldii* (Asteraceae) and twigs of *Cytisus* sp. (Fabaceae). Beaten from live *Pseudopanax edgerleyi* (Araliaceae); dead *Olearia colensoi* var. *grandis* and *O. lacunosa*

Sharpius sandageri (Broun) new combination

Figures 95-97, 279, 331-335, 604, and 605

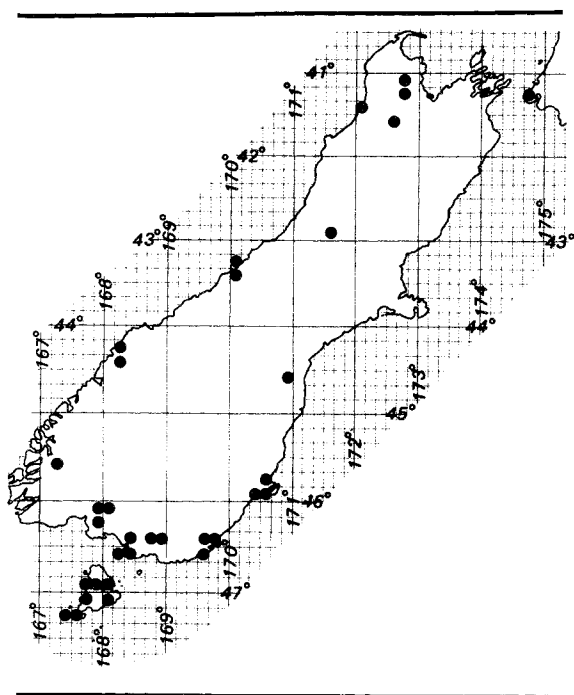
Broun, 1893, Manual of New Zealand Coleoptera 5: 1261-1262 (*Anthrribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 314 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 126 (*Anthrribus*).

obsoletus Broun, 1893 (as variety of *sandageri*): 1262 (*Anthrribus*). NEW SYNONYMY.

Integument yellowish-brown or dark reddish-brown. Length 2.4-3.8 mm; width 1.3-1.8 mm.

HEAD (Figure 95). Vestiture very dense, consisting of overlapping, mainly yellow and yellowish-brown scales, with small numbers of cream scales mostly on centre of vertex and between eyes and sometimes a few dark brown scales on vertex. Rostrum 1.0-1.2× longer than wide in male, slightly longer to slightly shorter than wide in female. Antennae (Figure 96) with segment 8 elongate and rather narrow apically. Eyes separated by 0.81-0.87× (male) or 0.81-0.85× (female) width of rostrum. Eye and scrobe separated by 0.9-1.2× (male) or 0.8-1.0× (female) length of eye.

THORAX. Pronotum (Figure 97) about 1.1× wider than long; integument brown; vestiture very dense, consisting of overlapping, mainly yellowish-brown scales but with a few spots and streaks of dark brown and cream scales; yellowish scales of declivity divided towards sides by a narrow strip of brown scales; dark brown area on ventro-lateral border of prothorax extending conspicuously on to dorsal surface, its dense brown hairs (or rarely cream hairs in very small specimens) sharply demarcated from pale scales of dorsum; transverse carina strongly antebasal, sinuous or slightly arcuate, broken symmetrically or asymmetrically in 3-7 places; lateral carina very short; declivity almost horizontal; secondary carina almost as wide as declivity. Elytra about 1.6× longer and 1.2× wider than pronotum, together 1.2× longer than wide; integument brown; vestiture dense, consisting of overlapping, mainly yellowish-brown scales with several small, white and dark brown spots intermingled; dark brown scales in a line running



(Asteraceae); dead *Senecio* sp.; *Nothofagus menziesii* and *N. solandri* (Fagaceae); *Myrsine chathamica* (Myrsinaceae) on Big South Cape I.; and *Coprosma foetidissima* and *C. lucida* (Rubiaceae). Small, unicellular ascospores and fragments of fungal fructifications and higher plant tissue were present in the hindgut of dissected adults.

Adults have been collected from August to March.

REMARKS. *S. imitarius*, *S. sandageri*, and *S. chathamensis* all have similar markings on the elytra and pronota, but only *imitarius* has fully developed wings, a large humeral callus, and a well developed sub-basal tubercle on the elytra. It shares many more features with *chathamensis* than with *sandageri*.

A single undated specimen in NMNZ, collected by G. V. Hudson, is labelled as being from Wellington. With the exception of part of Dunedin and South Canterbury, the South Island range of *imitarius* is entirely complementary to that of *sandageri* and almost identical with that recorded by Holloway (1963) for the large, flightless stag beetle *Dorcus helmsi* (Sharp).

obliquely outwards from near middle of base of elytron and in a transverse, triangular or inverted V-shaped patch just behind centre of disc; humeral callus and sub-basal tubercle absent. Wing (Figure 279) vestigial, about 2.5× longer than wide, 0.23-0.28× length of elytron. Femoral integument dark reddish-brown except for paler basal 0.3, with dark brown scales at apex and on middle 0.3 and cream scales elsewhere. Tibial integument dark reddish-brown with a transverse median band of pale scales.

ABDOMEN. Pygidium finely punctate in male, finely asperate in female; vestiture consisting of decumbent, coarse, yellowish scales. Ventrites 1-4 not carinate; ventrite 5 with fine, dense asperities in female.

MALE. Segment 8 and sternite 9, Figure 331. Tegmen, Figures 332 and 333. Aedeagus (Figures 334 and 335) about 0.7× length of elytron; apex of pedon gently tapering; internal sac with a very long dorsal lobe lined with dark, coarse spinules, a tract of brown spinules at apex of ventral lobe, and colourless, fine spinules elsewhere.

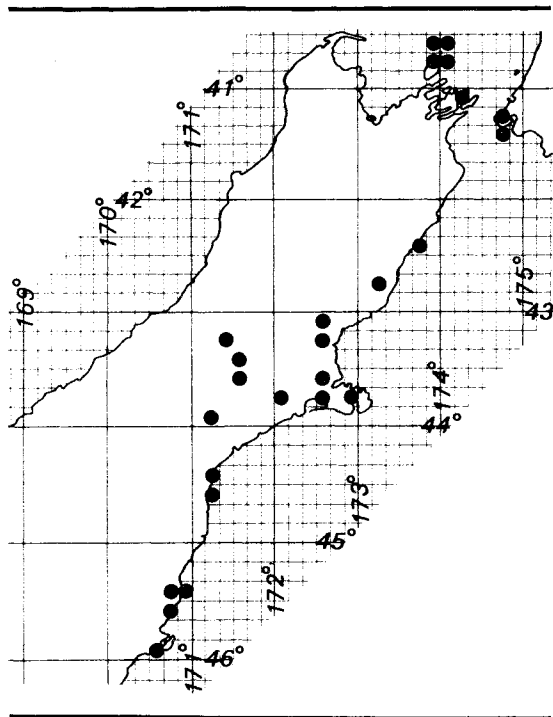
FEMALE. Segment 8, Figure 604. Genitalia, Figure 605; bursa copulatrix with a single large, brown sclerite; spermathecal gland small, spherical.

TYPE DATA. Holotype of *sandageri* Broun: female, 3.2 × 1.5 mm, Moeraki (DN), on climbing plant in winter, P. Sandager (BMNH). Lectotype of *obsoletus* Broun: male, 2.8 × 1.4 mm, Moeraki (DN), P. Sandager (NZAC). The holotype of *sandageri* is a pale teneral specimen.

MATERIAL EXAMINED. Holotype of *sandageri*, lectotype of *obsoletus*, 38 males, 38 females, 22 unsexed (BMNH, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

WN / SD including Stephens I., KA, NC, MC, SC, DN. From sea level to 1000 m. Northernmost record: Stephens Island (SD); southernmost record: Andersons Bay, Otago Peninsula (DN).

Reared from *Cytisus scoparius* (Fabaceae), *Acacia dealbata* (Mimosaceae), and *Crateagus* sp. (Rosaceae). Beaten from *Carmichaelia* sp. (Fabaceae) and *Pinus radiata* (Pinaceae), and extracted from leaf litter. Hyaline bicellular ascospores and



fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected in March and May and from August to January.

REMARKS. Although *S. sandageri* is externally very similar to *S. imitarius* and *S. chathamensis*, the pedon of the male is like that of *S. browni* and *S. venustus* in shape. In the extreme north and south of its range *sandageri* is sympatric with *imitarius*.

***Sharpius venustus* (Broun) new combination**

Figures 42, 98-100, 336-340, 606, and 607

Broun, 1914, Bulletin of the New Zealand Institute 1 (3): 254 (*Anthribus*); Wolfrum, 1926, Coleopterorum catalogus 26 (102): 101 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 127 (*Anthribus*); Hudson, 1950, Fragments of New Zealand entomology: 49, plate 11 figure 7 (*Anthribus*).

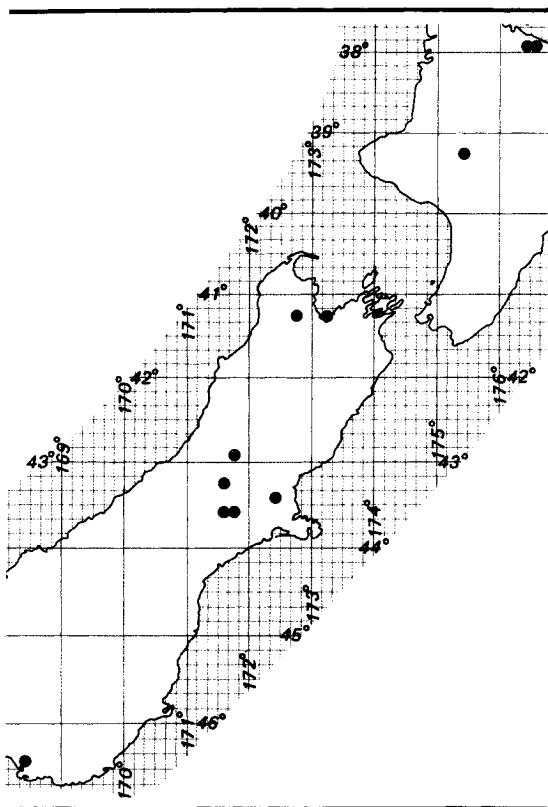
Integument black. Length 3.1-3.4 mm; width 1.5-1.8 mm.

HEAD (Figure 98). Vestiture sparse, consisting of narrow, intermingled cream and dark brown scales except for a small cream or orange patch near anteromedial edge of eye and 3 similar but larger patches on vertex. Rostrum 1.46-1.54× (male) or 1.28-1.41× (female) longer than wide. Antennae (Figure 99) with segment 8 elongate and rather narrow apically. Eyes separated by 0.70-0.86× (male) or 0.63-0.70× (female) width of rostrum. Eye and scrobe separated by about 1.65× (male) or 1.33× (female) length of eye.

THORAX. Pronotum (Figures 42 and 100) slightly longer to slightly shorter than wide; vestiture consisting of cream, brownish-orange, and black scales and hairs in patches which vary slightly in outline; transverse carina not strongly antebasal, barely curved, entire, or broken laterally at pale patches of vestiture, and sometimes weakened on midline; lateral carina short; declivity almost horizontal; secondary carina strongly developed between patches of cream scales. Elytra 1.6-2.0× longer and 1.2-1.5× wider than pronotum, together 1.30-1.37× longer than wide; vestiture consisting of cream, dark brown, and black scales forming pattern shown in Figure 42 (note: 2 anteriormost spots may be fused, and may be yellow or brownish-orange instead of cream); humeral callus moderately large; sub-basal tubercle very small. Wing about 3.1× longer than wide, about 1.9× longer than elytron, with weak 2nd and 3rd anal veins and a distinct anal lobe. Femoral integument uniformly black or reddish-black, with cream scales. Tibiae very dark except for a conspicuous band of pale scales near middle.

ABDOMEN. Pygidium rugose in male, puncto-asperate in female, with decumbent, intermingled cream and black scales. Ventrites 1-4 not carinate; ventrite 5 coarsely asperate in female.

MALE. Segment 8 and sternite 9, Figure 336. Tegmen, Figures 337 and 338. Aedeagus (Figures 339 and 340) about 0.4× length of elytron; apex of pedon tapering gently; internal sac with short, colourless spinules except for larger, dark denticles in apices of lobes.



FEMALE. Segment 8, Figure 606. Genitalia, Figure 607; bursa copulatrix with a pair of elongate, contiguous, pale sclerites; spermathecal gland very small, spherical.

TYPE DATE. Holotype: female, 3.4 × 1.7 mm, Invercargill (SL), 10 August 1912, A. Philpott (BMNH). The right elytron of the holotype is broken near the middle.

MATERIAL EXAMINED. Holotype, 2 males, 7 females (BMNH, CMNZ, FRNZ, NMNZ, NZAC).

BP, TO (Waimarino) / NN, NC, MC, SL. From sea level to 1515 m. Northernmost record: Rotoehu State Forest (BP); southernmost record: Invercargill (SL).

S. venustus has not been reared. Beaten from *Nothofagus* sp. (Fagaceae) and from *Pinus patula* and *P. radiata* (Pinaceae). Small, pale, bicellular ascospores and fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected in January, March, July, August, October, and December.

REMARKS. Its black ground colour and brilliant cream and orange markings make *S. venustus* the most colourful and easily recognised anthribid in New Zealand. It is poorly represented in collections, and probably has a mainly montane distribution.

Hoplorhaphus new genus

TYPE-SPECIES *Anthribus spinifer* Sharp, 1876.

(The name *Hoplorhaphus* is derived from the Greek 'hóplon', meaning 'weapon', and 'rhaphe', meaning 'suture', and refers to the conspicuous spines and tubercles on the elytral suture; gender masculine.)

Small to medium-sized anthribids (length about 3.0-6.5 mm). Integument black or dark brown, with barely discernible punctures except for coarse punctures on head and conspicuous punctures in elytral striae; vestiture consisting of appressed, mainly tawny, brown, and black hairs and fine, linear scales, with a few streaks, patches, and bands of white, cream, or yellow scales. Rostrum elongate, with a median carina and a pair of lateral carinae on dorsal surface; ventral surface with a median carina. Antennae moderately long in male, shorter in female, inserted laterally, with conspicuous white or cream scales on 8th segment. Eyes entire. Pronotum with even or uneven surface; declivity with a median band and a pair of lateral bands or patches of white or yellow scales; transverse carina antebasal, entire or broken; lateral carina indistinct. Elytra with a penicillate, bispinous or unarmed, median tubercle on suture above declivity. Wings fully developed. Femoral surface black, with cream and sometimes yellow scales. Tibiae with integument and vestiture black, except for varying proportions of white scales on retrolateral (posterior) surface. Sexual dimorphism moderately pronounced.

HEAD. Rostrum curved, parallel-sided for most of its length, expanded proximally and distally, with a low rim above scrobe; anterior margin slightly indented, not rimmed; vestiture fine, not very dense; median carina more strongly developed than lateral carinae. Antennae reaching almost

to middle of elytron in male, barely to base of pronotum in female; club elongate, not conspicuously wider than funicle in male, distinctly wider in female, about as long as 2 preceding funicle segments in male, as long as 3-3.5 preceding funicle segments in female; segment 8 with an expanded, truncate apex. Eyes widely separated, oval, protruding, completely lateral, with fine facets and minute hairs. Eye and scrobe separated by very much more than length of eye.

THORAX. Pronotum slightly wider than long, widest near middle, its sides gently convergent anteriorly and posteriorly; transverse carina strongly elevated, finely denticulate, sinuate to angularly arcuate, extending forward on dorsal surface without forming a distinct lateral carina, usually weakened or broken at midline, sometimes with lateral breaks; declivity almost horizontal, with a pair of secondary carinae, and with denticles on basal but not lateral margins. Pleural suture well developed, exposed; a conspicuous ventrolateral row of yellow or cream scales extending from suture to anterior margin of prothorax. Scutellum small, triangular, about level with base of elytra, clothed in erect, white, cream, or yellow scales. Elytra widest behind middle; basal margin with a broad, reclinate rim; sutural margin not raised anteriorly, but conspicuously elevated above declivity as a rounded or bispinous tubercle clothed with backward-directed, thick, black hairs; striole well developed, at least 0.3× length of elytron; striae with large, discrete punctures; declivity deep, almost vertical; humeral callus very large, angulate; sub-basal, median, and preapical tubercles absent. Tibiae slender, distinctly compressed. Tarsi elongate, mainly black; segment 1 about 1.5× as long as segments 2 and 3 together; segment 2 strongly emarginate.

ABDOMEN. Pygidium about as long as wide, with raised lateral margins, a rounded apex, a variably developed median carina, but no asperities; vestiture dense, consisting of dark hairs except for yellow or cream scales on midline. Ventrites sometimes impressed on midline; ventrites 1-4 with either triangular patches or a transverse row of pale scales; ventrite 5 of male slightly convex, with a barely deflected apical margin, and without asperities; ventrite 5 of female concave, with a strongly deflected apical margin and with asperities on apical half.

MALE. Tergite 8 rounded or emarginate at apex. Sternite 8 with a pair of transverse or elongate plates; apodeme absent. Sternite 9 apodeme long, slender, with well developed arms. Tegmen with ring longer than apodeme, which is almost parallel-sided; apex entire, tapering in dorsal aspect, not expanded in lateral aspect, with several long setae; preapical flange emarginate. Aedeagus about half as long as elytron; apodemes continuous with pedon; bridge robust, short, scarcely arched, distant from base of pedon; pedon entire, with a gradually tapering apical part; tectum with a rounded or pointed apex; internal sac not reaching free end of apodemes, with a small bilobed or trilobed patch of coarse spinules in dorsal lobe; ejaculatory duct inserted between dorsal and ventral lobes of internal sac.

FEMALE. Segment 8 about 0.7× as long as hemisternites; tergite with a large, median, membranous area and an entire apex; sternite well sclerotised, with numerous marginal setae. Hemisternites 0.3-0.5× as long as elytra; body distinct from lateral rods, which are about 0.75× as long as entire hemisternites; apical part with 4 moderately large teeth and a large stylus; median rods fused on midline, neither tapering nor divergent at proximal end. Vulva enclosed by a short, narrow, dorsal plate and 3 ventral lobes, 1 median and 2 lateral. Bursa copulatrix reaching well beyond lateral rods, with an internal sclerite that tapers to a point near insertion of median oviduct. Spermatheca moderately large, not annulate; spermathecal gland shorter than spermatheca, elongate-oval, distinctly stalked; ducts of spermatheca and spermathecal gland inserted on an elongate atrium at outer edge of spermatheca.

RANGE. New Zealand.

REMARKS. *Hoplorhaphus* is distinctive among New Zealand's Anthribidae in its penicillate tubercle on the elytral suture, white vestiture of the eighth antennal segment, elongate, tricarinate rostrum, and predominantly black coloration. The male genitalia have a group of coarse spinules in the dorsal lobe of the internal sac. Diagnostic characters of the female genitalia are the pointed sclerite in the bursa copulatrix, elongate-oval spermathecal gland, slender atrium at the base of the spermatheca, and elongate median lobe underlying the vulva.

Hoplorhaphus resembles *Eczesaris* Pascoe, which ranges from Aru Island, off the southwest coast of New Guinea, to Malacca in Malaysia, in the form of the rostrum, eyes, genitalia, and fifth abdominal ventrite. However, *Eczesaris* has expanded tibiae, very different-shaped elytra, and a broad, low, smooth keel on the underside of the rostrum in contrast to the narrow, sharp keel of *Hoplorhaphus*.

KEY TO SPECIES OF *Hoplorhaphus*

- Scutellum with yellow scales; penicillate tubercle on elytral suture with a pair of backward-directed spines; 1st and 2nd tarsal segments with white scales on basal half *spinifer*
- Scutellum with white or cream scales; penicillate tubercle on elytral suture lacking spines; 1st and 2nd tarsal segments lacking white scales *nodifer*

Hoplorhaphus nodifer new species

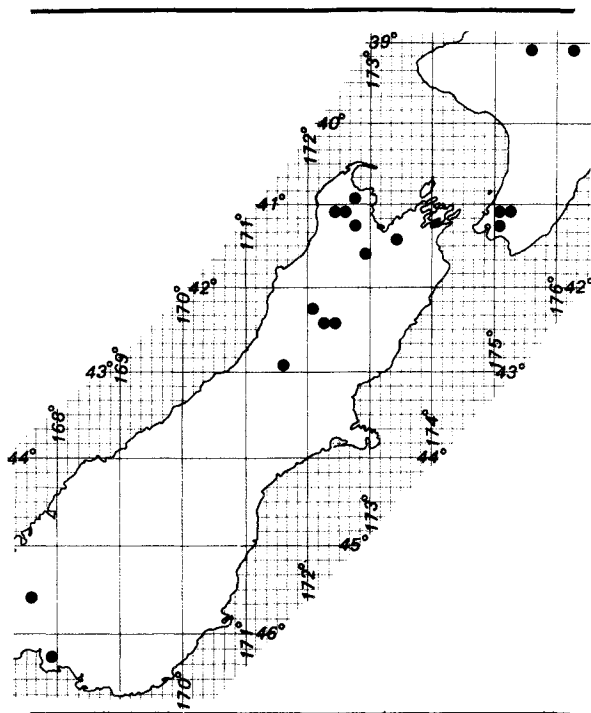
Figures 101-103, 341-345, 608, and 609

Integument black. Length 2.9-4.9 mm; width 1.4-2.6 mm.

HEAD (Figure 101). Vestiture consisting of pale yellow, tawny, brown, and black, linear, overlapping scales and hairs either in a uniformly variegated pattern or with pale scales predominant, fine and short on anterior 0.3 of rostrum. Rostrum 1.9-2.2× (male) or 1.8-2.0× (female) longer than wide; median carina of dorsal surface strong, lateral carinae variable. Antennae (Figure 102) with segment 8 0.6-0.8× (male) or 0.4-0.5× (female) width of segment 9. Eyes separated by 0.7-0.8× width of rostrum. Eye and scrobe separated by 1.6-1.9× (male) or 1.2-1.4× (female) length of eye.

THORAX. Pronotum (Figure 103) about 1.1× longer than wide; disc even or slightly uneven; vestiture dense, consisting of overlapping, linear scales mostly in a

variegated pale and dark pattern, with median and 2 lateral patches of cream scales on pronotal declivity and variably developed streaks and patches of cream scales on disc; transverse carina notched at midline, usually without other breaks, somewhat angularly arcuate towards sides, the forward-directed part dorsal throughout its length. Scutellum with white or cream scales. Elytra about 2.1× longer and 1.4× wider than pronotum, together about 1.2× longer than wide; vestiture dense, consisting of overlapping yellow, tawny, and black scales either in a variegated pattern or with 1 colour predominant, with a broad, silvery or tawny band extending across basal 0.25 of elytron and continuing along sutural margin to base of tubercle, and often a transverse tawny band on either side of tubercle. Wing about 3.0× longer than wide, about 1.9× longer than elytron, with well developed anal veins and about 9 conspicuous bristles near end of basal 0.3 of costa, but without a distinct anal lobe. Tibiae and tarsi with uniformly dark vestiture except for a few cream scales on retrolateral surface of middle tibia.



ABDOMEN. Pygidium with suberect, cream scales scattered or forming a broad band along midline. Ventrites 1-4 each with a triangular patch of cream scales near lateral margin.

MALE. Segment 8 and sternite 9, Figure 341; apex of tergite 8 slightly rounded. Tegmen, Figures 342 and 343. Aedeagus, Figures 344 and 345; apex of tectum tapering gradually, blunt; internal sac with a trilobed patch of coarse spinules in dorsal lobe and fine, brown spinules elsewhere.

FEMALE. Segment 8, Figure 608. Genitalia, Figure 609; hemisternites about half length of elytra; median lobe underlying vulva weakly sclerotised, tapering, with an entire, rounded apex; ejaculatory duct inserted on bursa copulatrix near centre of sclerite.

TYPE DATA. Holotype: female, 4.6 × 2.4 mm, Kaitoke (WN), 25 November 1951, E. S. Gourlay (NZAC). Paratypes (12 males, 21 females, in NZAC unless otherwise stated). TO - 1 male, Ruapehu-Tongariro near Mt Tongariro, approximately 1067 m, beech forest, 14 Dec 1961, G. Kuschel; 1 female, State Forest 90, East Taupo, 21 Jan 1960, on dead *Nothofagus fusca*, L. W. Newman

(FRNZ). WN - 1 male, Kaitoke, 9 Nov 1909 (NMNZ); 3 males, 5 females, Rimutaka Range, above George's Creek, 610 m, beaten from dead beech, 12 Dec 1923, G. V. Hudson (NMNZ). NN - 1 male, 1 female, Flora Hut, Mt Arthur, on *Nothofagus*, 27 Dec 1972, G.K.; 1 female, Flora Camp, Mt Arthur, 762 m, 6 Mar 1935, E.S.G.; 2 males, 2 females, Mt Arthur, 915 m, 8 Jan 1925, G.V.H. (NMNZ); 1 female, Canaan, 17-26 Jan 1949, A. E. Brookes; 1 female, Cobb Ridge, 7 Jan 1959, E.S.G.; 2 males, 2 females, Dun Mtn, 610 m, Feb 1918, A. C. O'Connor (NMNZ); 1 female, Dun Mtn, 18 Jan 1925, A. Philpott; 2 females, Golden Downs State Forest, 28 Dec 1938 (FRNZ). BR - 1 male, Maruia Springs, 25 Dec 1938, Lindsay (CMNZ); 1 female, Reefton-Rahu Saddle Scenic Reserve near Branch Creek, on *Nothofagus menziesii*, 14 Nov 1974, P. M. Johns (UCNZ). NC - 1 female, Rough Creek, Arthurs Pass National Park, 800 m, 22 Mar 1973, Malaise trap, A. P. Perrett (UCNZ). FD - 1 female, Hope Arm, Lake Manapouri, 3 Jan 1923 (AMNZ). SL - 1 male, 1 female, Longwood Range, 20 Jan 1965, on *Nothofagus menziesii*, G.K. and J. I. Townsend.

MATERIAL EXAMINED. Type series only (AMNZ, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

TO, WN / NN, BR, NC, FD, SL. From 152 m to 1067 m, mainly montane. Northernmost record: State Forest 90, East Taupo (TO); southernmost record: Longwood Range (SL).

H. nodifer has not been reared. Collected from *Nothofagus* sp., dead *N. fusca*, and *N. menziesii* (Fagaceae). Fragments of fungal fructifications, ascospores of Sordariaceae (Ascomycetes) resembling those of some species of *Melanospora* (smooth, brown, with a pore at either end), and conidia (with a poroid basal cell) of a dematiaceous hyphomycete (Fungi Imperfecti) were present in the hindgut of dissected adults.

Adults have been collected from November to March.

REMARKS. *H. nodifer* is very similar to *H. spinifer*, but is readily distinguishable by the characters given in the key. The male genitalia have a blunt apex on the tectum and a trilobed patch of spinules in the dorsal lobe of the internal sac, in contrast to the sharply pointed tectum and bilobed patch of spinules present in *H. spinifer*. In the female of *nodifer* the spermathecal duct inserts on the bursa copulatrix near the centre of the sclerite, not adjacent to the sclerite as in *spinifer*, and the apex of the median lobe below the vulva is neither notched nor truncate. *H. nodifer* has a mainly montane and southern distribution.

Hoplorhaphus spinifer (Sharp) new combination

Figures 3, 4, 43, 104-106, 346-350, 610, and 611

Sharp, 1876, Annals and magazine of natural history (4) 17: 436-437 (*Anthrribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 545-546 (*Anthrribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 314 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 124-125 (*Anthrribus*).

Integument black. Length 2.8-6.5 mm; width 1.5-3.7 mm.

HEAD (Figures 3, 4, 43, and 104).

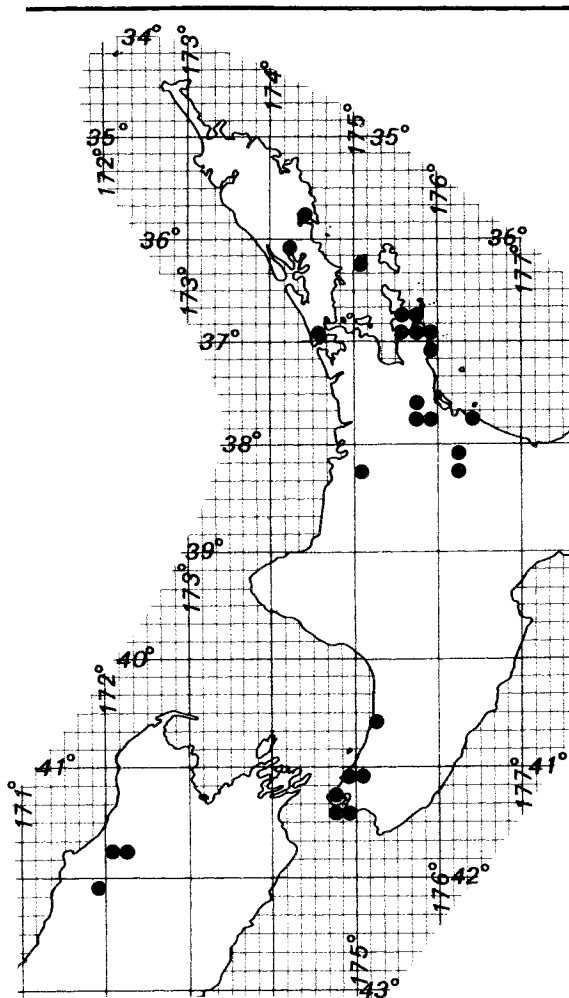
Vestiture consisting of dark, overlapping

hairs except for a conspicuous band of yellow scales along dorsal edge of eye and often a submarginal band of cream scales above scrobe. Rostrum 2.0-2.3× (male) or 1.6-2.0× (female) longer than wide; dorsal carinae variable in length and height, best developed in largest specimens. Antennae (Figure 105) with segment 8 about 0.5× (male) or 0.4× (female) width of segment 9. Eyes separated by 0.7-0.9× width of rostrum. Eye and scrobe separated by about 2.0× (male) or 1.0-1.4× (female) length of eye.

THORAX. Pronotum (Figure 106) about 1.1× wider than long; surface of disc even; vestiture dense, consisting of mostly overlapping, dark, fine scales except for a median band and a pair of lateral bands of cream or yellow scales on declivity and an incomplete median white streak and about 3 pairs of cream streaks on disc; ventrolateral row of scales extending posteriorly as well as anteriorly to pleural suture. Scutellum with yellow scales. Elytra about 2.0× longer and 1.4× wider than pronotum, together 1.1-1.2× longer than wide; vestiture dark except for an oblique band of tawny or yellow scales near humeral angle, a few cream scales on suture immediately in front of tubercle, and variably developed yellow or tawny streaks elsewhere; spines on sutural tubercle large and exposed in largest specimens, small and concealed by tuft in smallest specimens. Wing about 2.9× longer than wide, about 2.2× longer than elytron, with well developed anal veins and about 9 conspicuous bristles near end of basal 0.3 of costa, but without a distinct anal lobe. Tibiae with dark vestiture except for white scales on most of retrolateral surface of middle tibia and scattered white scales on retrolateral surface of front and hind tibiae. Tarsi with dark vestiture except for white scales on proximal half of segments 1 and 2.

ABDOMEN. Pygidium with a pair of convergent bands of suberect yellow scales on either side of basal half of median carina. Ventrites 1-4 each with a band of white scales on posterior margin.

MALE. Segment 8 and sternite 9, Figure 346; apex of tergite 8 notched. Tegmen, Figures 347 and 348. Aedeagus, Figures 349 and 350; apex of tectum strongly tapering, sharply pointed; internal sac with a bilobed patch of coarse spinules in dorsal lobe and fine, brown spinules elsewhere.



● Chatham Islands (44°S, 176°W)

FEMALE. Segment 8, Figure 610. Genitalia, Figure 611; hemisternites about 0.3× length of elytra; median lobe underlying vulva moderately sclerotised, with a broad, truncate or emarginate apex; ejaculatory duct inserted on bursa copulatrix adjacent to pointed apex of sclerite.

TYPE DATA. Holotype: female, 3.9 × 2.1 mm, Tairua (CL), Broun (BMNH). The precise type locality was published by Broun (1880). I am indebted to G. Kuschel for examining and measuring the holotype.

MATERIAL EXAMINED. 25 males, 30 females, 2 unsexed (AMNZ, BMNH, FRNZ, NMNZ, NZAC).

ND, AK, CL including Little Barrier I., WO, BP, WN / BR / Chatham Island. From sea level to an unspecified altitude (not more than 835 m) in the Coromandel Range. Northernmost record: Parua (ND); southernmost record in South Island: Boatmans, near Reefton (BR).

Reared from bark of *Litsea calicularis* (Lauraceae), dead *Myrsine chathamica* (Myrsinaceae), and unspecified rotten wood. Fragments of fungal fruiting bodies and spores of the ascomycete family Sordariaceae, either of *Bombardia* sp. or *Lasiosphaeria* sp., were present in the hindgut of dissected adults.

Adults have been collected in May and from October to February.

REMARKS. *H. spinifer* is the only New Zealand anthribid with a pair of spines on the elytral suture above the declivity. In the smallest specimens the spines are minute and concealed by vestiture. The extent of pale markings on the body varies considerably. In some specimens the 3 pale bands on the pronotal declivity extend across the transverse carina, and the carina may then be weakened or broken at these places. *H. spinifer* is a predominantly lowland and northern species.

Helmoreus new genus

TYPE-SPECIES *Anthrribus sharpi* Broun, 1880.

(The genus *Helmóreus* is named after D. W. Helmore, of Entomology Division, DSIR, in recognition of his contribution to New Zealand entomology as a scientific illustrator; gender masculine.)

Small anthribids (length 1.6–3.8 mm). Integument uniformly brown or mottled in shades of brown; upper surface with fine to moderately coarse, dense punctures and appressed to decumbent, dark brown hairs and narrow scales, and broader cream or yellowish scales. Rostrum elongate, with a variably developed median carina on dorsal surface, no carina on ventral surface, and a conspicuous ventrolateral groove running from antennal fossa to

anteroventral margin of eye. Antennae short to moderately long, inserted laterally; segment 2 wider and longer than segment 3. Eyes entire, distinctly dorsal. Interocular surface clothed with dense, pale scales. Pronotum without tufts or tubercles; declivity with a pale streak or band on midline and a pair of broad, pale bands towards sides; transverse carina antebasal, entire; lateral carina absent (New Zealand species) or weak but reaching to middle of pronotum (New Caledonian species). Elytral surface slightly raised anteriorly, without tubercles or tufts. Wings fully developed. Femoral surface darker on middle 0.3, uniformly covered with pale scales. Tibiae with uniformly pale brown integument and pale scales (N.C. sp.) or with darker integument and vestiture at base and apex (N.Z. sp.). Sexual dimorphism moderate.

HEAD. Rostrum curved, almost parallelsided on middle 0.3, expanded at base and apex, slightly elevated above scrobes, its anterior margin slightly notched, not rimmed; scales of dorsum mainly fine, yellowish, not overlapping except for a broad, somewhat H-shaped patch of dense, pale, coarser scales between eyes. Antennae reaching well beyond base of pronotum in male, barely reaching base of pronotum in female; club moderately compact, much wider than funicle, about as long as preceding 2 funicle segments in male, preceding 2.5 segments in female. Eyes moderately close (N.Z. sp.) to very close (N.C. sp.), almost circular, not protruding, with moderately fine facets and minute hairs.

THORAX. Pronotum wider than long, widest at level of transverse carina, its sides gently convergent anteriorly and posteriorly; transverse carina strongly elevated, finely denticulate, arcuate (N.Z. sp.) or sinuate (N.C. sp.); lateral carina (when present) meeting transverse carina in an obtusely rounded angle; declivity almost horizontal, with no secondary carina but with a few denticles towards sides. Pleural suture well developed, exposed. Scutellum minute, triangular, extending upwards above base of elytra. Elytra widest near middle; basal margin proclinate, with a low, narrow rim; sutural margin slightly elevated; striae about 0.25× length of elytron; striae with large, discrete punctures; declivity rather shallow, gently

sloping; humeral callus moderately large; vestiture consisting of patches of pale and dark scales in a variegated pattern. Tibiae slender. Tarsal integument uniformly brown (N.C. sp.) or darker at apex (N.Z. sp.), with mainly cream scales; segment 1 about 1.7× longer than segments 2 and 3 together; segment 2 moderately emarginate.

ABDOMEN. Pygidium wider than long, with a broadly rounded apex and elevated sides; surface densely covered with fine asperities and decumbent or appressed scales in female, without asperities but with dense, erect, curved hairs in male. Ventrites not impressed along midline; ventrite 5 with asperities in female, without asperities in male.

MALE. Tergite 8 not lobed. Sternite 8 with a pair of transverse lobes; apodeme present. Sternite 9 apodeme long, with well developed arms. Tegmen elongate, its ring shorter than apodeme, which is slender; fused parameres with entire apex tapering in dorsal aspect, slightly expanded in lateral aspect, bearing few setae; preapical flange emarginate. Aedeagus about 0.4× length of elytron; apodemes continuous with pedon, which is entire, and with a gradually tapering apex; tectum with a moderately sharp apex; bridge short, robust, barely arched, close to base of pedon; internal sac not reaching free end of apodemes, lobed, with sclerites and conspicuous tracts of spinules; ejaculatory duct inserted between lobes at apex of internal sac.

FEMALE. Segment 8 about 0.6× as long as hemisternites; tergite weakly sclerotised, without setae; sternite large, well sclerotised, with a pair of setose lobes apically. Hemisternites about 0.6× as long as elytra; body distinct from lateral rods, which are about 0.7× as long as entire hemisternites; apical part with 4 large teeth and a small stylus; median rods connected along midline for part of their length, neither tapering nor divergent at proximal end. Vulva enclosed ventrally by a minute median lobe and a pair of lateral lobes. Bursa copulatrix reaching well beyond lateral rods, with a weakly sclerotised area internally near insertion of spermathecal duct. Spermatheca small, not annulate; spermathecal gland almost spherical, shorter than spermatheca, with a very short stalk; ducts of spermatheca and

spermathecal gland inserted on a wide atrium on outer edge of spermatheca.

RANGE. New Zealand and New Caledonia.

REMARKS. *Helmoresus* can be recognised by its small size, mottled appearance, dorsal eyes, elongate rostrum with a conspicuous ventrolateral groove between the eye and the scrobe, H-shaped patch of scales between the eyes, and weakened or undeveloped lateral carina on the pronotum, and curly, standing hairs on the pygidium of the male. The internal sac of the male genitalia is very short and has a complex arrangement of spinules and sclerotised areas internally. The female genitalia are distinctive in having a very small median lobe underlying the vulva and the spermathecal duct and gland inserted on a large atrium on the outer edge of the spermatheca. The genus has affinities with *Plintheria* from New Guinea, which, however, differs in having a median carina ventrally, no dorsal carina, and no ventrolateral groove on the rostrum, the second antennal segment shorter and narrower than the third, the transverse carina of the pronotum sub-basal rather than antebasal, and no erect hairs on the pygidium of the male (type-species *P. luctuosa* Pascoe, 1859 examined). There are also major differences in the genitalia.

Helmoresus is represented in New Zealand by a single species, and in New Caledonia by an apparently undescribed species (represented by 8 specimens in NZAC).

***Helmoresus sharpi* (Broun) new combination**

Figures 17, 44, 107-109, 351-355, 612, and 613

Broun, 1880, Manual of New Zealand Coleoptera 1: 546 (*Anthrribus*); Jordan, 1894, Novitates zoologicae 1: 636 (*Plintheria*); Wolfrum, 1929, Coleopterorum catalogus 26 (102): 33 (*Plintheria*) and 100 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 125 (*Anthrribus*); Gourlay, 1951, Bulletin of entomological research 42: 21 (*Anthrribus*).

albiceps Broun, 1914, Bulletin of the New Zealand Institute 1 (2): 138-139 (*Anthrribus*); Wolfrum, 1929: 96 (*Brachytarsus*). NEW SYNONYMY.

Integument variegated brown. Length 1.8-3.8 mm; width 1.0-1.6 mm.

HEAD (Figures 44 and 107). Patch of vestiture between eyes usually cream, rarely yellowish. Rostrum 2.5-3.0× (male) or 2.3-3.0× (female) longer than wide; carina weakly developed, sometimes barely discernible; remaining dorsal surface even. Antennae (Figure 108) with segment 8 expanded and truncate apically; funicle segments shorter in female than in male. Eyes separated by 0.6-0.7× width of rostrum. Eye and scrobe separated by 1.8-2.0× length of eye.

THORAX. Pronotum (Figures 44 and 109) about 1.2× wider than long; transverse carina conspicuously antebasal, terminating ventrolaterally, not continuing forward as lateral carina; declivity with a median pale streak or patch a few pale scales. Scutellum with narrow, erect, curved, brown scales. Elytra about 2.0× longer and 1.2× wider than pronotum, together about 1.4× longer than wide; vestiture (Figure 44) conspicuously pale on humeral callus. Wing (Figure 17) about 3.0× longer than wide, 2.0× longer than elytron, with weak anal veins and a distinct anal lobe. Basal 0.3 and apical 0.3 of tibiae with dark brown integument and dark scales, remainder paler and with cream scales.

ABDOMEN. Ventrites covered with narrow, white scales; ventrite 5 of female covered with fine asperities, about as long as ventrite 3; ventrite 5 of male without asperities, about half as long as ventrite 3.

MALE. Segment 8 and sternite 9, Figure 351. Tegmen, Figure 352 and 353. Aedeagus, Figures 354 and 355; ejaculatory duct inserted between a pair of small lobes at apex of internal sac.

FEMALE. Segment 8, Figure 612. Genitalia, Figure 613; bursa copulatrix with a weak, bilobed sclerite near insertion of spermathecal duct.

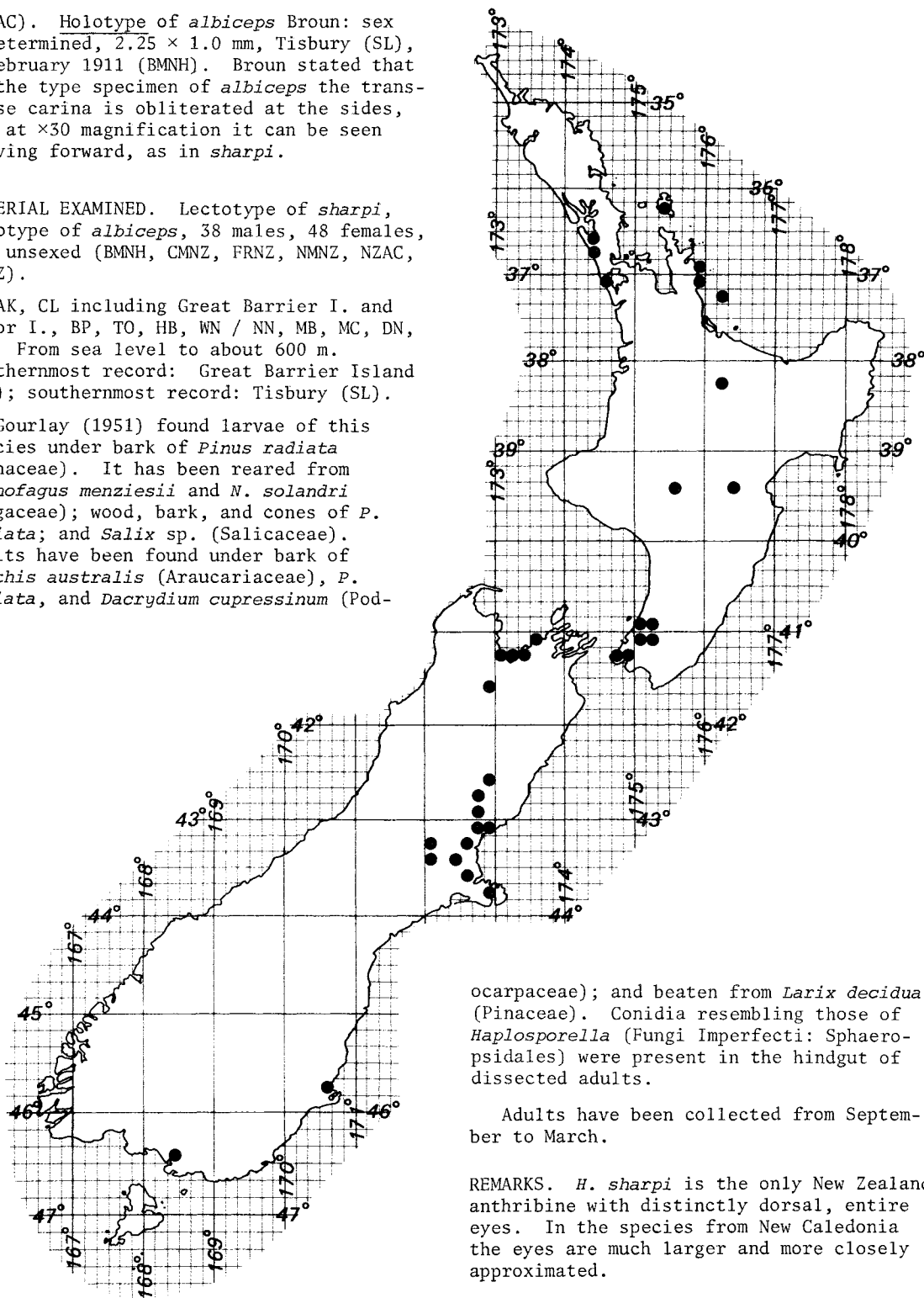
TYPE DATA. Lectotype of *sharpi* Broun: female, 2.7 × 1.2 mm, Tairua (CL), Broun

(NZAC). Holotype of *albiceps* Broun: sex undetermined, 2.25 × 1.0 mm, Tisbury (SL), 9 February 1911 (BMNH). Broun stated that in the type specimen of *albiceps* the transverse carina is obliterated at the sides, but at ×30 magnification it can be seen curving forward, as in *sharpi*.

MATERIAL EXAMINED. Lectotype of *sharpi*, holotype of *albiceps*, 38 males, 48 females, 117 unsexed (BMNH, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

AK, CL including Great Barrier I. and Mayor I., BP, TO, HB, WN / NN, MB, MC, DN, SL. From sea level to about 600 m. Northernmost record: Great Barrier Island (CL); southernmost record: Tisbury (SL).

Gourlay (1951) found larvae of this species under bark of *Pinus radiata* (Pinaceae). It has been reared from *Nothofagus menziesii* and *N. solandri* (Fagaceae); wood, bark, and cones of *P. radiata*; and *Salix* sp. (Salicaceae). Adults have been found under bark of *Agathis australis* (Araucariaceae), *P. radiata*, and *Dacrydium cupressinum* (Pod-



ocarpaceae); and beaten from *Larix decidua* (Pinaceae). Conidia resembling those of *Haplosporella* (Fungi Imperfecti: Sphaerosporidiales) were present in the hindgut of dissected adults.

Adults have been collected from September to March.

REMARKS. *H. sharpi* is the only New Zealand anthribine with distinctly dorsal, entire eyes. In the species from New Caledonia the eyes are much larger and more closely approximated.

Genus *Cacephatus* Blackburn

TYPE-SPECIES *Cacephatus sericeus* Blackburn, 1900, by monotypy.

Blackburn, 1900, Transactions of the Royal Society of South Australia 24: 143 (key) and 151; Holloway, 1971, Pacific insects monograph 27: 262-263; May 1971, Pacific insects monograph 27: 275-276; May, 1981, New Zealand journal of zoology 8: 260.

(The derivation of the name *Cacéphatus* is uncertain; gender masculine.)

Small to moderately large anthribids (length 2.9-6.9 mm). Integument black or brown, with fine to moderately coarse punctures on head and pronotum and fine punctures in elytral striae; vestiture dense, consisting of overlapping, appressed, linear scales and hairs in varying proportions of yellow, pale and dark brown, and black, and often a few cream or silvery scales; some specimens with uniformly black, fawn, or brown vestiture. Rostrum transverse or elongate, with a rather weak median carina set partly or completely in depression on dorsal surface, sometimes with a pair of short lateral carinae on dorsal surface, and with a median carina on ventral surface. Antennae short to moderately long, not very slender, inserted laterally. Eyes entire or barely emarginate. Pronotum without tubercles or tufts; transverse and lateral carinae present or absent. Elytra puncto-striate, with or without humeral callus and sub-basal tubercle, lacking median and preapical tubercles or tufts. Wings fully developed or vestigial. Legs with uniformly black or brown integument except for a darker patch on femora of some specimens, and with yellow or white vestiture. Sexual dimorphism slight.

HEAD. Rostrum parallel-sided, flat or slightly elevated above scrobes, with slightly to strongly depressed surface, and truncate or weakly indented anterior margin lacking a rim. Antennae not reaching beyond apex of elytra, slightly shorter in females than in males; club rather slender to moderately wide; segments 3-8 very similar in shape. Eyes widely separated to moderately close, spherical or elongate, moderately convex, with a truncate or slightly indented anterior edge,

dorsal anterior angle, fine to moderately coarse facets, and minute to conspicuous hairs.

THORAX. Pronotum wider than long, widest behind middle or at posterior angles, its sides gently convergent anteriorly and posteriorly; transverse carina (if present) antebasal or sub-basal, moderately elevated, finely denticulate, arcuate or slightly sinuate, entire or fragmented; lateral carina (when present) not extending past middle of sides, straight or arcuate, meeting transverse carina in a sharply acute to obtusely rounded angle; disc rather flattened; declivity horizontal to strongly oblique, lacking secondary carinae and denticles. Pleural suture well developed, exposed. Scutellum small, about level with base of elytra, clothed with curved, yellowish scales. Elytra parallel-sided or elliptic; basal margin proclinate, with marginal rim accentuated by a distinct groove immediately behind it; sutural margin not strongly elevated; striole short, about $0.2\times$ length of elytron; declivity short, gently sloping; females often with a dark, transverse band near middle of disc. Tibiae slender. Tarsi uniformly black or brown, sometimes slightly darker at apex; segment 1 longer than segments 2 and 3 together; segment 2 broadly and shallowly emarginate at apex.

ABDOMEN. Pygidium uniformly and finely puncto-asperate in female, irregularly and very finely puncto-asperate in male, with appressed scales and hairs in both sexes. Ventrites 1-3 convex, flattened, impressed, or with a median carina; ventrite 4 impressed or flattened; ventrite 5 of both sexes with fine asperities, strongly attenuate and with appressed linear scales in females, short and with scales and downward-directed hairs near the midline in males.

MALE. Tergite 8 with apex barely to conspicuously emarginate. Sternite 8 with a pair of sclerotised plates that are ill defined proximally; apodeme vestigial, with or without arms. Sternite 9 apodeme long, slender, with well developed arms. Tegmen with ring longer than apodeme, which is narrow or broad; apex upcurved, rounded, truncate or emarginate in dorsal aspect, not dilated in lateral aspect, with a tuft or two of hairs; preapical flange entire, rounded or notched. Aedeagus about half

length of elytron; apodemes continuous with pedon; bridge slender or robust, variable in position; pedon entire, with a pointed or blunt apex; tectum with a blunt, rather broad apex; internal sac long, usually reaching free ends of apodemes or beyond, with a tract of fine spinules on ventral wall and a variably developed, darker, somewhat cordiform patch of spinules on dorsal wall; ejaculatory duct inserted between dorsal and ventral lobes of internal sac.

FEMALE. Segment 8 about half length of hemisternites; tergite moderately sclerotised, with an entire apex; sternite with a pair of setose sclerites continuous with divergent arms of apodeme, which is short or long. Hemisternites about 0.7× as long as elytra; body distinct from lateral rods, which are about 0.7× as long as entire hemisternites; apical part with 3 large teeth and a small stylus which in ventral aspect is sometimes concealed; median rods fused throughout their length, widened conspicuously and broadly emarginate at proximal end. Vulva enclosed by membranous lobes, 1 dorsomedially and a pair ventrally. Bursa copulatrix rarely reaching beyond lateral rods, without sclerites. Spermatheca very small, not annulate, not conspicuously globose at base; spermathecal gland oval or spherical, longer or shorter than spermatheca, with a short stalk; ducts of spermatheca and spermathecal gland inserted on a small atrium at base of spermatheca.

RANGE. New Zealand including Chatham Islands, Auckland Islands, and The Snares, Australia, Lord Howe Island, New Caledonia, and Norfolk Island.

REMARKS. Within the New Zealand area *Cacephatus* is distinguishable from other anthribid genera with a parallel-sided rostrum and relatively short antennae by its entire or almost entire eyes, laterally inserted antennae, weak median carina set in a depression on the dorsal surface of the rostrum, median carina on the ventral surface of the rostrum, and unicolorous tibiae. The internal sac of the male genitalia has a very characteristic cordiform patch of spinules on the dorsal wall and a tract of fine spinules on the ventral wall. The shape of the cordiform patch is distinctive for each species. Distinctive

features of the female genitalia are the expanded, emarginate proximal end of the fused median rods, and the very small spermatheca. The European *Platystomos albinus* (Linnaeus, 1758) is the only other anthribid known to me that has a cordiform patch of spinules in the internal sac. The possession of this single character in common does not imply a close relationship between *Platystomos* and *Cacephatus*, as in other features of the genitalia and in aspects of the external morphology these genera are completely different. The larval characters of *Cacephatus* have been defined by May (1971, 1981).

Cacephatus comprises the type-species from Australia, 6 species from the New Zealand subregion, and an undescribed species from each of New Caledonia, Lord Howe Island, and Norfolk Island (represented by specimens in NZAC). Two of the New Zealand species are flightless and confined to outlying islands.

KEY TO SPECIES OF *Cacephatus*

- 1 Transverse carina of pronotum absent, or represented by a few fragments, or indicated by a finely etched line (Figure 112); integument at apex of elytron drawn out into a sharp point bearing a tuft of vestiture
 *aucklandicus*
 --Transverse carina of pronotum strongly elevated, entire (e.g., Figure 121); integument at apex of elytron not drawn out into a sharp point (but apex may have a pointed tuft of vestiture)
 2
- 2 Transverse carina meeting lateral
 (1) carina in a sharp, acute or right angle (Figure 115); rostrum longer or shorter than wide
 *huttoni*
 --Transverse carina meeting lateral carina in a broadly rounded, obtuse angle (e.g., Figure 118); rostrum never longer than wide
 3

- 3 Humeral callus absent or barely discernible; wings vestigial; apex of elytron with a small, pointed tuft of backward-directed vestiture
 (2) *propinquus*
 --Humeral callus well developed; wings fully developed; apex of elytron lacking a tuft of backward-directed vestiture 4
- 4 Eyes separated by 0.28-0.35× (male) (Figure 119) or 0.31-0.39× (female) width across eyes; integument black or very dark brown; elytra with dense, dark brown hairs and sometimes a few streaks and spots of greyish-cream scales or hairs *inornatus*
 (3) --Eyes separated by 0.40-0.45× (male) (Figures 116 and 125) or 0.41-0.49× (female) width across eyes; integument reddish-brown; elytra either with predominantly yellowish-brown, linear scales and sometimes a transverse band of dark hairs near middle, or with dense, brown hairs and numerous spots, streaks, and patches of silvery-cream scales 5
- 5 Eyes almost spherical, strongly protruding, conspicuously hairy (Figure 125); funicle segments stout in males, slender in females, expanding gradually from base to apex (Figure 126); sub-basal tubercle of elytron high; vestiture of elytron consisting of mainly yellowish-brown, often shaggy scales with intermingled spots of brown hairs (males) or a transverse band of dark brown hairs near middle of disc (female); ventrites 1-4 of male strongly impressed *vates*
 --Eyes elongate oval, not strongly protruding, not conspicuously hairy (Figure 116); funicle segments robust, thick in both sexes, each rather conspicuously widened on apical half (Figure 117); sub-basal tubercle of elytron low; vestiture of elytron consisting mainly of brown hairs, with streaks, spots, and patches of silvery cream scales in both sexes; ventrites 1-4 of male at most only slightly impressed *incertus*

***Cacephatus aucklandicus* (Brookes)**

Figures 5, 110-112, 280, 356-360, 614, and 615

Brookes, 1951, Cape Expedition series, bulletin 5: 43-44, figure 10 (*Anthribus*); Holloway, 1971, Pacific insects monograph 27: 263-266, figures 1-4 and 9-17 (*Cacephatus*); May, 1971, Pacific insects monograph 27: 272 and 276, figures 142-151 (*Cacephatus*); May, 1981, New Zealand journal of zoology 8: 260-261, figures 2-8 (*Cacephatus*).

Integument brown or black. Length 3.9-6.9 mm; width 1.8-2.8 mm.

HEAD (Figures 5 and 110). Vestiture of dorsum consisting of overlapping yellowish and brown scales, usually in a variegated pattern, sometimes almost concolorous. Rostrum 1.12-1.29× (male) or 1.23-1.39× (female) wider than long; dorsal carina weak, set in a deep depression on midline. Antennae (Figure 111) very similar in both sexes, not reaching beyond basal 0.3 of elytron in male or basal 0.25 in female; club rather compact, as long as preceding 2.0 (male) or 2.3 (female) funicle segments. Eyes almost spherical, moderately large, rather coarsely faceted, separated by 0.75-0.84× width of rostrum. Eye and scrobe separated by 0.12-0.25× (male) or 0.11-0.18× (female) length of eye.

THORAX. Pronotum (Figure 112) 1.14-1.50× (male) or 1.25-1.33× (female) wider than long; vestiture dense, consisting of yellowish and cream linear scales and dark brown hairs in a mottled or almost concolorous pattern; transverse carina entirely absent or indicated by weak antebasal fragments or an impressed line; lateral carina absent, fragmentary, or entire, when present reaching to pleural suture and meeting transverse carina in an obtusely rounded angle; declivity almost horizontal. Elytra 2.05-2.33× (male) or 2.23-2.58× (female) longer than pronotum, 1.13-1.20× (male) or 1.21-1.33× (female) wider than pronotum, together 1.52-1.56× (male) or 1.42-1.55× (female) longer than wide; vestiture dense, consisting of yellowish or pale brown linear scales and thick, dark brown hairs, usually in a mottled pattern, sometimes almost concolorous, sometimes with a dark, transverse band near mid elytron in female; both sexes with integument at apex of elytron produced into an elongate point clothed with vestiture; humeral callus and sub-basal tubercle absent or very weak. Wing (Figure 280) vestigial, about 3.5× longer than wide, 0.40-0.45× length of elytron. Tarsal segment 1 as long as segments 2 and 3 together.

ABDOMEN. Pygidium wider than long, with a rounded (male) or truncate (female) apex. Ventrites 1-3 with a distinct median carina in male, a weak carina or none at all in female.

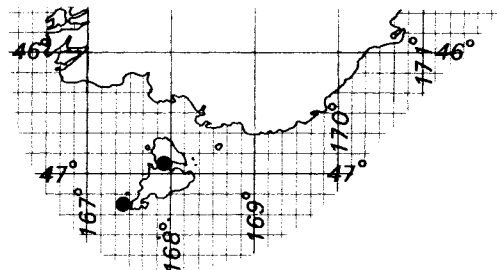
MALE. Segment 8 and sternite 9, Figure 356; apex of tergite 8 emarginate. Tegmen, Figures 357 and 358. Aedeagus, Figures 359 and 360; pedon with a blunt tip.

FEMALE. Segment 8, Figure 614. Genitalia, Figure 615.

TYPE DATA. Holotype: male, 5.4 x 2.4 mm, Port Ross, Auckland Islands, 1943, R. A. Falla (NMNZ).

MATERIAL EXAMINED. Holotype, 116 males, 113 females, 15 unsexed (BMNH, CMNZ, NMNZ, NZAC).

SI including Big South Cape I. and Big Stage I. / The Snares / Auckland Islands - Adams I., Auckland I., Enderby I., Ewing I., French I., Rose I. From sea level to



- The Snares (48°S, 166°E)
- Auckland Islands (51°S, 166°E)

about 200 m. Northernmost record: Rakeahua Valley (SI); southernmost record: Adams Island (Auckland Is).

Reared from dead branches of *Olearia lyalli* (Asteraceae); *Carex trifida* (Cyperaceae); branch of *Myrsine divaricata* (Myrsinaceae); dead branches of *Dacrydium cupressinum* (Podocarpaceae); dead branches of *Coprosma lucida* (Rubiaceae); and branches of *Hebe elliptica* (Scrophulariaceae). Adults have been found under bark of dead *Senecio stewartiae* (Asteraceae), *Metrosideros* sp. (Myrtaceae), and *Hebe elliptica*; beaten from various native shrubs; and extracted from leaf litter. Larvae have been found in dead *Dracophyllum longifolium* (Epacridaceae) (May 1981). Fragments of fungal fructifications, toruloid hyphae, ascospores of Xylariaceae, several kinds of conidia, lichen cells, and tissue of higher plants were present in the hindgut of dissected adults.

Adults have been collected from November to March and from May to August.

REMARKS. *C. aucklandicus* is the largest anthribid in the New Zealand area. In an earlier paper (Holloway 1971) I stated that the point at the apex of the elytron is shorter in specimens from Stewart Island, but examination of additional material shows that this is not always so. However, specimens from the Stewart Island area have more strongly developed transverse and lateral carinae on the pronotum than those from The Snares and the Auckland Islands. May (1971, 1981) has described and illustrated the larva.

***Cacephatus huttoni* (Sharp)**

Figures 45, 113-115, 361-365, 616, and 617

Sharp, 1876, Annals and magazine of natural history (4) 17: 425 (key; as *Cratoparis* and *Anthrribus*) and 431-432 (*Anthrribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 553-554 (*Anthrribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 313 (*Brachyarsus*); Hudson, 1934, New Zealand beetles and their larvae: 124 (*Anthrribus*); Holloway, 1971, Pacific insects monograph 27: 263 (*Cacephatus*).

Integument reddish-brown. Length 2.9-4.8 mm; width 1.4-2.4 mm.

HEAD (Figures 45 and 113). Vestiture of dorsum consisting of overlapping, intermingled, cream, yellowish, and dark brown scales, the yellowish scales often very numerous on rostrum and along medial edge of eye. Rostrum 0.94-1.13× (male) or 0.89-1.09× (female) as long as wide; dorsal carina well developed, set in a shallow depression. Antennae (Figure 114) slender and reaching base of pronotum in female, robust and almost reaching middle of elytron in male; club slender, elongate, slightly longer than preceding 3.0 funicle segments. Eyes elongate-oval, large, with fine facets and very short hairs, separated by 0.61-0.68× (male) or 0.63-0.68× (female) width of rostrum. Eye and scrobe separated by 0.20-0.33× (male) or 0.21-0.26× (female) length of eye.

THORAX. Pronotum (Figure 115) 1.36-1.41× (male) or 1.43-1.51× (female) wider than long; vestiture dense, consisting of yellowish or fawn scales, in some specimens with intermingled cream and orange scales; transverse carina entire, sinuous, almost basal at midline; lateral carina short, not reaching pleural suture, meeting transverse carina in an acute or right angle; declivity almost horizontal. Elytra 2.07-2.23× (male) or 2.29-2.42× (female) longer than pronotum, 1.04-1.17× wider than pronotum, together about 1.45× (male) or 1.38× (female) longer than wide; vestiture consisting of fawn, yellow, orange, and brown scales and thick, black hairs, in a variegated or almost uniformly brown or fawn pattern, usually with a dark, transverse band near middle in female; humeral callus

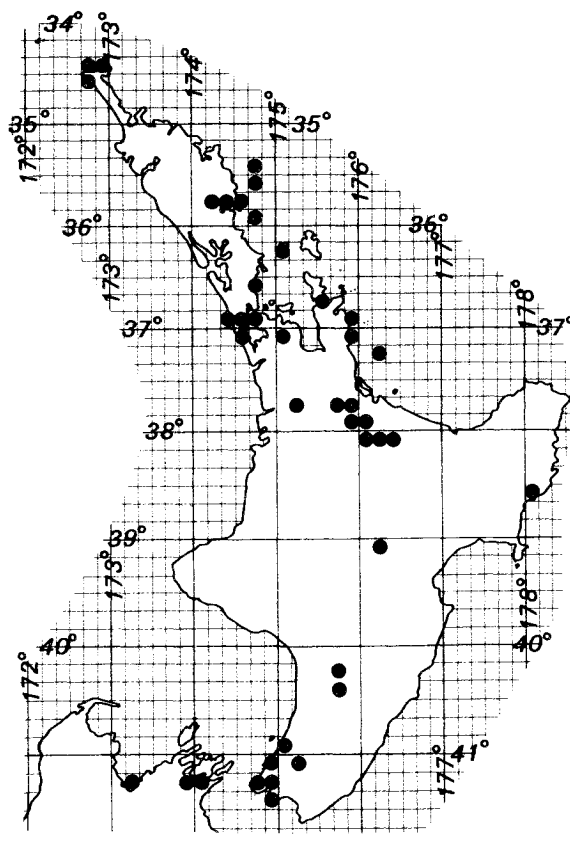
and sub-basal tubercle moderately large. Wing 3.0× longer than wide, about 2.1× longer than elytron, with well developed anal veins and a distinct anal lobe. Tarsal segment 1 almost 2.0× longer than segments 2 and 3 together.

ABDOMEN. Pygidium wider than long, with a rounded (male) or slightly emarginate (female) apex. Ventrites 1-4 flattened or faintly impressed along midline.

MALE. Segment 8 and sternite 9, Figure 361; apex of tergite 8 rounded. Tegmen, Figures 362 and 363. Aedeagus, Figures 364 and 365; pedon with a pointed apex.

FEMALE. Segment 8, Figure 616. Genitalia, Figure 617.

TYPE DATA. Lectotype: male, 4.2 × 1.9 mm, Auckland (AK) (BMNH). The type series was collected by T. Lawson in Auckland and T. Broun in Tairua, and Sharp did not publish a precise type locality for the species.



The lectotype is labelled "New Zealand" without a locality or collector's name, and I have designated Auckland as the type locality for *C. huttoni*. I am indebted to G. Kuschel for examining and measuring the lectotype.

MATERIAL EXAMINED. 123 males, 108 females, 2 unsexed (BMNH, CMNZ, FRNZ, NMNZ, NZAC, OMNZ, UCNZ).

ND including Coppermine I. and Poor Knights Is, AK, CL including Little Barrier I. and Mayor I., WO, BP, GB, TO, WI, WN / NN, SD. From sea level to 350 m. Northernmost record: Spirits Bay (ND); southernmost record: Picton, SD.

Reared from rotten wood of *Nothofagus* sp. (Fagaceae); dead stems of *Freycinetia baueriana* subsp. *banksii* (Pandanaeae); dead branches of *Macropiper excelsum* (Piperaceae); and cut branches of *Coprosma robusta* (Rubiaceae). Adults have been beaten from a wide range of native trees and shrubs. Fragments of fungal fructifications and mycelium and nondescript dark, hyaline spores were present in the hindgut of dissected adults.

Adults have been collected from October to March.

REMARKS. *C. huttoni* is the only species of the genus in New Zealand in which the transverse carina meets the lateral carina at a sharp angle. Most of the specimens examined are predominantly fawn in colour; no black morphs are known. *C. huttoni* is more similar externally and internally to an undescribed species of *Cacephatus* from Lord Howe Island than to any other New Zealand species.

***Cacephatus incertus* (White)**

Figures 116-118, 366-370, 618, and 619

White, 1846, *Erebus and Terror* zoology, 2, Insects of New Zealand: 13, plate 3 figure 6 (*Anthribus*); Gemminger & Harold, 1872, *Catalogus coleopterorum* 9: 2740 (*Xenocerus*); Hutton, 1874, *Transactions and proceedings of the New Zealand Institute* 6: 13 (*Anthribus*); Bovie, 1906, *Annales de la Société Entomologique de Belgique* 49: 313 (*Brachytarsus*); Holloway, 1971, *Pacific insects monograph* 27: 263 (*Cacephatus*).

aspersus Broun, 1893, *Manual of New Zealand Coleoptera* 5: 1265 (as a variety of *vates* Sharp) (*Anthribus*). NEW SYNONYMY.

brouni Bovie, 1906: 311 (replacement name for *tessellatus* Broun) (*Brachytarsus*).

brounianus Wolfrum, 1929, *Coleopterorum catalogus* 26 (102): 96 (replacement name for *brouni* Bovie) (*Brachytarsus*).

brunneus Broun, 1893: 1262-1263 (*Anthribus*); Bovie, 1906: 311 (*Brachytarsus*). NEW SYNONYMY.

flavipilus Broun, 1895, *Annals and magazine of natural history* (6) 15: 417-418 (*Anthribus*); Bovie, 1906: 312 (as *Brachytarsus flavipilis*); May, 1967, *Transactions of the Royal Society of New Zealand, zoology* 9: 179 (*Anthribus*). NEW SYNONYMY.

tessellatus Broun, 1893: 1263 (*Anthribus*); Bovie, 1906: 311 (*Brachytarsus*). NEW SYNONYMY.

Integument dark reddish-brown to almost black. Length 4.0-5.9 mm; width 1.6-2.5 mm.

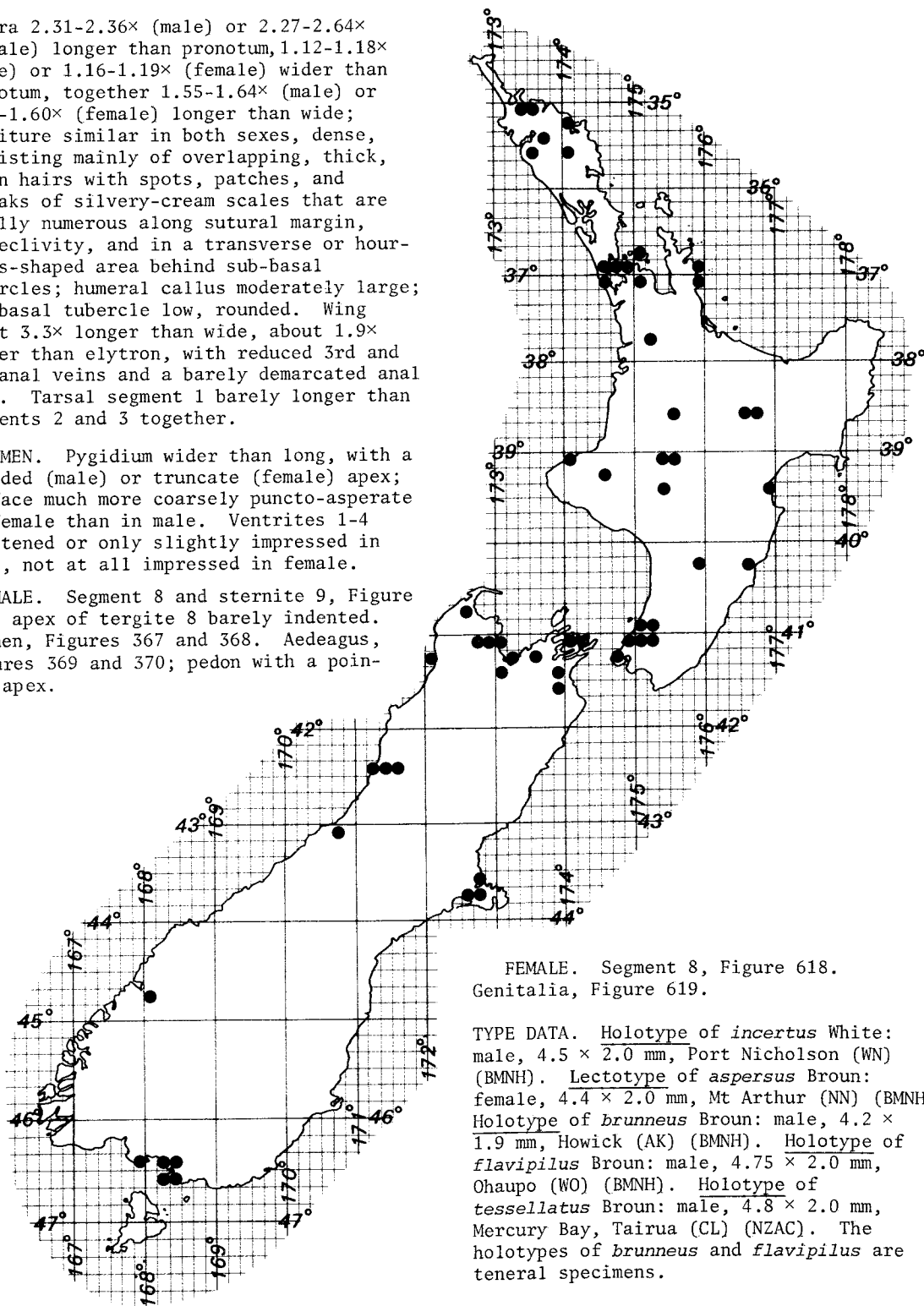
HEAD (Figure 116). Vestiture of dorsum moderately dense, consisting of rarely overlapping, intermingled, cream and brown linear scales. Rostrum 1.32-1.40× wider than long; anterior half of dorsum moderately depressed; dorsal carina weak to moderately strong. Antennae (Figure 117) reaching to middle of sub-basal tubercle, with thick funicle segments in both sexes; club stout, as long as preceding 3.5 funicle segments. Eyes elongate-oval, moderately large, not conspicuously protruding, with fine facets and inconspicuous hairs, separated by 0.42-0.43× (male) or 0.43-0.46× (female) width across eyes. Eye and scrobe separated by 0.19-0.25× length of eye.

THORAX. Pronotum (Figure 118) 1.26-1.34× (male) or 1.29-1.44× (female) wider than long; vestiture moderately dense, consisting of rarely overlapping, thick, brown hairs with isolated streaks and small patches of overlapping, creamish scales; transverse carina entire, sub-basal, arcuate or rarely sinuate, usually rounded at midline; lateral carina entire, reaching pleural suture or slightly beyond, meeting transverse carina in an obtusely rounded angle; declivity moderately oblique.

Elytra 2.31-2.36× (male) or 2.27-2.64× (female) longer than pronotum, 1.12-1.18× (male) or 1.16-1.19× (female) wider than pronotum, together 1.55-1.64× (male) or 1.44-1.60× (female) longer than wide; vestiture similar in both sexes, dense, consisting mainly of overlapping, thick, brown hairs with spots, patches, and streaks of silvery-cream scales that are usually numerous along sutural margin, on declivity, and in a transverse or hour-glass-shaped area behind sub-basal tubercles; humeral callus moderately large; sub-basal tubercle low, rounded. Wing about 3.3× longer than wide, about 1.9× longer than elytron, with reduced 3rd and 4th anal veins and a barely demarcated anal lobe. Tarsal segment 1 barely longer than segments 2 and 3 together.

ABDOMEN. Pygidium wider than long, with a rounded (male) or truncate (female) apex; surface much more coarsely puncto-asperate in female than in male. Ventrites 1-4 flattened or only slightly impressed in male, not at all impressed in female.

MALE. Segment 8 and sternite 9, Figure 366; apex of tergite 8 barely indented. Tegmen, Figures 367 and 368. Aedeagus, Figures 369 and 370; pedon with a pointed apex.



FEMALE. Segment 8, Figure 618. Genitalia, Figure 619.

TYPE DATA. Holotype of *incertus* White: male, 4.5 × 2.0 mm, Port Nicholson (WN) (BMNH). Lectotype of *aspersus* Broun: female, 4.4 × 2.0 mm, Mt Arthur (NN) (BMNH). Holotype of *brunneus* Broun: male, 4.2 × 1.9 mm, Howick (AK) (BMNH). Holotype of *flavipilus* Broun: male, 4.75 × 2.0 mm, Ohaupo (WO) (BMNH). Holotype of *tessellatus* Broun: male, 4.8 × 2.0 mm, Mercury Bay, Tairua (CL) (NZAC). The holotypes of *brunneus* and *flavipilus* are teneral specimens.

MATERIAL EXAMINED. The above 5 primary types, 117 males, 111 females, 12 unsexed (BMNH, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

ND, AK, CL, WO, BP, TO, TK, HB, RI, WN / SD, NN, MB, BR, WD, MC, OL/FD, SL. From sea level to about 900 m, mainly lowland. Northernmost record: Honeymoon Valley, Oruru (ND); southernmost record: Bluff (SL).

Reared from *Chamaecyparis lawsoniana* (Cupressaceae) and from *Dacrydium cupressinum* and *Dacrycarpus dacrydioides* (Podocarpaceae). Adults have been beaten from *Pinus radiata* (Pinaceae) and collected under bark of *Podocarpus spicatus* (Podocarpaceae). Ascospores, probably of Xylariaceae, unicellular, brown conidia resembling those of *Limacinula* (a sooty mould), conidia resembling those of *Phaeoxyphiella* (a sooty mould), and small, brown conidia resembling those of *Coniothyrium* were present in the hindgut of dissected adults.

Adults have been collected from September to May.

REMARKS. *C. incertus* was the first anthribid to be described from New Zealand. It resembles *inornatus* in its dark coloration, but is immediately distinguishable by its more widely spaced eyes and the relatively large amount of silvery vestiture on the dorsum. It differs from *vates* in having less protruding, less conspicuously haired, and more finely faceted eyes, a smaller humeral callus and sub-basal tubercle, and predominantly brownish hairs on the dorsum instead of fawn, shaggy scales. The antennae are stout in both sexes of *incertus* but only in males of *vates*. The larvae of *C. incertus* apparently are confined to conifers.

Cacephatus inornatus (Sharp)

Figures 119-121, 371-375, 620, and 621

Sharp, 1886, Scientific transactions of the Royal Dublin Society (2) 3: 434-435 (*Anthribus*); Broun, 1893, Manual of New Zealand Coleoptera 5: 1255-1256 (*Anthribus*); Bovie, 1906, Annales de la

Société Entomologique de Belgique 49: 313 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 124 (*Anthribus*); Holloway, 1971, Pacific insects monograph 27: 263 (*Cacephatus*).

concolor Sharp, 1886: 435 (*Anthribus*); Broun, 1893: 1256 (*Anthribus*); Bovie, 1906: 312 (*Brachytarsus*). NEW SYNONYMY.
curvatus Broun, 1893: 1263-1264 (*Anthribus*); Bovie, 1906: 312 (*Brachytarsus*). NEW SYNONYMY.

Integument black or very dark brown. Length 3.2-4.6 mm; width 1.5-2.1 mm.

HEAD (Figure 119). Vestiture of dorsum consisting of thick, mid brown, dark brown, greyish-cream, and rarely yellowish hairs that leave large parts of the integument exposed; some specimens with streaks of narrow cream scales. Rostrum 1.20-1.40× (male) or 1.28-1.42× (female) wider than long; median carina on dorsal surface set in a shallow depression for part of its length. Antennae (Figure 120) slender and reaching just beyond base of elytron in female, thicker and reaching basal 0.25 of elytron in male; club slender, elongate, slightly longer than preceding 3.0 funicle segments. Eyes elongate-oval, large, with fine facets and inconspicuous hairs, separated by 0.28-0.35× (male) or 0.31-0.39× (female) width across eyes. Eye and scrobe separated by 0.13-0.25× length of eye.

THORAX. Pronotum (Figure 121) 1.14-1.25× (male) or 1.24-1.31× (female) wider than long; vestiture moderately dense, consisting of thick, brown hairs sometimes with fine, cream scales arranged in a few elongate streaks on disc and in a pair of patches on declivity; transverse carina entire, gently arcuate, sub-basal at midline, where it may be notched; lateral carina entire, reaching as far as pleural suture or slightly beyond, meeting transverse carina in an obtusely rounded angle; declivity moderately oblique. Elytra 1.94-2.13× (male) or 2.12-2.18× (female) wider than pronotum, together 1.42-1.59× longer than wide; vestiture similar in both sexes, dense, consisting of thick, brown hairs and sometimes a few longitudinal streaks and spots of narrow, greyish-cream scales; humeral callus moderately large; sub-basal tubercle very low. Wings about 3.3× longer

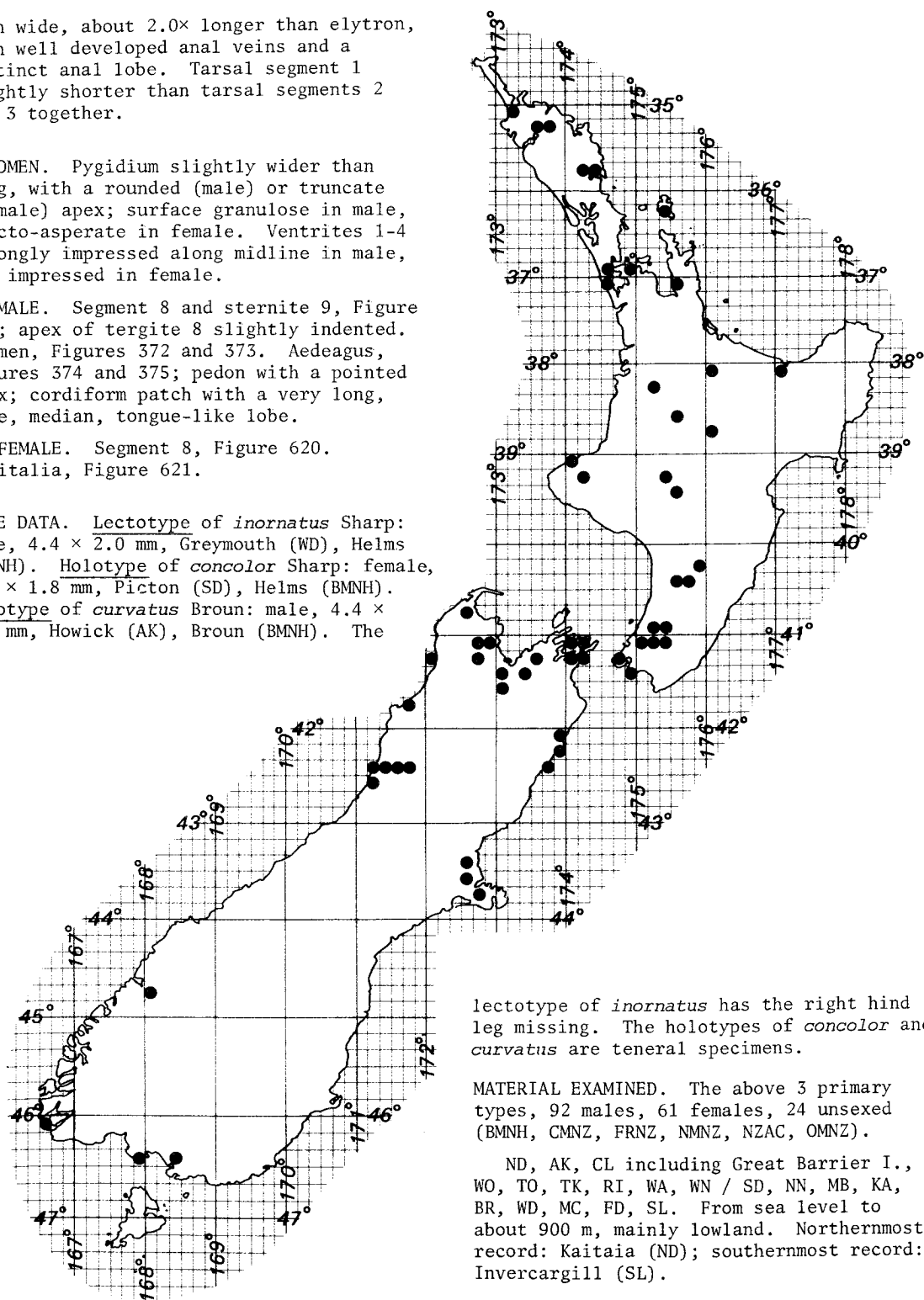
than wide, about 2.0× longer than elytron, with well developed anal veins and a distinct anal lobe. Tarsal segment 1 slightly shorter than tarsal segments 2 and 3 together.

ABDOMEN. Pygidium slightly wider than long, with a rounded (male) or truncate (female) apex; surface granulose in male, puncto-asperate in female. Ventrites 1-4 strongly impressed along midline in male, not impressed in female.

MALE. Segment 8 and sternite 9, Figure 371; apex of tergite 8 slightly indented. Tegmen, Figures 372 and 373. Aedeagus, Figures 374 and 375; pedon with a pointed apex; cordiform patch with a very long, pale, median, tongue-like lobe.

FEMALE. Segment 8, Figure 620. Genitalia, Figure 621.

TYPE DATA. Lectotype of *inornatus* Sharp: male, 4.4 × 2.0 mm, Greymouth (WD), Helms (BMNH). Holotype of *concolor* Sharp: female, 4.0 × 1.8 mm, Picton (SD), Helms (BMNH). Holotype of *curvatus* Broun: male, 4.4 × 2.0 mm, Howick (AK), Broun (BMNH). The



lectotype of *inornatus* has the right hind leg missing. The holotypes of *concolor* and *curvatus* are teneral specimens.

MATERIAL EXAMINED. The above 3 primary types, 92 males, 61 females, 24 unsexed (BMNH, CMNZ, FRNZ, NMNZ, NZAC, OMNZ).

ND, AK, CL including Great Barrier I., WO, TO, TK, RI, WA, WN / SD, NN, MB, KA, BR, WD, MC, FD, SL. From sea level to about 900 m, mainly lowland. Northernmost record: Kaitaia (ND); southernmost record: Invercargill (SL).

Reared from a sound dead stump and dead outer wood of *Agathis australis* (Araucariaceae) and from *Dacrydium cupressinum* (Podocarpaceae). Adults have been beaten from *Dacrycarpus dacrydioides* (Podocarpaceae) and collected under bark of *Dacrydium cupressinum* and *Podocarpus spicatus* (Podocarpaceae). Fragments of fungal fructifications and ascospores of Euantennariaceae (true sooty moulds) were present in the hindgut of dissected adults.

Adults have been collected in June and from September to April.

REMARKS. *C. inornatus* is easily recognised by its elongate, closely approximated eyes and blackish integument. Most of the specimens examined have uniformly dark vestiture with no pale streaks or patches. Both streaked and uniformly black specimens are represented in a series of adults captured as they emerged from a stump of *Agathis australis* at Omahuta (ND). The larvae apparently develop only in conifers.

Cacephatus propinquus (Broun)

Figures 122-124, 281, 376-380, 622, and 623

Broun, 1911, Transactions of the New Zealand Institute 43: 112 (*Anthribus*); Wolfmum, 1929, Coleopterorum catalogus 26 (102): 100 (*Brachytarsus*); Holloway, 1971, Pacific insects monograph 27: 263 (*Cacephatus*).

Integument black or brown. Length 2.1-5.4 mm; width 1.8-2.4 mm.

HEAD (Figure 122). Vestiture of dorsum consisting of overlapping, cream, yellowish, and dark brown, linear scales and hairs in a variegated pattern or almost entirely yellowish or brown. Rostrum 1.24-1.32× (male) or 1.37-1.47× (female) wider than long; dorsal carina set in a depression. Antennae (Figure 123) rather robust in both sexes, reaching well beyond base of elytron but not as far as middle; club moderately slender, as long as preceding 2.3 (male) or 3.0 (female) funicle segments. Eyes somewhat spherical, moderately

large, with coarse facets and inconspicuous hairs, separated by 0.77-0.81× width of rostrum. Eye and scrobe separated by 0.20-0.31× (male) or 0.13-0.20× (female) length of eye.

THORAX. Pronotum (Figure 124) 1.18-1.31× (male) or 1.14-1.25× (female) wider than long; vestiture dense, consisting of yellowish, linear scales and dark brown hairs arranged in a mottled pattern or with almost uniformly pale or dark brown hairs; transverse carina sinuous, entire, ante-basal; lateral carina entire, moderately long, reaching almost to pleural suture, meeting transverse carina in an obtusely rounded angle; declivity slightly oblique. Elytra 2.14-2.42× longer and 1.14-1.31× wider than pronotum, together 1.50-1.57× longer than wide; vestiture dense, consisting of yellowish and fawn linear scales and thick, black or brown hairs arranged in a variegated or almost uniformly black or brown pattern; some pale females with a broad, dark, transverse band near middle of each elytron and a dark patch near apex; apex with a conspicuous, pointed, backward-directed tuft of vestiture in both sexes. Humeral callus and sub-basal tubercle absent or barely discernible. Wings (Figure 281) vestigial, about 5.0× longer than wide, 0.41-0.50× length of elytron. Tarsal segment 1 as long as segments 2 and 3 together.

ABDOMEN. Pygidium wider than long, with a rounded (male) or truncate (female) apex; surface puncto-asperate in both sexes. Ventrites 1-3 weakly carinate on midline in male, usually without carinae in female.

MALE. Segment 8 and sternite 9, Figure 376; tergite 8 with an indented apex. Tegmen, Figures 377 and 378. Aedeagus, Figures 379 and 380; pedon with a blunt apex.

FEMALE. Segment 8, Figure 622, Genitalia, Figure 623.

TYPE DATA. Lectotype: female, 4.4 × 1.9 mm, Pitt Island, Chatham Islands, T. Hall (NZAC).

● Chatham Islands (44°S, 176°W)

MATERIAL EXAMINED. Lectotype, 49 males, 69 females, 6 unsexed (AMNZ, BMNH, NZAC).

Chatham Islands - Chatham I., Pitt I., South East I. From sea level to 137 m.

Reared from dead branches of *Myrsine chathamica* (Myrsinaceae) and dead stems of *Macropiper excelsum* (Piperaceae). Adults have been beaten from *Rhopalostylis sapida* (Palmae) and ferns, and extracted from leaf litter. In addition to the usual fragments of fungal fructifications the hindgut of one dissected male contained *Pestalotia*-like conidia, 2 kinds of ascospores including a xylariaceous type, rust aeciospores and uredospores (Basidiomycetes), conidia belonging to the *Helminthosporium* - *Corynespora* - *Sphoridesmium* group of fungi, and several kinds of nondescript spores. The hindgut of a second male contained fragments of fungal fructifications and numerous *Pestalotia*-like conidia.

Adults have been collected from October to February.

REMARKS. *C. propinquus* is easily recognisable by the characters given in the key. The colour pattern of the dorsal surface is extremely variable, and all colour forms may occur together in the same locality. The lectotype is uniformly brown. *C. propinquus* is most closely related to *C. aucklandicus*.

***Cacephatus vates* (Sharp) new combination**

Figures 125-127, 381-385, 624, and 625

Sharp, 1876, Annals and magazine of natural history (4) 17: 425 (key) and 428 (*Anthrribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 548-549 (*Anthrribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 315 (*Brachytarsus*); Tillyard, 1926, Insects of Australia and New Zealand: 240, figure R72 (*Anthrribus*); Hudson, 1934, New Zealand beetles and their larvae: 124 (*Anthrribus*); Wolfrum, 1953, Coleopterorum catalogus 26 (102), supplement: 45 (genus uncertain); Harrison, 1969, in The natural history of Canterbury: 375 (as *Anthrribus vates*).

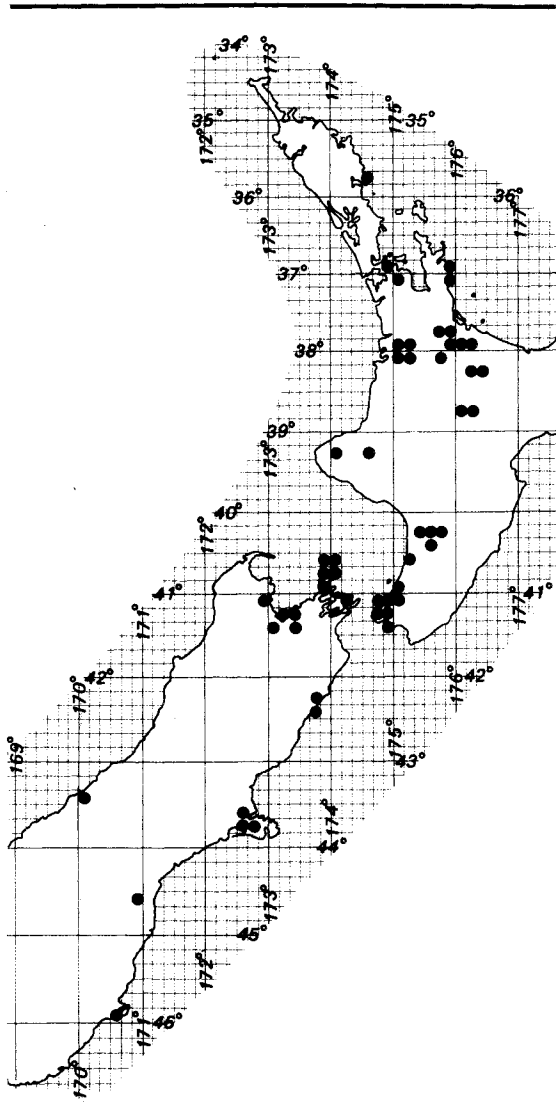
anxius Broun, 1893, Manual of New Zealand Coleoptera 5: 1265 (*Anthrribus*); Bovie, 1906: 311 (*Brachytarsus*). NEW SYNONYMY.

nigrofasciatus Broun, 1893: 1265 (as a variety of *vates* Sharp) (*Anthrribus*). NEW SYNONYMY.

Integument reddish-brown. Length 3.4-5.4 mm; width 1.5-2.5 mm.

HEAD (Figure 125). Vestiture of dorsum dense, consisting of overlapping, intermingled, cream and brown, linear scales. Rostrum 1.11-1.32× (male) or 1.21-1.33× (female) wider than long; anterior half of dorsum deeply depressed; median carina of dorsal surface weak to moderately strong; lateral carinae sometimes present. Antennae (Figure 126) slender and barely reaching sub-basal tubercle in female, thicker and reaching slightly beyond sub-basal tubercle in male; club elongate, rather slender, slightly longer than preceding 3.0 funicle segments. Eyes spherical or slightly oval, large, protruding, with rather coarse facets and conspicuous, rather long hairs, separated by 0.40-0.45× (male) or 0.41-0.49× (female) width across eyes. Eye and scrobe separated by 0.16-0.27× (male) or 0.22-0.32× (female) length of eye.

THORAX. Pronotum (Figure 127) 1.16-1.26× (male) or 1.26-1.43× (female) wider than long; vestiture dense, consisting of cream and pale brown, linear scales with a few thick, dark brown scales, the cream scales often dense along midline and towards sides; transverse carina entire, arcuate or sinuate, rounded or angulate at midline, sub-basal to moderately antebasal; lateral carina about reaching pleural suture, sometimes fragmented, meeting transverse carina in an obtusely rounded angle; declivity moderately oblique. Elytra 2.27-2.54× (male) or 2.42-2.71× (female) longer than pronotum, 1.24-1.28× (male) or 1.15-1.33× (female) wider than pronotum, together 1.53-1.70× (male) or 1.44-1.65× (female) longer than wide; vestiture dense, consisting of fawn or yellowish, linear scales and thick, dark brown hairs, the hairs usually dense on sub-basal tubercle in both sexes and forming a broad, transverse band near mid elytron in female; humeral callus large;



sub-basal tubercle very large, rounded. Wing 3.0× longer than wide, about 2.0× longer than elytron, with well developed anal veins and anal lobe. Tarsal segment 1 distinctly longer than segments 2 and 3 together.

ABDOMEN. Pygidium wider than long, with a rounded apex in male and a truncate or slightly emarginate apex in female; surface finely puncto-asperate in both sexes. Ventrites 1-4 rather strongly impressed in male, not impressed in female.

MALE. Segment 8 and sternite 9, Figure 381; tergite 8 with an indented apex. Tegmen, Figures 382 and 383. Aedeagus, Figures 384 and 385; pedon with a broadly rounded apex except for a small median angulation.

FEMALE. Segment 8, Figure 624. Genitalia, Figures 625.

TYPE DATA. Holotype of *vates* Sharp: male, 4.4 × 2.0 mm, Tairua (CL), Broun (BMNH). Holotype of *anxius* Broun: male, 4.1 × 1.85 mm, Howick (AK), Broun (BMNH). Lectotype of *nigrofasciatus* Broun: female, 4.9 × 2.3 mm, Tairua (CL), Broun (BMNH).

MATERIAL EXAMINED. The above 3 primary types, 88 males, 90 females, 1 unsexed (BMNH, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

ND, AK, CL, WO, BP, TK, RI, WI, WN / SD including D'Urville I. and Stephens I., NN, KA, WD, MC, SC, DN. From sea level to about 600 m. Northernmost record: Mt Mania (ND); southernmost record: "Otago" (DN).

Reared from dead branchlets of *Pseudo-panax arboreus* (Araliaceae); dead branches of *Olearia* sp. (Asteraceae); dead branches of *Laurelia novae-zelandiae* (Antherospermataceae); branches of *Myoporum laetum* (Myoporaceae); and dead and dying branches of *Hebe stricta* (Scrophulariaceae). Adults have been beaten from *Myrsine australis* (Myrsinaceae). Bicellular ascospores resembling those of *Gibbera* and fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected in April and from September to February.

REMARKS. *C. vates* can be recognised by the presence of some or all of the following external characters: protruding, almost spherical eyes with rather long hairs; large sub-basal tubercle on the elytra; conspicuously depressed anterior half of rostrum; reddish-brown integument; and predominantly fawn, often shaggy vestiture on the elytra. The broad, dark, transverse band near the middle of the elytra in females is usually very striking.

Garyus new genus

TYPE-SPECIES *Anthrribus altus* Sharp, 1876.

(The genus *Gáryus* is named after Dr Gary J. Samuels, of Plant Diseases Division, DSIR, whose identifications of fungal material in the hindgut of adult anthribids provided information on feeding habits that could not otherwise have been obtained; gender masculine.)

Small anthribids (length 2.5-4.2 mm). Integument mainly brown, often with a greenish tinge on humeral callus and elytral declivity; head with coarse, honeycomb punctures; pronotum and elytra with very fine punctures, the elytra puncto-striate; entire dorsal surface densely clothed with mainly short, rather broad, appressed to decumbent scales, predominantly in shades of brown, but also some cream and black scales. Rostrum transverse, constricted in basal half, expanding very slightly apically; dorsal surface with an oval depression on midline and a pair of obsolete longitudinal carinae between midline and lateral margin; ventral surface with a median carina. Antennae short, slender, inserted laterally. Eyes entire. Pronotum with a median tubercle; transverse carina entire, sub-basal; lateral carina well defined. Elytra each with a tufted sub-basal tubercle and a tuft of scales above declivity. Wings fully developed. Tibiae usually with distinctly green integument and 3 broad, transverse bands of pale scales alternating with 3 narrow bands of dark scales; remaining leg segments with brown integument sometimes tinged with green, and pale scales. Sexual dimorphism slight.

HEAD. Rostrum not elevated at scrobes, its anterior margin deeply notched, not rimmed; scales very dense, predominantly cream in male, predominantly orange-brown in female; depression on dorsal midline shiny, with raised margins; carinae almost obscured by scales. Antennae reaching base of pronotum in both sexes; club moderately compact, much wider than funicle, about as long as preceding 4 funicle segments. Eyes widely separated, large, elongate-oval, moderately protruding, with fine facets and minute hairs.

THORAX. Pronotum wider than long, widest near middle, its sides converging gently

posteriorly, strongly anteriorly; transverse carina strongly elevated, finely denticulate, slightly sinuous; lateral carina strongly elevated, finely denticulate, almost reaching pleural suture, joining transverse carina in an obtuse, slightly rounded angle; declivity almost vertical, with an uneven surface and with large denticles on lateral and basal margins. Pleural suture distinct, exposed. Scutellum small, triangular, about level with base of elytra, densely clothed with curved, cream scales. Elytra widest near middle; basal margin proclinate, with a rim; sutural margin not elevated; striole about 0.4× length of elytra; striae with discrete punctures; declivity short, almost vertical, with a very uneven surface; humeral callus moderately large, rounded; sub-basal tubercle very large, elongate, close to elytral suture, clothed with long, standing scales; disc usually with a conspicuous colour pattern. Tibiae rather robust. Tarsi with segment 1 about as long as segments 2 and 3 together; segment 2 emarginate; inner tooth of claw very short.

ABDOMEN. Pygidium wider than long, clothed with cream and brownish scales and thick, black hairs, apex almost truncate and without a rim in male, broadly rounded and rimmed in female; surface almost flattened and without asperities in male, very uneven and coarsely asperate in female. Ventrites 1-5 impressed along midline and lacking asperities in male; ventrites 1-4 of female slightly convex, and ventrite 5 with a transverse basal impression and numerous fine asperities; all ventrites in both sexes densely clothed with cream, linear scales.

MALE. Tergite 8 strongly sclerotised, notched on midline, with conspicuous marginal setae. Sternite 8 with a pair of small, transverse plates, each with a small but prominent projection on medial edge; apodeme well developed. Sternite 9 apodeme long, slender, with well developed arms. Tegmen slender, its ring membranous on dorsal midline, much longer than apodeme, which is very narrow; apex entire and rounded in dorsal aspect, oblique in lateral aspect, with a few fine hairs; preapical flange emarginate. Aedeagus about half as long as elytron; apodemes articulating on pedon; bridge robust, close to pedon, with a median extension directed towards tectum; pedon entire, rather broad, tapering to a

point at apex; tectum short, broad, with a transparent, pointed tip; internal sac reaching to free end of apodemes, lobed, with fine and coarse spinules and sclerites internally; ejaculatory duct inserted between dorsal and ventral lobes of internal sac.

FEMALE. Segment 8 about 0.4× as long as hemisternites; tergite weakly sclerotised, with an entire apex and with a few marginal setae; sternite membranous except for narrow median and lateral sclerites. Hemisternites about half length of elytron; body distinct from lateral rods, which are about 0.6× as long as entire hemisternites; apical part with 1 small tooth, 3 large teeth, and a short stylus; median rods fused along midline, neither divergent nor expanded at proximal end. Vulva enclosed ventrally by a large median lobe and a pair of small lateral lobes. Bursa copulatrix reaching well beyond lateral rods, with an elongate, pale sclerite on dorsal wall. Spermatheca large, not annulate, not at all globose; spermathecal gland elongate-oval, shorter than spermatheca, stalked; ducts of spermatheca and spermathecal gland inserted on a small, colourless atrium on outer basal edge of spermatheca; spermathecal duct entering bursa copulatrix through a deeply pigmented, stalked cap near base of median oviduct.

RANGE. New Zealand.

REMARKS. *Garyus* is readily distinguishable among New Zealand genera with short, laterally inserted antennae by its proximally constricted rostrum, median tubercle on the pronotum, and greenish tibiae with 3 pale and 3 dark bands of vestiture. The individual components of the lateral and transverse carinae are very prominent in this genus, and would be ideally suited to SEM study. Distinctive features of the male genitalia are the lobed and ornately lined internal sac and the articulated apodemes. *Lichenobius* is the only other New Zealand genus in which the apodemes are not continuous with the pedon. Characteristic features of the female genitalia are the elongate sclerite on the dorsal wall of the bursa copulatrix and the stalked, brown cap through which the spermathecal duct enters the bursa.

Garyus has no close relatives in New Zealand nor, apparently, in Australia, the

South Pacific, or Chile, so its single species must be regarded as part of the endemic element.

***Garyus altus* (Sharp) new combination**

Figures 46, 128-130, 386-390, 626, and 627

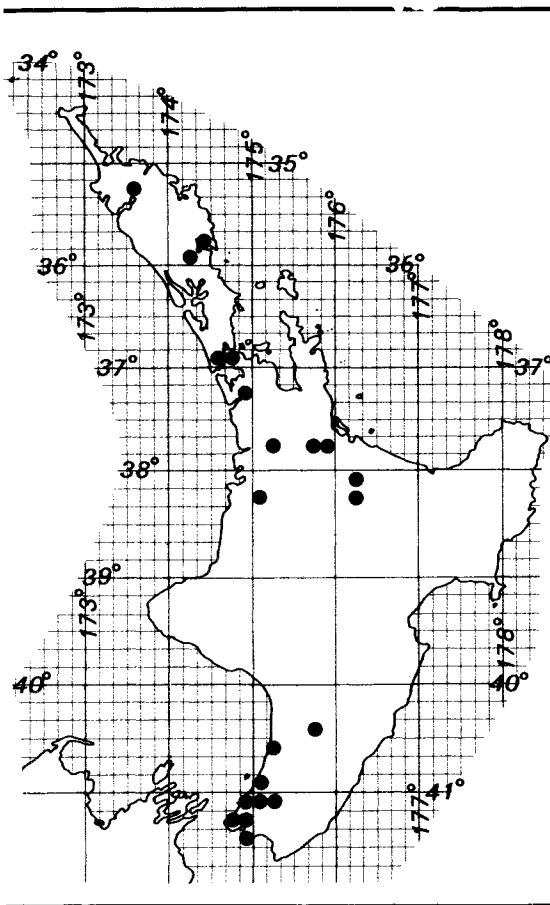
Sharp, 1876, Annals and magazine of natural history (4) 17: 425 (key; as *Anthribus* and *Cratoparis*) and 430-431 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 551-552 (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 311 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae; 124 (*Anthribus*).

Length 2.5-4.2 mm; width 1.2-2.0 mm.

HEAD (Figures 46 and 128). Dense scales of rostrum sometimes forming an H-shaped patch; midline of frons and vertex with a narrow band of cream scales. Rostrum 1.54-1.67× wider than long. Antennae, Figure 129. Eyes separated by 0.50-0.58× (male) or 0.62-0.63× (female) width of rostrum and 0.33-0.39× (male) or 0.42-0.45× (female) width across eyes.

THORAX. Pronotum (Figure 46 and 130) 1.10-1.32× wider than long; scales minute, oval, appressed, mainly yellowish-brown and pinkish-brown but intermingled with sharp-tipped black scales and varying proportions of cream scales; a narrow band of cream scales on midline from tubercle to anterior margin; scales on tubercle usually elongate, sometimes forming a distinct tuft. Elytra 1.89-2.09× longer than pronotum, 1.06-1.24× wider than pronotum, together 1.33-1.55× longer than wide; scales mostly longer than those on pronotum; colour pattern variable, but always with a cream spot near middle of disc and usually a curved band of black scales between sub-basal tubercle and preapical tuft, some of the scales in this band forming tufts in larger specimens (Figure 46).

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 386. Tegmen, Figures 387 and 388.



Aedeagus, Figures 389 and 390; dorsal lobe of internal sac containing 2 sclerites, 1 dark and horseshoe-shaped, the other pale and elongate.

FEMALE. Segment 8, Figure 626. Genitalia, Figure 627.

TYPE DATA. Lectotype: sex undetermined, 3.5 × 1.8 mm, Tairua (CL), Broun (BMNH). The precise type locality was published by Broun (1880). I am indebted to G. Kuschel for examining and measuring the lectotype.

MATERIAL EXAMINED. 51 males, 43 females, 13 unsexed (AMNZ, BMNH, CMNZ, FRNZ, NMNZ, NZAC, OMNZ, UCNZ).

ND, AK, WO, BP, WN. From near sea level to about 300 m. Northernmost record: Mangamuka (ND); southernmost record: Gollan's Valley (WN).

Reared from dead twigs of *Ficus* sp. (Moraceae) and from unspecified timber. Adults have been collected on dead wood of various native and introduced trees, especially acacias, and beaten from *Gahnia* sp. and *Mariscus* sp. (Cyperaceae). Disarticulated hyphae of Euantennariaceae (Ascomycetes) were present in the hindgut of dissected adults.

Adults have been collected from August to April.

REMARKS. Of the New Zealand anthribines which have short, laterally inserted antennae, *G. altus* is the only species with a single, large tubercle on the pronotum and sub-basal tubercles on the elytra. The minute oval scales, some with a needle-like tip, that cover most of the dorsum are unknown in any other New Zealand anthribid.

Genus *Xenanthribus* Broun

TYPE-SPECIES *Xenanthribus hirsutus* Broun, 1893, by monotypy.

Broun, 1893, Manual of New Zealand Coleoptera 5: 1270; Wolfrum, 1929, Coleopterorum catalogus 26 (102): 119 (in subfamily Urodoninae); Wolfrum, 1953, supplement: 51 (Urodoninae transferred to Bruchidae).

(The name *Xenanthribus* is derived from the Greek 'xénos', meaning 'strange', and *Anthribus*; gender masculine.)

Small anthribids (length 1.4-1.9 mm). Integument very dark brown, with dense, coarse punctures on rostrum, pronotum, and in elytral striae; entire dorsal surface densely clothed with very long, slightly curved, coarse, standing hairs and patches of appressed, yellowish, linear scales. Rostrum strongly transverse, slightly expanded towards apex, without distinct carinae either dorsally or ventrally. Antennae short, moderately robust, inserted laterally. Eyes entire. Pronotum without tubercles but with tufts of scales on midline; transverse carina (when present) antebasal, entire or broken; lateral carina absent. Elytra strongly puncto-striate,

with no swellings or tubercles except for a low sub-basal tubercle, and with several tufts of scales on interstriae. Wings absent. Femoral integument brown, with fine, dense scales. Proximal 0.6 of tibiae with dark brown integument and dense, long, curved setae on convex outer edge; remaining tibial surface pale brown, with fine, cream scales. Hind tarsal claw of male without an inner tooth. Sexual dimorphism moderate.

HEAD. Rostrum depressed on midline, not elevated above scrobes, its anterior margin truncate or slightly indented, weakly rimmed; scales of dorsum decumbent to appressed. Antennae barely reaching base of pronotum in male, shorter in female; club compact, much wider than funicle, about as long as preceding 4.5 funicle segments. Eyes widely separated in female, less so in male, obliquely transverse, strongly protruding, contiguous with antennal scrobe, with moderately coarse facets, lacking hairs.

THORAX. Pronotum about as wide as long, widest in middle, its sides converging very slightly anteriorly and posteriorly; transverse carina (when present) weakly elevated, irregularly denticulate, straight; declivity almost horizontal, without denticles or secondary carinae. Pleural suture not discernible. Scutellum not visible. Elytra very short, widest near middle, with sides slightly convergent anteriorly and posteriorly; basal margin proclinate, with a strong rim; sutural margin strongly depressed in scutellary region, neither depressed nor elevated elsewhere; striole obsolete; striae with large, deep, discrete punctures greater in diameter than width of interstriae; declivity deep, almost vertical; surface of sub-basal tubercle shiny, with several very large, shallow punctures and dense, standing scales. Tibiae robust. Tarsi uniformly brown; segment 1 about half length of segments 2 and 3 together; segment 2 weakly emarginate, not extending forward strongly on sides; all tarsal segments with hairs on ventral surface.

ABDOMEN. Pygidium wider than long, with a rounded, rimmed apex, moderately dense, decumbent, cream scales, and several long, standing setae; surface not asperate, finely punctured in male, coarsely punctured in female. All ventrites slightly

impressed in male, rounded in female; distal edge of ventrite 4 strongly excavated in male.

MALE. Tergite 8 with a slightly emarginate apex. Sternite 8 shallowly indented at apex; apodeme rudimentary. Sternite 9 apodeme long, slender, with well developed arms. Tegmen stout, its ring about as long as apodeme, which is almost parallel-sided; apex entire, broad, almost truncate in dorsal aspect, slightly expanded in lateral aspect, with long, marginal setae; pre-apical flange entire. Aedeagus about 0.9× as long as elytron; apodemes continuous with pedon; bridge robust, not arched, close to base of pedon, which is entire and has a tapering, truncate apical part; tectum very much shorter than pedon, with a pointed apex; internal sac almost reaching end of apodemes, lined with minute, colourless spinules; ejaculatory duct inserted ventrally near middle of internal sac.

FEMALE. Segment 8 about 0.6× as long as hemisternites; tergite weakly sclerotised, indented apically; sternite weakly sclerotised except for narrow median and lateral plates; setae short, sparse, marginal. Hemisternites about 0.75× as long as elytra; body distinct from lateral rods, which are about 0.6× as long as entire hemisternites; apical part with 4 large teeth and a large stylus; median rods fused along midline for about half their length, neither divergent nor widened at proximal end. Vulva enclosed by a small median lobe and a pair of ventral lobes. Bursa copulatrix reaching well beyond lateral rods, without sclerites. Spermatheca large, globose near middle, not annulate; spermathecal gland oval, almost sessile, longer than spermatheca, inserted near spermathecal duct on dark atrium at base of spermatheca.

RANGE. New Zealand.

REMARKS. *Xenanthribus* is distinguishable externally from other hirsute anthribids that occur in New Zealand by the combination of laterally inserted antennae, short, apically expanded, truncate rostrum, somewhat triangular, rather closely approximated eyes, and strongly setose tibiae with a proximal dark band and an apical pale band. No other New Zealand anthribid genus lacks a tooth on the inner edge of the hind claw of the male.

Wolfrum (1929) linked this genus with *Urodon* (= *Bruchela*) in the subfamily Urodoninae (= Bruchelinae of Crowson (1955)), presumably because of the concealed scutellum, absence of a transverse carina on the pronotum (absent in the type series of *Xenanthribus*, but present in some other specimens), weakly emarginate second tarsal segment, and the presence of hairs on the ventral surface of all tarsal segments. Later (Wolfrum 1953) he transferred this subfamily to Bruchidae, but it has since been treated as part of Anthribidae by Crowson (1955). The obsolete transverse carina and concealed scutellum of *Xenanthribus* are consequent upon flightlessness, and are not phylogenetically significant. Similar structural modifications occur in some or all flightless species of other New Zealand anthribid genera, e.g., *Dysnocryptus*, *Caliobius*, and *Notochoragus*. *Bruchela* comprises fully winged species, so the reduction of the transverse carina and scutellum in this genus has been brought about by entirely different factors. The most obvious external features setting *Bruchela* apart from typical Anthribidae and linking it with Bruchidae is the backward-directed vestiture of the pronotum. *Xenanthribus* has forward-directed pronotal vestiture, laterally inserted antennae with bilaterally symmetrical basal segments, and anthribine-type female genitalia, so it falls within the definition of Anthribinae.

The single species of *Xenanthribus* has no close relatives in New Zealand, Chile, or the adjacent Australian and Pacific areas, and therefore forms part of the endemic element of New Zealand.

Xenanthribus hirsutus Broun

Figures 33, 47, 131-133, 391-395, 628, and 629

Broun, 1893, Manual of New Zealand Coleoptera 5: 1270-1271.

Length 1.4-1.9 mm; width 0.7-1.1 mm.

HEAD (Figures 47 and 131). Rostrum 2.05-2.14× wider than long. Antennae, Figure 132. Eyes separated by 0.47-0.56× (male) or 0.63-0.74× (female) width of rostrum and 0.35-0.41× (male) or 0.51-0.54× (female) width across eyes.

THORAX. Pronotum (Figures 47 and 133) 1.0-1.1× wider than long. Elytra 1.19-1.22× longer than pronotum, 1.15-1.22× wider than pronotum, together 0.92-1.03× as wide as long.

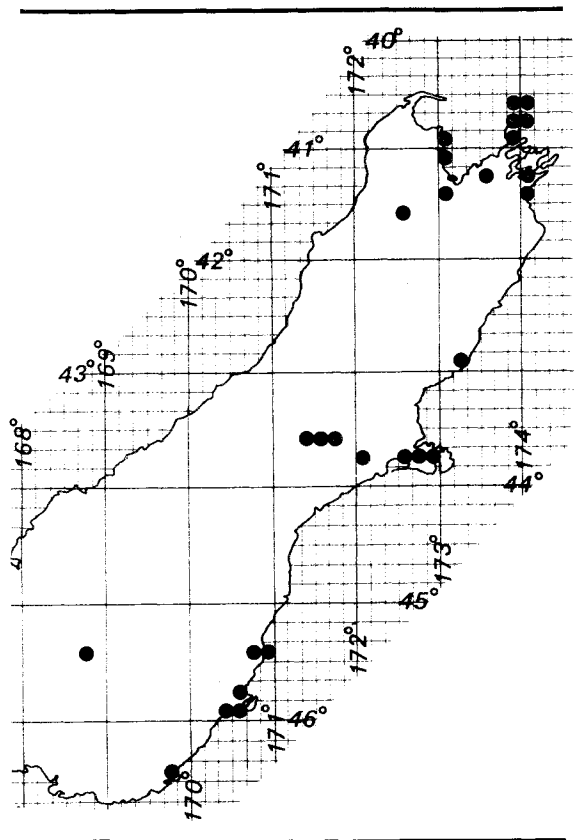
ABDOMEN. MALE. Segment 8 and sternite 9, Figure 391. Tegmen, Figures 392 and 393. Aedeagus, Figures 394 and 395.

FEMALE. Segment 8, Figure 628. Genitalia, Figures 33 and 629.

TYPE DATA. Lectotype: male, 1.8 × 0.9 mm, Moeraki (DN), P. S. Sandager (NZAC).

MATERIAL EXAMINED. Lectotype, 31 males, 13 females, 14 unsexed (BMNH, CMNZ, NZAC, UCNZ).

SD, NN, MB, NC, MC, OL, DN, SL. From near sea level to about 400 m. Northernmost record: Stephens Island (SD); southernmost record: Cannibal Bay, near Owaka (SL).



X. hirsutus has not been reared. Adults have been extracted from leaf litter and collected under wrack at high water mark. Bicellular brown spores (probably ascospores) and fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected from January to March and from May to November.

REMARKS. The only New Zealand species with which *X. hirsutus* is likely to be confused is *Caliobius littoralis*; this, however, is easily recognised by its longer rostrum, smaller, less protruding eyes, longer pronotum, and differently marked tibiae. In the material available for study geographic variation is apparent in the development of the transverse carina of the pronotum. Specimens from the Nelson, Marlborough, Marlborough Sounds, and Otago Lakes (Kingston) areas have a distinct, often well developed carina, whereas those from North and Mid Canterbury, Dunedin, and Southland have either an extremely fragmentary carina or none. *X. hirsutus* is one of the few exclusively ground-dwelling anthribids in New Zealand.

Caliobius new genus

TYPE-SPECIES *Caliobius littoralis* n.sp.

(The name *Caliobius* is derived from the Greek 'kaliá', meaning 'living quarters, nest', and 'bíos', meaning 'life', and alludes to the association of beetles of this genus with nests of seabirds; gender masculine.)

Small anthribids (length 1.8-3.3 mm). Integument either entirely dark brown except for paler legs, antennae, and a few spots on elytra and pronotum, or reddish-brown with dark patches and spots on head, pronotum, and elytra; punctures of dorsal surface dense, large, and honeycomb-shaped on head and pronotum, sparser and smaller in elytral striae; entire dorsal surface densely clothed with moderately long, coarse, curved, standing hairs and decumbent to appressed, yellowish or pinkish-

fawn, linear scales and a few patches of darker scales. Rostrum transverse, almost parallel-sided, without carinae. Antennae short, moderately robust, inserted laterally. Eyes entire. Pronotum without tubercles, but with a large tuft of pale scales on midline at base and one at apex, and a few smaller tufts towards sides; transverse and lateral carinae absent. Elytra puncto-striate, without tubercles or tufts. Wings absent. Femora with uniformly brown integument and creamish scales. Tibiae with uniformly pale brown integument, and with bands of dark brown scales on proximal and postmedian quarters alternating with bands of creamish scales. Sexual dimorphism slight.

HEAD. Rostrum depressed on midline at level of scrobes, its sides very slightly raised above scrobes, constricted immediately in front of scrobes; anterior margin truncate or slightly indented, with a low, sub-basal rim; scales sparse to moderately dense. Antennae reaching slightly beyond middle of pronotum in male, shorter in female; club moderately compact, much wider than funicle, about as long as preceding 3.5 funicle segments. Eyes widely separated, very small, somewhat oval, moderately protruding, with a small number of coarse facets and short hairs.

THORAX. Pronotum about as wide as long, widest near middle, its sides converging very slightly anteriorly and posteriorly. Pleural suture not discernible. Scutellum barely visible between elytra, without vestiture. Elytra widest just anterior to middle, the sides slightly convergent anteriorly and posteriorly; basal margin slightly proclinate, slightly raised; sutural margin not elevated; striole about 0.15× length of elytra; striae with moderately large, discrete punctures smaller in diameter than width of interstriae; declivity short, gently rounded. Tibiae rather slender. Tarsi with uniformly pale brown integument and cream vestiture; segment 1 shorter than segments 2 and 3 together; segment 2 shallowly emarginate; tooth of claw about 0.3× length of claw.

ABDOMEN. Pygidium wider than long, with a gently rounded apex and a rim only on sides; integument with a dark, median, triangular patch near base; surface very finely punctured in male, with moderately dense, cream scales and a few coarse,

brown, standing hairs; surface very finely puncto-asperate in female, with very dense, cream scales and a few brown, standing hairs. Ventrites 1-4 impressed along midline in male, slightly convex in female; ventrites 1-5 each with an incomplete row of coarse punctures along anterior margin, elsewhere with very fine punctures and dense, pale scales; ventrite 5 with very fine asperities in both sexes.

MALE. Tergite 8 weakly sclerotised on midline, with a notched apex. Sternite 8 very weakly sclerotised, with a small median lobe distally; apodeme absent. Sternite 9 apodeme weakly sclerotised, long, slender, with well developed arms. Tegmen very slender, its ring much longer than apodeme, which is narrow; apex entire and truncate in dorsal aspect, somewhat wedge-shaped in lateral aspect, with a few fine hairs; preapical flange entire. Aedeagus about as long as elytron; apodemes continuous with pedon; bridge absent (its former position probably indicated by a spongy area on apodemes near base of pedon); pedon entire, very slender, tapering to a point at apex; tectum elongate, slender, tapering but with a truncate tip; internal sac almost reaching free end of apodemes, lobed, with a tract of dense, fine, pale scales ventrally; ejaculatory duct inserted on dorsal lobe of internal sac.

FEMALE. Segment 8 about half as long as hemisternites; tergite weakly sclerotised, with an entire apex and with very few setae; sternite weakly sclerotised. Hemisternites about 0.7× as long as elytra; body distinct from lateral rods, which are about 0.65× as long as entire hemisternites; apical part with 3 large teeth and a short stylus; median rods fused along midline for less than half their length, neither divergent nor widened at proximal end. Vulva enclosed dorsally by a large, truncate-tipped median lobe and ventrally by a pair of lobes with a tuft of apical setae. Bursa copulatrix reaching well beyond lateral rods, lacking sclerites. Spermatheca large, not annulate, not at all globose; spermathecal gland oval, shorter than spermatheca, almost sessile, inserted near spermathecal duct on dark atrium at outer basal edge of spermatheca.

RANGE. New Zealand.

REMARKS. *Caliobius* resembles *Xenanthribus* in its size and overall colour and in the abundance of long hairs on the upper surface of the body, but it has more widely spaced and much smaller eyes with coarse facets and conspicuous hairs, somewhat mottled integument, tibiae with 2 pale bands alternating with 2 dark bands and lacking very long hairs, and more elongate elytra. The male genitalia are unusual in lacking a bridge between the aedeagal struts. The only other anthribid I know of which lacks this bridge is the totally unrelated European species *Platystomos albinus* (Linnaeus). The female genitalia of *Caliobius* are distinctive in having a tuft of setae on the apex of the paired ventral lobes.

Caliobius comprises a single species, which for the present must be regarded as part of the endemic element of New Zealand.

***Caliobius littoralis* new species**

Figures 48, 134-136, 396-400, 630, and 631

Length 1.8-3.3 mm; width 0.9-1.5 mm.

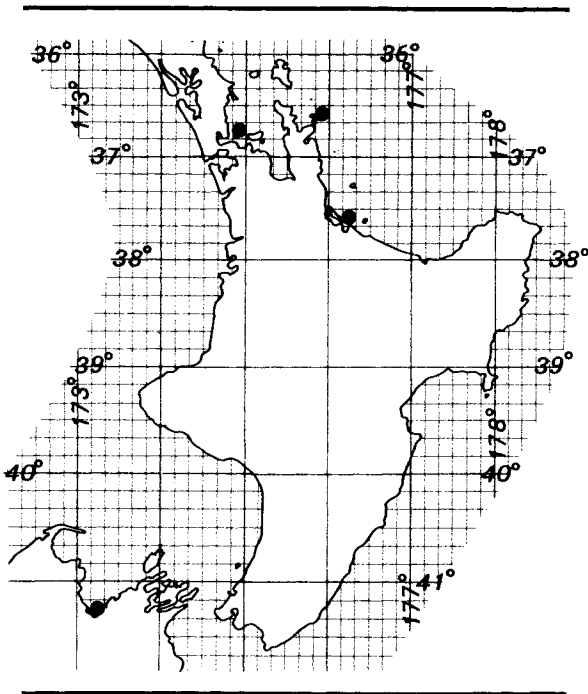
HEAD, Figures 48 and 134. Rostrum 2.00-2.08× wider than long. Antennae, Figure 135. Eyes separated by 0.84-0.89× width of rostrum and 0.63-0.67× width across eyes.

THORAX. Pronotum, Figures 48 and 136; width 0.98-1.03× length. Elytra 1.28-1.42× longer than pronotum, 1.12-1.19× wider than pronotum, together 1.11-1.21× longer than wide.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 396. Tegmen, Figures 397 and 398. Aedeagus, Figures 399 and 400.

FEMALE. Segment 8, Figure 630. Genitalia, Figure 631.

TYPE DATA. Holotype: male, 2.3 × 1.1 mm, Boulder Bank, Nelson City (NN), ex litter sample 73/99 from nest of black-backed gull (*Larus dominicanus*), 29 March 1973, G. W. Ramsay (NZAC). Paratypes (17 males, 6 females, all NZAC). 8 males, 3 females, same data as holotype; 2 males, type locality, ex litter sample 72/158 from abandoned nest of black-backed gull, 27 May



1972, G. W. Ramsay. 2 females, Maria Island, The Noises (AK), ex coastal litter samples 79/68 and 79/69, 29 Apr 1979, J. C. Watt; 2 males, same locality, ex coastal litter sample 79/127, 25 Oct 1979, M. F. Tocker; 2 males, same locality, ex coastal litter sample 79/154, 10 Dec 1979, J. C. Watt. 2 males, 1 female, Mercury Islands (CL), ex coastal litter, Nov 1972, G. W. Ramsay. 1 male, Motuotau Island (BP), ex coastal litter sample 72/260, 10 Nov 1972, L. R. Moran.

MATERIAL EXAMINED. Type series only (NZAC).

AK, CL, BP / NN. Close to sea level. Northernmost record: Mercury Islands (CL); southernmost record: Boulder Bank (NN).

C. littoralis has not been reared. Adults have been extracted from litter under coastal scrub and in nest material of southern black-backed gulls, *Larus dominicanus*. Unicellular coelomycete conidia, possibly of the genus *Fairmaniella*, and fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected from March to May and from October to December.

REMARKS. All material of *C. littoralis* has been extracted from litter associated with nests of seabirds. The specimens from Maria Island, one of The Noises group (inner Hauraki Gulf), were in litter taken from the vicinity of burrows of the grey-faced petrel, *Pterodroma macroptera gouldi*. Extensive sampling of coastal litter from other islands in The Noises which had no ground nesting seabirds did not yield any specimens of *C. littoralis*. This small, flightless anthribid could easily be transported on the bodies of seabirds, and is likely to be widely distributed on islands around, and even well beyond, the coast.

Genus *Lichenobius* Holloway

TYPE-SPECIES *Lichenobius silvicola* Holloway, 1970, by original designation.

Holloway, 1970, New Zealand journal of science 13: 438-440; Holloway, 1971, Pacific insects monograph 27: 266-268; May, 1971, Pacific insects monograph 27: 276; May, 1981, New Zealand journal of zoology 8: 262.

(The name *Lichenobius* is derived from the Greek 'leichén', meaning 'lichen', and 'bíos', meaning 'life', and alludes to the association of these anthribids with lichens; gender masculine.)

Small anthribids (length 1.7-2.6 mm). Integument black except for brown or yellowish legs and antennae; head and pronotum with obscure, honeycomb-like punctures; elytra puncto-striate; vestiture dense, consisting of overlapping, appressed or decumbent, fine, somewhat iridescent, silvery, bronze, or golden linear scales and sometimes sparse but conspicuous standing hairs. Rostrum transverse; dorsal surface with an obsolete median carina but no lateral carinae; ventral surface without carinae. Antennae short, rather robust, inserted laterally. Eyes weakly notched anteriorly. Pronotum without tubercles or tufts; transverse carina (when present) antebasal, sometimes weakened on midline; lateral carina indistinct. Elytra sometimes with a humeral callus, without tubercles or tufts. Wings vestigial. Femora unicolorous or darker near apex, with silver scales. Tibiae with silver or yellowish scales, not banded. Sexual dimorphism slight.

HEAD. Rostrum more or less parallel-sided, slightly elevated above scrobes, not depressed on dorsum, its anterior margin weakly indented, not rimmed; scales mainly silvery-grey or golden. Antennae similar in both sexes, not reaching base of pronotum; club compact, much wider than funicle, about as long as preceding 4 funicle segments. Eyes rather close to moderately separated, somewhat triangular in dorsal aspect, slightly to strongly protruding, with an emarginate anterior border, the ventral lobe extending forward at least as far as the dorsal lobe, with coarse facets and conspicuous hairs, especially on posterior half.

THORAX. Pronotum wider than long, widest in middle; sides subparallel for a short distance medially, then rapidly convergent anteriorly and posteriorly; transverse carina (when present) strongly elevated, irregularly denticulate, arched or sinuate; disc flat or with a transverse convexity; pronotal declivity (when present) slightly oblique, without denticles or secondary carinae. Pleural suture well developed, exposed. Scutellum very small, about level with base of elytra, rounded at apex, with curved silver scales. Elytra parallel-sided or widening or narrowing posteriorly; basal margin vertical, not at all proclinate, at most only slightly raised; sutural margin not elevated; striole about $0.2\times$ length of elytron; striae sometimes indistinct posteriorly. Tibiae slender. Tarsi uniformly pale or with some dark patches; segment 1 longer or shorter than segments 2 and 3 together; segment 2 barely emarginate.

ABDOMEN. Pygidium wider than long, in male subtriangular, rounded at apex, without raised margins, not asperate, in female transverse, more or less truncate at apex, with raised margins and fine, dense asperities. All ventrites impressed along midline in male, only ventrite 5 so impressed in female; length of ventrite 4 at midline half length at lateral margin in male, about $0.7\times$ in female; surface of ventrite 5 asperate in female.

MALE. Tergite 8 with a rounded or emarginate apex and long marginal setae. Sternite 8 shallowly indented at apex, with a pair of elongate sclerotised plates; apodeme rudimentary. Sternite 9 apodeme long, slender, with well developed arms.

Tegmen somewhat elliptical, its ring very much longer than apodeme, which is narrow and almost parallel-sided; apex entire, tapering in dorsal aspect, wedge-shaped in lateral aspect, with a small tuft of hairs at tip; preapical flange weak, entire, curved. Aedeagus about $0.8\times$ as long as elytron; apodemes not continuous with pedon, instead separated from its base by a distinct gap; bridge short, broad, not strongly arched, moderately close to base of pedon; pedon entire, with a pointed or rounded apex; tectum slender, with a rounded or pointed apex; internal sac reaching almost to free end of apodemes, not lobed, without obvious internal spinules; ejaculatory duct inserted ventrally on internal sac.

FEMALE. Segment 8 about half as long as hemisternites; tergite weakly sclerotised, with an entire apex and with a few long setae; sternite with a pair of lateral, sclerotised areas continuous with divergent arms of apodeme. Hemisternites about half as long as elytra; body distinct from lateral rods, which are about $0.7\times$ as long as entire hemisternites; apical part with 3 or 4 long teeth and a small, sometimes concealed stylus; median rods joined together for part of their length, widened and divergent at proximal end. Vulva enclosed by membranous lobes, 1 dorsomedially and a pair ventrally. Bursa copulatrix reaching well beyond lateral rods, lacking sclerites internally. Spermatheca small, not annulate, not very globose; spermathecal gland oval or spherical, longer or shorter than spermatheca, distinctly stalked; ducts of spermatheca and spermathecal gland inserted on a common, transparent, colourless atrium at base of spermatheca.

RANGE. Chatham, Bounty, and Big South Cape islands and The Snares.

REMARKS. *Lichenobius* is distinguished externally from other New Zealand anthribid genera by its small size, iridescent silvery or bronzy vestiture, laterally inserted antennae, shallowly notched eyes, and lack of tubercles and tufts on the pronotum and elytra. The posterior margin of the fourth ventrite is strongly excavated in both sexes. Distinctive features of the male genitalia are the articulated apodemes and the simple internal sac lacking spinules and with a ventrally inserted ejaculatory duct. Articulated apodemes also occur in

the New Zealand genus *Garyus*, which is not closely related. Diagnostic features of the female genitalia of *Lichenobius* are the divergent and slightly expanded proximal ends of the median rods, the absence of sclerites in the bursa copulatrix, and the very large teeth at the apex of the hemisternites. *Lichenobius* bears some resemblance to *Xynotropis* Blackburn from Australia (Holloway 1970). The larval characters of the genus have been discussed and illustrated by May (1971, 1981).

KEY TO SPECIES OF *Lichenobius*

- 1 Pronotum with an antebasal transverse carina (Figure 145); legs uniformly pale. On trees and shrubs. (Chatham Islands) *silvicola*
- Pronotum lacking a transverse carina (Figures 139 and 142); legs with partly darkened femora and tarsi. On lichen- or alga-encrusted rocks in the littoral or supralittoral zone. (Stewart Island area, Bounty Islands, The Snares) 2
- 2 Elytra with predominantly iridescent silvery-grey scales, sometimes with patches of fine bronze scales, and lacking conspicuous, long, standing setae; eyes separated by about 0.40× (male) or 0.48× (female) width across eyes. On lichen-encrusted, supralittoral rocks. (Stewart Island area, The Snares) *littoralis*
- Elytra with predominantly bronzy scales, and with sparse but conspicuous, long, standing setae; eyes separated by about 0.28× (male) or 0.40× (female) width across eyes. On lichen- or alga-encrusted, wave-washed rocks. (Bounty Islands) *maritimus*

Lichenobius littoralis Holloway

Figures 49, 137-139, 282, 401-405, 632, and 633

Holloway, 1970, New Zealand journal of science 13: 443-446, figures 2, 4, 6, 8, and 18-26; Holloway, 1971, Pacific insects monograph 27: 270, figures 18-28; May, 1971, Pacific insects monograph 27: 272, 276-277, figures 152-159; May, 1981, New Zealand journal of zoology 8: 262, figures 9-12.

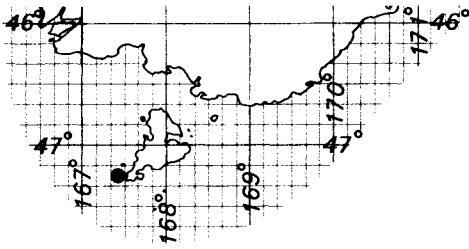
Vestiture entirely iridescent silvery-grey except on elytra, which usually have a rather large, diffuse spot of fine bronze scales at base and 1 or 2 similar but smaller spots near middle; spots on each elytron sometimes irregularly connected, and those of females larger than those of males. Length 1.70-2.10 mm; width 0.77-1.00 mm.

HEAD (Figures 49 and 137). Rostrum 1.62-1.73 (male) or 1.50-1.54 (female) wider than long. Antennae, Figure 138. Eyes weakly emarginate anteriorly, separated by 0.60-0.64× (male) or 0.66-0.74× (female) width of rostrum and about 0.40× (male) or 0.48× (female) width across eyes.

THORAX. Pronotum (Figures 49 and 139) 1.04-1.12× wider than long; transverse carina absent. Elytra about 1.9× longer than pronotum, 1.16-1.18× (male) or about 1.29× (female) wider than pronotum, together 1.50-1.51× (male) or 1.36-1.41× (female) longer than wide, subparallel; humeral callus absent. Wing (Figure 282) about 3.3× longer than wide, about 0.46× as long as elytron; veins indistinct. Femoral and tarsal integument partly darkened; tarsal segment 1 about half as long as segments 2 and 3 together; tooth of claw very short.

ABDOMEN. Pygidium with sparse, silvery scales; surface shiny and with sparse, obsolete punctures in male, dull and coarsely asperate in female. Ventrites with sparse, fine, silvery scales.

MALE. Segments 8 and sternite 9, Figure 401; tergite 8 rounded at apex, sternite 8 notched, both with sparse hairs. Tegmen (Figures 402 and 403) rather broad, with hairs confined to extreme tip. Aedeagus, Figures 404 and 405; apex of pedon attenuated and pointed; apex of tectum pointed.



● The Snares (48°S, 166°E)

FEMALE. Segment 8 (Figure 632) with sparse, short hairs at apex. Genitalia (Figure 633) with 3 large teeth at apex of hemisternite; spermathecal gland small, globose; spermathecal duct inserted on bursa copulatrix away from base of oviduct.

TYPE DATA. Holotype: male, 1.80 × 0.80 mm, north-eastern end of Big South Cape Island (SI), on *Pertusaria graphica* in spray zone, February 1969, B. A. Kuschel [Holloway] (NZAC).

MATERIAL EXAMINED. Holotype, 141 males, 137 females (AMNZ, BMNH, CMNZ, NMNZ, NZAC).

SI - Big South Cape Island; The Snares islands. Near sea level.

Larvae and adults live among crustose lichens on rocks in the spray zone, the dominant lichen species being *Pertusaria graphica* (Holloway 1970, 1971). The larvae work below the surface of the lichen, excavating a simple tunnel with a thin roof which soon becomes eroded by weathering. Lichen fragments, including tissue of fructifications, were present in the hindgut of dissected adults.

Adults have been collected in August and from November to March.

REMARKS. *L. littoralis* is immediately recognisable by its small size, almost uniformly silvery-grey vestiture, and lack of a transverse pronotal carina. The bronze markings are not usually very conspicuous, although specimens from The Snares have an overall darker appearance than those from Big South Cape Island. It can be expected that this species will be found on all the muttonbird islands around Stewart Island, wherever the characteristic white lichen belt occurs (Holloway 1971,

figure 27). In spite of careful searching in similar lichen belts on Campbell, Auckland, and Antipodes islands, no specimens of *L. littoralis* have been found. The immature stages of this species have been described and illustrated by May (1971, 1981). In the original description and in a subsequent paper dealing with this species (Holloway 1971) the apex of the pedon was incorrectly described as being rounded, but in the illustrations it was correctly shown to be attenuated and pointed.

Lichenobius maritimus new species

Figures 8, 140-142, 283, 406-410, 634, and 635

Vestiture of head silvery green, that of pronotum and elytra bronze with numerous iridescent silvery-green spots and streaks. Length 2.3-2.6 mm; width 1.0-1.1 mm.

HEAD (Figure 140). Rostrum 1.69× (male) or 1.79× (female) wider than long. Antennae, Figures 8 and 141. Eyes short, rather protruding, almost truncate on anterior margin, with very conspicuous transparent hairs on posterior half, separated by 0.46 (male) or 0.61× (female) width of rostrum and 0.28× (male) or 0.40× (female) width across eyes.

THORAX. Pronotum (Figure 142) 1.07× (male) or 1.02× (female) wider than long; transverse carina absent. Elytra 1.33× (male) or 1.38× (female) longer than wide, 1.89× (male) or 1.88× (female) longer than pronotum, together 1.33× (male) or 1.38× (female) longer than wide, distinctly tapering posteriorly; scales very dense; elytra each with about 50 transparent, standing hairs about 0.1 mm in length, these hairs most numerous posteriorly; humeral callus absent. Wing (Figure 283) about 3.3× longer than wide, 0.26× as long as elytron; veins indistinct. Femoral and tarsal integument darker apically; tibiae with 2 or 3 long, transparent, curved setae on outer edge; tarsal segment 1 slightly longer than segments 2 and 3 together; tooth of claw at least half as long as claw itself.

ABDOMEN. Pygidium with sparse, silvery scales; surface shiny and with moderately

dense, fine punctures in male, dull, uneven, and coarsely asperate in female. Ventrites with dense, fine, silvery scales.

MALE. Segment 8 and sternite 9, Figure 406; tergite 8 rounded at apex, sternite 8 weakly notched, both with rather numerous hairs on margin and elsewhere. Tegmen (Figures 407 and 408) very slender, with hairs not confined to tip. Aedeagus, Figures 409 and 410; apex of pedon attenuate, pointed, directed ventrally; tectum elongate, with a rounded apex.

FEMALE. Segment 8 (Figure 634) with very sparse hairs on apical margin. Genitalia (Figure 635) with 3 large teeth and a conspicuous stylus at apex of hemisternite; spermathecal gland large, oval; spermathecal duct inserted on bursa copulatrix away from base of oviduct.

TYPE DATA. Holotype: male, 2.3 × 1.0 mm, Proclamation Island, Bounty Islands, on vertical rock, in small cracks with short, dry, green algae, 17 November 1978, D. S. Horning, BITC 37 (NMNZ). Paratype: female, same data as holotype (NMNZ).

● Bounty Islands (48°S, 179°E)

MATERIAL EXAMINED. Type specimens only.

Bounty Islands, at sea level.

L. maritimus has not been reared. Unicellular, hyaline fungal spores, fragments of fungal fructifications and hyphae, but no algal or lichen tissue were present in the hindgut of the type specimens.

The type specimens were collected in November.

REMARKS. *L. maritimus* resembles *L. littoralis* in lacking a transverse pronotal carina, but is readily distinguishable by its more prominent and closely approximated eyes and by the extensive bronze and silvery-green areas on the elytra. The colour pattern is similar to that in some specimens of *L. silvicola*. The elongate hairs on the elytra and tibiae of *maritimus* were straight when the specimens were in ethanol but became curved when they were dry-mounted. The exposed coastal rocks on

which this species was found must be washed by the sea for long periods during stormy weather. It is likely that the well developed tooth on the inner edge of each claw helps the beetles to cling to the rock-encrusting plant material on which they live, and that the long hairs on the elytra and tibiae enable specimens that are swept away to stay afloat until they are thrown back on to the rocks.

Lichenobius silvicola Holloway

Figures 143-145, 284, 411-415, 636, and 637

Holloway, 1970, New Zealand journal of science 13: 440-443, figures 1, 3, 5, 7, and 9-17.

Vestiture irregularly variegated in iridescent golden, grey, and bronze in both sexes, but darker zones more extensive in female. Length 1.75-2.10 mm; width 0.82-1.00 mm.

HEAD (Figure 143). Rostrum 1.66-1.70× (male) or 1.53-1.59× (female) wider than long. Antennae, Figure 144. Eyes distinctly emarginate, the ventral lobe noticeably longer than the dorsal lobe, separated by 0.60-0.62× (male) or 0.67-0.70× (female) width of rostrum and about 0.36× (male) or 0.43× (female) width across eyes.

THORAX. Pronotum (Figure 145) 1.03-1.09× wider than long; transverse carina antebasal, entire or obsolete at midline. Elytra about 2.0× longer and 1.30-1.39× wider than pronotum, together 1.31-1.41× longer than wide, gradually but distinctly widening beyond middle; humeral callus low. Wing (Figure 284) about 3.4× longer than wide, about 0.97× as long as elytron; some basal veins distinguishable. Legs with uniformly yellow integument; tarsal segment 1 about half as long as segments 2 and 3 together; tooth of claw less than half as long as claw itself.

ABDOMEN. Pygidium with shiny surface and sparse, fine, silvery scales, very finely asperate in female, without asperities in male. Ventrites with sparse, fine, silvery scales.

Genus *Eugonissus* Broun

MALE. Segment 8 and sternite 9, Figure 411; tergite 8 and sternite 8 emarginate, moderately hairy. Tegmen (Figures 412 and 413) rather broad, with hairs on oblique surface at apex. Aedeagus, Figures 414 and 415; apex of pedon broad and rounded, not attenuate; tectum with a pointed apex.

FEMALE. Segment 8 (Figure 636) with numerous long hairs on apical margin. Genitalia (Figure 637) with 4 large teeth and a concealed stylus at apex of hemisternite; spermathecal gland small, globose; spermathecal duct inserted on bursa copulatrix at base of oviduct.

TYPE DATA. Holotype: male, 1.85 × 0.87 mm, Awatotara, Chatham Island, 23 February 1967, G. Kuschel (NZAC).

● Chatham Islands (44°S, 176°W)

MATERIAL EXAMINED. Holotype, 8 males, 9 females (BMNH, NMNZ, NZAC).

Chatham Islands - Chatham I., Mangere I., Pitt I. From near sea level to 185 m.

Reared from live stem of *Macropiper excelsum* (Piperaceae). Larvae have been found boring in the outer bark of live branches of *Pseudopanax chathamicus* (Araliaceae), *Corokia macrocarpa* (Cornaceae), *Plagianthus betulinus* var. *chathamicus* (Malvaceae), *Myrsine chathamica* (Myrsinaceae), *Macropiper excelsum*, and *Hymenanchera chathamica* (Violaceae). The bark adjacent to the larval workings was covered by a filmy growth, possibly of a lichen, which perhaps constitutes part of the larval diet (Holloway 1970). Fragments of lichen tissue, including fructifications, were present in the hindgut of dissected adults.

Adults have been collected in February, March, October, and November.

REMARKS. *L. silvicola* is easily recognizable by the presence of a transverse carina on the pronotum. The wings, although vestigial, are relatively long and have normal basal veins. In the original description the apex of the pedon was incorrectly described as attenuated and pointed, but in the figure it was correctly shown to be broad and rounded.

TYPE-SPECIES *Etnalis conulus* Broun, 1880, by original designation.

Broun, 1893, Manual of New Zealand Coleoptera 5: 1257-1258.

(The name *Eugonissus* is probably derived from the Greek 'eu', meaning 'well, nice', and 'gonía', meaning 'angle'; gender masculine.)

Small anthribids (length 1.6-3.3 mm). Integument brown, glossy; head and pronotum with dense, moderately large, somewhat honeycomb-shaped punctures separated by narrow, shiny interstices; elytra punctostriate; vestiture consisting of mainly intermingled, appressed to suberect, cream, yellowish, dark brown, and black, linear scales and coarse hairs which usually do not obscure the integumental surface. Rostrum transverse; dorsal surface flattened or slightly uneven, without distinct carinae; ventral surface without carinae. Antennae short, inserted slightly dorso-laterally. Eyes notched dorsally on anterior margin. Pronotum convex, neither tuberculate nor tufted on centre of disc; transverse carina basal at midline, sub-basal elsewhere, entire; lateral carina absent. Elytra with a large humeral callosity, a large sub-basal tubercle, and backward-directed crests of scales on tubercle and near centre of disc. Wings fully developed or vestigial. Femoral surface dark, with dark, coarse hairs on proximal half and cream, linear scales elsewhere. Tibiae with dark integument, dark hairs on distal 0.3 and sometimes at base, and a broad median or basal band of cream scales. Sexual dimorphism very slight, apparent mainly in shape of abdominal ventrites.

HEAD. Rostrum widest in front of scrobes, indented at posterior margin of scrobes, exposing part of scrobal floor, its lateral margin distinctly raised and weakly rimmed; anterior margin shallowly indented, weakly rimmed. Antennae slender, reaching beyond sub-basal tubercle; segment 1 pyriform; segment 2 short, prominently constricted at base, its globular distal part more convex on anterodorsal surface than posteroventral surface; segments 3-8 about equal in thickness, rather slender, becoming progressively shorter towards club, which is rather

slender, not very compact, and about as long as preceding 4 funicle segments. Eyes small, protruding, longitudinal, finely faceted, with minute hairs, separated by slightly less than distance between scrobal emarginations of rostrum.

THORAX. Pronotum wider than long, widest posteriorly or near middle; transverse carina strongly elevated, denticulate, sinuous, curving outwards and backwards at the sides, meeting lateral margin in a sharp, acute basal angle; declivity vertical to concave, denticulate at sides, irregularly serrate on basal margin, without secondary carinae. Pleural suture exposed. Scutellum small, rounded at apex, level with base of elytra, densely clothed with cream scales. Elytra short, broad, widest slightly behind middle; basal margin proclinate, rimmed; sutural margin slightly raised; sub-basal tubercle large, elongate; humeral callus rounded; striae about $0.62\times$ as long as elytron; striae with discrete, rather coarse punctures; interstriae convex; declivity shallow, almost vertical. Tibiae moderately slender. Tarsi slender; segment 1 about as long as segments 2 and 3 together; inner tooth of claw small.

ABDOMEN. Pygidium wider than long, rounded at apex, not asperate, with numerous fine punctures and moderately dense, decumbent, cream, linear scales. Ventrites slightly impressed along midline in male, flattened or slightly rounded in female; surface shiny, with numerous fine punctures and moderately dense, appressed, cream, linear scales; posterior margin of ventrite 4 more strongly indented in male; ventrite 5 not asperate.

MALE. Tergite 8 strongly sclerotised, with marginal and submarginal setae. Sternite 8 membranous except for a pair of small, transverse, setose, sclerotised lobes. Sternite 9 apodeme short, with very long arms that parallel each other for almost 0.6 of their length. Tegmen broad, robust, its ring much longer than apodeme, which is gradually widened from base; apex very short, broad, almost truncate, with 2 groups of rather sparse hairs; preapical flange entire, curved. Aedeagus about half as long as elytron; apodemes continuous with pedon; bridge robust, very close to base of pedon; pedon entire, truncate at apex; tectum moderately long, with a pointed apex; internal sac not reaching free end

of apodemes, not lobed, lined with fine, brown spinules, with an ornate sclerite on dorsal wall; ejaculatory duct inserted at apex of internal sac.

FEMALE. Segment 8 about half as long as hemisternites; tergite weakly sclerotised, with an entire apex and with a few setae. Hemisternites about $0.6\times$ as long as elytra; body distinct from lateral rods; apex with 3 short, sharp teeth and a minute, concealed stylus; median rods fused together throughout their length, neither expanded nor divergent at proximal end. Vulva enclosed ventrally by a pair of large, membranous lobes. Bursa copulatrix slender, constricted near middle, with a large, sclerotised, folded, ring-like invagination enclosing insertion of spermathecal duct. Spermatheca large, not very bulbous; spermathecal gland small, spherical, sessile on atrium at base of spermatheca.

RANGE. New Zealand.

REMARKS. *Eugonissus* is distinguishable externally from other New Zealand anthribid genera with short antennae and a broad rostrum by its shallowly notched eyes, partially exposed scrobal floor, dorsolaterally inserted antennae, and large, elongate, crested, sub-basal elytral tubercle. Also, the tibiae are very distinctively marked. The male genitalia have an unusually large sclerite on the dorsal wall of the internal sac and a very broad, truncate apex on the pedon. The folded, sclerotised ring around the insertion of the bursa copulatrix is a distinctive feature of the female genitalia. *Eugonissus* comprises a single species, which for the present must be regarded as part of the endemic element of New Zealand.

Eugonissus conulus (Broun)

Figures 50, 146-148, 285, 416-420, 638, and 639

Broun, 1880, Manual of New Zealand Coleoptera 1: 555 (*Etnalis*); Donckier de Donceel, 1884, Annales de la Société Entomologique de Belgique 28: cccxxx (*Etnalis*); Broun, 1893, Manual of New Zealand Coleoptera 5: 1258 (*Eugonissus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 299 (as

Etnalis cornutus); Wolfrum, 1929, Coleopterorum catalogus 26 (102): 83 (*Etnalis*); Wolfrum, 1953, Coleopterorum catalogus 26 (102), supplement: 38 (*Eugonissus*).

pictipes Broun, 1893: 1257-1258 (*Eugonissus*). NEW SYNONYMY.

turneri Broun, 1913, Transactions and proceedings of the New Zealand Institute 45: 148-149 (*Eugonissus*). NEW SYNONYMY.

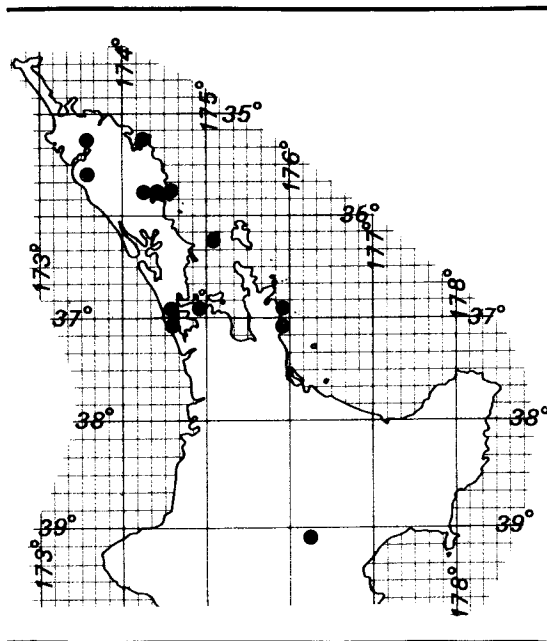
Length 1.6-3.3 mm; width 0.8-1.7 mm.

HEAD (Figures 50 and 146). Vestiture sparse, not concealing punctures. Rostrum 1.41-1.67× wider than long. Antennae, Figure 147. Eyes separated by 0.79-0.86× width of rostrum and 0.54-0.60× width across eyes.

THORAX. Pronotum (Figures 50 and 148) 1.29-1.47× wider than long, widest at basal angles in large specimens and near middle in small specimens, the basal angles very prominent in large specimens, very small in the smallest specimens; vestiture of dorsal surface denser than on head, sometimes with a few small, pale areas among the otherwise intermingled pale and dark scales. Elytra 1.94-2.13× longer and 1.11-1.38× wider than pronotum, together 1.05-1.35× longer than wide; vestiture very dense in large specimens, consisting mainly of intermingled pale and dark scales and hairs but usually with several small, pale or dark patches; interstriae distinctly convex in large specimens, their vestiture sometimes directed posteromedially to form crests that are most obvious in large specimens; humeral callus equally well developed in flightless and fully winged specimens. Wings, when fully developed, about 3.0× longer than wide, about 2.4× longer than elytron, without 3rd anal veins and anal lobe; vestigial wings (Figure 285) about 1.8× longer than wide, about 0.2× as long as elytron, with a broad, somewhat truncate apex. Tooth of tarsal claw about 0.2× as long as entire claw.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 416. Tegmen, Figures 417 and 418. Aedeagus, Figures 419 and 420; sclerite on dorsal wall of internal sac, large, pale, with 2 clusters of dark, digitate processes.

FEMALE. Segment 8, Figure 638. Genitalia, Figure 639.



TYPE DATA. Lectotype of *conulus* Broun: sex undetermined, 2.8 × 1.6 mm, Tairua (CL), Broun (BMNH). Holotype of *pictipes* Broun: sex undetermined, 2.2 × 1.2 mm, Waitakere (AK). Holotype of *turneri* Broun: sex undetermined, 2.1 × 1.1 mm, Huiia (AK), November 1909 (BMNH). The holotype of *pictipes* is a small, somewhat teneral specimen. The holotype of *turneri* is also small, and has weakly developed basal angles on the pronotum.

MATERIAL EXAMINED. The above 3 primary types, 8 males, 7 females, 4 unsexed (BMNH, FRNZ, NZAC).

ND, AK, CL including Little Barrier I., TO. From near sea level to about 600 m. Northernmost record: Omahuta (ND); southernmost record: State Forest 90, East Taupo (TO).

E. conulus has not been reared. Adults have been extracted from leaf litter and beaten from vegetation. Bark tissue, fragments of fungal fructifications and hyphae, and several kinds of spores, including *Conoplea*-like conidia (Fungi Imperfecti: Hyphomycetes), were present in the hindgut of dissected adults.

Adults have been collected in March and from October to January.

REMARKS. *E. conulus* could perhaps be confused with *Isanthribus proximus*, because both species have notched eyes and protruding basal angles on the pronotum. However, in *I. proximus* the eyes do not extend medially beyond the inner level of the notch on the scrobal margin of the rostrum, and the elytra are more slender than those of *E. conulus*, have a much smaller sub-basal tubercle, and are more brightly patterned. So far as I am aware, *E. conulus* is unique among Anthribidae in having both macropterous and brachypterous males and females. The vestigial wing is unusual because of its broad, somewhat truncate apex. Although the sample available for study is small, it is clear that wing size is not correlated with altitudinal or latitudinal factors. In other flightless New Zealand anthribids the humeral callus is reduced in size and the transverse carina of the pronotum tends to fragment or disappear, but in *E. conulus* the humeral callus and transverse carina of brachypterous specimens are identical with those of macropterous specimens.

Genus *Etnalis* Sharp

TYPE-SPECIES *Etnalis spinicollis* Sharp, 1873, by monotypy.

Sharp, 1873, Entomologist's monthly magazine 10: 32; Sharp, 1876, Annals and magazine of natural history (4) 17: 425.

(The name *Etnalis* is derived from Mt Etna, the famous Sicilian volcano, and alludes to the elytral profile; gender masculine.)

Small to medium-sized anthribids (length 2.5-4.0 mm). Integument mainly reddish-brown; dorsum of head and pronotum with dense, irregular-sized, somewhat honeycomb-shaped punctures separated from one another by narrow, shiny interstices; elytra puncto-striate; vestiture dense, consisting of appressed, overlapping, cream, yellow, orange, brown, and black scales and hairs. Rostrum transverse, without carinae; dorsal surface sometimes with a longitudinal median groove. Antennae rather short, inserted somewhat dorsolaterally. Eyes deeply emarginate. Pronotum without tubercles or tufts; transverse carina entire, basal or sub-basal; lateral carina very

short or absent. Elytra with a humeral callus, sub-basal tubercles, and the discal surface rising gradually to a hump on posterior half. Wings fully developed. Femoral integument darker near middle; vestiture of all leg segments entirely creamish.

HEAD. Rostrum with sides either parallel or indented, always exposing part of scrobal floor, elevated at scrobes, its anterior margin deeply notched and elevated; dorsum depressed behind anterior margin; vestiture cream and orange. Antennae in both sexes slender, reaching basal 0.3 of elytra; club slender, moderately compact, about as long as preceding 2.5-3.0 funicle segments. Eyes moderately close together, large, protruding, obliquely longitudinal, with a dorsal anterior angle, moderately fine facets, and minute hairs.

THORAX. Pronotum wider than long, widest at level of transverse carina, its sides almost parallel or very gently convergent anteriorly; transverse carina strongly elevated, finely denticulate, slightly sinuate; lateral carina (when present) strongly elevated, finely denticulate, extremely short, meeting transverse carina in a sharp, obtuse angle; if lateral carina absent, then base of pronotum projecting at sides as a strong, curved spine; disc slightly convex, with cream, yellow, and orange scales; declivity almost vertical, with irregularly developed denticles at base and sides, without secondary carinae. Pleural suture well developed, obscured by vestiture. Scutellum very small, triangular, about level with base of elytron, densely clothed with curved, cream scales. Elytra widest near middle; basal margin proclinate, rimmed; sutural margin not conspicuously elevated; striole about 0.3× as long as elytron; striae with discrete, moderately large punctures; declivity deep, strongly oblique; humeral callus moderately large; sub-basal tubercle large, the surface immediately behind it depressed, then rising to a rounded hump on posterior half of elytra; vestiture consisting of varying proportions of pale and dark scales, usually with a dark patch on sub-basal tubercle, a broad, dark, transverse band near middle of disc, and irregular-shaped patches and bands elsewhere. Tibiae rather slender in both sexes; middle tibia of male curved. Tarsi slender; segment 1 considerably longer than segments 2 and 3

together; segment 2 barely emarginate; anterior claw of male with similar-sized inner and outer teeth.

ABDOMEN. Pygidium wider than long, distinctly tapering towards apex, not asperate; surface densely clothed with scales; margins raised. Ventrites impressed along midline in male, only ventrite 5 so impressed in female; surface without asperities in both sexes, densely clothed with pale scales.

MALE. Tergite 8 not lobed. Sternite 8 with a pair of transverse, triangular, setose plates; apodeme present. Sternite 9 apodeme long, slender, with well developed arms. Tegmen moderately robust, its ring longer than apodeme, which is almost parallel-sided; apex entire and broadly rounded in dorsal aspect, slightly expanded and emarginate in lateral aspect, with several short setae; preapical flange entire. Aedeagus about 0.6× as long as elytron; apodemes joined to a dorsal extension on either side of base of pedon; bridge slender, short, slightly arched, very close to base of pedon; pedon divided transversely towards apex, the apical part slender, elongate, and terminating in a rounded tip, the basal part with a curved ventral projection and a pair of dorsal lobes; tectum long, with a sharply pointed apex; internal sac not reaching free end of apodemes, lined with fine and coarse spinules; ejaculatory duct inserted subapically on dorsal surface of internal sac.

FEMALE. Segment 8 about half as long as hemisternites; tergite weakly sclerotised, with an entire apex; sternite weakly sclerotised except for a pair of elongate lobes continuous with apodeme; setae short, sparse. Hemisternites about half as long as elytra; body distinct from lateral rods, which are about 0.6× as long as entire hemisternites; apex with 3 small, blunt teeth and a minute, concealed stylus; median rods fused together along midline, neither tapering nor divergent at proximal end. Vulva with a pair of membranous lobes ventrally. Bursa copulatrix reaching slightly beyond lateral rods, without sclerotised areas internally. Spermatheca small, very globose on basal half, not annulate but with surface rugulose near base; spermathecal gland oval, shorter than spermatheca, stalked; ducts of spermatheca and spermathecal gland inserted independently in a slit at base of spermatheca.

RANGE. New Zealand.

REMARKS. *Etnalis* is the only New Zealand anthribine genus with both short antennae and deeply emarginate eyes. The elytra are very characteristically humped in lateral aspect. Distinctive features of the male are the curved middle tibiae, the similar-sized inner and outer teeth on the claw of the front leg, and the subapical suture, ventral extension, and dorsally produced lobes of the pedon. The only other New Zealand genus with a similar pedon is *Gynarchaeus*, which is not closely related. Diagnostic characters of the female genitalia are the slender, almost parallel arms of the apodeme of segment 8 and the slit, rather than an atrium, at the base of the spermatheca.

Etnalis has no close relatives in New Zealand nor, apparently, elsewhere in the South Pacific, and it therefore forms part of the endemic element.

KEY TO SPECIES OF *Etnalis*

- Pronotum without a lateral carina; transverse carina of pronotum basal, extending outwards at sides and meeting lateral margin in a curved, spine-like projection (Figure 154); pygidium with creamish scales only *spinicollis*
- Pronotum with a short lateral carina; transverse carina of pronotum sub-basal, meeting lateral carina in an obtuse angle (Figure 151); pygidium with intermingled cream and orange scales *obtusus*

Etnalis obtusus (Sharp) new combination

Figures 149-151, 421-425, 640, and 641

Sharp, 1886, Scientific transactions of the Royal Dublin Society (2) 3: 435 (*Anthribus*); Broun, 1893, Manual of New Zealand Coleoptera 5: 1256-1257 (*Anthribus*);

Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 314 (*Brachytarsus*).

Length 2.4-3.9 mm; width 1.0-1.7 mm.

HEAD (Figure 149). Rostrum 1.6-2.0× wider than long. Antennae, Figure 150. Eyes with dorsal and ventral lobes not reaching anteriorly as far as posterior margin of scrobe, separated by 0.50-0.52× (male) or 0.58-0.60× (female) width of rostrum.

THORAX. Pronotum (Figure 151) about 1.2× wider than long; vestiture consisting of cream, orange, brown, and black scales, somewhat intermingled except for a sharply defined, broad dorsolateral band of cream scales on postmedian quarter. Elytra about 2.1× longer and 1.1× wider than pronotum, together 1.4-1.5× longer than wide. Orange scales abundant among cream scales; dark areas with more black than brown scales. Wing about 3.1× longer than wide, 1.9× longer than elytron. Middle tibia of male slightly curved, with a small ventral patch of dark spinules at apex.

ABDOMEN. Pygidium with intermingled orange and cream scales.

MALE. Segment 8 and sternite 9, Figure 421. Tegmen, Figures 422 and 423. Aedeagus, Figures 424 and 425; internal sac with 2 contiguous tracts of large, brown spinules on ventral surface and fine, hair-like lining elsewhere.

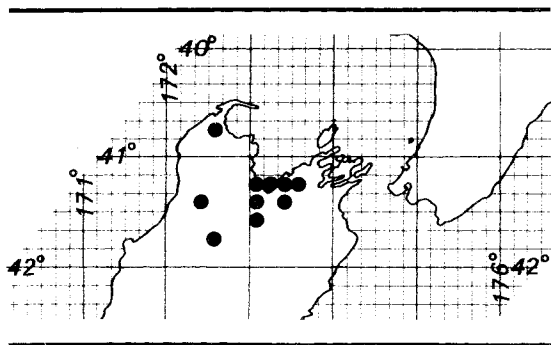
FEMALE. Segment 8, Figure 640. Genitalia, Figure 641.

TYPE DATA. Holotype: female, 3.7 × 1.6 mm, Picton (SD), Helms (BMNH). I am indebted to G. Kuschel for examining and measuring the holotype.

MATERIAL EXAMINED. 13 males, 8 females, 1 unsexed (CMNZ, FRNZ, NMNZ, NZAC).

SD, NN. Sea level to about 610 m. Northernmost record: Aorere Valley (NN); southernmost record: near Kawatiri (NN).

Reared from galls on *Coriaria arborea* (Coriariaceae) and from dead branches of *Coprosma* sp. (Rubiaceae). Fragments of fungal fructifications and large numbers of unidentifiable translucent, thin-walled, pale brown spores were present in the hindgut of dissected specimens.



Adults have been collected in April, August, and from October to February.

REMARKS. *E. obtusus* is readily identified by the characters given in the key. The spinules of the internal sac of the male are very distinctive, but the female genitalia are almost indistinguishable from those of *E. spinicollis*. *E. obtusus* is apparently confined to the northernmost part of the South Island, and is poorly represented in collections.

Etnalis spinicollis Sharp

Figures 51, 152-154, 426-430, 642, and 643

Sharp, 1873, Entomologist's monthly magazine 10: 32; Sharp, 1876, Annals and magazine of natural history (4) 17: 425 (key); Broun, 1880, Manual of New Zealand Coleoptera 1: 554-555; Hudson, 1934, New Zealand beetles and their larvae: 127; Wolfrum, 1959, Entomologische Arbeiten aus dem Museum Frey 10: 159.

Length 2.5-4.0 mm; width 1.1-1.8 mm.

HEAD (Figures 51 and 152). Rostrum 2.0-2.4× wider than long. Antennae, Figure 153. Eyes with dorsal lobe extending forward slightly beyond posterior margin of scrobe, ventral lobe not quite reaching scrobe, separated by 0.25-0.32× (male) or 0.45-0.55× (female) width of rostrum.

THORAX. Pronotum, Figures 51 and 154; width, excluding spine-like basal projection, about 1.2× length; vestiture consisting of intermingled cream and orange

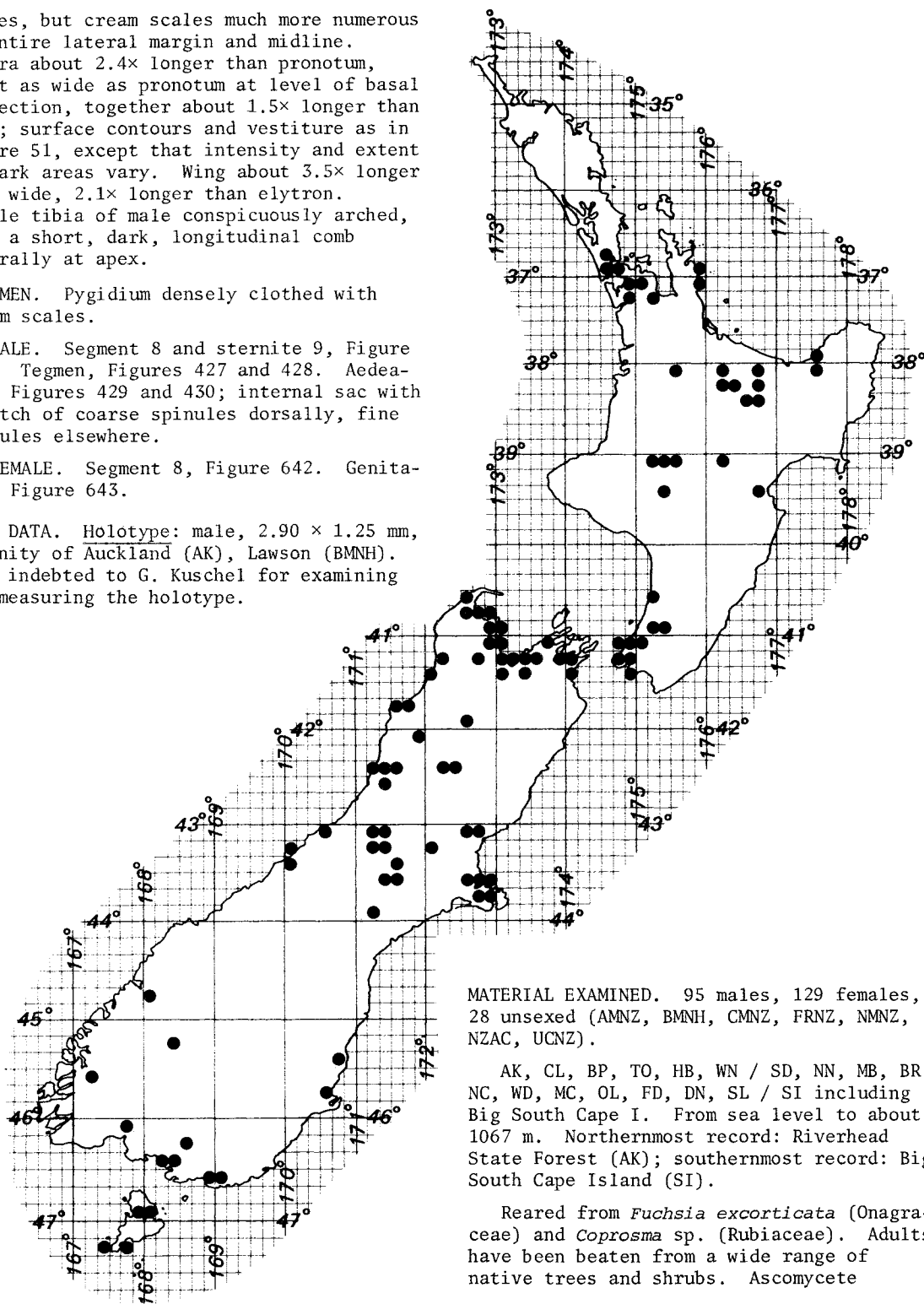
scales, but cream scales much more numerous on entire lateral margin and midline. Elytra about 2.4× longer than pronotum, about as wide as pronotum at level of basal projection, together about 1.5× longer than wide; surface contours and vestiture as in Figure 51, except that intensity and extent of dark areas vary. Wing about 3.5× longer than wide, 2.1× longer than elytron. Middle tibia of male conspicuously arched, with a short, dark, longitudinal comb ventrally at apex.

ABDOMEN. Pygidium densely clothed with cream scales.

MALE. Segment 8 and sternite 9, Figure 426. Tegmen, Figures 427 and 428. Aedeagus, Figures 429 and 430; internal sac with a patch of coarse spinules dorsally, fine spinules elsewhere.

FEMALE. Segment 8, Figure 642. Genitalia, Figure 643.

TYPE DATA. Holotype: male, 2.90 × 1.25 mm, vicinity of Auckland (AK), Lawson (BMNH). I am indebted to G. Kuschel for examining and measuring the holotype.



MATERIAL EXAMINED. 95 males, 129 females, 28 unsexed (AMNZ, BMNH, CMNZ, FRNZ, NMNZ, NZAC, UCNZ).

AK, CL, BP, TO, HB, WN / SD, NN, MB, BR, NC, WD, MC, OL, FD, DN, SL / SI including Big South Cape I. From sea level to about 1067 m. Northernmost record: Riverhead State Forest (AK); southernmost record: Big South Cape Island (SI).

Reared from *Fuchsia excorticata* (Onagraceae) and *Coprosma* sp. (Rubiaceae). Adults have been beaten from a wide range of native trees and shrubs. Ascomycete

spores, probably of Xylariaceae, and fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected in June and from August to February.

REMARKS. *E. spinicollis* is immediately recognisable by the spine-like basal projection of the pronotum. It is widespread and relatively common, especially in lowland areas.

Isanthribus new genus

TYPE-SPECIES *Etnalis proximus* Broun, 1880

(The name *Isanthribus* is derived from the Greek 'isos', meaning 'equal, like', and *Anthribus*, and draws attention to the similar external appearance of males and females of species of this genus; gender masculine.)

Small anthribids (length 1.9-3.9 mm). Integument brown, glossy; head and pronotum with dense, moderately large, somewhat honeycomb-shaped punctures separated by shiny, narrow interstices; elytra punctostriate; vestiture dense, consisting of appressed to suberect, cream, yellow, dark brown, black, and sometimes silver and orange, linear scales and coarse hairs which usually obscure the integumental surface. Rostrum transverse; dorsal surface without distinct longitudinal carinae; ventral surface not carinate. Antennae short, inserted dorsolaterally. Eyes with a minute dorsal notch on anterior margin. Pronotum without tubercles or tufts; transverse carina sub-basal to ante-basal, entire or broken; lateral carina present or absent. Elytra with a barely discernible to moderately large humeral callus and sub-basal tubercle, without tufts of scales. Wings fully developed or vestigial. Legs unicolorous, or sometimes banded with darker integument on middle section of femora, middle and apical sections of tibiae, and apices of tarsal segments; vestiture consisting of cream or yellowish, linear scales and coarse hairs, the hairs darker on dark integument. Sexual dimorphism slight, most apparent in shape of abdominal ventrites.

HEAD. Rostrum widest in front of scrobes, somewhat carinate and conspicuously emarginate above scrobes, exposing scrobal floor; anterior margin slightly indented; surface uneven, usually with a transverse carina behind anterior margin, often with a median depression or groove between scrobes, and with a pair of saucer-shaped depressions in front of scrobes. Antennae slender to moderately robust, reaching basal 0.3 or even midlength of elytra; scape pyriform; 2nd segment short, slightly constricted at base; segments 3-8 rather slender, about equal in thickness, becoming shorter towards club; club moderately robust, about as long as preceding 2.5 funicle segments. Eyes rather small, longitudinal, protruding, rather finely faceted, with minute hairs, separated by more than distance between scrobal emarginations of rostrum.

THORAX. Pronotum wider than long, widest posteriorly or near middle, its sides gently convergent anteriorly and posteriorly; transverse carina strongly elevated and denticulate, sinuous, with sides curving forwards or backwards or produced outwards; lateral carina (when present) not extending forward to level of pleural suture, meeting transverse carina in an acute or obtuse angle; discal surface slightly convex; declivity moderately oblique to strongly concave, sometimes with denticles at sides; secondary carinae (if present) indistinct. Pleural suture exposed. Scutellum very small, rounded apically, level with base of elytra, densely clothed with cream scales. Elytra slender, widest at or slightly beyond middle; basal margin proclinate, rimmed; sutural margin flattened or raised; striae about 0.25× as long as elytron; striae with small, discrete punctures; declivity shallow, rounded; humeral callus and sub-basal tubercle rounded. Tibiae slender to moderately stout. Tarsi slender; segment 1 longer than segments 2 and 3 together; inner tooth of claw small.

ABDOMEN. Pygidium wider than long, rounded at apex, not rimmed, with numerous fine punctures and dense, decumbent, cream, linear scales, without asperities. Ventrites flattened along midline in female, distinctly concave in male, their surface shiny, with numerous minute, inconspicuous punctures except for a few large punctures

near margins; vestiture moderately dense, consisting of appressed, cream, linear scales; posterior margin of ventrite 4 strongly indented in male, slightly indented in female; ventrite 5 not asperate.

MALE. Tergite 8 very strongly sclerotised, with marginal setae. Sternite 8 membranous except for a pair of small lobes. Sternite 9 apodeme long, slender, with well developed arms. Tegmen slender, its ring longer than apodeme, which is narrow; apex long, narrow, rounded or truncate at tip, with 2 tufts of short setae; preapical flange entire, rounded or with a median prolongation. Aedeagus about half as long as elytron; apodemes continuous with pedon; bridge rather broad, close to base of pedon; pedon entire, broad, with a pointed apex; tectum moderately long, with a pointed apex; internal sac not reaching beyond free ends of apodemes, not lobed, lined with fine or moderately coarse spinules; ejaculatory duct inserted at apex of internal sac.

FEMALE. Segment 8 0.4-0.6× as long as hemisternites; tergite very weakly sclerotised, with an entire margin and with a few setae; sternite weakly sclerotised except for 2 long, narrow, moderately divergent arms continuous with apodeme. Hemisternites about half as long as elytra; body weakly sclerotised, distinct from lateral rods, which are about 0.6× as long as entire hemisternites; apex with 3 short, rather blunt teeth and a minute, concealed stylus; median rods fused together throughout their length; neither expanded nor divergent at proximal end. Vulva enclosed ventrally by a pair of large, membranous lobes. Bursa copulatrix slender, constricted near base, without sclerites. Spermatheca moderately large, bulbous at base, not annulate; spermathecal gland spherical, shorter than spermatheca, distinctly stalked; spermathecal duct widened near its insertion on atrium of spermatheca and at its insertion on bursa copulatrix.

RANGE. New Zealand.

REMARKS. *Isanthribus* is distinguished externally from other New Zealand anthribid genera which have the sides of the rostrum emarginate above the scrobes by its short antennae, minutely notched anterior margin

of the eyes, interocular distance not less than the distance between the scrobes, and lack of distinct rostral carinae. Characteristic features of the genitalia are the robust bridge and simple internal sac of the male, and the constricted bursa copulatrix, expanded ends of the spermathecal duct, stalked spermathecal gland and form of the sternite 8 apodeme in the female.

No close relatives of *Isanthribus* have been found among Chilean, Australian, or South Pacific Anthribidae.

KEY TO SPECIES OF *Isanthribus*

- 1 Pronotum with transverse carina broken and lateral carina well developed, almost reaching pleural suture (Figure 157) *dracophylli*
- Pronotum with transverse carina entire and lateral carina obsolete or developed as a short hook terminating well before level of pleural suture (Figures 160 and 163) 2
- 2 Pronotum with transverse carina extending outwards well beyond remainder of lateral margin (Figure 163); humeral callus and sub-basal tubercle moderately large; sutural margin of elytron raised; wings fully developed *proximus*
- Pronotum with transverse carina not extending outwards beyond remainder of lateral margin (Figure 160); humeral callus and sub-basal tubercle very small or absent; sutural margin of elytron not raised; wings vestigial *phormii*

Isanthribus dracophylli new species

Figures 155-157, 644, and 645

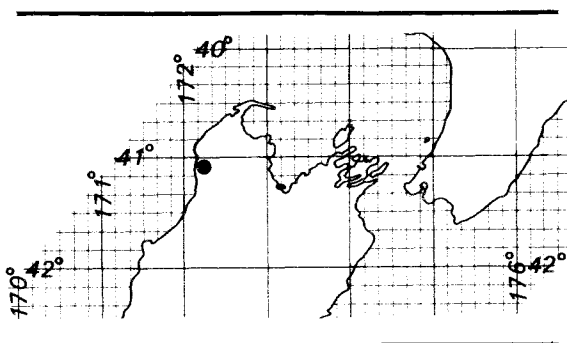
This description refers only to the holotype female; no other specimens are yet known. Vestiture appressed to suberect, very dense, mainly in shades of yellow and brown, with some streaks of cream scales and large patches of coarse, black hairs. Length 3.9 mm; width 1.8 mm.

HEAD (Figure 155). Entire dorsal surface with very dense, coarse, shaggy, yellowish and brown scales except for a median, white streak on vertex. Rostrum 1.35× wider than long. Antennae (Figure 156) 0.81× length of elytra, clothed with dense, rather long scales and hairs. Eyes separated by 0.85× width of rostrum and 0.61× width across eyes; notch on anterior margin barely discernible.

THORAX. Pronotum (Figure 157) 1.18× wider than long, widest just behind middle; vestiture consisting mainly of yellowish-brown scales with intermingled black hairs, a cream stripe on midline, and a black band on lateral margins; transverse carina ante-basal, broken at midline and in several places laterally, very slightly sinuate, directed forwards at sides; lateral carina well developed, almost reaching pleural suture, meeting transverse carina in an obtuse angle; declivity moderately oblique. Elytra 2.12× longer and 1.77× wider than pronotum, together 1.50× longer than wide; vestiture consisting of intermingled cream and yellowish-brown scales and dark brown hairs, with coarse black hairs on sub-basal tubercle, on suture of declivity, and in a broad, irregular band running along side of disc from humeral callus to declivity; humeral callus large, elongate; sub-basal tubercle low, rounded; punctures of striae widely spaced, neither very large nor deep; sutural margin barely raised; interstriae flattened. Wings fully developed (not dissected for closer examination). Femora with a slightly darker integumental band beyond middle. Tibiae and tarsi unicolorous; tooth of tarsal claw about half as long as claw.

ABDOMEN. FEMALE. Segment 8, Figure 644. Genitalia, Figure 645.

TYPE DATA. Holotype: female, 3.9 × 1.8 mm, Mt Domett (NN), 1250 m, emerged 21 March



1973 from decaying branches of *Dracophyllum traversii* (Epacridaceae) collected 2 December 1971, J. S. Dugdale (NZAC).

REMARKS. In elytral colour pattern *I. dracophylli* resembles some large specimens of *I. proximus*, but they are easily separable by the shape of the transverse and lateral carinae of the pronotum. Some of the scales on the dorsal surface of the holotype of *dracophylli* appear to have been damaged: they are truncate rather than tapering.

Isanthribus phormii new species

Figures 158-160, 286, 431-435, 646, and 647

Vestiture appressed and decumbent, moderately dense, mainly in shades of yellow, with some intermingled coarse, brown hairs, never with conspicuous pale and dark patches. Length 1.9-3.5 mm; width 0.9-1.6 mm.

HEAD (Figure 158). Rostrum 1.13-1.21× (male) or 1.33-1.38× (female) wider than long. Antennae (Figure 159) 1.04-1.13× (male) or 0.99-1.01× (female) as long as elytra. Eyes separated by 0.91-0.94× (male) or 0.86-0.90× (female) width of rostrum and 0.58-0.62× width across eyes.

THORAX. Pronotum (Figure 160) 1.02-1.03× (male) or 1.05-1.09× (female) wider than long, widest near middle; transverse carina entire, sub-basal, slightly sinuous, directed outwards or slightly forward at sides; lateral carina absent, or present as a very short hook on end of transverse

carina; declivity strongly oblique laterally. Elytra about 2.18× (male) or 2.20-2.35× (female) longer than pronotum, 1.33-1.35× wider than pronotum, together 1.55-1.57× longer than wide; vestiture uniformly yellow, or yellow and brown; humeral callus and sub-basal tubercle extremely small or absent; punctures of striae rather close, deep, large; sutural margin not raised; interstriae flattened. Wings (Figure 286) vestigial, about 2.8× longer than wide, about 0.84× as long as elytron, with reduced anal veins but a distinct anal lobe. Femora with a dark, transverse integumental band near middle. Tibiae with a dark, elongate integumental band on outer edge. Tarsal segments only slightly darker apically; tooth of claw almost half as long as claw itself.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 431. Tegmen (Figures 432 and 433) very slender, with a median prolongation on flange. Aedeagus (Figures 434 and 435) with relatively long apodemes; tectum rather short; internal sac not reaching as far as free end of apodemes, with rather coarse spinules.

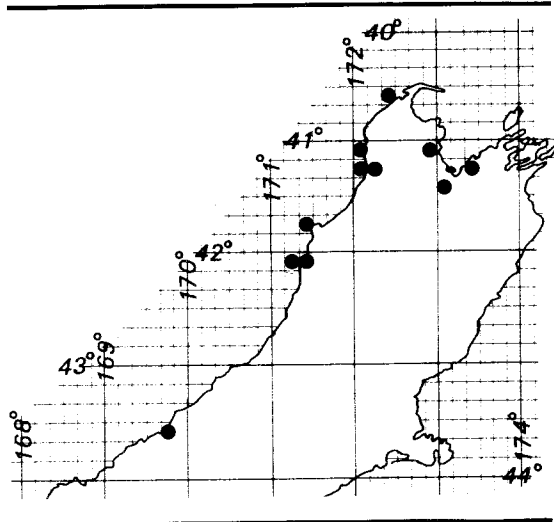
FEMALE. Segment 8, Figure 646. Genitalia, Figure 647.

TYPE DATA. Holotype: male, 3.2 × 1.4 mm, Tauranga Bay, Westport (BR), beaten from dead leaf bases of *Phormium tenax*, 27 January 1971, B. A. Holloway (NZAC). Paratypes (25 males, 11 females, 5 unsexed, all NZAC). 8 males, 4 females, same data as holotype; 8 males, 6 females, Kohaihai River (NN), beaten from *Phormium*, 30 May 1963, B.A.H. and G. Kuschel; 6 males, 2 unsexed, Oparara River (NN), 13-19 Nov 1957, E. S. Gourlay and J. I. Townsend; 1 male, Mangarakau (NN), 11 Jan 1966, A. K. Walker; 1 unsexed, Aniseed Valley (NN), 29 Dec 1935, E.S.G.; 1 male, Canaan (NN), 17 Feb 1965, J.I.T.; 2 unsexed, Cawthron Park (NN), 26 Feb 1949, E.S.G.; 1 female, Punakaiki (BR), 21 Jan 1935, E.S.G.; 1 male, Bruce Bay (WD), dead leaves of *Phormium tenax*, 24 Feb 1966, G.K.

MATERIAL EXAMINED. Type series only.

NN, BR, WD. From sea level to about 610 m. Northernmost record: Mangarakau (NN); southernmost record: Bruce Bay (WD).

I. phormii has not been reared, but larvae undoubtedly are associated with dead



leaf bases of *Phormium* spp. (Agavaceae), where adults have been collected in considerable numbers. Spores of *Anthostomella* sp. near *tomicum* (Ascomycetes: Xylariaceae) and fragments of fungal fructifications and hyphae were present in the hindgut of dissected adults.

Adults have been collected in May and from November to February.

REMARKS. *I. phormii* is a small, slender, drab-looking species lacking any striking surface contours or colour pattern. The vestigial wing has undergone much less reduction in size and venation than that of other flightless New Zealand anthribids (exception: *Tribaseileus noctivagus* new species).

Isanthribus proximus (Broun) new combination

Figures 52, 161-163, 436-440, 648, and 649

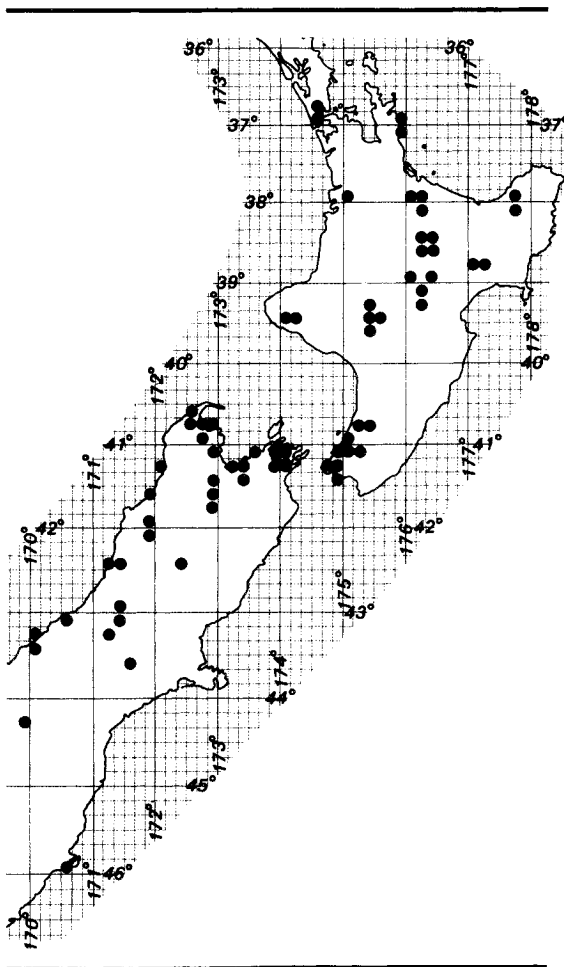
Broun, 1880, Manual of New Zealand Coleoptera 1: 555-556 (*Etnalis*); 1893, Manual of New Zealand Coleoptera 5: 1258 (*Eugonissus*); Wolfrum, 1959, Entomologische Arbeiten aus dem Museum Frey 10: 160 (*Etnalis*).

sylvanus Broun, 1913, Transactions and proceedings of the New Zealand Institute 45: 149-150 (*Eugonissus*); Hudson, 1934, New Zealand beetles and their larvae: 127 (*Eugonissus*). NEW SYNONYMY.

Vestiture mainly appressed, in small specimens sparse to moderately dense, mainly in shades of yellow and brown with a few silvery, cream, or orange scales; vestiture in large specimens moderately to very dense, usually with conspicuous bands and patches of black and opalescent silvery or cream scales on pronotal and elytral discs, sometimes with orange scales interspersed with these, and with dense, intermingled silvery and orange scales on dorsal surface of head. Length 1.9-3.4 mm; width 1.0-1.5 mm.

HEAD (Figures 52 and 161). Rostrum 1.38-1.50× (male) or 1.56-1.67× (female) wider than long. Antennae (Figure 162) 0.94-1.21× (male) or 0.86-0.95× (female) as long as elytra, longest in largest specimens. Eyes separated by 0.80-0.87× width of rostrum and 0.53-0.61× width across eyes; notch with a conspicuous cluster of pale scales.

THORAX. Pronotum (Figures 52 and 163) 1.23-1.34× wider than long, widest at posterior angles; transverse carina entire, sub-basal, sinuous, directed outwards and somewhat backwards at sides to form a sharply acute basal angle; lateral carina absent, or present as a short hook on end of transverse carina; declivity concave laterally. Elytra (Figure 52) 2.43-2.56× (male) or 2.59-2.71× (female) longer than pronotum, 1.17-1.29× (male) or 1.24-1.32× (female) wider than pronotum, together 1.53-1.64× longer than wide; colour pattern very variable, in small specimens rather dull and drab, in large specimens (Figure 52) consisting of strongly contrasting, variably shaped black and white patches; humeral callus rather small; sub-basal tubercle large, rounded; punctures of striae more conspicuous in small specimens than in large ones; sutural margin conspicuously raised; interstriae flattened or very slightly convex. Wings fully developed, about 3.4× longer than wide, about 2.2× longer than elytra, with weak anal veins but a well developed anal lobe. Femora with a dark integumental band just beyond middle. Tibiae with dark integument at base and near middle, the vestiture on these bands sparser and darker than elsewhere. Tarsi slightly darkened at extreme apex; tooth of claw about 0.3× as long as claw.



ABDOMEN. MALE. Segment 8 and sternite 9, Figure 436. Tegmen (Figures 437 and 438) moderately slender, with a uniformly rounded flange. Aedeagus (Figures 439 and 440) with relatively short apodemes; tectum rather long; internal sac reaching free end of apodemes, with fine spinules.

FEMALE. Segment 8, Figure 648. Genitalia, Figure 649.

TYPE DATA. Lectotype of *proximus* Broun: sex undetermined, 2.8 × 1.3 mm, Tairua (CL), Broun (BMNH). Lectotype of *sylvanus* Broun: sex undetermined, 2.8 × 1.3 mm, Waimarino (TO), January 1910, Broun (BMNH).

MATERIAL EXAMINED. The above 2 primary types, 101 males, 88 females, 16 unsexed (BMNH, FRNZ, NMNZ, NZAC, UCNZ).

AK, CL, WO, BP, GB, TO, TK, RI, WN / SD, NN, BR, WD, MC, MK, DN. From sea level to 1128 m. Northernmost record: Riverhead (AK); southernmost record: Dunedin (DN).

Reared from *Nothofagus fusca* (Fagaceae). Adults have been beaten in considerable numbers from *Pinus radiata* (Pinaceae) and *Hebe* spp. (Scrophulariaceae). Fragments of fungal fructifications and hyphae and 2 kinds of dark-walled dictyoconidia were found in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. The protruding, sharply pointed basal angles of the pronotum are a striking feature of *I. proximus*, and are well developed even in very small specimens. Similarly developed basal angles occur in only 2 other New Zealand anthribines: *Etnalis spinicollis*, which is immediately recognisable by its deeply emarginate eyes; and *Eugonissus conulus*, which has a very large, crested sub-basal tubercle on the elytra and differently patterned tibiae.

Tribasileus new genus

TYPE-SPECIES *Tribasileus noctivagus* new species.

(The name *Tribasileus* is derived from the Greek 'trêsis', meaning 'three', and 'basileús', meaning 'king', and refers to the Three Kings Islands where the genus occurs; gender masculine.)

Small to moderately large anthribids (length 3.8-6.2 mm). Integument dark brown to black; vertex with a few large punctures, remainder of dorsal surface with granulose minisculpture but no distinct punctures except in elytral striae; entire dorsal surface with dense, overlapping, appressed to decumbent, linear scales in shades of yellow and brown. Rostrum transverse, with a median carina and a pair of midlateral carinae on dorsal surface, the median carina deeply furrowed anteriorly; ventral surface without a carina. Antennae moderately long, inserted dorsolaterally. Eyes weakly emarginate. Pronotum without

tubercles or tufts; transverse carina strongly antebasal, broken; lateral carina present. Elytra without tufts or tubercles but with a humeral callus. Wings vestigial. Legs with dark integument; vestiture cream except for a dark band at apex of tibiae. Sexual dimorphism slight.

HEAD. Rostrum indented at scrobes, exposing scrobal floor, narrowing slightly anteriorly, its anterior margin deeply notched but not rimmed; sides raised at scrobes; surface somewhat shagreened, with very dense, yellowish scales; the 3 longitudinal carinae joined by short, transverse bars on frons. Antennae reaching middle of elytra or slightly beyond in females and small males, but almost to apex of elytra in large males; club very slender, about as long as preceding 2 funicle segments. Eyes widely separated, small, oval, protruding, finely faceted, with minute hairs; anterior margin truncate except for a small, dorsal emargination.

THORAX. Pronotum wider than long, widest near middle, its sides gently converging anteriorly and posteriorly; transverse carina strongly elevated, feebly denticulate, very sinuous, broken symmetrically towards sides, sometimes broken at midline; lateral carina dorsal in position, strongly elevated, reaching pleural suture, meeting transverse carina in an obtusely rounded angle; entire dorsal surface somewhat shagreened; declivity slightly sloping, with a few denticles near sides, without secondary carinae. Pleural suture conspicuous. Scutellum small, triangular, depressed below level of elytral bases, clothed with short, cream scales. Elytra widest near middle; basal margin slightly proclinate, rimmed near elytral suture; sutural margin not raised; striole obsolete; striae with moderately large, deep, discrete punctures; interstriae slightly rounded; humeral callus moderately large; vestiture somewhat variegated, usually with some patches and bands of creamish scales. Tibiae rather slender. Tarsi slender; segment 1 slightly longer than segments 2 and 3 together; segment 2 emarginate; inner tooth of claw minute.

ABDOMEN. Pygidium wider than long, densely clothed with yellow scales; surface somewhat shagreened, without asperities in male, with asperities near apex in female.

Ventrites 1-5 of male impressed along midline, only ventrite 5 so impressed in female; all ventrites with silvery-grey scales; asperities present in female, absent in male.

MALE. Tergite 8 strongly sclerotised, emarginate and conspicuously setose apically. Sternite 8 with sclerotised area reduced to a pair of narrow, transverse strips. Sternite 9 apodeme long, slender, with well developed arms. Tegmen broad, spindle-shaped, its ring much longer than the apodeme, which is widened slightly from base; apex trilobed in dorsal aspect, oblique in lateral aspect, with numerous long hairs; preapical flange entire. Aedeagus about 0.6× as long as elytron; apodemes continuous with pedon; bridge slender, arched, distant from base of pedon; pedon entire, broad, with a pointed apex; tectum long, slender, pointed; internal sac very short, barely reaching middle of apodemes, ornately lobed, with a sclerotised and spinulose lining; ejaculatory duct inserted ventrally on internal sac.

FEMALE. Segment 8 about half as long as hemisternites; tergite weakly sclerotised, with an entire apex and with long marginal setae; sternite moderately sclerotised, with marginal setae. Hemisternites about 0.7× as long as elytra; body distinct from lateral rods, which are about 0.7× as long as entire hemisternites; apex with 3 short, blunt, very setose teeth and a minute stylus; median rods joined together for most of their length, expanded and slightly divergent at proximal end. Vulva enclosed ventrally by a pair of short, membranous lobes. Bursa copulatrix reaching slightly beyond lateral rods, without sclerites. Spermatheca very small, not annulate, slightly globose basally; spermathecal gland oval, about as long as spermatheca, sessile on small atrium at base of spermatheca.

RANGE. New Zealand.

REMARKS. *Tribasileus* is the only New Zealand anthribid genus that has 3 longitudinal rostral carinae joined by short, transverse bars on the frons. *Lawsonia* has 3 rostral carinae, but they are widely separated on the frons. The very short, ornately lobed internal sac is a unique

feature of the male genitalia. Some characters of the female genitalia are shared by the New Caledonian genus *Anthribisomus* Perroud, but the 2 genera are otherwise very dissimilar. For the present, *Tribasileus* has to be regarded as part of the endemic element of New Zealand.

The genus comprises a single species that is confined to the Three Kings Islands.

Tribasileus noctivagus new species

Figures 53, 164-166, 287, 441-445, 650, and 651

Length 3.8-6.2 mm; width 2.0-3.3 mm.

HEAD (Figures 53 and 164). Rostrum 1.57-1.93× wider than long. Antennae, Figure 165. Eyes separated by 0.71-0.77× width of rostrum and 0.52-0.57× width across eyes.

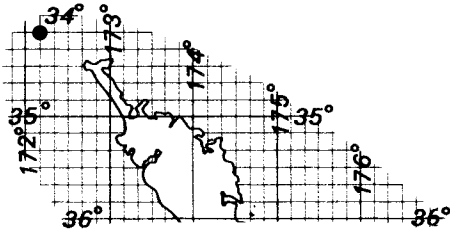
THORAX. Pronotum (Figures 53 and 166) 1.19-1.28× wider than long. Yellow scales often conspicuous on midline, towards sides of declivity, and on centre of disc. Pleural suture sometimes extending on to dorsal surface. Elytra 1.61-1.86× longer and 1.09-1.21× wider than pronotum, together 1.17-1.24× longer than wide. Vestiture (Figure 53) with slight variations. Wings (Figure 287) vestigial, about 2.6× longer than wide, about 1.03× as long as elytron, with well developed basal veins.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 441. Tegmen, Figures 442 and 443. Aedeagus, Figures 444 and 445.

FEMALE. Segment 8, Figure 650. Genitalia, Figure 651.

TYPE DATA. Holotype: male, 5.6 × 2.9 mm, Castaway Camp, Great Island, Three Kings Islands, on *Melicytus* bark at night, November 1970, G. Kuschel (NZAC). Paratypes: 46 males, 44 females, Great I. and South West I., Three Kings, 1963 and 1970, E. S. Gourlay, P. M. Johns, G.K., J. McBurney, G. W. Ramsay, and J. C. Watt (NZAC, UCNZ).

MATERIAL EXAMINED. Type series only (NZAC, UCNZ).



Three Kings Islands - Great I., South West I. From near sea level to about 100 m.

T. noctivagus has not been reared. Adults have been collected on various native trees and shrubs. Fragments of fungal fructifications and a wide variety of nondescript spores were present in the hindgut of dissected specimens.

Adults have been collected from November to January.

REMARKS. The wings and humeral callus of *T. noctivagus* are less modified than in most other flightless New Zealand anthribids. This is a nocturnal anthribid, hence the specific name ('night wanderer'). For the romantically minded, the star-guided peregrinations of the original Three Kings may be evoked by the full name.

***Cerius* new genus**

TYPE-SPECIES *Cerius tiregius* new species.

(The name *Cerius* is derived from the Greek 'kerion', meaning 'honeycomb', and alludes to the appearance of the punctures on the head and pronotum; gender masculine.)

Small anthribids (length 2.4-3.4 mm). Integument brown, glossy; head and pronotum with dense, moderately large, honeycomb-shaped punctures; elytra puncto-striate; vestiture moderately dense, consisting of appressed and decumbent, silver, cream, yellow, and dark brown or black, linear scales and coarse hairs which do not completely obscure the integumental surface. Rostrum transverse, without dorsal and ventral carinae but with a small, median depression dorsally near anterior margin.

Antennae long, inserted dorsolaterally. Eyes with a notch in anterior margin. Pronotum without tufts or tubercles; transverse carina sub-basal or antebasal, entire or fragmented; lateral carina present or absent. Elytra smooth or with a humeral callus and a low, sub-basal convexity, without tufts. Wings fully developed or vestigial. Legs not banded, but sometimes with darker integument on middle section of femora, outer apical part of tibiae, and apices of tarsal segments; vestiture consisting of creamish, linear scales. Sexual dimorphism apparent in antennal length.

HEAD. Rostrum conspicuously emarginate at scrobes, exposing scrobal floor; anterior margin slightly indented, sometimes with a low rim; median depression near anterior margin oval. Antennae long, 2.02-2.55× (male) or 0.78-0.92× (female) length of body; scape pyriform; segment 2 short, slightly constricted basally; segment 3 broader and shorter than segment 4 in male, broader and longer than segment 4 in female; segments 4-8 slender, becoming progressively shorter towards club in both sexes; club slender, about as long as segment 8 in male, about 2× longer than segment 8 in female. Eyes rather small, longitudinal, protruding, finely faceted, with minute hairs, separated by less than distance between scrobes; upper lobe smaller than lower lobe, its medial edge usually bounded by a shiny keel.

THORAX. Pronotum wider than long, widest near middle, its sides gently rounded; transverse carina scarcely curving forward at sides, almost straight on either side of midline, strongly elevated and denticulate when entire, weak when fragmented; lateral carina (when present) extending forward almost to pleural suture, meeting transverse carina in an obtusely rounded angle; declivity almost horizontal to strongly oblique, coarsely and irregularly denticulate at sides and across base; secondary carinae (if present) incomplete. Pleural suture exposed. Scutellum very small, rounded at apex, level with base of elytra, clothed with dense, cream scales. Elytra short, broad, widest beyond middle; disc rather convex near middle; base slightly proclinate, rimmed; sutural margin not raised; striae about 0.35× as long as elytron; striae with rather small, close but discrete punctures; declivity rather deep, rounded; humeral callus (when

present) small, angulate. Tibiae moderately slender. Tarsi slender; segment 1 longer than segments 2 and 3 together; inner tooth of claw small.

ABDOMEN. Pygidium wider than long, rounded at apex, not asperate, densely clothed with decumbent, cream, linear scales. Ventrites not impressed along midline, their surface with barely discernible punctures and moderately dense, appressed, cream, linear scales; ventrite 5 not asperate.

MALE. Tergite 8 strongly sclerotised, its margin entire, sparsely setose; sternite 8 membranous except for a pair of minute lobes. Sternite 9 apodeme long, with well developed arms. Tegmen slender, its ring longer than apodeme, which is narrow; apex rather wide, rounded, with marginal setae; preapical flange entire, strongly curved. Aedeagus about 0.4× as long as elytron; apodemes continuous with pedon; bridge very expansive, distant from base of pedon; pedon entire, pointed at apex; tectum moderately long, pointed at apex; internal sac lobate near apex, with a ventral tract of moderately coarse spinules; ejaculatory duct inserted at apex of internal sac.

FEMALE. Segment 8 about 0.3× as long as hemisternites; tergite with an entire apex and with very few setae; sternite sclerotised mainly on median 0.3, sparsely setose. Hemisternites about 0.7× as long as elytra; body weakly sclerotised, not strongly demarcated from lateral rods, which are about 0.6× as long as entire hemisternites; apex with 3 or 4 short teeth and a minute stylus; median rods longer than lateral rods, fused together throughout their length, expanded conspicuously at proximal end. Vulva with a pair of membranous lobes ventrally. Bursa copulatrix large, without sclerites. Spermatheca moderately large, slightly bulbous at base; spermathecal gland spherical or oval, longer or shorter than spermatheca; ducts of spermatheca and spermathecal gland inserted on small atrium at base of spermatheca.

RANGE. New Zealand.

REMARKS. The very uniform, honeycomb-like sculpturing of the head and pronotum is a characteristic feature of *Cerius*. The genus is unique among New Zealand's Anthribinae in having the median rods of

the female genitalia extending proximally beyond the lateral rods. The choragine *Araecerus* is the only other anthribid genus in New Zealand having median rods longer than the lateral rods. Characteristic features of the male genitalia are the expansive bridge between the apodemes of the aedeagus and the very small, sclerotised lobes of the eighth sternite.

Cerius has no close relatives in New Zealand nor in adjacent areas of the Pacific. Its 2 species occur in widely separated localities.

KEY TO SPECIES OF *Cerius*

Pronotum with transverse carina entire, sub-basal, and with a well developed lateral carina (Figure 172); elytra with a humeral callus and a sub-basal convexity; wings fully developed

.... *triregius*

Pronotum with transverse carina fragmented, antebasal, and with no lateral carina (Figure 169); elytra without a humeral callus or a sub-basal convexity; wings vestigial

.... *otagensis*

Cerius otagensis new species

Figures 6, 167-169, 288, 652, and 653

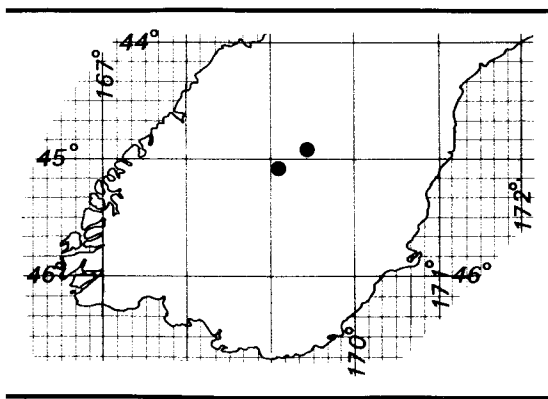
This description refers only to females; males are at present unknown. All scales rather long, silky, flexible, usually overlapping. Length 2.4-2.7 mm; width 1.3-1.4 mm.

HEAD (Figures 6 and 167) with numerous silvery as well as yellow scales. Rostrum 1.57-1.71× wider than long, weakly emarginate behind labrum; median depression not very conspicuous. Antennae (Figure 168) 1.24-1.31× longer than elytra. Eyes separated by about 0.67× width of rostrum and 0.54-0.57× width across eyes.

THORAX. Pronotum (Figure 169) 1.13-1.19× wider than long; vestiture mainly yellow and silver, but with some interspersed dark brown scales; transverse carina very fragmented and weak; lateral carina absent; declivity almost horizontal. Elytra 2.00-2.13× longer than pronotum, 1.37-1.56× wider than pronotum, together 1.14-1.31× longer than wide; vestiture dense, consisting of yellow, silver, and brown scales in a coarsely variegated pattern; humeral callus and sub-basal convexity absent; punctures of striae not sharply defined; interstriae not convex. Wing (Figure 288) 2.5× longer than wide, 0.25× as long as elytron, without recognisable veins. Tarsal segments darkened apically; tooth of claw minute, barely apparent.

ABDOMEN. FEMALE. Segment 8 (Figure 652) with arms of apodeme rather widely divergent. Genitalia (Figure 653) with median rods extending only slightly beyond lateral rods; body of hemisternites moderately sclerotised ventrally; spermathecal gland oval, longer than spermatheca.

TYPE DATA. Holotype: female, 2.7 × 1.4 mm, Gentle Annie Creek, Kawarau Gorge (CO), beaten from *Carmichaelia*, 25 November 1974, J. S. Dugdale (NZAC). Paratypes (3 females, all NZAC): 2, same data as holotype; 1, 4 km north of Lindis Crossing (CO), beaten *Carmichaelia petriei*, 27 Oct 1981, J. C. Watt.



MATERIAL EXAMINED. Type series only (NZAC).

CO. From 215 m to 260 m. Northernmost record: near Lindis Crossing (CO); southernmost record: Gentle Annie Creek (CO).

C. otagensis has not been reared. The type specimens were beaten from *Carmichaelia* spp. (Fabaceae). Fragments of fungal fructifications and large numbers of conidia of a pycnidial fungus, possibly *Stigmella*, were present in the hindgut of the one dissected specimen.

The type specimens were collected in October and November.

REMARKS. This small, flightless anthribid may well prove to be as local and scarce as existing information suggests.

Cerius triregius new species

Figures 34, 54, 170-172, 446-450, 654, and 655

All scales rather short and inflexible, those on head and pronotum rarely overlapping. Length 2.4-3.4 mm; width 1.2-1.7 mm.

HEAD (Figures 54 and 170) with mainly yellow scales. Rostrum 1.67-1.80× wider than long, rather strongly emarginate behind labrum; median depression usually very conspicuous. Antennae (Figure 171) 2.97-3.95× (male) or 1.26-1.38× (female) longer than elytra, longest in large males and small females. Eyes separated by 0.55-0.64× (male) or 0.64-0.70× (female) width of rostrum and 0.47-0.55× width across eye.

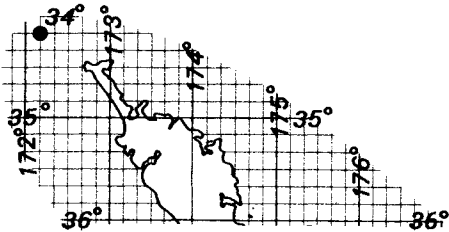
THORAX. Pronotum (Figures 54 and 172) 1.26-1.35× wider than long; vestiture mainly yellow and brown, usually with a pale streak on midline and several pale spots elsewhere on disc; transverse and lateral carinae well developed; declivity oblique. Elytra 1.89-2.30× longer and 1.13-1.31× wider than pronotum, together 1.18-1.35× longer than wide; vestiture (Figure 54) moderately dense, consisting of yellow and dark brown scales in a variegated pattern, always with pale scales on humeral callus, with dark scales on sub-basal convexity, and often with an oblique, dark patch near mid elytron; humeral callus and sub-basal convexity small; punctures of striae very clearly defined; interstriae moderately convex.

Wing fully developed, 3× longer than wide, 2× longer than elytron, with weak anal veins and a well developed anal lobe. Tarsal segments not darkened at apex; tooth of claw about 0.3× as long as claw itself.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 446. Tegmen, Figures 447 and 448. Aedeagus, Figures 449 and 450.

FEMALE. Segment 8 (Figure 654) with arms of apodeme not strongly divergent. Genitalia (Figures 34 and 655) with median rods extending well beyond lateral rods; body of hemisternites very weakly sclerotised ventrally; spermathecal gland spherical, shorter than spermatheca.

TYPE DATA. Holotype: male, 2.8 × 1.4 mm, Castaway Camp, Great Island, Three Kings Islands, November 1970, G. Kuschel (NZAC). Paratypes (6 males, 8 females, all NZAC): 1 female, Great Island, Three Kings, 1-3 Jan 1963, E. S. Gourlay; remainder same data as holotype, G.K., G. W. Ramsay, and J. C. Watt.



MATERIAL EXAMINED. Type series only (NZAC).

Three Kings Islands - Great I. From near sea level to about 100 m.

C. triregius has not been reared. The type material was obtained by general beating. Bark tissue and fragments of fungal fructifications and hyphae were present in the hindgut of dissected specimens.

Adults have been collected in January and November.

REMARKS. The name *triregius* alludes to the Three Kings Islands, type - and possibly only - locality of this species.

Androporus new genus

TYPE-SPECIES *Anthrribus discedens* Sharp, 1876.

(The name *Andróporus* is derived from the Greek 'anér, andrós', meaning 'man', and 'póros', meaning 'pore, pit', and alludes to the sensory pit on the hind femur of males; gender masculine.)

Small anthribids (length 2.5-4.4 mm). Integument brown, glossy; punctures of head and pronotum coarse, separated by shiny interstices; elytra puncto-striate; vestiture moderately dense, consisting of sub-erect to decumbent, yellowish-brown, cream, and black, linear scales and hairs that obscure most of the integument of the elytra but not of the head and pronotum. Rostrum transverse, its dorsal surface uneven but without distinct carinae or tubercles; ventral surface without carinae. Antennae long, inserted dorsolaterally. Eyes with a small, inconspicuous, anterior emargination. Pronotum convex, with (New Zealand species) or without (New Caledonian species) a pair of low, conical tubercles close to midline in centre of disc; transverse carina entire, sub-basal (N.Z. sp.) or antebasal (N.C. sp.); lateral carina well developed. Elytra with a well developed humeral callus and sub-basal tubercles, and with tufts and obsolete tubercles near centre of disc. Wings fully developed. Femora and tibiae with a dark, transverse integumental band near middle, the vestiture on these bands sparse, dark, but elsewhere dense, yellow; hind femur of male with a sensory pit ventrally containing dense, erect, yellowish hairs. Sexual dimorphism apparent mainly in antennal length.

HEAD. Rostrum with sides slightly elevated and deeply emarginate at scrobes, exposing scrobal floor, shallowly indented and with a low rim at anterior margin; dorsal surface with a shallow or deep, elongate, median groove and a pair of saucer-shaped depressions. Antennae slender, 1.5-2.1× longer than body in males, slightly shorter than body in females; scape pyriform; segment 2 very short, moderately constricted basally; segments 3-8 slender, all of similar form in female, progressively narrowing in male; club slender, almost

1.5× longer than segment 8 in male, about 2× longer than segment 8 in female. Eyes widely separated, elongate, protruding, very small (N.Z. sp.) to moderately large (N.C. sp.), moderately finely faceted, with short hairs; dorsal lobe much smaller than ventral lobe, barely extending medially beyond scrobal emargination of rostrum.

THORAX. Pronotum slightly wider than long, widest near middle, its sides gently convergent anteriorly and posteriorly; transverse carina strongly elevated, evenly denticulate, with a sharp, median angulation and a pair of shallow indentations laterally; lateral carina reaching pleural suture, meeting transverse carina in an obtuse angle; declivity moderately oblique, denticulate along lateral margin, with an incomplete secondary carina. Pleural suture exposed (N.C. sp.) or concealed by vestiture (N.Z. sp.). Scutellum small, obtusely rounded at apex, level with base of elytra, densely clothed with cream scales. Elytra widest just beyond middle; basal margin slightly proclinate, rimmed; sutural margin barely raised; striae about 0.3× as long as elytra; striae with small, shallow, discrete punctures; declivity short, almost vertical; humeral callus elongate, angulate; sub-basal tubercle moderately large (N.C. sp.) or very large (N.Z. sp.), elongate, close to suture, with dark scales on apex; centre of disc with 1-3 pairs of obsolete, elongate tubercles; vestiture rather coarsely variegated, the black scales usually suberect and forming tufts (not in N.C. sp.). Tibiae and tarsi slender; tarsal segment 1 longer than segments 2 and 3 together; segment 2 emarginate; inner tooth of claw less than half as long as claw itself.

ABDOMEN. Pygidium wider than long, without asperities, finely punctured, densely clothed with decumbent, pale, linear scales. Ventrites not impressed along midline; surface with fine punctures and dense, appressed, yellowish, linear scales; ventrite 5 not asperate.

MALE. Tergite 8 and sternite 8 weakly sclerotised, with short, marginal setae. Sternite 9 apodeme very long, with well developed arms. Tegmen rather broad, its

ring about as long as apodeme, which is slender; apex broad, pointed, with a tuft of long hairs; preapical flange entire, angulate near middle. Aedeagus about half as long as elytron; apodemes continuous with pedon; bridge robust, not arched, distant from base of pedon; pedon entire, broad, pointed at apex; tectum moderately long, pointed at apex; internal sac long, bilobed, with spinules and a sclerite; ejaculatory duct inserted at apex of ventral lobe.

FEMALE. Segment 8 about half as long as hemisternites; tergite weakly sclerotised, lacking setae; sternite moderately sclerotised, with long marginal setae; apodeme expanding gradually from its base. Hemisternites about half as long as elytra; body distinct from lateral rods, which are about 0.6× as long as entire hemisternites; apex with 3 short, blunt teeth and a minute stylus; median rods joined along midline, neither expanded nor divergent at proximal end. Vulva with a pair of membranous lobes ventrally. Bursa copulatrix slender, without sclerites. Spermatheca small, moderately globose, not annulate; spermathecal gland oval, shorter than spermatheca, stalked; ducts of spermatheca and spermathecal gland inserted on a very small atrium at base of spermatheca.

RANGE. New Zealand, New Caledonia.

REMARKS. *Androporus* differs from other New Zealand and New Caledonian genera with long, slender antennae in having an elevated pronotal disc, only the humeral callus and sub-basal tubercles of the elytra well developed, and the dorsal lobe of the eye scarcely extending medially beyond the scrobal indentation of the rostrum. Males are distinctive in having a conspicuous sensory pit on the ventral surface of the hind femur and a large sclerite in the internal sac. The female genitalia are characterised by the short, blunt teeth and long median rods of the hemisternites, and the gradually expanded apodeme and short, divergent arms of the eighth sternite.

Androporus comprises a New Zealand species and an apparently undescribed New Caledonian species (represented by a series of males and females in NZAC).

***Androporus discedens* (Sharp) new combination**

Figures 13, 55, 173-176, 451-455, 656, and 657

Sharp, 1876, Annals and magazine of natural history (4) 17: 425 (key), 429-430 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 551 (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 312 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae; 126 (*Anthribus*).

deterius Broun, 1893, Manual of New Zealand Coleoptera 5: 1266 (*Anthribus*); Bovie, 1906: 312 (*Brachytarsus*). NEW SYNONYMY.

laetabilis Broun, 1893: 1265-1266 (*Anthribus*); Bovie, 1906: 313 (*Brachytarsus*). NEW SYNONYMY.

obscurus Broun, 1913, Transactions of the New Zealand Institute 45: 151 (*Anthribus*); Wolfrum, 1929: 99 (*Brachytarsus*). NEW SYNONYMY.

Length 3.2-4.4 mm; width 1.5-2.2 mm.

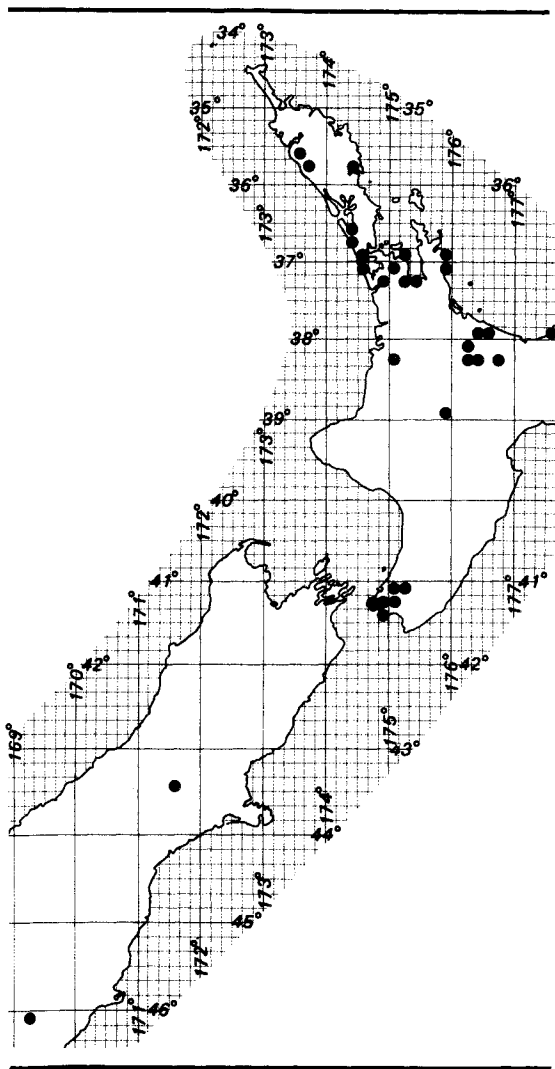
HEAD (Figures 55 and 173). Rostrum 1.23-1.50× wider than long; median groove and paired depressions deep in large specimens. Antennae (Figure 174) 2.6-3.6× (male) or 1.3-1.5× (female) longer than elytra, longest in large specimens. Eyes very small, with emargination barely discernible in some specimens, separated by 0.75-0.85× width of rostrum and 0.52-0.60× width across eyes.

THORAX. Pronotum (Figures 13, 55, and 175) 1.22-1.32× wider than long; transverse carina sub-basal; disc with a pair of low, conical tubercles; yellowish scales dense on lateral margin anterior to pleural suture. Elytra 1.95-2.40× longer and 1.16-1.36× wider than pronotum, together 1.32-1.47× longer than wide; sub-basal tubercle very large, the integumental surface immediately behind and lateral to it depressed; centre of disc with 2 or 3 pairs of obsolete tubercles capped with black tufts; vestiture coarsely variegated, the black scales forming tufts and conspicuous crests on alternate interstriae, especially on posterior half of elytra. Wing about 3× longer than wide, about 2.2× longer than elytron, with well developed anal veins but without anal lobe. Hind femoral sensory pit of male (Figure 176) elongate-oval.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 451. Tegmen, Figures 452 and 453. Aedeagus, Figures 454 and 455.

FEMALE. Segment 8, Figure 656. Genitalia, Figure 657.

TYPE DATA. Holotype of *discedens* Sharp: male, 3.1 × 1.4 mm, Tairua (CL) (BMNH). Holotype of *deterius* Broun: female, 2.6 × 1.3 mm, Helensville (AK) (BMNH). Holotype of *laetabilis* Broun: male, 3.3 × 1.7 mm, Tairua (CL), Broun (BMNH). Holotype of *obscurus* Broun: male, 2.8 × 1.3 mm, Silverstream (WN), A. C. O'Connor (BMNH). I am indebted to G. Kuschel for examining and measuring the holotype of *discedens*.



MATERIAL EXAMINED. Holotypes of *deterius*, *laetabilis*, and *obscurus*, 34 males, 48 females, 2 unsexed (BMNH, CMNZ, FRNZ, NMNZ, NZAC, OMNZ).

ND, AK, CL, WO, BP, TO, WN / MC, SL.
From near sea level to 1066 m. Northernmost record: Waipoua State Forest (ND); southernmost record: Conical Hills (SL).

Reared from *Agathis australis* (Araucariaceae); *Pinus nigra* (as *P. laricio*) and *P. radiata* (Pinaceae); rotten, fallen branches of *Podocarpus* sp. (Podocarpaceae); and dead branches of *Toronia toru* (Proteaceae). Adults have been beaten from various native trees and shrubs. Bicellular, elliptic, spinulose, brown spores (probably ascospores) and *Diplodia*-like conidia were present in the hindgut of dissected adults.

Adults have been collected from September to February.

REMARKS. *A. discedens* is distinguishable from other New Zealand anthribids with very long antennae by its minutely emarginate eyes, the pair of low, conical tubercles on the pronotal disc, and the absence of median and preapical tubercles on the elytra. No other New Zealand anthribid has a sensory pit on the hind femur of the male. The undescribed New Caledonian species differs from *discedens* in having larger eyes, no tubercles on the pronotal disc, smaller elytral tubercles, and on the hind femur of the male, a circular sensory pit rather than an oval one.

Genus *Arecopais* Broun

TYPE-SPECIES *Exillis spectabilis* Broun, 1880, by original designation.

Broun, 1893, Manual of New Zealand Coleoptera 5: 1267; Jordan, 1924, Novitates zoologicae 31: 260.

(The name *Arecopais* is derived from *Areca* (now *Rhopalostylis*), and the Greek 'pais', meaning 'child'; gender masculine.)

Small to medium-sized anthribids (length 2.4-5.3 mm). Integument brown, glossy on head and elytra, rather dull on pronotum; head with coarse, somewhat honeycomb-shaped

punctures; pronotum with uniformly granulose minisculpture and barely discernible punctures; elytra puncto-striate; vestiture moderately dense, consisting of appressed to decumbent, yellow, brown, and black, linear scales and coarse hairs which do not completely conceal the integumental surface. Rostrum transverse, without carinae, but with an elongate median groove on dorsal surface in both sexes, and with a pair of rounded, longitudinal, inter-antennal ridges in males. Antennae very long, inserted dorsolaterally. Eyes with a notch in anterior margin. Pronotum without tufts or tubercles; transverse carina sub-basal, entire; lateral carina well developed. Elytra smooth except for a small humeral callus and a very low, sub-basal convexity. Wings fully developed. Legs with integument uniformly brown except for an obscure, slightly darker, longitudinal patch near middle of tibia in some specimens; vestiture consisting of creamish, linear scales. Sexual dimorphism and allometry apparent mainly in antennal length and development of rostral ridges.

HEAD. Rostrum with scrobal margin strongly elevated, deeply indented, exposing floor of scrobe; anterior margin indented, elevated; surface uneven, with a pair of saucer-shaped depressions behind anterior margin in addition to median groove and ridges (male only) between antennae. Antennae slender, 1.5-4.7× (male) or 1.4-1.5× (female) length of body, longest in the largest specimens: scape pyriform; segment 2 very short, slightly constricted at base; male with segment 3 broad, shorter than segment 4, and segments 4-8 becoming progressively narrower and usually longer; female with segments 3 and 4 broad, sub-equal in length, and segments 5-8 longer and more slender than segment 4, also sub-equal; club slender, 0.63-1.44× (male) or 1.27-1.46× (female) length of segment 8, shortest in the largest specimens. Eyes rather small, longitudinal, protruding, moderately coarsely faceted, with minute hairs, their upper lobes separated by distance between scrobes or slightly less; upper lobe longer and narrower than lower lobe, its anterior angle rounded or pointed.

THORAX. Pronotum wider than long, widest at middle, its sides conspicuously convergent anteriorly and posteriorly; transverse carina moderately elevated, irregularly

denticulate, rounded at midline, curving forward slightly at sides; lateral carina reaching pleural suture, meeting transverse carina in an obtuse angle; declivity slightly oblique, coarsely denticulate on sides and base; secondary carinae variably developed. Pleural suture either concealed by vestiture or exposed. Scutellum very small, rounded at apex, level with base of elytra, densely clothed with cream scales. Elytra almost parallel-sided; base slightly proclinate, rimmed; sutural margin barely elevated; striole about 0.3× as long as elytron; striae with moderately large, deep, discrete punctures; declivity short, rounded; humeral callus small, rounded, inconspicuous. Wings about 3.2× longer than wide, 2.0× longer than elytra; anal veins weak, anal lobe indistinct. Legs very slender. Tarsi with segment 1 longer than segments 2 and 3 together; segment 2 emarginate; inner tooth of claw about 0.2× as long as claw itself.

ABDOMEN. Pygidium wider than long, rounded at apex, not asperate, with barely discernible punctures and dense, decumbent, pale, linear scales. Ventrites not impressed along midline; surface with barely discernible punctures, densely clothed with appressed, cream, linear scales; ventrite 5 not asperate.

MALE. Tergite 8 and sternite 8 moderately sclerotised, with marginal setae. Sternite 9 apodeme very long, slender, with well developed arms. Tegmen moderately slender, its ring slightly longer than apodeme, which is narrow; apex elongate, slender, truncate at tip, with a tuft composed of a few very long and very short setae; preapical flange entire, strongly arched. Aedeagus about 0.4× as long as elytron; apodemes continuous with pedon; bridge slender, arched, distant from base of pedon; pedon entire, tapering to a point; tectum long, pointed at apex; internal sac bilobed at apex, lined with fine, pale, hair-like spinules; ejaculatory duct inserted at apex of ventral lobe of internal sac.

FEMALE. Segment 8 about 0.6× as long as hemisternites; tergite weakly sclerotised, with an entire apex and with a few setae; sternite weakly sclerotised, its apodeme expanding gradually and with very slender, slightly divergent arms. Hemisternites about half as long as elytra; body distinct from lateral rods, which are about 0.7× as

long as entire hemisternites; apex with 3 short teeth and a minute, concealed stylus; median rods joined on midline throughout their length, neither expanded nor divergent at proximal end. Vulva with a pair of membranous lobes ventrally. Bursa copulatrix short, lacking sclerites. Spermatheca small, rather slender; spermathecal gland spherical, very much smaller than spermatheca; ducts of spermatheca and spermathecal gland inserted on minute atrium at base of spermatheca.

RANGE. New Zealand.

REMARKS. *Arecopais* is easily distinguishable externally from other New Zealand anthribid genera with emarginate eyes and long antennae by its uniformly brown coloration, almost smooth elytra, finely granulate and more or less impunctate pronotum, and unicolorous femora. Important generic characters of the male genitalia are the bilobed internal sac, which is almost completely lined with fine hairs, and the slender, arched bridge between the apodemes. The gradually expanded apodeme of the eighth sternite and the very small spermathecal gland are distinctive features of the female genitalia.

Arecopais comprises a single species which, judged from its overall appearance and its association with palms, must be derived from tropical anthribids. It is not, however, closely related to any species in adjacent Pacific regions.

Arecopais spectabilis (Broun)

Figures 10, 56, 177-180, 456-460, 658, and 659

Broun, 1880, Manual of New Zealand Coleoptera 1: 558 (*Exilis* [sic]); Waterhouse, 1883, Aid to the identification of insects 2: plate 138 figures 7 and 8 (*Exilis* [sic]); Broun, 1893, Manual of New Zealand Coleoptera 5: 1267 (*Arecopais*); Jordan, 1924, Novitates zoologicae 31: 260 (*Arecopais*); Hudson, 1934, New Zealand beetles and their larvae: 128 (*Exilis* [sic]); Watt, 1961, Tane 8: 88-89 (*Arecopais*).

Length 2.4-5.3 mm; width 1.0-2.2 mm.

HEAD (Figures 56 and 177). Rostrum 1.22-2.38× (male) or 1.25-1.56× (female) wider than long, widest in small males and large females; rostral ridges sometimes continuing posteriorly on to frons as a pair of very narrow, shiny ridges. Antennae (Figures 10, 178, and 179) 2.55-7.37× (male) or 2.01-2.27× (female) longer than elytra, longest in the largest specimens. Eyes separated by 0.70-0.81× width of rostrum and 0.50-0.55× width across eyes; medial edge of eye often bounded by a shiny ridge.

THORAX. Pronotum (Figures 56 and 180) 1.07-1.17× wider than long; centre of disc rather uneven in large specimens, sometimes with a low, rounded hump on either side of midline; vestiture often dense and pale along midline. Elytra 2.00-2.07× (male) or 2.29-2.33× (female) longer than pronotum, 1.10-1.25× (male) or 1.22-1.26× (female) wider than pronotum, together 1.55-1.65× longer than wide; vestiture uniformly brown or yellowish, or variegated brown and yellow, and with a few black spots. Tibiae never conspicuously banded, if not unicolourous then at most with an obscure, dark mark on outer edge.

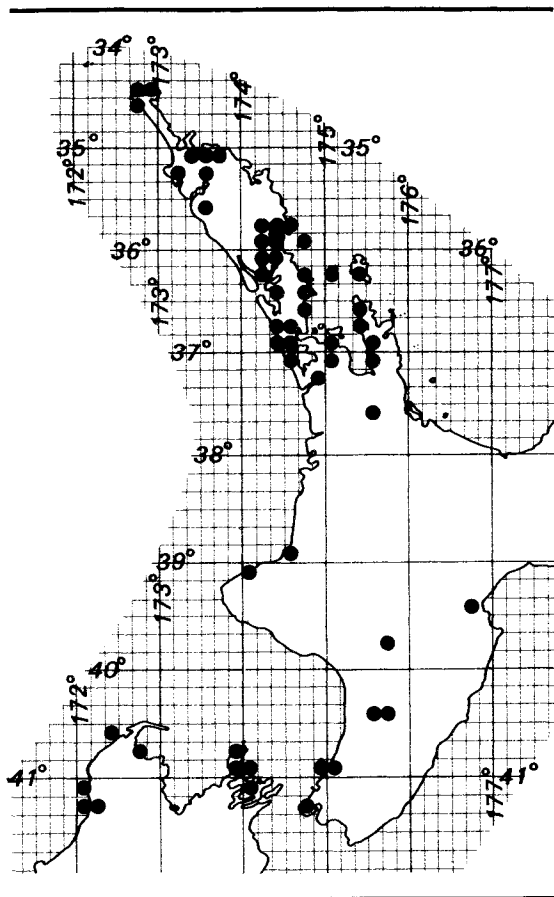
ABDOMEN. MALE. Segment 8 and sternite 9, Figure 456. Tegmen, Figures 457 and 458. Aedeagus, Figures 459 and 460.

FEMALE. Segment 8, Figure 658. Genitalia, Figure 659.

TYPE DATA. Lectotype: male, 4.30 × 1.75 mm, Whangarei (ND), on nikau (*Rhopalostylis sapida*), T. Broun (CMNZ).

Broun described this species from a series of specimens collected on nikau near Whangarei Harbour. None of the specimens in the type series in BMNH and NZAC agrees in size and colour with Broun's description, and there are no specimens of the type series in the Paris Museum. The male that agrees best with Broun's description is a specimen in CMNZ, mounted similarly to others of the type series, and bearing one of Broun's green labels numbered '980' as well as a large identification label in Broun's handwriting. Although this specimen bears no locality label, it fits the original description very well, and I have selected it as the lectotype.

MATERIAL EXAMINED. Lectotype, 230 males, 190 females, 3 unsexed (BMNH, CMNZ, FRNZ, NMNZ, NZAC, OMNZ, UCNZ).



ND including Hen I., AK, CL including Great Barrier I. and Little Barrier I., WO, BP, TK, WN / NN, SD including Chetwode Is. and D'Urville I. From sea level to about 650 m. Northernmost record: Unuwaho (ND); southernmost record: Oparara (NN).

Reared from the sheaths of fallen fronds of *Rhopalostylis sapida* (Palmae). The material examined includes specimens that have been beaten from *Cordyline* sp. (Agavaceae), *Phormium* sp. (Agavaceae), *Astelia* sp. (Liliaceae), and *Collospermum* sp. (Liliaceae). Hudson (1934) collected adults on *Freyinetia baueriana* subsp. *banksii* (Pandanaeae). Epidermal tissue of higher plants, fragments of fungal fructifications, hyphae of a dematiaceous fungus and small, colourless, naviculate fungal spores were present in the hindgut of dissected adults. The gut of a macerated larva contained ascospores, fragments of

fungal fructifications, and hyphae as well as tissue of the palm frond.

Adults have been collected in all months.

REMARKS. *A. spectabilis* is easily recognised by its smooth, brown elytra and extremely long antennae. The adults are very common inside the sheaths of fallen nikau fronds, especially during summer, but have also been collected on the palm itself, between the sheathing bases of the leaves and trunk (Watt 1961). Jordan (1924) implies that several New Zealand species belong in *Arecopais*, and mentions that one of these has a pair of tubercles between the antennae. The latter species presumably would be one that I place in *Phymatus*.

Phymatus new genus

TYPE-SPECIES *Anthribus phymatodes* Redtenbacher, 1868.

(The name *Phýmatus* comes from the Greek 'phýma, phýmator', meaning 'tumour', and alludes to the tuberculate elytra; gender masculine.)

Small to medium-sized anthribids (length 2.4-5.8 mm). Integument brown, glossy; punctures of head and pronotum dense, coarse, separated by narrow, shiny interstices; elytra puncto-striate; vestiture moderately to very dense, consisting of mainly appressed, yellow, cream, silver, brown, and black, linear scales and hairs which usually obscure most of the cuticular surface. Rostrum transverse; dorsal surface uneven, sometimes with a median interantennal groove or fine carina, usually with a pair of large, horn-like tubercles in males. Antennae long, inserted dorso-laterally. Eyes conspicuously emarginate anterodorsally. Pronotum with surface uneven but not tuberculate, sometimes with tufts; transverse carina antebasal, weakened or entire. Elytra tuberculate, with tufts. Wings fully developed. Legs with integument darker at apices of tibiae and tarsi, near middle and base of tibiae, and usually near middle of femur; vestiture consisting of thick, creamish or silvery hairs except for brown hairs on darker

areas. Sexual dimorphism and allometry conspicuous in antennal length and presence and development of rostral tubercles.

HEAD. Rostrum with scrobal margin elevated, sometimes developed as an indistinct carina that runs forward to anterior margin, slightly indented and exposing scrobal floor; anterior margin indented, raised; upper surface uneven, with a pair of saucer-shaped depressions in front of scrobes, a variably developed median groove (large specimens) or fine median carina (smaller specimens), sometimes a very short, low ridge extending backwards from raised anterior margin, sometimes a transverse elevation at level of antennal insertion, usually a transverse concavity in front of eyes; tubercles of males at level of scrobes or above, large in large males, obsolete or absent in the smallest males. Antennae slender, 0.9-4.0× (male) or about 0.7× (female) as long as body; scape pyriform; segment 2 very short, moderately constricted at base; segments 3-8 of female slender, becoming progressively shorter towards club; in male, segment 3 broad, longer or shorter than segment 4, and segments 4-8 becoming progressively shorter and more slender; club slender, 1.2-2.2× (male) or 1.9-2.6× (female) longer than segment 8. Eyes moderately large, protruding, finely faceted, with minute hairs, the upper lobes separated by less than distance between scrobes; upper lobe shorter and narrower than lower lobe, with a rounded anterior angle.

THORAX. Pronotum wider than long, widest near middle, its sides gently convergent anteriorly and posteriorly; transverse carina angulate or rounded at midline, curving forward near sides, moderately strongly elevated, irregularly or evenly denticulate; lateral carina reaching pleural suture, meeting transverse carina in an obtuse angle; declivity almost horizontal, irregularly denticulate at sides, without distinct secondary carinae. Pleural suture either concealed by vestiture or exposed. Scutellum small, obtusely rounded at apex, level with base of elytra, densely clothed with cream scales. Elytra widest near middle; base slightly proclinate, rimmed; sutural margin slightly raised; striole about 0.3× as long as elytron; striae with small, shallow, discrete punctures; declivity short, vertical, or rounded; humeral callus elongate,

rounded; sub-basal tubercle moderately to very large, elongate, tufted, not close to suture; post-median tubercle small to moderately large, tufted; pre-apical tubercle or tubercles moderately large or barely discernible, reclinate, tufted. Wings about 3.0× longer than wide, about 2.2× longer than elytra, with reduced anal veins and a weakly demarcated anal lobe. Legs moderately slender. Tarsi with segment 1 longer than segments 2 and 3 together; segment 2 emarginate; inner tooth of claw about half as long as claw itself.

ABDOMEN. Pygidium wider than long, rounded at apex, finely punctate, with very dense, decumbent, pale, linear scales but no asperities. Ventrites not impressed along midline, their surface finely punctured and densely clothed with appressed, silver or cream, linear scales; ventrite 5 not asperate.

MALE. Tergite 8 and sternite 8 moderately sclerotised, with marginal setae. Sternite 9 apodeme long, slender, with well developed arms. Tegmen moderately slender, its ring longer than apodeme, which is narrow; apex slender to broad, its tip rounded or truncate, with a tuft of setae; preapical flange entire, moderately arched. Aedeagus about 0.4× as long as elytron; apodemes continuous with pedon; bridge moderately robust, slightly arched, distant from base of pedon; pedon entire, broad, truncate or pointed at apex; tectum long, pointed or rounded at apex; internal sac long, simple, without sclerites but with a ventral tract of fine, pale brown spinules; ejaculatory duct inserted at apex of internal sac.

FEMALE. Segment 8 about half as long as hemisternites; tergite weakly sclerotised, with an entire apex but without setae; sternite moderately sclerotised, its apodeme strongly constricted proximally and distally, where it divides into a pair of convergent or parallel arms. Hemisternites about half as long as elytra; body distinct from lateral rods, which are about 0.7× as long as entire hemisternites; apex with 3 somewhat obsolete teeth and a minute, concealed stylus; median rods joined at midline throughout their length, neither expanded nor divergent at proximal end. Vulva with a pair of large, membranous lobes ventrally. Bursa copulatrix large, without sclerites, conspicuously constricted near level of entry of spermathecal

duct. Spermatheca small, not very globose; spermathecal gland oval, large, longer or shorter than spermatheca; ducts of spermatheca and spermathecal gland inserted on small atrium at base of spermatheca.

RANGE. New Zealand.

REMARKS. The following assemblage of characters distinguishes *Phymatus* from other New Zealand anthribid genera in which the eyes are emarginate and the antennae of males are very long; brownish coloration; strongly emarginate eyes, their upper lobes separated by less than the distance between the scrobes; densely punctured pronotum; conspicuously banded tibiae; and each elytron with at least 2 tubercles in addition to the humeral callus. Males, except the smallest, have a pair of pointed tubercles on the rostrum. Diagnostic characters of the male genitalia are the simple internal sac without sclerites, apical insertion of the ejaculatory duct on the internal sac, and short, robust bridge between the apodemes. The elongate, constricted bursa copulatrix and the shape of the ninth sternite's apodeme are distinctive features of the female genitalia.

Phymatus comprises 3 species, which although apparently tropical in origin, because of their long antennae and deeply emarginate eyes, are without close relatives in the Pacific or elsewhere. They are therefore regarded as part of the New Zealand endemic element. Some of the species placed in *Phymatus* are those which Wolfrum (1959) and probably Jordan (1924) regarded as belonging to the New Caledonian genus *Anthribisomus* Perroud, presumably because of the shape of the eyes. Other morphological characters, particularly of the genitalia, do not indicate a close relationship between these genera.

KEY TO SPECIES OF *Phymatus*

- 1 Pronotum with 2 tufts of scales close to midline on anterior margin (Figures 182 and 184) *cucullatus*
- Pronotum without tufts on anterior margin (Figures 187 and 192) 2

2 Elytra each with a very large sub-basal tubercle, a strong, conical post-median tubercle, and a pair of large, contiguous preapical tubercles, in addition to the humeral callus (Figure 195) *phymatodes*

--Elytra each with a moderately large sub-basal tubercle, a very small, elongate post-median tubercle, and a single, elongate, obsolete preapical tubercle, in addition to the humeral callus (Figure 190) *hetaera*

***Phymatus cucullatus* (Sharp) new combination**

Figures 181-185, 461-465, 660, and 661

Sharp, 1886, Scientific transactions of the Royal Dublin Society (2) 3: 434 (*Anthribus*); Broun, 1893, Manual of New Zealand Coleoptera 5: 1255 (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 312 (*Brachytarsus*).

philpotti Broun, 1909, Annals and magazine of natural history (8) 4: 160-161 (*Anthribus*); Wolfrum, 1929, Coleopterorum catalogus 26 (102): 99 (as *Brachytarsus philprotti*); May, 1967, Transactions of the Royal Society of New Zealand, zoology 9: 179 (*Anthribus*).
NEW SYNONYMY.

Length 2.5-5.8 mm; width 1.1-1.2 mm.

HEAD (Figures 181 and 182). Rostrum 1.31-1.40× (male) or 1.38-1.55× (female) wider than long; vestiture very dense, consisting of white or cream scales in both sexes; tubercles distinct in small males as well as large ones, arising at level of antennal scrobes, the surface behind them strongly depressed; surface between or behind scrobes in females with a strong, transverse depression; median carina or groove incomplete or absent; lateral (marginal) carinae present or absent. Antennae

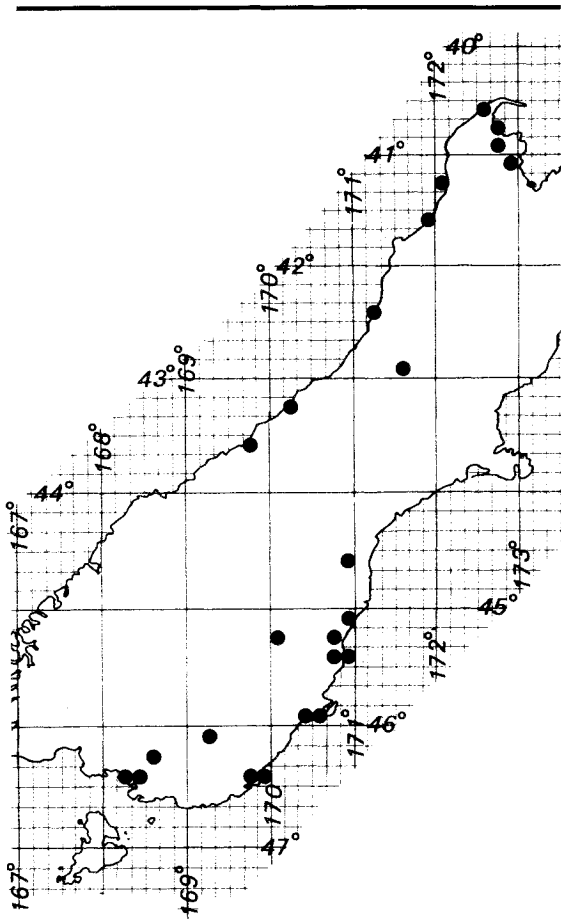
(Figure 183) 1.41-2.45× (male) or 0.95-1.00× (female) as long as elytra, longest in largest specimens. Eyes separated by 0.56-0.67× width of rostrum and 0.48-0.52× width across eyes.

THORAX. Pronotum (Figure 184) 1.20-1.28× wider than long; vestiture dense, consisting of cream, yellow, and black scales, with 2 tufts of yellow and black scales close to midline on anterior margin, a narrow, whitish band on entire midline bordered by a broad, yellowish-orange band, and cream, yellow, and black scales in a variegated pattern towards sides, the vestiture brightest and the tufts largest in large specimens; transverse carina often weakened on midline and towards sides, irregularly denticulate, weakly elevated. Elytra (Figure 185) 2.21-2.37× (male) or 2.36-2.56× (female) longer than pronotum and 1.17-1.22× (male) or 1.34-1.41× (female) wider than pronotum, together 1.51-1.55× (male) or 1.41-1.46× (female) longer than wide; each elytron with a well developed humeral callus, sub-basal tubercle, post-median tubercle, and a pair of contiguous preapical tubercles, all similarly developed in small specimens as well as large ones; surface immediately lateral to sub-basal tubercle not greatly depressed; vestiture consisting of cream, yellow, and black scales in a variegated pattern, the colours usually brighter in the largest specimens; tufts on tubercles usually with some black and bright yellow scales; humeral callus usually conspicuously pale. Dark bands on legs very conspicuous.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 461. Tegmen (Figures 462 and 463) with a broad apical section. Aedeagus (Figures 464 and 465) with apex of pedon truncate and apex of tectum rounded.

FEMALE. Segment 8 (Figure 660) with a rather narrow apodeme; arms parallel towards apex. Genitalia, Figure 661; spermathecal gland as long as spermatheca.

TYPE DATA. Holotype of *cucullatus* Sharp: female, 3.6 × 1.7 mm, Otago (DN), Hutton (BMNH). Holotype of *philpotti* Broun: male, 3.1 × 1.5 mm, Invercargill (SL), A. Philpott (BMNH). I am indebted to G. Kuschel for examining and measuring the holotype of *cucullatus*.



MATERIAL EXAMINED. Holotype of *philpotti*, 70 males, 78 females, 2 unsexed (BMNH, FRNZ, NMNZ, NZAC, UCNZ).

NN, BR, NC, WD, SC, DN, SL. From sea level to 915 m. Northernmost record: Mangarakau (NN); southernmost records: Owaka and Tisbury (SL).

Reared from *Laburnum anagyroides* and *Lupinus* sp. (Fabaceae); twigs and small branches of *Hedycarya arborea* (Monimiaceae); and *Pinus ponderosa* and *Pseudotsuga menziesii* (as *Ps. taxifolia*) (Pinaceae). Tissue of fungal fructifications, brown, bicellular ascospores, and hyaline, bicellular spores of either an ascomycete or a pycnidial deuteromycete were present in the hindgut of dissected adults.

Adults have been collected from August to March.

REMARKS. *P. cucullatus* is the only New Zealand anthribid with a pair of crests on the anterior margin of the pronotum. Relative to *P. phymatodes*, the rostral vestiture is paler and denser and the vestiture of the elytra and pronotum tends to be more brightly coloured. *P. cucullatus* is confined to the South Island, where it occurs west of the Southern Alps (the NC records are from the Arthur's Pass area) and in Dunedin and Southland.

Phymatus hetaera (Sharp) new combination

Figures 186-190, 466-470, 662, and 663

Sharp, 1876, *Annals and magazine of natural history* (4) 17: 425 (key) and 429 (*Anthribus*); Broun, 1880, *Manual of New Zealand Coleoptera* 1: 550-551 (*Anthribus*); Bovie, 1906, *Annales de la Société Entomologique de Belgique* 49: 313 (*Brachytarsus*); Hosking, 1979, *New Zealand entomologist* 7 (1): 88 (*Anthribus*).

decens Broun, 1893, *Manual of New Zealand Coleoptera* 5: 1264 (*Anthribus*); Bovie, 1906: 312 (*Brachytarsus*). NEW SYNONYMY.

finitimus Broun, 1893: 1264-1265 (*Anthribus*); Bovie, 1906: 312 (*Brachytarsus*). NEW SYNONYMY.

Length 2.4-5.3 mm; width 1.0-2.3 mm.

HEAD (Figures 186 and 187). Rostrum 1.35-1.57× (male) or 1.53-1.57× (female) wider than long; vestiture moderately dense, consisting of yellowish scales that do not obscure the integument; males with a pair of irregularly shaped transverse thickenings between scrobes, and usually a pair of conical tubercles behind these, the thickenings and tubercles best developed in large specimens; both sexes usually with a shiny groove along midline, most strongly developed in the largest females; integument only slightly depressed behind scrobes in both sexes; median and marginal carinae incomplete or absent. Antennae (Figure 188) 2.05-3.77× (male) or 1.05-1.24× (female) longer than elytra, longest in the largest specimens. Eyes separated by 0.50-0.61× (male) or 0.55-0.59× (female) width of rostrum and 0.40-0.50× width across eyes.

THORAX. Pronotum (Figure 189) 1.25-1.34× (male) or 1.31-1.38× (female) wider than long; vestiture dense, consisting of cream and yellow scales; transverse carina entire, denticulate, strongly elevated. Elytra (Figure 190) 2.19-2.29× (male) or 2.50-2.57× (female) longer than pronotum, 1.02-1.15× (male) or 1.21-1.29× (female) wider than pronotum, together 1.50-1.65× (male) or 1.50-1.52× (female) longer than wide; each elytron with a well developed humeral callus, a moderately large sub-basal tubercle, a low, elongate post-median tubercle, and a very low, elongate preapical tubercle which in the smallest specimens is discernible merely as an elongate crest; vestiture consisting of cream and yellow scales in a somewhat variegated pattern, sometimes also with brown or black spots or patches, especially on tubercles and near declivity. Dark bands on legs only moderately conspicuous.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 466. Tegmen (Figures 467 and 468) with a very narrow apical section. Aedeagus (Figures 469 and 470) with apex of pedon truncate and apex of tectum sharply pointed.

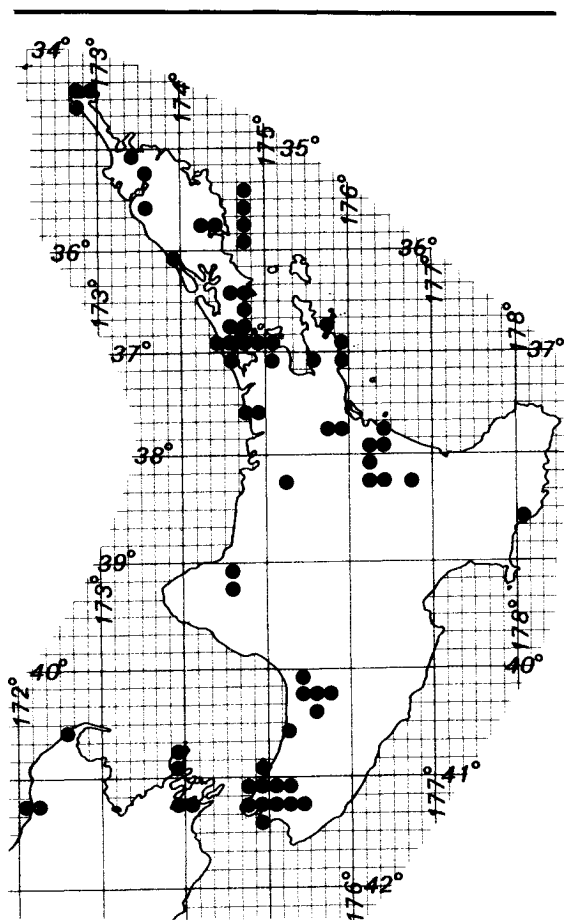
FEMALE. Segment 8 (Figure 662) with a narrow apodeme; arms very slightly convergent towards apex. Genitalia, Figure 663; spermathecal gland shorter than spermatheca.

TYPE DATA. Holotype of *hetaera* Sharp: female, 3.2 × 1.4 mm, Tairua (CL), Broun (BMNH). Holotype of *decens* Broun: male, 4.4 × 1.8 mm, Howick (AK), Broun (BMNH). Holotype of *finitimus* Broun: male, 5.0 × 2.2 mm, Waitakere Range (AK), Broun (BMNH).

MATERIAL EXAMINED. The above 3 primary types, 146 males, 137 females, 2 unsexed (BMNH, CMNZ, FRNZ, NMNZ, NZAC, OMNZ).

ND including Poor Knights Is and Hen I., AK, CL, WO, BP, GB, TK, RI, WI, WA, WN / SD including D'Urville I., NN / Chatham I. From sea level to about 610 m. Northernmost record: Unuwahao (ND); southernmost record: Chatham Island.

Reared from stems of *Parsonsia* sp. (Apocynaceae); *Pseudopanax* sp. and branchlets of *P. arboreus* (Araliaceae); dead bark of *Agathis australis* (Araucariaceae); *Lupinus* sp. and dead branches of *Sophora microphylla* (Fabaceae); *Plagianthus*



● Chatham Islands (44°S, 176°W)

betulinus (Malvaceae); dead branches of *Myrsine chathamica* (Myrsinaceae); a rotten stump of *Rhopalostylis sapida* (Palmae); dead *Clematis* sp. (Ranunculaceae); and dying branches of *Citrus limon* (Rutaceae). Adults have been beaten in considerable numbers from *Schefflera digitata* (Araliaceae), dead *Corynocarpus laevigatus* (Corynocarpaceae), *Hoheria* sp. (Malvaceae), *Hedycarya arborea* (Monimiaceae), and *Tetrapathaea tetrandra* (Passifloraceae). Epidermal tissue and bark cells of higher plants, wall tissue of fungal fructifications, and brown, bicellular fungal spores probably of an ascomycete were present in the hindgut of dissected adults.

Adults have been collected from August to April.

REMARKS. In *P. hetaera* the rostral tubercles of the males are blunter and relatively smaller than in *P. cucullatus* and *P. phymatodes*, and are also closer to the eyes; the pair of thickenings between the antennae of *hetaera* are more or less in the position of the tubercles in the other two species. In general, the occurrence and size of the rostral tubercles in *hetaera* is linked with overall body size, but this is not invariable: in very small specimens of similar size the tubercles may or may not be developed. Moreover, in the smallest specimens there is less uniformity in the relative lengths of the antennal segments. The colour pattern of *hetaera* shows much less variation than that of either *phymatodes* or *cucullatus*, and there are no specimens with predominantly blackish elytral scales among the material examined. Although *P. hetaera* occurs as far south as the Chatham Islands it has not been found south of Picton on the east side of the South Island nor south of the Oparara River on the west side. Hosking (1979) collected this species in Malaise traps set up in stands of *Pinus ponderosa* in the Whakarewarewa State Forest Park (BP).

***Phymatus phymatodes* (Redtenbacher) new combination**

Figures 57, 191-195, 471-475, 664, and 665

Redtenbacher, 1868, Reise der österreichischen Fregatte Novara ..., zoology 2 (1), Coleoptera: 174 (*Anthribus*); Gemminger & Harold, 1872, Catalogus coleopterorum 9: 2747 (*Exillis*); Hutton, 1874, Transactions and proceedings of the New Zealand Institute 6: 163 (*Anthribus*); Sharp, 1876, Annals and magazine of natural history (4) 17: 424, 425 (key), and 428-429 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 550 (*Anthribus*); Hudson, 1934, New Zealand beetles and their larvae: 126 (*Anthribus*); Wolfrum, 1959, Entomologische Arbeiten aus dem Museum Frey 10: 160 (*Anthribisomus*).

cornutellus Broun, 1913, Transactions and proceedings of the New Zealand Institute 45: 150 (*Anthribus*); Wolfrum, 1929,

Coleopterorum catalogus 26 (102): 96 (as *Brachytarsus corrutellus*). NEW SYNONYMY.

fuscopictus Broun, 1880: 564-565 and corrigenda (*Anthribus*); Donckier de Donceel, 1884, Annales de la Société Entomologique de Belgique 28: cccxxxii (*Araeocerus* [sic]). NEW SYNONYMY.

impar Broun, 1893, Manual of New Zealand Coleoptera 5: 1266-1267 (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 313 (*Brachytarsus*). NEW SYNONYMY.

lanuginosus Broun, 1880: 549-550 (*Anthribus*); Bovie, 1906: 313 (*Brachytarsus*); Hudson, 1934: 126 (*Anthribus*). NEW SYNONYMY.

levinensis Broun, 1913: 150-151 (*Anthribus*); Wolfrum, 1929: 98 (*Brachytarsus*). NEW SYNONYMY.

nigrescens Broun, 1881, Manual of New Zealand Coleoptera 2: 743 (*Anthribus*); Bovie, 1906: 313 (*Brachytarsus*). NEW SYNONYMY.

picipictus Broun, 1881: 742-743 (*Anthribus*); Bovie, 1906: 314 (*Brachytarsus*). NEW SYNONYMY.

torulosus Broun, 1881: 743-744 (*Anthribus*); Bovie, 1906: 315 (*Brachytarsus*); Wolfrum, 1959: 160 (*Anthribisomus*). NEW SYNONYMY.

tuberosus Sharp, 1886, Scientific Transactions of the Royal Dublin Society (2) 3: 433-434, plate 13 figure 18 (*Anthribus*); Broun, 1893: 1254-1255 (*Anthribus*); Bovie, 1906: 315 (*Brachytarsus*). NEW SYNONYMY.

wairirensis Broun, 1913: 152 (*Anthribus*); Wolfrum, 1929: 101 (*Brachytarsus*). NEW SYNONYMY.

Length 2.4-4.5 mm; width 1.1-2.0 mm.

HEAD (Figures 57, 191, and 192). Rostrum 1.50-1.83× wider than long; vestiture consisting of cream or yellow scales which are very dense in large females, and less dense in males and small females; tubercles distinct in small males as well as large ones, arising at level of antennal scrobes, the integument behind not strongly depressed; integument between scrobes transversely depressed in females; median carina or groove weakly developed; marginal carinae

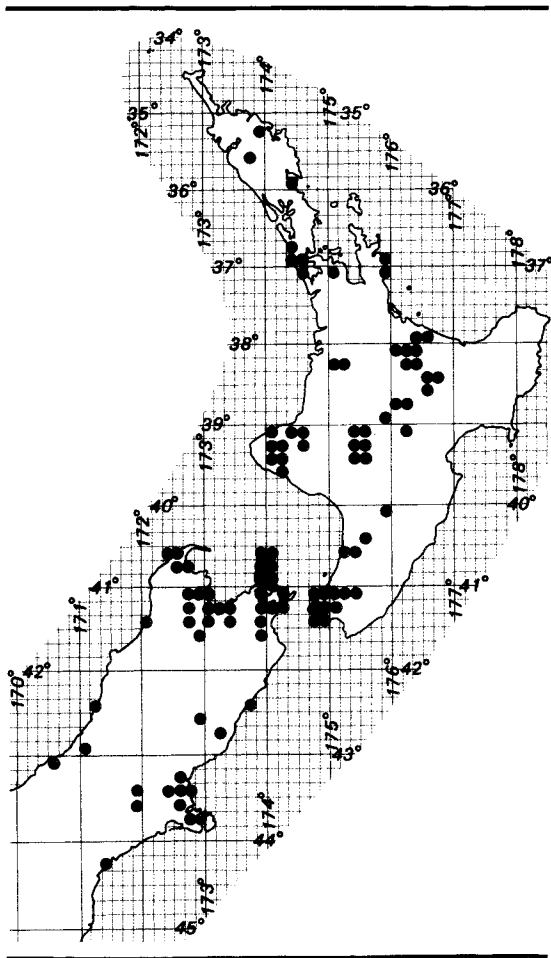
present. Antennae (Figure 193) 1.50-2.93× (male) or 1.00-1.12× (female) as long as elytra, longest in the largest specimens. Eyes separated by 0.59-0.70× width of rostrum and 0.48-0.54× width across eyes.

THORAX. Pronotum (Figures 57 and 194) 1.26-1.31× wider than long; vestiture cream or yellow, dense along midline, moderately dense (small specimens) or sparse (large specimens) towards sides; transverse carina denticulate, strongly elevated, entire. Elytra (Figures 57 and 195) 2.21-2.31× (male) or 2.48-2.54× (female) longer than pronotum, 1.14-1.33× (male) or 1.27-1.31× (female) wider than pronotum, together 1.33-1.50× (male) or 1.48-1.54× (female) longer than wide; elytra each with a well developed humeral callus, a sub-basal tubercle, a post-median tubercle, and a pair of contiguous preapical tubercles, all equally well developed in small and large specimens; surface immediately lateral to sub-basal tubercle conspicuously depressed in large specimens; colour pattern of vestiture extremely variable, entirely silvery-grey, yellowish, black, or with varying proportions of pale and dark scales, usually with black scales in centre of tufts on tubercles, often with alternating cream and black patches along suture. Dark areas on legs conspicuous.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 471. Tegmen (Figures 472 and 473) with a narrow apical section. Aedeagus (Figures 474 and 475) with apex of pedon pointed and apex of tectum rounded.

FEMALE. Segment 8 (Figure 664) with a broad apodeme; arms slightly convergent at apex. Genitalia, Figure 665; spermathecal gland as long as spermatheca.

TYPE DATA. Holotype of *phymatodes* Redtenbacher: male, 4.1 × 1.8 mm, New Zealand, 1860, Hochst[etter] (NHMW). Holotype of *cornutellus* Broun: male, 4.5 × 2.0 mm, Tarukenga (BP), T. Broun (BMNH). Holotype of *fuscipictus* Broun: female, 3.5 × 1.7 mm, Whangarei (ND), T. Broun (BMNH). Holotype of *impar* Broun: male, 2.5 × 1.2 mm, Waitakere (AK), T. Broun (BMNH). Holotype of *lanuginosus* Broun: female, 3.6 × 1.8 mm, Tairua (CL), T. Broun (BMNH). Holotype of *levinensis* Broun: male, 3.7 × 1.7 mm, Levin (WN), A. C. O'Connor (BMNH). Holotype of *nigrescens* Broun: female, 3.2 × 1.5 mm,



Wellington (WN), P. Stewart (BMNH). Lectotype of *picipictus* Broun: male, 3.6 × 1.5 mm, Wellington (WN), P. Stewart (BMNH). Holotype of *torulosus* Broun: male, 3.2 × 1.4 mm, Wellington (WN), P. Stewart (BMNH). Holotype of *tuberosus* Sharp: female, 4.1 × 2.0 mm, Greymouth (BR), Helms (BMNH). Holotype of *wairirensis* Broun: male, 2.7 × 1.2 mm, Wairiri (KA), W. L. Wallace (BMNH).

Since Hochstetter left New Zealand on 2 October 1859 (Fleming 1959) the "1860" on the label accompanying the holotype of *phymatodes* is probably the year in which the specimen was received at the Vienna Museum. The tarsi are damaged on 4 legs of the holotype of *levinensis*.

MATERIAL EXAMINED. The above 11 primary types, 229 males, 243 females, 3 unsexed (BMNH, CMNZ, FRNZ, NHMW, NMNZ, NZAC, UCNZ).

ND, AK, CL, WO, BP, TO, TK, RI, WI, WN / SD including Stephens I. and D'Urville I., NN, MB, KA, BR, NC, WD, MC, SC. From sea level to 1220 m. Northernmost record: Kerikeri (ND); southernmost record: Opihi River (SC).

Rearing from *Pseudopanax* sp. and dead branchlets of *P. arboreus* (Araliaceae); dead stems of *Cassinia* sp. (Asteraceae); *Chamaecyparis lawsoniana* (Cupressaceae); *Lupinus* sp. and *Clanthus* sp. (Fabaceae); *Quercus suber* (Fagaceae); *Pinus radiata* and cones of *P. patula* (Pinaceae); *Pittosporum* sp. (Pittosporaceae); and dead stems of *Coprosma robusta* (Rubiaceae). Adults have been beaten in considerable numbers from *Schefflera digitata* (Araliaceae), *Carmichaelia egmontiana* (Fabaceae), and *Tetrapathaea tetrandra* (Passifloraceae). Epidermal tissue and bark cells of higher plants, tissue of fungal fructifications, and nondescript bicellular fungal spores were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. The size, colour pattern, and rostral tubercles of *P. phymatodes* are extremely variable, but the species is easily recognised by the 4 large tubercles (in addition to the humeral callus) on each elytron and by the lack of tufts on the anterior margin of the pronotum. When the sexual, allometric, and individual differences that occur within *phymatodes* are considered, it is not surprising that the species has a long list of synonyms. Sharp apparently did not examine the holotype of *phymatodes*, and misidentified the species. A specimen in the Sharp Collection (BMNH) labelled "*phymatodes* ♀" in Sharp's handwriting is in fact a small male of *hetaera* (lacking horns), and a specimen he labelled "*phymatodes* ♂" is a larger male of *hetaera* (with horns).

Hoherius new genus

TYPE-SPECIES *Anthribus meinertzhageni* Broun, 1880.

(The name *Hohérius* is derived from *Hoheria*, a genus of plants with which the larvae are associated; gender masculine.)

Small to moderately large (length 3.0-6.7 mm). Integument mainly green or greenish-brown, usually with some dark brown or black areas; punctures of head and pronotum fine, entirely concealed by vestiture; elytra puncto-striate; vestiture of head and pronotum very dense, consisting of overlapping, appressed to erect, mainly long, cream, orange, and sometimes black, linear scales; elytra with sparser, mainly appressed, shorter, cream, orange, brown, and black scales. Rostrum transverse; carinae (when present) obsolete; dorsal surface with a median anterior depression extending between scrobes as a shallow groove. Antennae long, inserted dorso-laterally. Eyes strongly emarginate. Pronotum without tufts or tubercles; transverse carina sub-basal to antebasal, entire; lateral carina well developed. Elytra with tufts and tubercles. Wings fully developed. Legs with integument greenish; vestiture consisting mainly of very long, fine, cream scales but with a few short, dark hairs in a patch near middle of tibiae and at apices of tibiae and tarsi. Sexual dimorphism and allometry apparent in antennal length, eye shape, rostral width and shape, and mandibular size.

HEAD. Rostrum widest anteriorly, vertical and very wide in large males, more horizontal and narrower in females and small males; scrobal margin slightly elevated, indented, exposing scrobal floor; anterior margin protruding at labrum, not rimmed, but with a low transverse, subapical ridge; dorsal surface with a small, dark, shiny, transverse, median depression anteriorly from which a short, shallow groove extends upwards towards vertex. Antennae 1.25-2.75× length of body in male, very slightly shorter than body in female; scape densely hairy and with a basal stalk, entirely compressed in male, compressed basally and cylindrical apically in female; segment 2 very short, conspicuously constricted at base; segments 3-8 slender; club very slender, about as long as preceding 2.0 funicle segments in female, as long as preceding 1.25-2.00 funicle segments in male. Eyes transverse, large, widely separated in females, closer in males, not protruding, finely faceted, with minute hairs; dorsal lobe shorter than ventral lobe, with a rounded anterior angle.

THORAX. Pronotum almost 2× wider than long, widest near middle, its surface very uneven; transverse carina antebasal at sides, somewhat sub-basal near middle, strongly elevated, evenly denticulate, with a median angulation and 1 or 2 pairs of lateral angulations; lateral carina reaching pleural suture, meeting transverse carina in a right angle; declivity slightly oblique, strongly denticulate on lateral margin, with secondary carinae developed at sides. Pleural suture concealed by vestiture. Scutellum large, obtusely rounded at apex, level with base of elytra, densely clothed with cream scales. Elytra widest near middle; base slightly proclinate, with an indistinct rim; sutural margin slightly raised; striole about 0.3× as long as elytron; striae with small, shallow, discrete punctures; declivity short, almost vertical; elytra each with an elongate, angulate humeral callus, a large, vertical, sub-basal tubercle, and a large, proclinate, preapical tubercle with a smaller vertical tubercle just in front and somewhat lateral to it; all tubercles, but not humeral callus, with tufts. Wings about 3× longer than wide, 2× longer than elytra, with well developed anal veins but no anal lobe. Legs slender. Tarsi with segment 1 longer than segments 2 and 3 together; segment 2 emarginate; inner tooth of claw short.

ABDOMEN. Pygidium wider than long, finely puncto-asperate, with dense, decumbent, pale, linear scales. Ventrites not impressed along midline, their surface finely punctured, densely clothed with appressed, linear scales; ventrite 5 not asperate.

MALE. Tergite 8 and sternite 8 weakly sclerotised, with numerous marginal hairs. Sternite 9 apodeme long, with well developed arms. Tegmen rather broad, its ring longer than apodeme, which is slender; apex short, tapering, truncate at tip, with a few short hairs; preapical flange entire, slightly arched. Aedeagus about half as long as elytron; apodemes continuous with pedon; bridge slender, arched, rather close to base of pedon; pedon entire, broad, truncate at apex; tectum tapering gradually; internal sac moderately long, simple, with fine and coarse spinules; ejaculatory duct inserted on ventral surface.

FEMALE. Segment 8 about half as long as hemisternites; tergite weakly sclerotised,

with very few setae; sternite weakly sclerotised, its apodeme constricted near middle and with slightly divergent arms. Hemisternites about half as long as elytra; body distinct from lateral rods, which are about 0.65× as long as entire hemisternites; apex with 3 very short teeth and a minute, concealed stylus; median rods joined together for most of their length, neither expanded nor divergent at proximal end. Vulva with a pair of very large, membranous lobes ventrally. Bursa copulatrix slender, without sclerites. Spermatheca small, not very globose; spermathecal gland oval, longer than spermatheca, almost sessile on atrium at base of spermatheca.

RANGE. New Zealand.

REMARKS. *Hoherius* is the only New Zealand anthribid genus with long antennae in which the pronotum is very much wider than long and has a somewhat wavy transverse carina. Because of its broad rostrum, short pronotum, and transverse, emarginate eyes *Hoherius* bears some resemblance to the New Caledonian genus *Proscoporphinus* Montrouzier. It differs in lacking distinct rostral carinae (*Proscoporphinus* has 5 longitudinal carinae) and having a very uneven pronotal surface (smooth in *Proscoporphinus*), a wavy rather than evenly curved transverse carina on the pronotum, and males that lack crests between the eyes and a sensory pit on the outer edge of the elytron. There are major differences between the genitalia of these genera. In *Proscoporphinus* the proximal sclerotised margin of the tectum is fused to the pedon, the internal sac has a rather ornate lining, and the apodemes are fused for almost 0.25 of their length by a short but extensive bridge. The female genitalia of *Proscoporphinus* differ from those of *Hoherius* in having a sclerite in the bursa copulatrix and elongate, sharp teeth at the apex of the hemisternites.

Hoherius comprises a single species which forms part of the New Zealand endemic element.

Hoherius meinertzhageni (Broun) new combination

Figures 58, 196-201, 476-480, 666, and 667

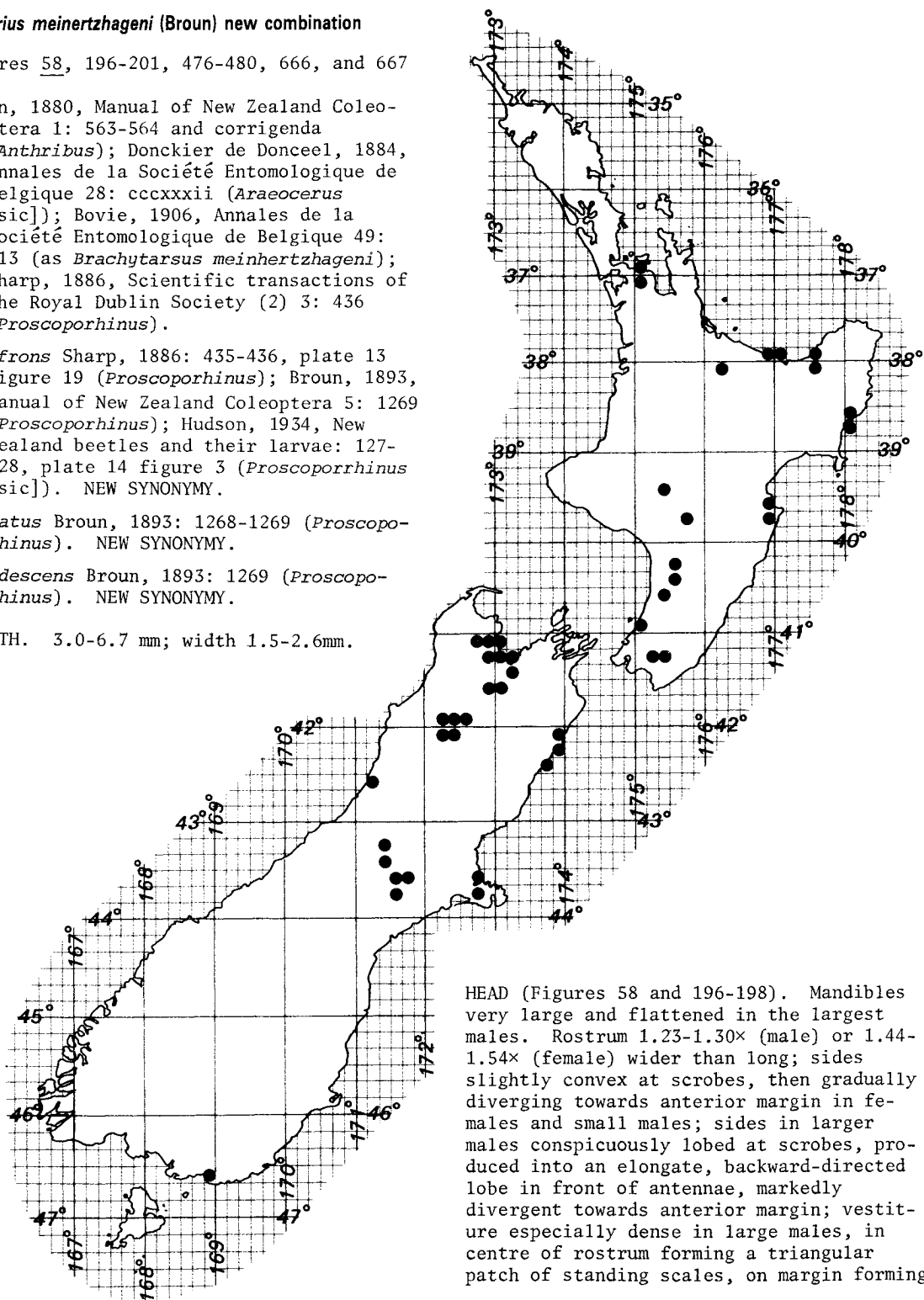
Broun, 1880, Manual of New Zealand Coleoptera 1: 563-564 and corrigenda (*Anthribus*); Donckier de Donceel, 1884, Annales de la Société Entomologique de Belgique 28: cccxxii (*Aræocerus* [sic]); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 313 (as *Brachytarsus meinertzhageni*); Sharp, 1886, Scientific transactions of the Royal Dublin Society (2) 3: 436 (*Proscoporhinus*).

albifrons Sharp, 1886: 435-436, plate 13 figure 19 (*Proscoporhinus*); Broun, 1893, Manual of New Zealand Coleoptera 5: 1269 (*Proscoporhinus*); Hudson, 1934, New Zealand beetles and their larvae: 127-128, plate 14 figure 3 (*Proscoporhinus* [sic]). NEW SYNONYMY.

signatus Broun, 1893: 1268-1269 (*Proscoporhinus*). NEW SYNONYMY.

viridescens Broun, 1893: 1269 (*Proscoporhinus*). NEW SYNONYMY.

LENGTH. 3.0-6.7 mm; width 1.5-2.6mm.



HEAD (Figures 58 and 196-198). Mandibles very large and flattened in the largest males. Rostrum 1.23-1.30× (male) or 1.44-1.54× (female) wider than long; sides slightly convex at scrobes, then gradually diverging towards anterior margin in females and small males; sides in larger males conspicuously lobed at scrobes, produced into an elongate, backward-directed lobe in front of antennae, markedly divergent towards anterior margin; vestiture especially dense in large males, in centre of rostrum forming a triangular patch of standing scales, on margin forming

a long fringe. Antennae (Figures 199 and 200) 2.5-5.0× (male) and 1.05-1.28× (female) longer than elytra, longest in the largest specimens; vestiture of scape very dense and long in large males. Eyes separated by 0.18-0.35× (male) or 0.50-0.54× (female) width of rostrum and 0.30-0.39× (male) or 0.44-0.54× (female) width across eyes.

THORAX. Pronotum (Figures 58, 197, and 201) 1.73-2.09× (male) or 1.57-1.79× (female) wider than long, widest in large specimens; transverse carina varying slightly in shape but always with a small, backward-directed angulation on midline and a pair of large, forward-directed, sharp angulations towards sides. Elytra (Figure 58) 2.67-3.09× (male) or 2.86-2.94× (female) longer than pronotum, 1.13-1.15× (male) or 1.18-1.32× (female) wider than pronotum, together 1.30-1.33× (male) or 1.36-1.38× (female) longer than wide; tubercles well developed in both large and small specimens; disc with 2-6 pairs of tufts, these most numerous in largest males; colour pattern variable, but usually with a large, brown patch extending over sub-basal tubercles and with black centres in tufts.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 476. Tegmen, Figures 477 and 478. Aedeagus, Figures 479 and 480.

FEMALE. Segment 8, Figure 666. Genitalia, Figure 667.

TYPE DATA. Holotype of *meinertzhageni* Broun: male, 3.5 × 1.8 mm, Napier (HB), Meinertzhagen (BMNH). Holotype of *albifrons* Sharp: male, 4.4 × 2.15 mm, Kumara, near Greymouth (BR/WD), 12 November 1880, Helms (BMNH). Holotype of *signatus* Broun: female, 4.6 × 2.55 mm, Napier (HB), Meinertzhagen (BMNH). Lectotype of *viridescens* Broun: male, 4.1 × 2.3 mm, Clevedon (AK), Broun (BMNH). I am indebted to G. Kuschel for examining and measuring the holotype of *albifrons*.

MATERIAL EXAMINED. The primary types of *meinertzhageni*, *signatus*, and *viridescens*, 75 males, 68 females (AMNZ, BMNH, FRNZ, NMNZ, NZAC, UCNZ).

AK, BP, GB, HB, RI, WI, WA, WN / NN, KA, BR, WD, MC, SL. From sea level to about 1067 m. Northernmost record: Clevedon (AK); southernmost record: Otara (SL).

Reared from *Hoheria* sp. (Malvaceae). Large numbers of adults have been beaten from *H. glabrata*, *Plagianthus betulinus*, and *P. divaricatus* (Malvaceae). Fragments of higher plant tissue and brown-walled bicellular fungal spores with the septum on the basal third of the spore were present in the hindgut of dissected adults.

Adults have been collected from September to April.

REMARKS. *H. meinertzhageni* is immediately recognisable by its greenish coloration, short, broad pronotum with characteristically angulate transverse carina, lack of tubercles or conspicuous paired carinae on the rostrum, and transverse, strongly emarginate eyes with a rounded anterior angle on the dorsal lobe. The rostrum of large males is broad and shield-like. Very small males resemble females because of their smaller rostrum, but have relatively longer antennae.

Genus *Lawsonia* Sharp

TYPE-SPECIES *Lawsonia variabilis* Sharp, 1873, here designated.

Sharp, 1873, Entomologist's monthly magazine 10: 30; Pascoe, 1875, Annals and magazine of natural history (4) 16: 210 (as synonym of *Exillia* Pascoe, 1860); Sharp, 1876, Annals and magazine of natural history (4) 17: 424 and 425 (key).

(*Lawsonia* is named after Mr T. Lawson, of Auckland, who collected the specimens on which the genus is based; gender masculine.)

Small anthribids (length 2.1-4.3 mm). Integument mainly brown, green, or brown with a greenish tinge, usually with some black areas on elytra; surface of head and pronotum dull, with granulose, minisculpture and no obvious punctures; elytra glossy, puncto-striate; vestiture dense, consisting of overlapping, appressed, linear scales, predominantly cream and yellowish-brown but usually with spots and patches of black scales. Rostrum transverse, with median and midlateral carinae. Antennae long, inserted dorsolaterally.

Eyes strongly emarginate. Pronotum without tubercles or tufts; transverse carina entire, sub-basal; lateral carina well developed. Elytra with small tubercles but no tufts. Wings fully developed. Legs with integument greenish-brown, not banded; vestiture consisting of fine, cream scales. Sexual dimorphism most apparent in antennal length, rostral shape, and colour pattern; allometry marked in antennal length of male.

HEAD. Rostrum widest at antennal insertion, slightly elevated and indented at scrobes, exposing part of scrobal floor; sides in front of antennae strongly raised and rimmed in males; anterior margin protruding slightly at labrum, with a sub-marginal, median, V-shaped ridge; surface uneven, with a median carina extending on to vertex as a depressed line and a pair of anteriorly convergent, midlateral carinae extending forward obliquely from medial edge of eyes; males usually with a small, transverse elevation between antennal insertion and midlateral carina. Mandibles of male with a large, circular, shiny pit on dorsal surface near base. Antennae very long and slender, up to 4.5× (male) or 1.8× (female) length of body; scape scaly, slightly compressed, obliquely truncate at base; segment 2 very short, conspicuously constricted at base; segment 3 and sometimes segment 4 noticeably broader than remaining funicle segments; club very slender, slightly longer than segment 8 in male, shorter than segment 8 in female. Eyes transverse, widely separated, finely faceted, with minute hairs; dorsal lobe about as long as ventral lobe, with a rounded anterior angle.

THORAX. Pronotum about 1.3× wider than long, its sides notched near middle; surface slightly depressed but not uneven; transverse carina strongly elevated, finely denticulate, gently sinuate on either side of a median angulation; lateral carina reaching pleural suture, meeting transverse carina in an obtuse angle; declivity slightly oblique, finely denticulate on lateral margins, with secondary carinae well developed at sides but obscured by vestiture. Pleural suture extending on to dorsal surface, concealed by vestiture. Scutellum moderately large, rounded at apex, level with base of elytra, densely clothed with cream scales. Elytra almost parallel-sided; base slightly to strongly

proclinate, with an indistinct rim; sutural margin slightly raised; striole about 0.2× as long as elytron; striae with small, shallow, discrete punctures; declivity short, vertical; humeral callus small, rounded; elytra each with a small to moderately large, rounded, sub-basal tubercle and sometimes a very small, median and sub-apical swelling. Wings about 3.2× longer than wide, 2.2× longer than elytra, with well developed anal veins and a small anal lobe. Legs slender. Femoral integument brown; tibial and tarsal integument usually greenish. Tarsal segment 1 about as long as segments 2 and 3 together; segment 2 shallowly emarginate; inner tooth of claw very short.

ABDOMEN. Pygidium wider than long, neither punctate nor asperate, densely clothed with decumbent, linear scales. Ventrites not impressed along midline; surface without distinct punctures, densely clothed with appressed linear scales; ventrite 5 not asperate.

MALE. Tergite 8 and sternite 8 moderately sclerotised, with numerous marginal hairs. Sternite 9 apodeme long, with well developed arms. Tegmen moderately broad, its ring about as long as apodeme, which is slender; apex rather parallel-sided in dorsal aspect, with a rounded tip and with marginal setae; preapical flange entire, slightly angulate in middle. Aedeagus about half as long as elytron; apodemes continuous with pedon; bridge robust, not arched, not very close to base of pedon, barely separating the apodemes; pedon entire, broad, with a narrow, truncate apex; tectum long, with a narrow, rounded apex; internal sac moderately long, bilobed, with fine and coarse spinules; ejaculatory duct inserted on ventral lobe of internal sac.

FEMALE. Segment 8 about half as long as hemisternites; tergite weakly sclerotised, with a few marginal setae; sternite moderately sclerotised, with marginal setae, its apodeme long, widening gradually from base and with long, moderately divergent arms. Hemisternites about 0.6× as long as elytra; body distinct from lateral rods, which are about 0.6× as long as entire hemisternites; apex with 3 sharp, rather long teeth and a minute, concealed stylus; median rods joined together except at extreme proximal end, short relative to lateral rods. Vulva with a pair of large,

membranous lobes ventrally. Bursa copulatrix broad, without sclerites. Spermatheca small, not very globose; spermathecal gland oval, about as long as spermatheca, stalked; ducts of spermatheca and spermathecal gland inserted on large atrium at base of spermatheca.

RANGE. New Zealand and probably New Caledonia.

REMARKS. Sharp erected *Lawsonia* for what he considered to be 2 distinct new species, but his names *L. longicornis* and *L. variabilis* in fact refer respectively to the male and female of a single species. A type species was not designated for the genus. Pascoe (1875) considered *Lawsonia* to be identical with *Exillilis* Pascoe, and mentioned that the name *longicornis* had already been used for the type-species of *Exillilis*. Subsequently Sharp (1876) remarked that if indeed *Lawsonia* proved to be synonymous with *Exillilis* he would propose the name *E. lawsoni* to replace that of *L. longicornis* Sharp, although for the time being he retained *Lawsonia* as a valid genus. Without providing any new evidence, Broun (1880) synonymised *Lawsonia* with *Exillilis* (as *Exilis*) and formalised the name *E. lawsoni* Sharp to replace *E. longicornis* (Sharp). Broun's usage was accepted by both Bovie (1906) and Wolfrum (1929).

I have examined males and females of *E. longicornis* Pascoe, and am satisfied that it represents a genus quite discrete from *Lawsonia*. I am therefore reinstating the genus *Lawsonia* together with the name *L. longicornis*. I have designated *variabilis* Sharp as type-species of *Lawsonia* because this species name has had continuous usage in catalogues and other literature dealing with New Zealand Anthribidae.

The most obvious external differences between *Lawsonia* and *Exillilis* are in the form of the rostral carinae and the shape of the antennal segments. *E. longicornis* has a deep median groove behind the anterior margin of the rostrum, a pair of weak, almost parallel carinae extending on to the frons from the upper limit of the groove, and a pair of longer, more strongly developed, almost parallel, midlateral carinae that extend from near the anterior margin of the rostrum to the vertex and do not touch the edge of the eye. The scape is pyriform, not truncate at the

base, and the funicle segments are not expanded into a node apically. The male genitalia of *Exillilis* have a complex arrangement of spinules and sclerites in the internal sac, the ejaculatory duct inserted on a dorsal lobe of the internal sac, and the apodemes of the aedeagus widely separated by a slender, arched bridge. The female genitalia of *Exillilis* have a rather narrow, curved spermatheca and a very elongate, somewhat pear-shaped spermathecal gland similar to that of *Euciodes suturalis*. The ducts of the spermatheca and spermathecal gland are broad, and enter the spermatheca separately through an elongate slit at its base.

Lawsonia is represented in New Zealand by a single species. An apparently undescribed species from New Caledonia, represented by specimens in NZAC, seems to belong in this genus.

Lawsonia variabilis Sharp

Figures 35, 59, 202-206, 481-485, 668, and 669

Sharp, 1873, Entomologist's monthly magazine 10: 31 (*Lawsonia*); Sharp, 1876, Annals and magazine of natural history (4) 17: 425 (key) (*Lawsonia*); Broun, 1880, Manual of New Zealand Coleoptera 1: 557-558 (*Exilis* [sic]); Reitter, 1880, Verhandlungen des naturforschenden Vereins in Brünn 18: 182 (*Lawsonia*); Hudson, 1934, New Zealand beetles and their larvae: 128 (*Exilis* [sic]); Morimoto, 1979, Esakia 14: 3 (*Exillilis*).

lawsoni Sharp, 1876: 424 (*Exillilis*; conditionally for *Lawsonia longicornis* Sharp); Broun, 1880: 556-557 (*Exilis* [sic]); Hudson, 1934: 128 (*Exilis* [sic]); Morimoto, 1979: 3 (*Exillilis*).

longicornis Sharp, 1873: 30-31 (*Lawsonia*); Sharp, 1876: 424 and 425 (key) (*Lawsonia*); Donckier de Donceel, 1884 Annales de la Société Entomologique de Belgique 28: cccxxx (= *longicornis* Pascoe; *Exillilis*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 309 (*Exillilis*; as a synonym of *lawsoni*).
NEW SYNONYMY.

Length 2.1-4.3 mm; width 0.9-1.9 mm.

HEAD (Figures 59, 202, and 203). Rostrum 1.83-2.15× wider than long. Antennae (Figures 204 and 205) 2.73-6.85× (male) or 1.73-2.50× (female) longer than elytra, longest in the largest specimens. Eyes separated by 0.44-0.55× width of rostrum and 0.41-0.48× width across eyes.

THORAX. Pronotum (Figures 59 and 206) 1.29-1.31× wider than long. Elytra 1.29-1.36× longer and 1.11-1.29× wider than pronotum, together 1.45-1.51× longer than wide; vestiture varying in colour, but usually mainly creamish-brown with numerous black spots or several large, black areas; females usually with a large, oblique, black band or triangular patch near centre of each elytron.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 481. Tegmen, Figures 482 and 483. Aedeagus, Figures 484 and 485.

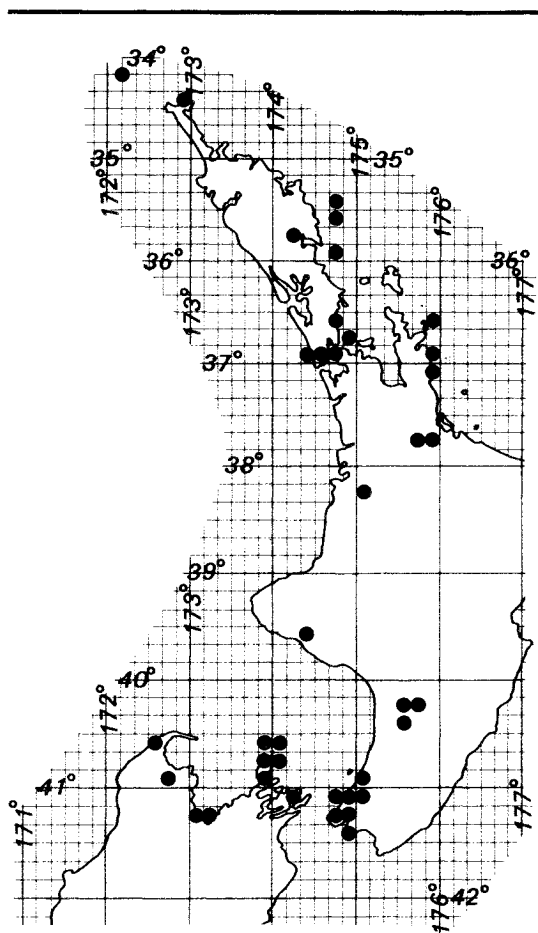
FEMALE. Segment 8, Figure 668. Genitalia, Figures 35 and 669.

TYPE DATA. Holotype of *variabilis* Sharp: female, 3.7 × 1.65 mm, Auckland (AK), T. Lawson (BMNH). Holotype of *longicornis* Sharp: male, 3.5 × 1.55 mm, Auckland (AK), T. Lawson (BMNH). I am indebted to G. Kuschel for examining and measuring these 2 type specimens.

MATERIAL EXAMINED. 142 males, 146 females (AMNZ, BMNH, CMNZ, NMNZ, NZAC, OMNZ, UCNZ).

Three Kings Islands - Great I., South West I. / ND including Poor Knights Is and Chicken I., AK, CL including Mercury Is, WO, BP, TK, WI, WN / SD including Stephens I. and D'Urville I., NN. From near sea level to 305 m. Northernmost record: Three Kings Islands; southernmost record: Pigeon Valley (NN). Reitter (1880) identified this species in a collection of beetles he received from R. Helms of Greymouth, but it is not clear in the text whether all the material Helms sent was from Greymouth.

L. variabilis has not been reared. Adults have been beaten from various native shrubs and have occasionally been extracted from leaf litter. The larvae almost certainly develop in dying *Parsonsia* sp. (Apocynaceae), as large numbers of adults have been collected on recently cut stems of this plant. Woody tissue (mainly bark) and fungal material including small, dark, uni-



cellular conidia resembling those of *Cladosporium* and large, spinulose ascospores probably of an operculate discomycete (order Pezizales) were present in the hindgut of dissected specimens.

Adults have been collected from September to June.

REMARKS. The deeply emarginate eyes, greenish integument, and tricarinate rostrum are distinguishing features of both males and females of *L. variabilis*. Males are easily recognised by their very long antennae, the upturned lateral margin of the rostrum, and the pit at the base of the mandible. Females usually have a dark, oblique or transverse band near the centre of the elytral disc.

Genus *Euciodes* Pascoe

TYPE-SPECIES *Euciodes suturalis* Pascoe, 1866, by monotypy.

Pascoe, 1866, Journal of entomology 2: 492-493; Blackburn, 1900, Transactions and proceedings of the Royal Society of South Australia 24: 143 (key); Jordan, 1924, Novitates zoologicae 31: 260.

(The name *Euciodes* is probably derived from the Greek 'eu', meaning 'well, nice', and 'kiodes', meaning 'pillar-like'; gender masculine.)

Small anthribids (length 1.7-3.6 mm). Integument black, with a somewhat metallic sheen; head and pronotum with fine, dense punctures; elytra finely puncto-striate; entire dorsal surface densely clothed with mainly overlapping, linear, silver, and bronze scales in a somewhat variegated pattern; ventral surface and legs with dense, overlapping, linear, silver scales. Rostrum transverse, without carinae but with a median pit and a groove on dorsal surface. Antennae long, inserted dorso-laterally. Eyes very deeply emarginate. Pronotum without tufts or tubercles; transverse carina sub-basal to basal, entire or broken; lateral carina very short. Elytra without tufts or tubercles apart from humeral callus. Wings fully developed. Legs not banded. Sexual dimorphism most apparent in length of antennae.

HEAD. Rostrum vertical, widest at antennal insertion, narrowing slightly towards anterior margin, its sides slightly raised and deeply notched at scrobes, exposing scrobal floor; anterior margin indented, rimmed; median pit deep, close to anterior margin, continuing on to frons as a short groove. Antennae slender, about as long as body in female, about 2× as long as body in male; scape pyriform; segment 2 about as long as scape, gradually expanding from base to apex; segment 3 usually wider than following funicle segments; segments 4-8 rather similar in length and diameter; club very slender, about as long as preceding funicle segment in male, about as long as preceding 2 funicle segments in female. Eyes horseshoe-shaped, widely separated, not protruding, finely faceted, with minute hairs; dorsal lobe longer than ventral lobe, with a rounded anterior angle.

THORAX. Pronotum about as wide as long, its sides straight or slightly sinuous; transverse carina basal on middle 0.3, sub-basal at sides, weakly elevated, irregularly denticulate, entire or with median or dorsolateral breaks; lateral carina developed merely as a hook that meets transverse carina in an obtusely rounded angle; declivity almost horizontal, with secondary carinae well developed at sides. Pleural suture almost concealed by vestiture. Scutellum small, triangular, about level with base of elytra, densely clothed with silver scales. Elytra almost parallel-sided; base very slightly proclinate, rimmed; sutural margin not raised; striole about 0.25× as long as elytron; striae with small, shallow, discrete punctures; declivity short, sloping gently; humeral callus moderately large, angulate. Wings about 3.3× longer than wide, about 1.6× as long as elytra, with well developed anal veins but no anal lobe. Legs slender. Tarsi with segment 1 longer than segments 2 and 3 together; segment 2 emarginate; inner tooth of claw very short.

ABDOMEN. Pygidium wider than long; surface with dense, coarse punctures and decumbent, linear, bronze scales. Ventrites not impressed along midline; ventrite 5 with dense, coarse punctures but no asperities, its apex with a small patch of bronze hairs in male and a patch of black hairs in female.

MALE. Tergite 8 and sternite 8 weakly sclerotised, with a few marginal hairs. Sternite 9 apodeme moderately long, with well developed arms. Tegmen narrow, slender, its ring about as long as apodeme, which is relatively broad; apex relatively broad, rounded at tip, with rather long, marginal setae; preapical flange notched in middle, barely curved. Aedeagus about 0.4× as long as elytron; apodemes continuous with pedon; bridge robust, not arched, distant from base of pedon; pedon entire, very slender, with a pointed, membranous apex; tectum long, narrow, pointed; internal sac very long, not lobed, with a tract of fine spinules ventrally; ejaculatory duct inserted dorsally near apex of internal sac.

FEMALE. Segment 8 about 0.4× as long as hemisternites; tergite weakly sclerotised on midline, its setae short and marginal; sternite weakly sclerotised, with very few setae, its apodeme expanded gradually from

base, the arms moderately divergent. Hemisternites about 0.75× as long as elytra; body distinct from lateral rods, which are about 0.7× as long as entire hemisternites; apex with 2 sharply pointed, narrow teeth and a minute stylus; median rods very short relative to lateral rods, joined together for most of their length, neither expanded nor divergent at proximal end. Vulva with a pair of short, membranous lobes ventrally. Bursa copulatrix very large, lobed, without sclerites. Spermatheca small, not very globose; spermathecal gland elongate, tapering towards apex, more than 2× as long as spermatheca, almost sessile on atrium at base of spermatheca.

RANGE. Australia and New Zealand (adventive).

REMARKS. *Euciodes* differs from other anthribids with long antennae that occur in New Zealand in its vertical rostrum and frons, very deeply emarginate eyes, non-tuberculate, cylindrical body, and silvery-greyish vestiture. The shape of the head, and particularly of the median pit and groove on the rostrum, suggests a close relationship with *Xenocerus* Schoenherr, from northern Australia and the Indo-Malay region, as well as with *Exillia* Pascoe. The unusually elongate and tapering spermathecal gland is almost identical with that in *E. longicornis* Pascoe.

Euciodes comprises a single species.

***Euciodes suturalis* Pascoe**

Figures 60, 207-209, 486-490, 670, and 671
Pascoe, 1866, Journal of entomology 2: 493; Blackburn, 1900, Transactions and proceedings of the Royal Society of South Australia 24: 143; Jordan, 1924, Novitates zoologicae 31: 260; Wolfrum, 1959, Entomologische Arbeiten aus dem Museum Frey 10: 160; Cumber, 1959, New Zealand journal of agricultural research 2: 768-769, figure 3 (as *Exillis* [sic] sp.); Kuschel, 1972, New Zealand journal of science 15: 274, 275 (key), and 286; Penman, 1978, New Zealand entomologist 6: 421-425, figures 1-6.

Length 1.7-3.6 mm; width 0.6-1.4 mm.

HEAD (Figures 60 and 207). Rostrum 2.71-3.11× wider than long. Antennae (Figure 208) 2.1-3.2× (male) or 1.3-1.5× (female) longer than elytra. Eyes separated by 0.35-0.40× width of rostrum and 0.31-0.36× width across eyes.

THORAX. Pronotum (Figures 60 and 209) 0.95-1.04× as wide as long; dorsum often with denser scales along midline and near lateral margin. Elytra 1.90-2.19× as long and 1.00-1.33× as wide as pronotum, together 1.54-2.10× longer than wide; surface lateral to striae flattened in small specimens, slightly convex in large specimens.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 486. Tegmen, Figures 487 and 488. Aedeagus, Figures 489 and 490.

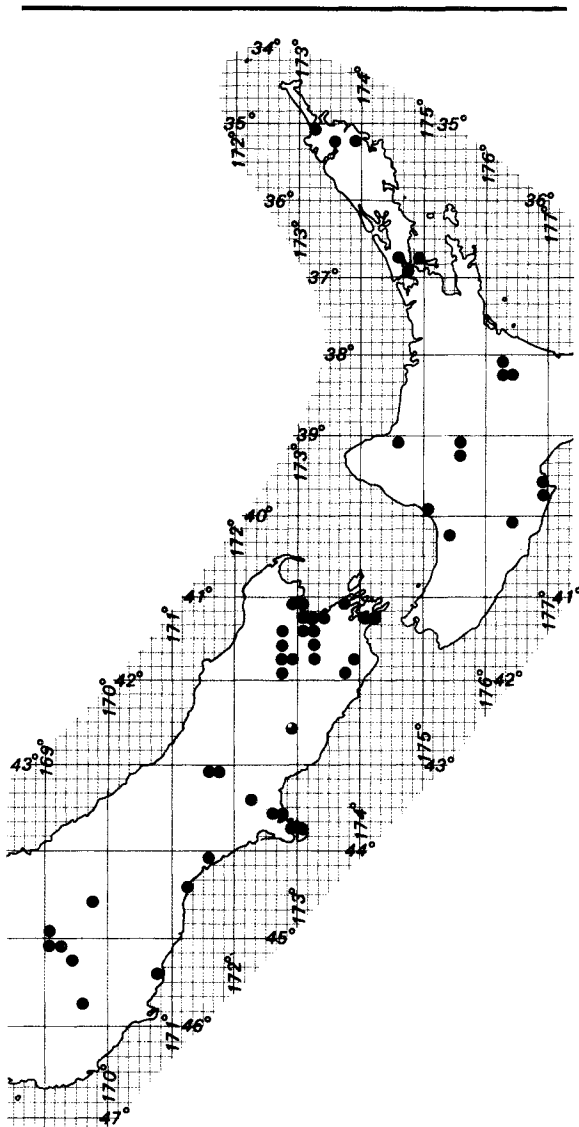
FEMALE. Segment 8 and sternite 9, Figure 670. Genitalia, Figure 671.

TYPE DATA. Lectotype: male, 2.3 × 0.77 mm, Gawler, South Australia (BMNH). I am indebted to G. Kuschel for examining and measuring the lectotype.

MATERIAL EXAMINED. 118 males, 105 females, 4 unsexed (BMNH, FRNZ, NZAC, UCNZ).

NEW ZEALAND: ND, AK, WO, BP, TO, TK, HB, WI, WA, WN / SD, NN, MB, BR, NC, MC, SC, CO, DN. From sea level to 1695 m. Northernmost record: Kaingaroa (ND); southernmost record: Beaumont (CO). AUSTRALIA: New South Wales, South Australia, Western Australia, Tasmania. The Australian records were kindly provided by G. Kuschel from label data on 38 specimens in BMNH. The WO, WA, and WN records are from Cumber (1959).

The reared New Zealand specimens among the material examined are from dry flower stalks of *Holcus lanatus* and *Dactylis glomerata* (Poaceae). Other grasses in which the larvae are known to develop are *Arrhenatherum elatius*, *Bromus* sp., and *Festuca arundacea* (Kuschel 1972, Penman 1978). Spores of *Puccinia* sp. (Uredinales), bicellular conidia and long, brown conidiophores of a dematiaceous hyphomycete resembling *Dendryphiella*, pale brown, fusiform, triseptate spores (probably of an ascomycete), and fragments of fungal fructifications were present in the hindgut of dissected adults.



pasture survey carried out in January-March 1957. At that time, in spite of intensive sampling, no specimens were found north of Helensville (AK). *E. suturalis* is now common through most of New Zealand, although apparently not yet on the Chatham Islands, and has been more successful than any endemic species in extending its range to high altitudes. It is decidedly seasonal in occurrence, only one adult specimen having been collected during winter. An account of its biology in New Zealand, including photographs of oviposition scars and emergence holes, has been given by Penman (1978). Although *E. suturalis* is often very common in pasture grasses, its effect on seed production is minimal (Penman 1978). Some of Cumber's voucher specimens which were recorded and labelled as "*Exilis* sp." are in NZAC.

***Dasyanthribus* new genus**

TYPE-SPECIES *Anthribus purpureus* Broun, 1880.

(The name *Dasyanthribus* is derived from the Greek 'dasýs', meaning 'hairy', and *Anthribus*, and alludes to the numerous standing hairs on the dorsal surface of the body; gender masculine.)

Very small anthribids (length 1.5-2.1 mm). Integument shiny metallic black except for brown legs and antennal funicle; head and pronotum with dense, coarse punctures; elytra puncto-striate; entire dorsal surface densely clothed with long, brown, standing setae and moderately dense, curved, cream, linear scales. Rostrum transverse, without carinae or depressions. Antennae short, inserted dorsally. Eyes weakly emarginate. Pronotum without tufts and tubercles; transverse carina complete or incomplete in New Zealand species, absent in New Caledonian species; lateral carina obsolete or absent. Elytra without tufts or tubercles; humeral callus absent. Wings vestigial (N.Z. species) or absent (N.C. species). Legs not banded. Sexual dimorphism not apparent externally.

Adults have been collected in New Zealand in August (a single specimen from Nelson) and from October to February.

REMARKS. The first New Zealand specimens of *E. suturalis* were found in Hastings (HB) in November 1924 by J. G. Myers (Kuschel 1972), but it was not until 1959 that the species was recorded as occurring in this country (Wolfrum 1959). The WO, WA, and WN records from Cumber (1959) are based on specimens collected in a North Island

HEAD. Rostrum very short, deeply notched at scrobes, exposing scrobal floor, its lateral and anterior margins slightly elevated; anterior margin indented. Antennae robust, of similar length in both sexes, not reaching base of pronotum; scape flask-shaped, broadest basally; segment 2 widest subapically, slightly arched; segments 3-8 rather broad, becoming progressively shorter towards club, which is very much wider than funicle and about as long as preceding 3 funicle segments. Eyes widely separated, moderately large, somewhat pear-shaped in dorsal aspect, protruding, finely faceted, with minute hairs; dorsal lobe not extending as far forward as ventral lobe, with a broadly rounded anterior margin.

THORAX. Pronotum wider than long, almost parallel-sided; transverse carina (if present) antebasal, scarcely curved, moderately elevated, irregularly denticulate, usually weakened at midline, often with additional breaks; lateral carina (when discernible) not extending forward as far as pleural suture; declivity almost horizontal, without denticles or secondary carinae. Pleural suture well developed, not concealed. Scutellum minute, triangular, about level with base of elytra, with a few curved, cream scales. Elytra widest near middle, very slightly convergent anteriorly and posteriorly; base vertical, not at all proclinate, rimmed; sutural margin not raised; striae about $0.3\times$ as long as elytra; striae with large, discrete punctures; interstriae not raised; declivity short, gently sloping. Legs robust. Femora more or less uniformly brown, darker than other segments, with sparse, linear, cream scales. Tibiae densely clothed with long, cream scales. Tarsi with segment 1 about half as long as segments 2 and 3 together; segment 2 weakly emarginate; inner tooth of claw less than half as long as claw itself.

ABDOMEN. Pygidium wider than long, rounded at apex, not asperate, clothed with cream, linear scales. All ventrites without asperities, not impressed along midline, densely clothed with creamish, linear scales; distal margin of ventrite 4 not deeply excavated; ventrite 5 without obvious sexual dimorphism.

MALE. Tergite 8 with a truncate or barely emarginate apex and a few marginal setae; sternite 8 with an entire distal margin and with numerous setae. Sternite 9 apodeme long, slender, with well developed arms. Tegmen somewhat elliptical, rather slender, its ring longer than the apodeme, which widens conspicuously beyond middle; apex entire, broad and slightly tapering in dorsal aspect, rounded in lateral aspect, with a small tuft of hairs on slightly recurved tip; preapical flange strongly curved. Aedeagus about $0.6\times$ as long as elytron; apodemes continuous with pedon; bridge short, broad, not very arched, close to base of pedon; pedon entire, with a wide base and a slightly pointed apex; tectum tapering to a point; internal sac simple, reaching beyond free ends of apodemes, densely lined with minute, brown, scale-like spinules; ejaculatory duct inserted at apex of internal sac.

FEMALE (New Zealand species only). Segment 8 about half as long as hemisternites; tergite weakly sclerotised, without setae; sternite weakly sclerotised, its apodeme expanding rapidly from base and dividing into 2 widely divergent arms that are expanded apically. Hemisternites about $0.8\times$ as long as elytra; body distinct from lateral rods, which are about $0.6\times$ as long as entire hemisternites; apex with 4 small, blunt teeth and a minute, concealed stylus; median rods joined together along midline, neither expanded nor divergent at proximal end. Vulva enclosed by a pair of small, membranous lobes ventrally. Bursa copulatrix reaching well beyond ends of lateral rods, lacking sclerites. Spermatheca large, not very globose; spermathecal gland spherical, much smaller than spermatheca, stalked; ducts of spermatheca and spermathecal gland inserted in a narrow slit at base of spermatheca; vagina with a transverse fold near insertion of median oviduct.

RANGE. New Zealand and New Caledonia.

REMARKS. *Dasyanthribus* is immediately recognisable by its very small, metallic-sheened, hairy body, very short rostrum, and dorsally inserted antennae. It has a superficial resemblance to Choraginae because of the dorsal insertion of the antennae and the slightly arched second

antennal segment, but the genitalia and antennal scape are typically anthribine.

Dasyanthribus comprises a single species from New Zealand and an underscribed species (2 specimens in NZAC) from New Caledonia.

***Dasyanthribus purpureus* (Broun) new combination**

Figures 61, 210-212, 289, 491-495, 672, and 673

Broun, 1880, Manual of New Zealand Coleoptera 1: 559-560 and corrigenda (*Anthribus*); Donckier de Donceel, 1884, Annales de la Société Entomologique de Belgique 28: cccxxxii (*Araeocerus* [sic]); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 314 (*Brachytarsus*).

Length 1.5-2.1 mm; width 0.6-1.2 mm.

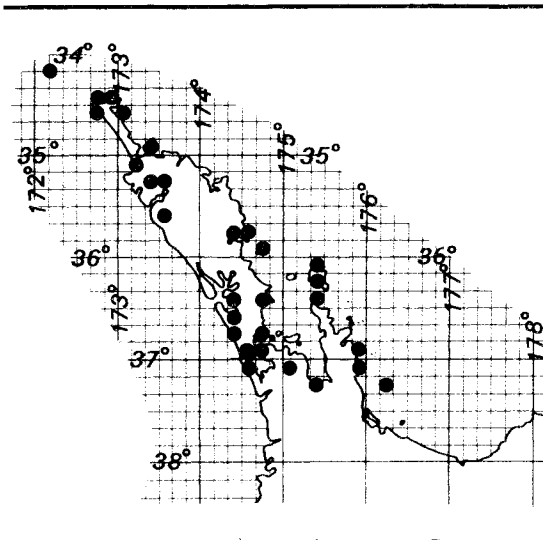
HEAD (Figures 61 and 210). Rostrum 2.11-2.38× wider than long. Antennae, Figure 211. Eyes separated by 0.94-1.00× width of rostrum and 0.61-0.67× width across eyes.

THORAX. Pronotum (Figures 61 and 212) 1.06-1.19× wider than long; transverse carina antebasal, rarely entire, usually broken at midline, often with several symmetrical or asymmetrical breaks; declivity usually with a median patch and a pair of dorsolateral patches of cream scales. Elytra 1.37-1.63× longer and 1.15-1.24× wider than pronotum, together 1.05-1.18× longer than wide. Wing (Figure 289) ribbon-shaped, 15-19× longer than wide, 0.3-0.4× as long as elytron, without recognisable veins.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 491. Tegmen, Figures 492 and 493. Aedeagus, Figures 494 and 495; tectum tapering gradually to a point.

FEMALE. Segment 8, Figure 672. Genitalia, Figure 673.

TYPE DATA. Lectotype: sex undetermined, 1.6 × 0.9 mm, Tairua (CL), Broun (NZAC).



MATERIAL EXAMINED. Lectotype, 22 males, 36 females, 112 unsexed (BMNH, NZAC, OMNZ, UCNZ).

Three Kings Islands - Great I., South West I. / ND including Hen I., AK, CL including Great Barrier I. and Mayor I., WO. From sea level to about 460 m. Northernmost record: Great Island, Three Kings; southernmost records: Mayor Island (CL) and Mangatarata (WO).

Reared from bark flakes of *Olearia furfuracea* (Asteraceae). Adults have been beaten from live foliage of various native trees and shrubs. Disarticulated hyphae of a true sooty mould (Ascomycetes: Euantennariaceae) were present in the hindgut of dissected adults.

Adults have been collected in April and from July to February.

REMARKS. *D. purpureus* is a common northern species with unusual ribbon-shaped vestigial wings. The undescribed New Caledonian species of *Dasyanthribus* is almost identical with the New Zealand species except that it lacks wings, has no transverse carina on the pronotum, and has a sharply pointed tectum on the aedeagus.

Subfamily CHORAGINAE

Members of this subfamily (see Checklist of Taxa, p. 8) can be recognised by their arched first and second antennal segments. The antennae are always shorter than the body, and the scrobes are entirely dorsal. An important feature of the female genitalia is the absence of transverse bars on the hemisternites. Crowson (1955) suggested that four-segmented labial palps and a basal transverse carina on the pronotum may be diagnostic characters of this subfamily, but in the type-species of *Choragus* and all the New Zealand Choraginae the labial palps are three-segmented, as in Anthribinae, and in some species of two of the New Zealand genera the transverse carina is sub-basal.

The five genera of Choraginae that occur in New Zealand may be separated using the key on page 37.

Lirumus new genus

TYPE-SPECIES *Araecerus pardalis* Pascoe, 1876.

(The name *Lirómus* is derived from the Greek 'leirós', meaning 'pale', and 'ómos', meaning 'shoulder', and refers to the pale area on the elytral shoulder; gender masculine.)

Small anthribids (length 2.2-3.6 mm). Integument glossy, yellowish-brown to almost black, always with pale and dark areas forming a mottled pattern on pronotum and elytra; entire dorsal surface with very dense, fine punctures; elytra punctostriate; vestiture of dorsum consisting of very dense, shaggy, appressed to decumbent, yellowish and dark brown or black, linear scales and coarse hairs, the dark vestiture mainly on dark integument; some intermingled erect or suberect, pale setae on pronotum and elytra. Rostrum transverse, without tubercles, carinae, or grooves.

Antennae short. Eyes entire. Pronotum without tubercles or tufts; transverse carina basal, entire; lateral carina present. Elytra with humeral callus and sub-basal swelling but without tufts. Wings fully developed. Legs yellowish-brown, with dense, appressed to decumbent, short, cream, linear scales. Sexual dimorphism apparent in length and thickness of antennae and in form of abdominal ventrites and pygidium.

HEAD. Rostrum with divergent sides and rimmed, shallowly notched anterior margin; interscrobial distance about 0.7× interocular distance. Antennae about half (male) or about 0.4× (female) as long as body; scape bulbous except for strongly constricted and curved basal stalk; segment 2 strongly produced on anterior margin; segments 3 and 4 slender, cylindrical; segments 5-8 flattened dorsoventrally, somewhat asymmetrical, broader in males than in females; combined length of segments 3-8 about 1.5× that of segments 1 and 2; club broad, compact, almost symmetrical. Eyes large, widely separated, protruding, longitudinal, finely faceted, with minute hairs.

THORAX. Pronotum transverse, widest at basal angles; surface uniformly rounded; transverse carina strongly elevated, finely denticulate; lateral carina reaching almost to pleural suture, descending slightly, meeting transverse carina in an obtuse or right angle; declivity oblique, with obsolete secondary carinae, and with a few coarse denticles towards sides. Pleural suture exposed. Scutellum minute, setose. Elytra widest near humeral angles, tapering slightly towards apex; base proclinate, rimmed; sutural margin barely raised; striae about 0.3× as long as elytron; striae with small, rather deep, discrete punctures; interstriae not strongly raised; declivity shallow, gently sloping. Wings about 3× longer than wide, 2× longer than elytra, with a distinct anal lobe and weak anal veins. Legs slender; all tibiae about the same length; tarsi with segment 1 longer than segments 2 and 3 together; tooth of claw very small except on front leg of male.

ABDOMEN. Pygidium wider than long, its apex narrow and slightly rounded in male, wider and almost truncate in female; surface slightly convex and rather uneven in

male, more strongly convex and conspicuously puncto-asperate on apical 0.3 in female; vestiture dense, consisting of appressed, cream, linear scales except on apical 0.3 in female, where it is hair-like. Ventrites with dense, appressed, cream, linear scales; all ventrites strongly impressed in male, the 1st and 2nd each with a low, median keel, the 3rd with a deep, median keel, the 4th with a moderately deep median keel; female with surface of 1st to 4th ventrites slightly convex, and 5th densely asperate with a strongly deflected posterior margin.

MALE. Tergite 8 moderately sclerotised, with a slightly indented apical margin and short marginal setae; sternite 8 represented by a pair of small, triangular sclerites. Sternite 9 apodeme long, with well developed arms. Tegmen rather broad, its ring slightly longer than the apodeme, which is almost parallel-sided and slender; apical region broad, its tip slightly rounded and with a few hairs; preapical flange entire, slightly curved. Aedeagus about half as long as elytron; apodemes continuous with pedon; bridge very extensive, close to base of pedon, and with a broad, median extension reaching to proximal end of tectum; apodemes moderately separated by bridge; pedon entire, with a rather broad, truncate apex; tectum short, with a sharply pointed tip; internal sac simple, long, reaching to free end of apodemes, with dense, coarse, pale brown spines, some of those on the ventral surface darker and grouped in an oval patch; ejaculatory duct inserted ventrally near apex of internal sac.

FEMALE. Segment 8 about 0.4× as long as hemisternites; tergite divided on midline by a broad, membranous area, with a few marginal setae; sternite moderately sclerotised, with a long, broad apodeme. Hemisternites broad, about 0.8× as long as elytra; body incompletely demarcated from lateral rods, which are about 0.6× as long as entire hemisternites; apex relatively short and broad, with 3 short, robust teeth and a minute stylus; median rods joined together on midline throughout their length, greatly expanded at their free end, not extending beyond ends of lateral rods. Vulva without associated membranous lobes. Bursa copulatrix slender, without sclerites. Spermatheca extremely small, somewhat bulbous; spermathecal gland large, almost spherical, with a distinct stalk;

spermathecal duct narrow throughout its length, inserted on a relatively broad atrium at base of spermatheca.

RANGE. New Zealand and possibly New Caledonia.

REMARKS. *Liromus* is distinguished from other choragine genera in New Zealand by its somewhat mottled integument, pale elytral shoulders, dense, shaggy vestiture, finely faceted, entire eyes, compact antennal club, and dorsoventrally flattened, asymmetrical funicle segments. Distinctive features of the male genitalia are the barely emarginate apex of tergite 8, the undivided, truncate apex of the pedon, and the median extension of the bridge. The female genitalia are unique among those of New Zealand Choraginae in having the fused median rods greatly expanded at the proximal end.

Liromus comprises a single species. An unidentified New Caledonian choragine with black integument, black and silver vestiture, and robust legs has some external and genitalic characters which place it in or near this genus. It is represented by 6 specimens in NZAC.

Liromus pardalis (Pascoe) new combination

Figures 7, 12, 62, 213-216, 496-500, 674, and 675

Pascoe, 1876, Annals and magazine of natural history (4) 17: 58-59 (*Araeocerus* [sic]); Sharp, 1876, Annals and magazine of natural history (4) 17: 425 (key) (*Araeocerus* [sic]); Broun, 1880, Manual of New Zealand Coleoptera 1: 559 (*Araeocerus* [sic]); Hudson, 1934, New Zealand beetles and their larvae: 128 (*Araeocerus* [sic]).

Length 2.2-3.6 mm; width 1.0-1.6 mm.

HEAD (Figures 7, 62, and 213). Eyes separated by 0.76-0.90× width of rostrum (both sexes) and 0.48-0.53× (male) or 0.58-0.59× (female) width across eyes. Antennae (Figure 214) 0.73-0.79× (male) or 0.57-0.59× (female) as long as elytra.

THORAX. Pronotum (Figures 12, 62, and 215) 1.25-1.40× wider than long. Elytra 2.08-

2.33× longer and 1.05-1.10× wider than pronotum, together 1.45-1.56× longer than wide.

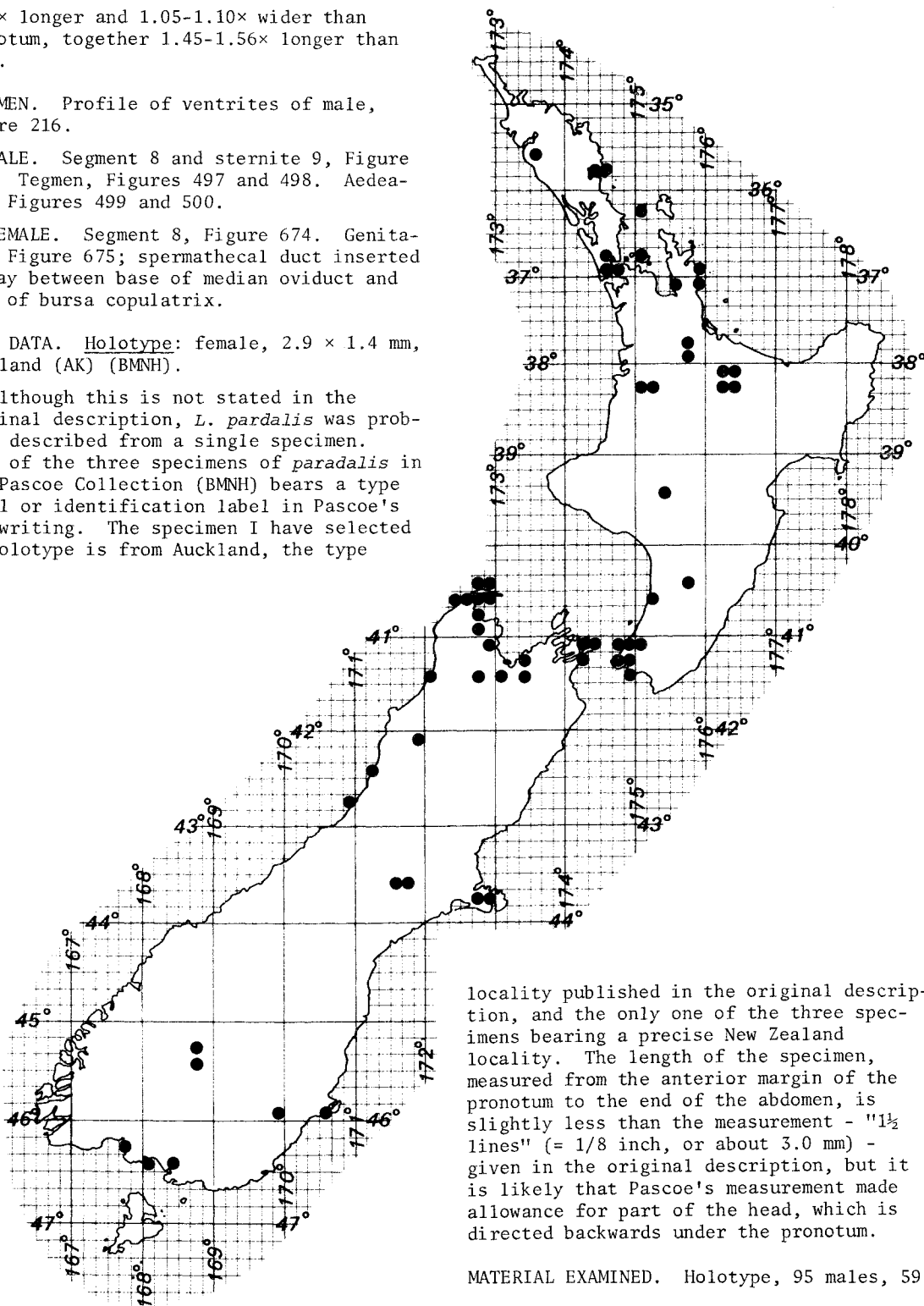
ABDOMEN. Profile of ventrites of male, Figure 216.

MALE. Segment 8 and sternite 9, Figure 496. Tegmen, Figures 497 and 498. Aedeagus, Figures 499 and 500.

FEMALE. Segment 8, Figure 674. Genitalia, Figure 675; spermathecal duct inserted midway between base of median oviduct and apex of bursa copulatrix.

TYPE DATA. Holotype: female, 2.9 × 1.4 mm, Auckland (AK) (BMNH).

Although this is not stated in the original description, *L. pardalis* was probably described from a single specimen. None of the three specimens of *pardalis* in the Pascoe Collection (BMNH) bears a type label or identification label in Pascoe's handwriting. The specimen I have selected as holotype is from Auckland, the type



locality published in the original description, and the only one of the three specimens bearing a precise New Zealand locality. The length of the specimen, measured from the anterior margin of the pronotum to the end of the abdomen, is slightly less than the measurement - "1½ lines" (= 1/8 inch, or about 3.0 mm) - given in the original description, but it is likely that Pascoe's measurement made allowance for part of the head, which is directed backwards under the pronotum.

MATERIAL EXAMINED. Holotype, 95 males, 59

females (BMNH, CMNZ, FRNZ, NMNZ, NZAC, OMNZ, UCNZ).

ND, AK, CL including Little Barrier I., WO, BP, TO, WN / SD, NN, BR, WD, MC, OL, DN, SL. From near sea level to about 610 m. Northernmost record: Waipoua S.F. (ND); southernmost record: Tisbury (SL).

Reared from dead branches of *Coprosma linariifolia* and *C. robusta* (Rubiaceae). Adults have been beaten from various native trees and shrubs. Epidermal tissue of higher plants, fragments of fungal fructifications and hyphae, and a wide variety of conidia were present in the hindgut of dissected adults.

Adults have been collected from September to April.

REMARKS. The colour pattern of *L. pardalis* is extremely variable. Some specimens have predominantly pale brown integument and pale vestiture (Figure 62), whereas others are almost entirely dark brown or blackish. All the specimens examined have at least some pale vestiture on the elytral shoulders, and usually paler integument as well in this area. Pascoe (1876) mistakenly considered *L. pardalis* to be conspecific with an anthribid from Ceylon.

***Micranthribus* new genus**

TYPE-SPECIES *Anthribus atomus* Sharp, 1876.

(The name *Micranthribus* is derived from the Greek 'micrós', meaning 'small', and *Anthribus*, and alludes to the very small size of these anthribids; gender masculine.)

Very small anthribids (length 0.8-1.4 mm). Integument mainly glossy, black except for brown or yellowish appendages, sometimes with brown or yellowish patches on the pronotum and elytra; head and pronotum with finely granulate surface and sparse, minute, barely discernible punctures; elytra puncto-striate; vestiture of dorsum sparse, consisting of appressed and scattered erect, yellowish, linear scales and coarse hairs; metepisternum with a band of dense, minute, oval, silvery scales. Rostrum transverse, without carinae or grooves but sometimes with a distinct, low, interscrobal tubercle. Antennae short. Eyes

entire. Pronotum without tubercles or tufts; transverse carina basal, entire; lateral carina present. Elytra sometimes with a very small humeral callus but without tubercles or tufts. Wings fully developed (New Caledonian species) or vestigial (New Zealand species). Legs not banded; vestiture sparse, consisting of mainly appressed, rather short, cream, linear scales. Sexual dimorphism very slight, apparent mainly in the shape of the abdominal ventrites and pygidium.

HEAD. Rostrum with divergent sides and a rimmed, shallowly notched anterior margin; interscrobal distance about half interocular distance; interscrobal surface rounded or with a low swelling. Antennae about 0.4× as long as body; scape not very bulbous, not strongly constricted at base; segment 2 slender; segments 3-8 short, cylindrical, their combined length about equal to that of segments 1 and 2; club broad, compact, almost symmetrical. Eyes moderately large, widely separated, protruding, longitudinal, rather finely faceted, with minute hairs.

THORAX. Pronotum wider than long, widest behind middle or at basal angles; transverse carina strongly elevated, finely denticulate, somewhat arcuate on either side of midline; lateral carina reaching almost to pleural suture but descending anteriorly so that entire carina is not visible in dorsal aspect, meeting transverse carina in a sharp angle; declivity oblique, sometimes with obsolete secondary carinae and scattered denticles. Pleural suture exposed. Scutellum visible at most as a minute, shiny pinhead. Elytra widest near middle, tapering strongly towards apex; base proclinate, rimmed; sutural margin not conspicuously raised; striole absent; striae with large but somewhat indistinct, shallow, discrete punctures; interstriae conspicuously convex; declivity shallow, gently sloping. Legs rather robust; femora darker than other segments; front tibiae slightly longer than mid and hind tibiae; tarsi with segment 1 shorter or longer than segments 2 and 3 together; tooth of claw very small.

ABDOMEN. Pygidium not asperate, wider than long, rounded at apex, with a few long, erect, coarse hairs mainly on apical half and a narrow rim on sides but not at apex; surface flattened in males, strongly convex

in females. Ventrites without tubercles, keels, or asperities, flattened or slightly impressed along midline in males, slightly convex in females; posterior margin of ventrite 4 deeply indented in males, less indented in females.

MALE. Tergite 8 moderately sclerotised, with an apical notch and marginal setae; sternite with a pair of transverse sclerotised lobes. Sternite 9 apodeme long, with short arms. Tegmen slender, its ring about as long as the apodeme, which is very slender and parallel-sided; apical region very short, narrow, with a rounded tip and 2 tufts of very long setae; preapical flange entire, curved. Aedeagus about 0.75× as long as elytron; apodemes continuous with pedon, widely separated by bridge, which is rather expansive and distant from base of pedon; pedon entire, with a rounded or pointed apex; tectum short, rounded or pointed at apex; internal sac simple, not reaching to free end of apodemes, lined with fine, colourless spinules; ejaculatory duct inserted at apex of internal sac.

FEMALE. Segment 8 about 0.3× as long as hemisternites; tergite divided on midline by a narrow membranous area, and with a few marginal setae; sternite expansive, triangular, with a minute apodeme. Hemisternites very slender, about 0.75× as long as elytra; body not demarcated from lateral rods; apex elongate, with 4 slender, sharp teeth and a minute stylus; median rods moderately broad, joined together throughout their length, neither expanded nor divergent at proximal end, not projecting beyond ends of lateral rods. Vulva enclosed by a small, median, membranous flap dorsally. Bursa copulatrix slender, without sclerites. Spermatheca large, not very bulbous; spermathecal gland small, spherical, with a distinct stalk; spermathecal duct expanded for about 0.3 of its length before entering small atrium on outer edge at base of spermatheca.

RANGE. New Zealand and New Caledonia.

REMARKS. *Micranthribus* is distinguished externally from other New Zealand Choraginae by its minute size, sparse vestiture, and broad, compact, almost symmetrical antennal club, the elongate patch of silvery scales on the metepisternum and the absence of keels on the abdominal ventrites

and of asperities on the pygidium. The male genitalia have a distinctive V-shaped notch on the apical margin of tergite 8, a very slender tegmen, and a slender pedon with an entire apex. Distinguishing features of the female genitalia are the very long, slender hemisternites with slender, curved, sharp teeth at their apex and the rather broad, parallel-sided median rods.

Micranthribus comprises a vestigial-winged New Zealand species and a fully winged, undescribed New Caledonian species (represented by 5 specimens in NZAC).

Micranthribus atomus (Sharp) new combination

Figures 30, 36, 63, 217-219, 290, 501-505, 676, and 677

Sharp, 1876, Annals and magazine of natural history (4) 17: 426 (key), 433-434 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 561-562 and corrigenda (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 311 (*Brachytarsus*).

Standing scales and hairs on dorsal surface rather short. Length 0.9-1.4 mm; width 0.5-0.7 mm.

HEAD (Figures 63 and 217). Interscrobial surface often with a small, low tubercle on midline. Eyes separated by 0.67-0.75× (male) or 0.89-0.91× (female) width of rostrum and 0.43-0.59× width across eyes. Antennae (Figure 218) 0.52-0.66× as long as elytra.

THORAX. Pronotum (Figures 63 and 219) 1.11-1.27× wider than long. Elytra 1.50-1.80× longer and 1.04-1.14× wider than pronotum, together 1.21-1.39× longer than wide; humeral swelling entirely absent. Wings (Figure 290) vestigial, 0.75-1.11× as long as elytra, about 3× longer than wide, with some recognisable basal veins.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 501. Tegmen, Figures 502 and 503. Aedeagus, Figures 504 and 505.

FEMALE. Segment 8, Figure 676. Genitalia, Figures 30, 36 and 677; spermathecal duct inserted close to apex of bursa copulatrix.

MATERIAL EXAMINED. Lectotype, 27 males, 49 females, 17 unsexed (BMNH, CMNZ, FRNZ, NZAC).

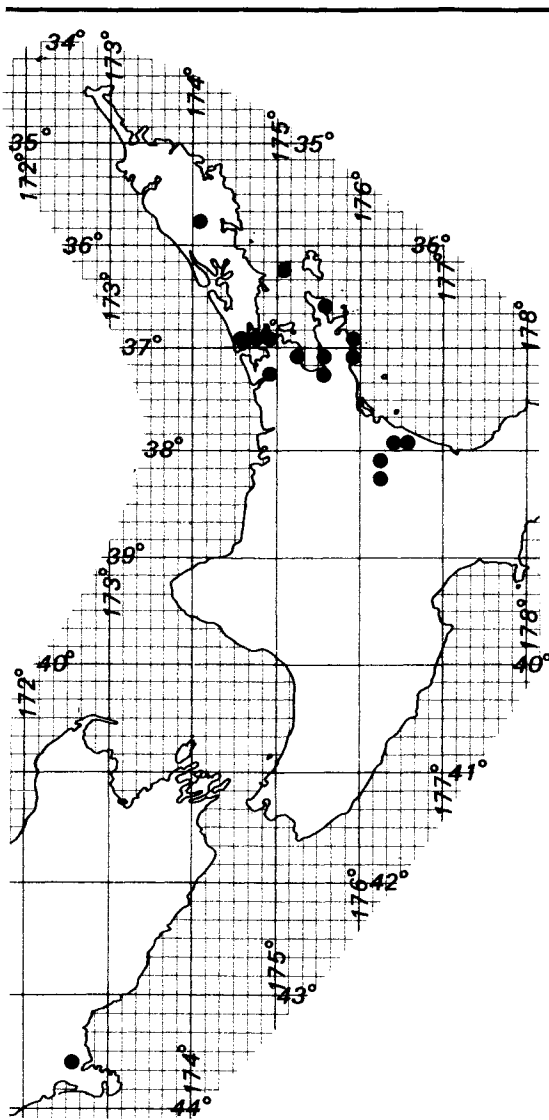
ND, AK, CL, BP / MC. From near sea level to 550 m. Northernmost record: Titoki (ND); southernmost record: Riccarton Bush (MC).

M. atomus has not been reared. Adults have been found in leaf litter and decayed wood, and beaten in considerable numbers from *Gahnia lacera* (Cyperaceae) and *Cortaderia splendens* (Poaceae). Ascospores resembling those of *Anthostomella* (Xylariaceae) were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. The smallest anthribids occurring in New Zealand belong to this species. There is considerable variation in colour pattern in the material examined. Some specimens are entirely black, whereas others have large brown or yellowish areas on the dorsal surface. Both teneral and mature specimens may have these pale markings.

The only New Zealand choragines with which *M. atomus* might be confused are some species of *Dysnocryptus*. These, however, are distinctive in having an asperate pygidium in females and carinae on the midline of the abdominal ventrites in males, as well as in lacking wings. Apart from having fully developed wings and long, standing hairs and scales on the dorsal surface, the New Caledonian species of *Micranthribus* is very similar, both externally and internally, to *M. atomus*.



TYPE DATA. Lectotype: sex undetermined, 1.10 × 0.55 mm, Auckland (AK), Lawson (BMNH).

M. atomus was described from specimens collected in Auckland by Lawson and in Tairua by Broun, and no precise type locality was published. The lectotype bears neither a locality nor a collector label. I have selected Auckland as the type locality as the species is very abundant in the Auckland area.

Genus *Dysnocryptus* Broun

TYPE-SPECIES *Dysnocryptus pallidus* Broun, 1893 (here designated).

Broun, 1893, Manual of New Zealand Coleoptera 5: 1258.

(The name *Dysnocrýptus* is derived from the Greek 'dýsnoos', meaning 'unfriendly', and 'kryptós', meaning 'hidden', and alludes to the cryptic habits of some of the species; gender masculine.)

Small anthribids (length 1.1-2.5 mm). Integument dull or glossy, yellowish, black, or brown, unicolorous or variegated; head and pronotum punctate; elytra punctostriate or with honeycomb reticulation; vestiture of dorsal surface consisting of appressed to erect, pale, fine or coarse hairs or slender scales that do not obscure the integumental surface, some of the hairs often very long. Rostrum transverse, sometimes with a small, median interscrobal tubercle or low carina. Antennae short. Eyes entire. Pronotum without tubercles or tufts; transverse carina (when present) basal to antebasal, entire or fragmented; lateral carina present or absent. Elytra without tufts, tubercles, or a humeral callus but sometimes with sub-basal and preapical swellings. Wings absent. Legs not banded, their vestiture moderately dense, consisting of appressed to erect, pale hairs. Sexual dimorphism most apparent in the form of the abdominal ventrites and pygidium.

HEAD. Rostrum with divergent sides and a rimmed, notched anterior margin; interscrobal distance 0.6-0.9× the interocular distance; interscrobal surface flattened to slightly convex, smooth or uneven, usually conspicuously raised above antennal insertion; posterior margin of scrobe not rimmed. Antennae moderately robust, 0.4-0.6× as long as body; scape strongly bulbous beyond basal constriction; segment 2 moderately slender; segments 3-8 cylindrical, slender to moderately robust, each expanded near apex, their combined length about 1.3× that of segments 1 and 2; segments 1-8 each with several very long, conspicuous setae; club broad, compact, asymmetrical. Eyes small to moderately large, transverse or longitudinal, protruding, rather coarsely faceted, apparently without hairs.

THORAX. Pronotum with its width greater or less than its length, widest at or just behind middle, the discal surface flattened or slightly convex; transverse carina moderately elevated, its denticles fine and even, coarse and irregular, or indistinct; basal rim strongly developed, exposed; lateral carina (when present) meeting transverse carina or basal rim in an obtuse angle, not extending forward beyond pleural suture; secondary carinae absent; lateral margin of declivity not denticulate, sometimes with a distinct rim. Pleural suture

inconspicuous. Scutellum not visible. Elytra widest near middle, not fused along suture; base vertical or very slightly proclinate; sutural margin not conspicuously raised; striole present or absent; striae (when present) with discrete, fine and shallow or coarse and deep punctures; interstriae flattened to strongly convex; declivity shallow, gently rounded. Legs robust; front tibiae not conspicuously longer than middle or hind tibiae; tarsi with segment 1 shorter than segments 2 and 3 together; tooth of claw small.

ABDOMEN. Pygidium asperate in female but not in male, about as wide as long; apex rounded, without a rim in either sex; surface flattened or very slightly convex, with variably developed punctures and appressed to erect pale hairs. Ventrites without asperities in either sex, but with moderately dense, fine or coarse punctures and appressed pale scales; surface rounded or slightly impressed on midline except for carinate 1st ventrite and sometimes 2nd ventrite of male; posterior margin of 4th ventrite slightly more indented in males than in females.

MALE. Tergite 8 strongly sclerotised, with a setose, deeply bilobed apical margin; sternite with a pair of large, sclerotised plates. Sternite 9 apodeme very long, with short or obsolete arms. Tegmen broad, its ring longer than the apodeme, which is moderately slender and almost parallel-sided; apical region long, broad, with an expanded, setose, often bilobed tip; preapical flange entire, rounded. Aedeagus almost as long as elytra; apodemes continuous with pedon, not very widely separated by bridge, which is extensive and not sharply demarcated from base of pedon; pedon broad, its apex truncate or lobed in dorsal aspect and weakly sclerotised along the midline; tectum short, with an attenuate apex; internal sac simple, reaching to free end of apodemes, lined with fine to moderately coarse spinules; ejaculatory duct inserted at apex of internal sac.

FEMALE. Segment 8 0.3-0.5× as long as hemisternites; tergite divided on midline by a variably developed membranous area, with few or no setae; sternite expansive, with a broad, expanded apodeme. Hemisternites not very slender, almost as long as elytra; body slightly demarcated from lateral rods; apex moderately elongate, with 4 large teeth and a minute, peg-like

KEY TO SPECIES OF *Dysnocryptus*

stylus which is sometimes concealed in ventral aspect; median rods broad, joined together for most of their length, neither divergent nor expanded at proximal end, not projecting beyond ends of lateral rods. Vulva with a small, median, membranous lobe ventrally. Bursa copulatrix moderately slender, without sclerites, but with a weakly sclerotised, shiny patch between base of median oviduct and insertion of spermathecal duct. Spermatheca rather large, distinctly bulbous at base; spermathecal gland small, spherical, stalked; spermathecal duct inserted on bursa copulatrix well away from base of median oviduct, entering spermatheca through a small, basal atrium.

DISTRIBUTION. New Zealand.

REMARKS. *Dysnocryptus* can be recognised by the following combination of characters: conspicuously punctured head and pronotum; stout, bristly antennae; elytra without a humeral callus or sub-basal tubercle; complete absence of wings; setose keel on the midline of the first and sometimes second abdominal ventrite of the male; asperate pygidium in the female. Distinctive features of the male genitalia are the deeply bilobed tergite 8, broad tegmen with a wide apical section, attenuate tectum, and broad pedon with an expanded apex that is weakly sclerotised on the midline. The peg-like stylus and weakly sclerotised shiny patch in the bursa copulatrix are characteristic features of the female genitalia.

Broun did not designate a type-species for *Dysnocryptus*, which he erected to include five apparently new species and three species previously placed in *Anthrribus*. I have selected *D. pallidus* Broun as type-species of the genus.

Dysnocryptus, with nine species, is the largest anthribid genus in New Zealand. Three of the species are confined to the Three Kings Islands and a fourth is endemic to the Chatham Islands. Several species have a strong association with monocotyledons. The genus is not closely related to other New Zealand choragines nor, apparently, to those in Australia and the South Pacific, and for the present it must be regarded as part of the endemic element.

- 1 Pronotum with neither a lateral carina nor a transverse carina, but with a well developed basal rim (Figure 250). Chatham Islands only *pilicornis*
- Pronotum with a transverse carina, or a lateral carina, or both, and with a well developed basal rim (e.g., Figures 234, 238, and 242). Not on Chatham Islands 2
- 2 Integument of head and pronotum dull (1) or only slightly shiny, and with uniformly granulate minisculpture between the punctures 3
- Integument of head and pronotum very shiny and lacking uniform, granulate, minisculpture between the punctures, although there may be weak, irregular etching 4
- 3 Pronotum lacking a transverse carina; (2) lateral carina meeting basal rim in a sharp, obtuse angle (Figure 242); elytral surface with faint striae *melchior*
- Pronotum with a sub-basal transverse carina; lateral carina meeting transverse carina in an obtusely rounded angle (Figure 222); elytral surface with reticulate honeycomb sculpturing *balthasar*
- 4 Elytral interstriae each with several (2) usually irregular rows of short, appressed or decumbent, coarse hairs 5
- Elytral interstriae each with a single row of curved, fine hairs, or naked 6

5 Pronotum and elytra with numerous very
(4) long, conspicuous, curved, erect hairs
in addition to the short, appressed
and decumbent hairs *pallidus*

--Pronotum and elytra with very few if
any erect hairs, and these only mod-
erately long and not conspicuous
.... *maculifer*

6 Elytra with deeply impressed striae
(4) and strongly convex interstriae
.... *rugosus*

--Elytra with weakly impressed striae
and flattened or only weakly convex
interstriae 7

7 Head and elytra with numerous long,
(6) conspicuous, curved setae. Three
Kings Islands only *gaspar*

--Head and elytra with sparse, rather
short, inconspicuous, curved setae.
Not on Three Kings Islands 8

8 Transverse carina of pronotum dis-
(7) tinctly antebasal near middle and
slightly recurved at lateral margin
(Figure 226); lateral carina of pro-
notum absent; base of elytra yellowish,
translucent, and slightly swollen on
either side of suture; sutural striae
with moderately dense, evenly spaced
punctures, and remaining elytral
striae with sparser, unevenly spaced
punctures *dignus*

--Transverse carina of pronotum sub-
basal rather than antebasal near
middle and curving forward at lateral
margin (Figure 234); lateral carina of
pronotum present, at least as a vest-
ige; base of elytra neither yellowish,
nor translucent, nor swollen on either

side of suture; all elytral striae
with moderately dense, evenly spaced
punctures *inflatus*

***Dysnocyptus balthasar* new species**

Figures 220-223, 506-510, 678, and 679

Black or dark brown. Length 1.1-1.9 mm;
width 0.6-1.2 mm.

HEAD (Figure 220). Surface coarsely gran-
ulate, rather dull, with moderately dense,
fine, shallow punctures and moderately
dense, appressed and decumbent, short, pale
hairs. Eyes separated by 0.82-0.84× width
of rostrum and 0.63-0.67× width across
eyes. Interscrobal distance 0.63-0.71× the
interocular distance. Antennae (Figure
221) 0.63-0.92× as long as elytra.

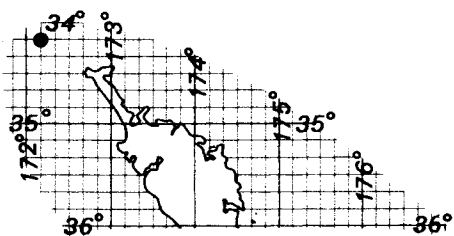
THORAX. Pronotum (Figure 222) 1.03-1.21×
wider than long; surface coarsely granulate,
rather dull, with dense, large, shallow
punctures and dense, appressed and decumb-
ent, short, pale hairs; transverse carina
almost basal near midline, becoming sub-
basal laterally; lateral carina well de-
fined, weakly denticulate, meeting trans-
verse carina in a wide, obtusely rounded
angle, descending slightly anteriorly,
reaching as far as pleural suture; lateral
margin of declivity sometimes with a dis-
tinct rim. Elytra 1.32-1.58× longer and
1.14-1.32× wider than pronotum, their
length 0.98-1.13× their combined width;
surface shiny, with a fine, reticulate
pattern formed by small, shallow, somewhat
hexagonal punctures each bearing a short,
decumbent, pale hair; striole indisting-
uishable. Legs brown, their surface
granulate and with dense, appressed and
decumbent, short, pale hairs.

ABDOMEN. Surface of ventrites granulate.
Ventrite 1 of male (Figure 223) with a low,
elongate keel on midline.

MALE. Segment 8 and sternite 9, Figure
506; tergite 8 lobes without projections;
sternite 9 apodeme with very short arms.
Tegmen, Figures 507 and 508; apex almost
truncate. Aedeagus, Figures 509 and 510;
spinules of internal sac very coarse.

FEMALE. Segment 8, Figure 678.
Genitalia, Figure 679; spermathecal duct
inserted close to apex of bursa copulatrix.

TYPE DATA. Holotype: male, 1.70 × 0.95 mm,
Three Kings Islands, Great Island, Castaway
Camp, litter sample 70/193, November 1970,
G. Kuschel (NZAC). Paratypes (all Great
Island, Three Kings). 8 males, 5 females,
leafmould, October 1948, E. G. Turbott
(AMNZ); 41 males, 29 females, Tasman
Valley, moss and litter, November 1970,
G.K., G. W. Ramsay, and J. C. Watt (NZAC);
86 males, 74 females, Castaway Camp,
litter, November 1970, G.K., G.W.R., and
J.C.W. (NZAC); 1 female, beating at night,
November 1970, J.C.W. (NZAC).



MATERIAL EXAMINED. Type series only (AMNZ,
NZAC).

Three Kings Islands - Great I. From
near sea level to about 100 m.

D. balthasar has not been reared.
Adults have been extracted from leaf
litter and moss. Fragments of fungal
fructifications and hyphae, xylariaceous
ascospores, and unidentifiable conidia were
present in the hindgut of dissected adults.

Adults have been collected in October
and November.

REMARKS. *D. balthasar* is the only species
of *Dysnocyrtus* with reticulate sculpturing
on the elytra. The eyes are extremely
small, and the punctures and granules on
the pronotum are very much coarser than
those of *D. melchior*, which it closely
resembles. It is the most abundant of the
three species of *Dysnocyrtus* that are
endemic to the Three Kings Islands. It is
named after Balthasar, one of the three
Magi.

Dysnocyrtus dignus (Broun)

Figures 224-227, 511-515, 680, and 681

Broun, 1880, Manual of New Zealand Coleo-
ptera 1: 563 and corrigenda (*Anthribus*);
Donckier de Donceel, 1884, Annales de la
Société Entomologique de Belgique 28:
cccxxxii (*Araeocerus* [sic]); Broun,
1893, Manual of New Zealand Coleoptera
5: 1259 (*Dysnocyrtus*).

Reddish-brown, usually with translucent
yellowish patches on pronotum and elytra.
Length 1.2-1.7 mm; width 0.6-1.0 mm.

HEAD (Figure 224). Surface shiny, with
sparse, shallow punctures, those on the
rostrum bearing short, decumbent, pale
hairs, the remainder with microscopic
hairs; interstices between punctures with-
out minisculpture. Eyes separated by 0.67-
0.75× width of rostrum and 0.53-0.56× width
across eyes. Interscrobial distance 0.67-
0.83× the interocular distance. Antennae
(Figure 225) 0.72-1.00× length of elytra.

THORAX. Pronotum (Figure 226) width 0.98-
1.05× the length; surface with sparse, fine
punctures separated by shiny interstices
lacking minisculpture; about 8 of the dis-
cal punctures with short, curved setae, the
remainder either with minute, barely dis-
cernible hairs or apparently lacking hairs;
disc usually with a pair of yellowish,
translucent streaks or triangular markings
anterolaterally; transverse carina ante-
basal, slightly recurved at the sides,
entire, uniformly denticulate; lateral
carina not distinct, at most represented by
a short, slightly raised, shiny line that
meets the transverse carina in an obtusely
rounded angle. Elytra 1.23-1.50× longer
and 1.14-1.30× wider than pronotum, togeth-
er 1.03-1.25× wider than long; surface
shiny; sutural stria distinctly impressed
and with dense, small, shallow punctures,
the remaining striae barely impressed and
with sparser, often unevenly distributed
punctures, especially in outermost striae,
all punctures apparently bearing micro-
scopic hairs; interstriae flattened, each
with a row of very sparse, barely discern-
ible punctures, 1-3 punctures in each row
bearing a short, curved, pale hair, the
remainder each with a barely discernible
hair; elytra each with a yellow, trans-
lucent, sub-basal swelling and sometimes a
yellow, translucent, longitudinal streak

laterally; striole obsolete. Legs yellowish, their surface shiny, very faintly etched, and with moderately dense, appressed, short, pale hairs, those on the outer edge of the tibiae similar in length to the remainder.

ABDOMEN. Surface of ventrites shiny, usually with no obvious minisculpture, at most with a few faintly etched lines. Male (Figure 227) with a short, low keel on ventrite 1 and a minute, tufted swelling on ventrite 2.

MALE. Segment 8 and sternite 9, Figure 511; tergite 8 lobes each with a minute, setose projection; sternite 9 apodeme with very short arms. Tegmen, Figures 512 and 513; apex truncate. Aedeagus, Figures 514 and 515; spinules of internal sac very fine.

FEMALE. Segment 8, Figure 680. Genitalia, Figure 681; spermathecal duct inserted near middle of bursa copulatrix.

TYPE DATA. Holotype: female, 1.60 × 0.84 mm, Parua (ND) (BMNH).

MATERIAL EXAMINED. Holotype, 16 males, 19 females (BMNH, NZAC).

ND including Hen and Chickens Is, AK, BP. From near sea level to about 245 m. Northernmost record: Kapowairua, Spirits Bay (ND); southernmost record: Mt Te Aroha (BP).

Reared from stalks of *Gahnia lacera* (Cyperaceae). Adults have been extracted

from leaf litter and beaten from *Carex* sp., *Gahnia* sp., and *Uncinia* sp. (all Cyperaceae) and *Cortaderia* (Gramineae). Large numbers of brown, triseptate spores (possibly ascospores because of the absence of an abscission scar) and fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. *D. dignus* looks very much like *D. inflatus* because of its shiny, sparsely haired integument and weakly impressed elytral striae, but it can be discriminated by the distinctive shape of the transverse carina and by the presence of yellowish markings on the pronotal disc and yellowish swellings at the base of the elytra. All the *dignus* specimens examined are reddish-brown, whereas *inflatus* specimens may be yellowish-brown, reddish-brown, or black. There are differences in the density of punctures in the elytral striae of the two species, but these can be fully appreciated only in a side-by-side comparison of specimens.

D. dignus has the greatest latitudinal range of the three species of *Dysnocryptus* that occur in the north of the North Island. In the immediate vicinity of Auckland it is much less abundant than either *inflatus* or *rugosus*.

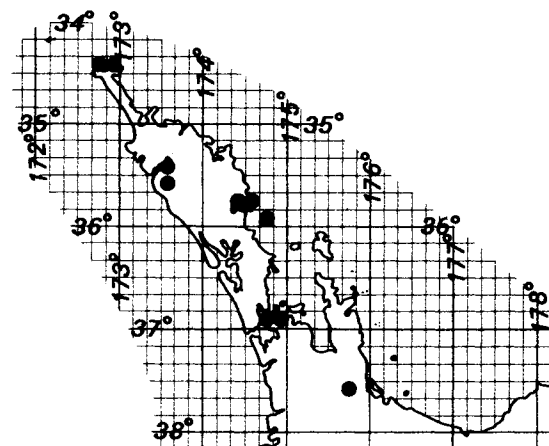
Dysnocryptus gaspar new species

Figures 228-231, 516-520, 682, and 683

Yellowish-brown or reddish-brown, sometimes with darker patches on the pronotum and elytra. Length 1.5-2.2 mm; width 0.9-1.2 mm.

HEAD (Figure 228). Surface shiny, with moderately dense, shallow, hexagonal punctures and short and long, brown, standing hairs. Eyes separated by 0.59-0.69× width of rostrum and 0.48-0.53× width across eyes. Interscrobial distance 0.73-0.85× the interocular distance. Antennae (Figure 229) 0.83-0.95× as long as elytra.

THORAX. Pronotum, Figure 230; width 1.00-1.31× the length; surface shiny, with moderately dense, shallow, somewhat hexagonal



punctures and long, yellowish, standing hairs; transverse carina sub-basal at middle, antebasal laterally, denticulate, entire; lateral carina (when discernible) smooth, weak, meeting transverse carina in an obtuse angle, descending anteriorly, barely reaching pleural suture. Elytra 1.36-1.44× longer and 1.05-1.17× wider than pronotum, together 1.06-1.28× longer than wide; surface smooth, shiny; striae barely impressed, their punctures large and shallow; interstriae each with a row of uniformly spaced, long, yellowish, standing setae; striole obsolete. Legs yellowish, shiny; femora with a few short, curved, yellow hairs; tibiae with long, curved, yellow hairs on the outer edge and short, yellow hairs elsewhere.

ABDOMEN. Surface of ventrites shiny. Male (Figure 231) with an elongate, low keel on ventrite 1 and a short, low keel on ventrite 2.

MALE. Segment 8 and sternite 9, Figure 516; tergite 8 lobes each with a hook-like projection; sternite 9 apodeme without arms. Tegmen, Figures 517 and 518; apex shallowly notched. Aedeagus, Figures 519 and 520; spinules of internal sac fine and silky.

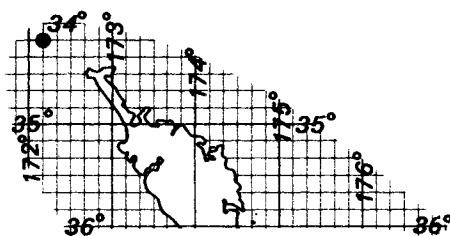
FEMALE. Segment 8, Figure 682. Genitalia, Figure 683; spermathecal duct inserted slightly beyond middle of bursa copulatrix.

TYPE DATA. Holotype: female, 1.80 × 0.95 mm, Three Kings Islands, Great Island, Castaway Camp, litter sample 70/193, November 1970, G. Kuschel (NZAC). Paratypes (all Great Island, Three Kings). 4 males, 4 females, Castaway Camp, November 1970, G.K. and G. W. Ramsay; 1 male, 3 females, Tasman Valley, beating and in litter, November 1970, G.K.; 1 male, 1 female, beating at night, November 1970, J. C. Watt; 1 male, January 1963, E. S. Gourlay; (all NZAC).

MATERIAL EXAMINED. Type series only (NZAC).

Three Kings Islands - Great I. From near sea level to about 100 m.

D. gaspar has not been reared. Adults have been beaten from shrubs and extracted from leaf litter. Grey bicellular fungal spores and fragments of bark and fungal fructifications were present in the hindgut of dissected adults.



Adults have been collected in January and November.

REMARKS. *D. gaspar* can be recognised by the following assemblage of characters: shiny, brownish integument; weakly impressed elytral striae; and a single row of evenly spaced, long, standing hairs on each interstria. Judged by similarities in external characters, as well as the male genitalia, *gaspar* is closely related to *inflatus*. The species is named after Gaspar, one of the three Magi.

***Dysnocryptus inflatus* (Sharp)**

Figures 11, 37, 232-235, 521-525, 684, and 685

Sharp, 1876, Annals and magazine of natural history (4) 17: 426 (key), 434-435 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 562 and corrigenda (*Anthribus*); Broun, 1893, Manual of New Zealand Coleoptera 5: 1259 (*Dysnocryptus*).

testaceus Broun, 1893: 1259 (*Dysnocryptus*).
NEW SYNONYMY.

Yellowish-brown or reddish-brown to black, either unicolorous or bicolorous. Length 1.2-2.1 mm; width 0.6-1.1 mm.

HEAD (Figure 232). Surface shiny, with sparse to moderately dense, variable-sized punctures each bearing a short, pale, erect seta; interstices between punctures smooth in large specimens, sometimes with obsolete granular minisculpture in small specimens. Eyes separated by 0.54-0.83× width of rostrum and 0.40-0.59× width across eyes. Interscrobial distance 0.70-0.86× the inter-

ocular distance. Antennae (Figures 11 and 233) 0.76-0.96× as long as elytra.

THORAX. Pronotum, Figure 234; width 0.89-1.18× the length; surface with fine punctures that are sparse in small specimens, denser in large specimens; interstices between punctures flattened, shiny, sometimes slightly etched; about 20 discal punctures with short, pale, standing hairs, the remainder with minute, almost imperceptible hairs; transverse carina sub-basal near middle, antebasal laterally and curving forward, entire, uniformly denticulate; lateral carina (when present) weak, smooth, meeting transverse carina in an obtusely rounded angle, descending, not usually reaching to pleural suture. Elytra 1.18-1.44× longer and 1.18-1.29× wider than pronotum, their length 0.97-1.13× their combined width; surface shiny; striae barely impressed, their punctures moderately large, shallow, evenly distributed, and apparently bearing microscopic hairs; interstriae flattened or weakly convex, each with a row of about 6 short, curved, pale hairs and usually a few minute, appressed hairs arising from minute pits; striole obsolete. Legs yellowish; surface shiny, faintly etched, with moderately dense, short, appressed or decumbent, pale hairs; those on outer edge of tibiae only slightly longer than the others.

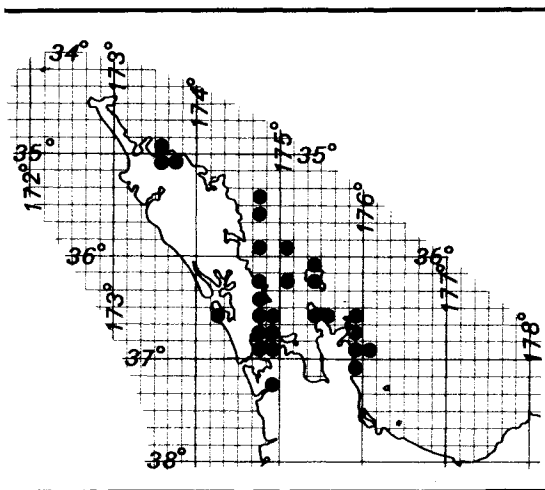
ABDOMEN. Surface of ventrites shiny, with obsolete granular minisculpture. Male (Figure 235) with an elongate, low keel on ventrite 1 and a minute, pointed projection on ventrite 2.

MALE. Segment 8 and sternite 9, Figure 521; tergite 8 lobes each with a setose, hook-like projection; sternite 9 apodeme with very short arms. Tegmen, Figures 522 and 523; apex slightly notched. Aedeagus, Figures 524 and 525; internal sac with both fine and coarse spinules.

FEMALE. Segment 8, Figure 684. Genitalia, Figures 37 and 685; spermathecal duct inserted near apex of bursa copulatrix.

TYPE DATA. Lectotype of *inflatus* Sharp: male, 1.60 × 0.82 mm, Auckland (AK), Lawson (BMNH). Holotype of *testaceus* Broun: male, 1.87 × 0.97 mm, Tiritiri Island (AK), Sandager (BMNH).

Sharp described *inflatus* from a series



of specimens collected in Auckland by Lawson and in Tairua by Broun, but did not publish a type locality. The lectotype, labelled "New Zealand", lacks both a precise locality label and a collector's name. I have selected Auckland as the type locality for *inflatus*. The holotype of *testaceus* is teneral and has very pale integument.

MATERIAL EXAMINED. Lectotype of *inflatus*, holotype of *testaceus*, 258 males, 216 females (BMNH, CMNZ, NZAC, OMNZ, UCNZ).

ND including Poor Knights Is, Hen and Chicken Is, and Mokohinau Is, AK, CL including Great Barrier I., Little Barrier I., Mercury Is, Ohena Is, and The Aldermen. From sea level to about 70 m. Northernmost record: Oruaiti (ND); southernmost record: Whangarata (AK).

Reared from dead wood of *Meryta sinclairii* (Araliaceae), stalks of *Gahnia lacera* (Cyperaceae), and dead wood of *Ulex europaeus* (Fabaceae). Adults have been extracted from leaf litter, and beaten in considerable numbers from *Parsonsia* sp. (Apocynaceae), *Gahnia* spp. and *Lepidosperma* sp. (Cyperaceae), *Cortaderia* sp. (Gramineae), *Astelia* sp. (Liliaceae), and *Leptosphaeria similis* (Restionaceae). *Leptosphaeria*-like ascospores, conidia resembling those of *Coniothyrium* and *Drechslera*, and fragments of fungal fructifications and hyphae were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. *D. inflatus* is shiny, sparsely haired, and has weakly impressed elytral striae. It is very similar externally to *D. dignus*, with which it is sympatric, but can be separated fairly readily by the characters given in the key. In particular *inflatus* has very uniformly distributed punctures in the elytral striae, never has a pale swelling on either side of the base of the elytral suture nor pale, translucent markings on the pronotum, and usually has the lateral carina of the pronotum well defined, even if it is fragmented. The genitalia of *inflatus* and *dignus* are very different, as can be seen from the illustrations. The overall colour of *inflatus* varies a great deal in specimens from a given locality. Bicolourous specimens show a merging of colours rather than sharply demarcated colour patterns.

D. inflatus is the most abundant of the three species of *Dysnocryptus* occurring in the Auckland area. It is especially common on *Gahnia* and *Cortaderia* in coastal situations.

***Dysnocryptus maculifer* Broun**

Figures 236-239, 526-530, 686, and 687

Broun, 1893, Manual of New Zealand Coleoptera 5: 1260.

Usually dark reddish-brown on the head and ventral surface, variegated reddish-brown, yellow, dark brown, and black elsewhere. Length 1.4-2.2 mm; width 0.7-1.2 mm.

HEAD (Figure 236). Surface shiny, with dense, moderately large punctures, the interstices between these lacking minisculpture; entire dorsal surface with dense, appressed, moderately long, cream and brown hairs, rarely with a few slightly longer, inconspicuous, erect, brown hairs on frons and vertex. Eyes separated by 0.61-0.85× width of rostrum and 0.48-0.61× width across eyes. Interscrobial distance 0.64-0.82× the interocular distance; surface between scrobes very uneven. Antennae (Figure 237) 0.64-0.86× as long as elytra.

THORAX. Pronotum (Figure 238) 1.04-1.19× wider than long; surface rather coarsely reticulate or sometimes transversely

rugose, the interstices between punctures slightly convex, shiny, lacking minisculpture; entire surface with dense, moderately long, appressed and decumbent, cream and brown hairs, sometimes with a few slightly longer, inconspicuous, erect, brown hairs; transverse carina usually antebasal, sometimes sub-basal on midline, terminating abruptly at lateral margin or curving forward slightly, entire or fragmented, irregularly denticulate; lateral carina absent. Elytra 1.43-1.67× longer and 1.08-1.27× wider than pronotum, together 1.13-1.26× longer than wide; surface shiny; striae conspicuous but not deeply impressed, the punctures moderately large, deep, circular, usually separated by very narrow interstices, and each apparently containing a minute sensory hair; interstriae not very convex; entire dorsal surface with very dense decumbent, coarse, cream and brown hairs, rarely with a few slightly longer, inconspicuous, coarse, erect, brown hairs near lateral margin and on declivity; elytra each usually with 1 or 2 inconspicuous, low, elongate, yellow swellings above declivity; striae present. Legs reddish-brown or yellowish-brown; femora and tibiae with dense, short, appressed, pale hairs; outer edge of tibiae with 2 or 3 slightly longer, inconspicuous straight, brown hairs.

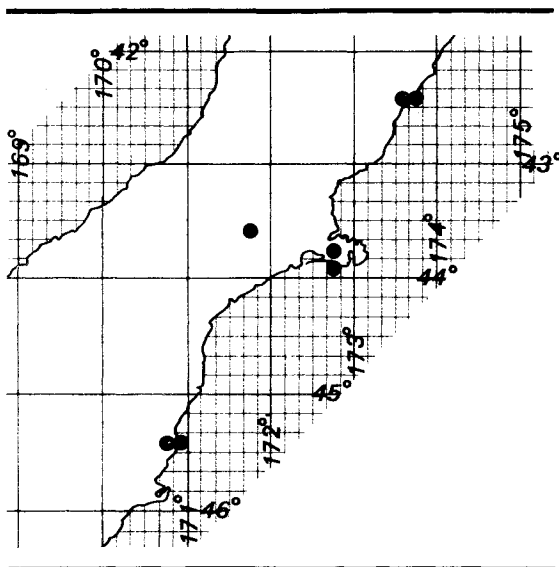
ABDOMEN. Surface of ventrites shiny, very faintly etched. Male (Figure 239) with a short, deep keel on ventrite 1.

MALE. Segment 8 and sternite 9, Figure 526; tergite 8 lobes without projections; sternite 9 apodeme without arms. Tegmen, Figures 527 and 528; apex relatively narrow, notched. Aedeagus, Figures 529 and 530; internal sac with fine and moderately coarse spinules.

FEMALE. Segment 8, Figure 686. Genitalia, Figure 687; spermathecal duct inserted beyond middle of bursa copulatrix.

TYPE DATA. Holotype: male, 1.8 × 0.9 mm, Moeraki (DN), Sandager (BMNH).

In the original description the type locality is given as "Mokohinou Island", but the holotype is labelled "Moerake" in Broun's handwriting, and "Mokohinou Island" has been amended to "Moerake" by Broun in one of his personal copies of the Manual (in the library of the Mt Albert Research Centre, Auckland).



MATERIAL EXAMINED. Holotype, 25 males, 17 females (BMNH, NMNZ, NZAC, UCNZ).

KA, MC, DN. From sea level to about 300 m. Northernmost record: Puhipuhi Reserve, Kaikoura (KA); southernmost record: Moeraki (DN).

D. maculifer has not been reared. Adults have been extracted from leaf litter and moss, especially that associated with *Muehlenbeckia* (Polygonaceae) and *Leptospermum* (Myrtaceae). Brown, transversely septate spores (conidia or ascospores) and fragments of fungal fructifications and hyphae were present in the hindgut of dissected adults.

Adults have been collected in February, March, May, August, September, and October.

REMARKS. *D. maculifer* is a densely haired species closely resembling *D. pallidus*, from which it differs mainly in the absence of numerous long, conspicuous, erect hairs on the dorsal surface of the body. If hairs other than dense, appressed, short ones are present in *maculifer* they are only moderately long, few in number, and not conspicuous. Other characters separating *maculifer* from *pallidus* are the smaller, closer punctures of the elytra striae and the less conspicuous yellowish swellings above the elytral declivity. Between Kaikoura and Banks Peninsula *maculifer* is sympatric with *pallidus*.

Dysnocryptus melchior new species

Figures 240-243, 531-535, 688, and 689

Black or dark brown. Length 1.5-2.2 mm; width 0.9-1.3 mm.

HEAD (Figure 240). Surface finely granulate, rather dull, with moderately dense, shallow, irregularly shaped punctures and moderately dense, decumbent, short, pale hairs. Eyes separated by 0.76-0.87× width of rostrum and 0.48-0.62× width across eyes. Interscrobial distance 0.69-0.81× the interocular distance. Antennae (Figure 241) 0.67-0.78× as long as elytra.

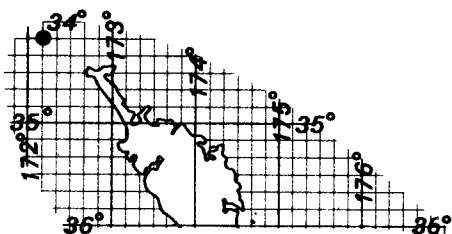
THORAX. Pronotum (Figure 242) 1.10-1.28× wider than long; surface finely granulate, usually rather dull, rarely slightly shiny, with moderately dense, minute, very shallow punctures and moderately dense, appressed and decumbent, very short, pale hairs; transverse carina absent; lateral carina well defined, weakly denticulate, meeting basal rim in a sharp, obtuse angle, descending anteriorly, reaching as far as pleural suture. Elytra 1.25-1.44× longer and 1.09-1.25× wider than pronotum, their length 0.97-1.04× their combined width; surface shiny; striae weakly impressed, their punctures shallow, almost contiguous, and each bearing a short, decumbent hair; interstriae slightly convex, each with 1 or 2 rows of rather sparse, very fine punctures bearing short, decumbent, yellow hairs; striole obsolete. Legs brown, granulate, with moderately dense, appressed and decumbent, short, pale hairs.

ABDOMEN. Surface of ventrites granulate. Male (Figure 243) with an elongate, low keel on ventrite 1 and a shorter keel on ventrite 2.

MALE. Segment 8 and sternite 9, Figure 531; tergite 8 lobes without projections; sternite 9 apodeme with well developed arms. Tegmen, Figures 532 and 533; apex almost truncate. Aedeagus, Figures 534 and 535; internal sac with moderately coarse spinules.

FEMALE. Segment 8, Figure 688. Genitalia, Figure 689; spermathecal duct inserted well beyond middle of bursa copulatrix.

TYPE DATA. Holotype: female, 2.3 × 1.3 mm, Three Kings Islands, Great Island, Castaway



Camp, litter sample 70/193, November 1970, G. Kuschel (NZAC). Paratypes: 11 males, 5 females, Great Island, Tasman Valley, litter, November 1970, G.K.; 2 females, South West Island, litter, November 1970, G.K. and G. W. Ramsay; (all NZAC).

MATERIAL EXAMINED. Type series only (NZAC).

Three Kings Islands - Great I., South West I. From sea level to about 100 m.

D. melchior has not been reared. Adults have been extracted from leaf litter. Tri-septate spores, probably of an ascomycete, and fragments of fungal fructifications and hyphae were present in the hindgut of dissected adults.

Adults have been collected in November.

REMARKS. *D. melchior* is the only species in which the lateral carina is joined to the basal rim of the pronotum, there being no transverse carina. Internal and external characters of both sexes suggest that *melchior* is most closely related to *baithasar*, also from the Three Kings Islands. This species is named after Melchior, one of the three Magi.

Dysnocryptus pallidus Broun

Figures 64, 244-247, 536-540, 690, and 691

Broun, 1893, Manual of New Zealand Coleoptera 5: 1259-1260.

setigerus Broun, 1921, Bulletin of the New Zealand Institute 1: 658-659 (*Dysnocryptus*). NEW SYNONYMY.

Usually variegated reddish-brown and yellow, often with dark brown or black markings, rarely almost entirely dark; head and ventral surface usually blackish. Length 1.2-2.3 mm; width 0.7-1.2 mm.

HEAD (Figures 64 and 244). Surface shiny, with moderately dense, large, coarse punctures, the interstices between these smooth or with faint, granulate etching; vestiture dense, consisting of appressed or decumbent, moderately long, coarse, cream and brown hairs and a few very long, erect, brown hairs on frons and vertex. Eyes separated by 0.72-0.75× width of rostrum and 0.52-0.56× width across eyes. Inter-scrobal distance 0.73-0.85× the interocular distance; surface between scrobes very uneven, almost tuberculate in some specimens. Antennae (Figure 245) 0.66-0.89× as long as elytra.

THORAX. Pronotum (Figure 246) 1.05-1.21× wider than long; surface very coarsely reticulate, the interstices between punctures slightly convex, shiny, without minisculpture; vestiture very dense, consisting of moderately long, appressed and decumbent, cream and brown hairs with numerous interspersed, long, erect, conspicuous, brown hairs; transverse carina ante-basal, terminating abruptly at lateral margin, entire or fragmented, irregularly denticulate; lateral carina absent. Elytra 1.27-1.68× longer and 1.09-1.22× wider than pronotum, their length 1.00-1.17× their combined width; surface shiny; striae conspicuous but not deeply impressed, their punctures very large, deep, almost quadrate, usually separated by wide interstices, and usually each bearing a minute sensory hair; interstriae convex; vestiture very dense, consisting of decumbent, coarse, cream and pale brown hairs and about 8 long, erect, curved, brown hairs evenly distributed on each interstria; elytra each with a conspicuous, pale, triangular swelling above declivity; striole present. Legs yellowish-brown; surface shiny, with fine, granulate minisculpture; femora with dense, short, appressed, pale hairs; tibiae with about 6 very long, straight, brown hairs and numerous shorter, pale, curved hairs on their outer edge, elsewhere with short, appressed, pale hairs.

ABDOMEN. Surface of ventrites shiny, without minisculpture. Male (Figure 247) with a short, very deep keel on ventrite 1 and a short, low keel on ventrite 2.

MALE. Segment 8 and sternite 9, Figure 536; tergite 8 lobes without projections; sternite 9 apodeme without arms. Tegmen, Figures 537 and 538; apex notched, relatively narrow. Aedeagus, Figures 539 and 540; internal sac with moderately coarse spinules.

FEMALE. Segment 8, Figure 690. Genitalia, Figure 691; spermathecal duct inserted slightly beyond middle of bursa copulatrix.

TYPE DATA. Holotype of *pallidus* Broun: female, 2.16 × 1.10 mm, Wellington (WN) (BMNH). Holotype of *setigerus* Broun: female, 1.88 × 0.97 mm, Titahi Bay (WN), 10 August 1916, A. C. O'Connor (BMNH).

MATERIAL EXAMINED. Holotypes of *pallidus* and *setigerus*, 77 males, 66 females, 1 unsexed (BMNH, CMNZ, NMNZ, NZAC, UCNZ).

WI, WN / SD including Stephens I., D'Urville I., and Chetwode Is, NN, KA, MC. From near sea level to about 500 m. Northernmost record: Ashhurst (WI); southernmost record: Puke Atua Bush, Banks Peninsula (MC).

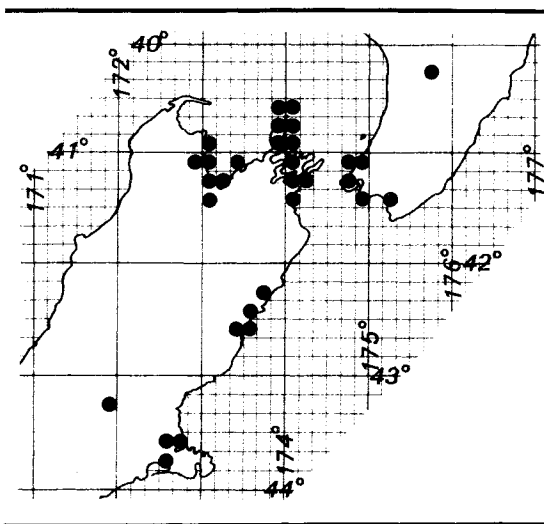
D. pallidus has not been reared. Adults have been extracted from leaf litter, and beaten in considerable numbers from dead *Lonicera* sp. (Caprifoliaceae). *Conothyrium*-

like conidia and fragments of fungal fructifications were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. *D. pallidus* is very hairy, and has a somewhat variegated integument. It differs from *maculifer*, which also is hairy, in having numerous very long, brown hairs intermingled with the short, appressed or decumbent hairs. The integumental colour is very variable. Most of the specimens examined have predominantly pale ground colour with black or dark brown markings, but in some specimens, including those from Shakespeare Bay (SD) and Goose Bay (KA), the elytra are very dark and have only a few small pale areas. The erect hairs on the body and legs vary in length in individuals from a given locality, but are always distinctly longer than the more numerous appressed and decumbent hairs. The shape of the transverse carina of the pronotum is also variable; in some specimens it is gently curved or almost straight, whereas in others it has a conspicuous notch on the midline.

D. pallidus is the only species of *Dysnocryptus* that occurs in the southern part of the North Island, on islands in Cook Strait, and in the Nelson - Marlborough Sounds area. Further south, in Kaikoura and Mid Canterbury, it is sympatric with *D. maculifer*.



Dysnocryptus pilicornis (Broun) new combination

Figures 248-251, 541-545, 692, and 693

Broun, 1911, Transactions of the New Zealand Institute 43: 112-113 (*Anthrabus*); Wolfrum, 1929, Coleopterorum catalogus 26 (102): 100 (*Brachytarsus*).

Yellowish-brown to dark brown, usually with head darker, often with extensive dark brown or black areas on pronotum and elytra. Length 1.5-2.5 mm; width 0.7-1.2 mm.

HEAD (Figure 248). Surface rather dull, with moderately dense, coarse, somewhat hexagonal punctures, the interstices be-

tween these with coarse, granulate sculpture; vestiture rather dense, consisting of decumbent, short, pale hairs. Eyes separated by 0.69-0.18× width of rostrum and 0.52-0.56× width across eyes. Inter-scrobal distance 0.69-0.78× the interocular distance. Antennae (Figure 249) 0.64-0.88× as long as elytra.

THORAX. Pronotum, Figure 250; width 0.96-1.00× the length; surface rather shiny, very finely granulate, with moderately large, shallow punctures and dense, appressed, very short, pale hairs; transverse and lateral carinae absent; basal rim well developed. Elytra 1.33-1.61× longer and 1.18-1.26× wider than pronotum, 1.16-1.28× longer than their combined width; surface shiny; striae shallowly impressed, their punctures large, very shallow, separated by wide interstices, and each bearing a decumbent or erect, short, yellow hair; interstriae hardly convex, each with 1 or 2 rows of sparse, minute punctures bearing short, decumbent or erect, yellow hairs; striole present. Legs yellowish-brown, very finely granulate; femora with moderately dense, appressed, short, pale hairs; tibiae with a few erect, short, pale hairs on outer edge and denser, appressed hairs elsewhere.

ABDOMEN. Surface of ventrites very finely granulate. Male (Figure 251) with a low, elongate keel on ventrite 1 and a shorter keel on ventrite 2.

MALE. Segment 8 and sternite 9, Figure 541; tergite 8 lobes without projections; sternite 9 apodeme with very short arms. Tegmen, Figures 542 and 543; apex almost truncate. Aedeagus, Figures 544 and 545; internal sac with coarse, dense spinules.

FEMALE. Segment 8, Figure 692. Genitalia, Figure 693; spermathecal duct inserted slightly beyond middle of bursa copulatrix.

TYPE DATA. Lectotype: female, 2.1 × 1.0 mm, Chatham Islands, Pitt Island, T. Hall (NZAC).

MATERIAL EXAMINED. Lectotype, 46 males, 60 females (BMNH, CMNZ, NZAC).

Chatham Islands - Chatham I., Pitt I., The Sisters, South East I. From near sea level to about 140 m.

Reared from dead branches of *Pseudopanax chathamicus* (Araliaceae). Adults have been extracted from leaf litter, and beaten in considerable numbers from *Muehlenbeckia australis* (Polygonaceae). Conidia resembling those of both *Diplodia* and *Coniothyrium* were present in the hindgut of dissected adults.

Adults have been collected from January to March and in November.

REMARKS. *D. pilicornis* is the only species lacking both the lateral and transverse carinae of the pronotum. Overall colour and the extent of dark markings on the pronotum and elytra are very variable.

Dysnocryptus rugosus (Sharp)

Figures 252-255, 546-550, 694, and 695

Sharp, 1876, Annals and magazine of natural history (4) 17: 426 (key), 435-436 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 563 and corrigenda (*Anthribus*); Broun, 1893, Manual of New Zealand Coleoptera 5: 1259 (*Dysnocryptus*).

nigricans Broun, 1893: 1260 (*Dysnocryptus*).
NEW SYNONYMY.

plagiatus Broun, 1893: 1258-1259 (*Dysnocryptus*). NEW SYNONYMY.

Yellowish-brown to black; some specimens unicolorous, but most bicolorous; pale specimens usually with darker head, some dark patches on pronotum, and a dark, transverse area on basal half of elytra; darker specimens usually with pale markings on base and declivity of elytra. Length 1.3-1.9 mm; width 0.7-1.0 mm.

HEAD (Figure 252). Surface shiny, with moderately dense, irregularly shaped, discrete punctures, the interstices between these smooth except for very fine, granulate minisculpture on upper part of vertex; vestiture moderately dense, consisting of

appressed, pale hairs which are very short and inconspicuous on posterior half of head but longer elsewhere. Eyes separated by $0.57-0.71\times$ width of rostrum and $0.44-0.48\times$ width across eyes. Interscrobial distance $0.63-0.91\times$ the interocular distance. Antennae (Figure 253) $0.76-0.78\times$ length of elytra.

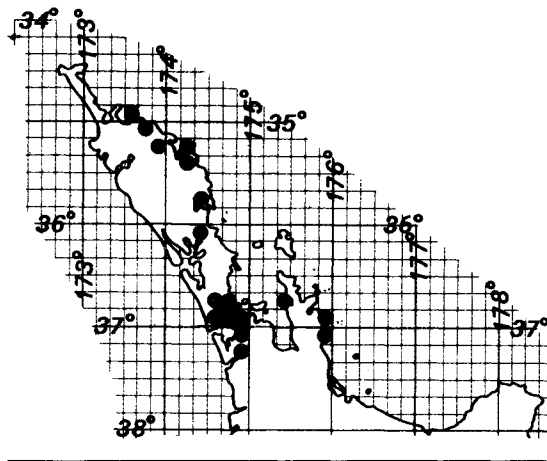
THORAX. Pronotum (Figure 254) $1.13-1.39\times$ wider than long; surface reticulate or rugose, the punctures large, hexagonal, separated by broad, shiny, convex interstices, and each bearing a short, appressed, fine, pale hair; transverse carina sub-basal near middle, becoming ante-basal laterally, entire, uniformly denticulate; lateral carina weak, meeting transverse carina in an obtusely rounded, angle, descending anteriorly, reaching as far as pleural suture. Elytra $1.33-1.43\times$ longer and $1.05-1.16\times$ wider than pronotum, $1.03-1.07\times$ longer than their combined width; surface shiny; striae very deep, with large, deep, discrete punctures each bearing a very short, appressed, pale hair; interstriae strongly convex, each with a median row of fine, sparse punctures bearing either a minute, appressed, pale hair or a longer but inconspicuous curved hair; striole obsolete. Legs usually paler than remainder of body, shiny, with obsolete, granulate minisculpture and dense, short, appressed or decumbent, pale hairs.

ABDOMEN. Surface of ventrites shiny, with fine, granulate minisculpture. Male (Figure 255) with a low, short keel on ventrite 1.

MALE. Segment 8 and sternite 9, Figure 546; tergite 8 lobes each with a minute, tufted process; sternite 9 apodeme with very short arms. Tegmen, Figures 547 and 548; apex broad, bilobed. Aedeagus, Figures 549 and 550; internal sac with moderately coarse spinules.

FEMALE. Segment 8, Figure 694. Genitalia, Figure 695; spermathecal duct inserted near middle of bursa copulatrix.

TYPE DATA. Holotype of *rugosus* Sharp: female, 1.70×0.87 mm, Tairua (CL), Broun (BMNH). Holotype of *nigricans* Broun: female, 1.60×0.92 mm, Northcote (AK) (BMNH). Holotype of *plagiatus* Broun: female, 1.55×0.90 mm, Waitakere (AK) (BMNH).



MATERIAL EXAMINED. The above 3 primary types, 45 males, 48 females (BMNH, NZAC, UCNZ).

ND, AK, CL. From near sea level to about 60 m. Northernmost record: Mangonui (ND); southernmost record: Tuakau (AK).

Reared from stems of *Gahnia lacera* (Cyperaceae). Adults have been beaten in considerable numbers from dead fronds of *Cyathea* sp. (Cyatheaceae); *Gahnia* spp.; *Cortaderia* sp. (Gramineae); and *Freycinetia baueriana* subsp. *banksii* (Pandanaeaceae); and extracted from leaf litter. Ascospores of *Anthostomella* (Xylariaceae), conidia resembling those of *Hendersonula*, and fragments of fungal fructifications and hyphae were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. *D. rugosus* is the only species with deeply impressed elytral striae and strongly convex, sparsely haired interstriae. Specimens from a given locality show wide variation in colouring. In the Auckland area *rugosus*, *inflatus*, and *dignus* occur together in *Gahnia* and *Cortaderia*.

Genus *Araecerus* Schoenherr

TYPE-SPECIES *Anthribus coffeae* Fabricius, 1801 (synonym of *Curculio fasciculatus* Degeer, 1775).

Schoenherr, 1823, *Isis von Oken* 10: 1135; Zimmerman, 1938, *Occasional papers of the Bernice P. Bishop Museum* 14: 241-242. For the synonymy of this genus and a full list of references, see Wolfrum (1929, 1953).

Doticus Pascoe, 1882, *Annals and magazine of natural history* (5) 9: 27. For the synonymy of this genus and relevant references, see Wolfrum (1929). NEW SYNONYMY.

(The name *Araecerus* is derived from the Greek 'araiós', meaning 'slender', and 'kéras', meaning 'horn, antenna'; gender masculine. The name was incorrectly formed, and should be *Araeocerus*; this, however, is preoccupied in Staphylinidae (see Neave 1939).)

The following generic description is based on *Araecerus fasciculatus* and *A. palmaris*, the two species which have been encountered in New Zealand. Small to moderately large anthribids (length 2.4-5.7 mm). Integument glossy, shades of brown to almost black, usually with some mottling; dorsal surface of head and pronotum with dense, contiguous, moderately large, hexagonal punctures; elytra puncto-striate, the interstriae with dense, shallow, fine punctures; vestiture of dorsum very dense, consisting of appressed to decumbent, linear scales in a colour pattern that is either uniformly cream or variegated with differing proportions of cream, orange, brown, and black scales. Rostrum transverse, usually with a low median carina but sometimes with a shallow median groove. Antennae short. Eyes with a small anteromedian notch. Pronotum with discal surface either smooth or with several low, conical protuberances; transverse carina basal or nearly basal, entire; lateral carina present. Elytra with a variably developed humeral callus and a sub-basal tubercle. Wings fully developed. Legs with dense, appressed, short, mainly cream, linear scales, but middle and hind tibiae usually with several narrow, alternating, cream and brown bands. Sexual dimorphism apparent in the form of the abdominal ventrites and pygidium, and

sometimes in the length, width, and vestiture of the front legs.

HEAD. Mandibles with almost equal-sized apical and subapical teeth. Rostrum with slightly divergent sides and a rimmed, either truncate or distinctly notched anterior margin; interscrobial distance 0.50-0.75× the interocular distance. Antennae about half as long as body; scape not very bulbous; segment 2 not strongly produced on anterior margin; segments 3-8 cylindrical or slightly flattened, symmetrical, their combined length about 3× that of segments 1 and 2; club slender, loosely articulated, slightly asymmetrical. Eyes large, lateral, elongate, protruding, with fine facets and minute hairs; a short keel running forward obliquely towards midline of rostrum from the small anteromedial emargination.

THORAX. Pronotum transverse, widest at basal angles; transverse carina strongly elevated, finely denticulate, slightly sinuous on either side of midline; lateral carina reaching almost to pleural suture, meeting transverse carina in a slightly obtuse angle; declivity greatly reduced, strongly oblique, with a conspicuous secondary carina projecting at the sides as a serrated process. Pleural suture exposed. Scutellum large, transverse, densely clothed with curved scales. Elytra widest at humeral angle or near middle, tapering slightly towards apex; base proclinate, rimmed; sutural margin barely raised; striole about 0.3× as long as elytron; striae with small, shallow, discrete punctures; interstriae scarcely to strongly raised; declivity very shallow, gently sloping. Wings about 3× longer than wide, 1.6-1.8× longer than elytra, with weak anal veins but without a distinct anal lobe. Legs slender; tibiae and tarsi of front legs longer and usually wider than those of middle and hind legs, especially in males; tarsi with segment 1 longer than segments 2 and 3 together; tooth of claw very small.

ABDOMEN. Pygidium as wide as long or wider in male, longer than wide in female; outer margin with a narrow, strongly upturned rim which is continuous in female but broken at the apex in male; apex rounded in male pointed in female; surface convex, puncto-asperate in both sexes, but with asperities better defined in female; vestiture dense,

consisting of appressed and decumbent scales and hairs which extend over the apex in male but not in female. Ventriles with dense, appressed, cream or brownish scales; surface convex or impressed, never carinate; 5th ventrite entirely asperate, 3rd and 4th ventrites partially asperate, the asperities more conspicuous in females; 5th ventrite of male about as long as 4th, with a truncate apex; 5th ventrite of female very much longer than 4th, with an acutely angulate apex.

MALE. Tergite 8 weakly sclerotised, with a slightly indented apex and few marginal hairs; sternite mainly membranous, with long marginal setae. Sternite 9 apodeme very long, with short, divergent arms. Tegmen strongly sclerotised, its ring very much shorter than the apodeme, which is slender and parallel-sided; apical region short and broad, its tip rounded or truncate, with both long and short hairs; preapical flange entire, curved or almost straight. Aedeagus about 0.7× as long as elytron; apodemes continuous with pedon; bridge weakly sclerotised and indistinct, distant from base of pedon, joining apodemes together closely for about 0.25 of their length; pedon with a pointed apex, incompletely sclerotised on midline; tectum long, with a pointed apex; internal sac simple, very much longer than apodemes, folded at base, with a sclerite or group of sclerites at or towards apex; ejaculatory duct inserted ventrally on a projection near apex of internal sac.

FEMALE. Segment 8 very weakly sclerotised, about 0.6× as long as hemisternites; tergite mainly membranous, with few marginal setae; sternite sclerotised along midline, without a distinct apodeme. Hemisternites slender, about 0.9× as long as elytra; body not demarcated from lateral rods; apex short, slender, with 3 short teeth and a minute stylus; median rods fused for most of their length, extending well beyond lateral rods as a compressed spike, their wall adjacent to the vulva with a distinctive internal cellular structure. Vulva enclosed ventrally by a trilobed membrane. Bursa copulatrix short, slender, with or without a sclerite near base of median oviduct. Spermatheca very small, not very bulbous; spermathecal gland spherical, smaller or larger than spermatheca, almost sessile; spermathecal duct narrow throughout its length, very short,

inserted on a minute atrium at base of spermatheca.

RANGE. *Araecerus* is widespread in tropical and subtropical regions. Of the two species met with in New Zealand, *A. palmaris* is from Australia and *A. fasciculatus* is almost cosmopolitan.

REMARKS. *Araecerus* is the only choragine genus in New Zealand with banded tibiae, elongate, lateral eyes with an anteromedial notch from which a short keel runs forward obliquely towards the midline of the rostrum, and mandibles with equal-sized apical and subapical teeth. The slender antennae with loosely articulated, asymmetrical club segments resemble those of *Notochoragus*. Distinctive features of the male genitalia are the extremely long apodeme of the tegmen, the very long internal sac, which is folded near the base and has one or more sclerites, and the break on the midline at the apex of the pedon. Generic characters of the female genitalia are the compressed, spike-like median rod, extending well beyond the ends of the lateral rods, and the conspicuous cell-like structure of the median rods where they diverge on either side of the vulva.

Pascoe (1882) erected the genus *Doticus* for *palmaris* because he considered the front legs to be too unusual to allow its inclusion in *Araecerus*. However, Blackburn (1900) pointed out that *Doticus* was "unsatisfactorily close" to *Araecerus*, and suggested that the extreme development of the legs in *Doticus* might be related to the greater body size of species placed in that genus. Although he was of the "opinion that the generic distinction of the two cannot be maintained", Blackburn did not formally declare *Doticus* to be a junior synonym of *Araecerus*. It should be noted that while the type-species of *Araecerus* has simple (normal) front legs, some other species, including *A. vieillardii* Montrouzier, have modified front legs that are comparable to some extent with those of *palmaris*. Characters of the male and female genitalia probably provide the strongest evidence for placing *palmaris* and *fasciculatus* in a single genus.

A. fasciculatus is not established in New Zealand, but is intercepted from time to time in shipments of coffee beans, nutmegs, and other dried plant material.

KEY TO SPECIES OF *Araecerus*

Pronotal disc smooth and uniformly convex; elytral surface smooth, with a small, rounded humeral callus, a very small sub-basal swelling, and low interstriae. Intercepted in imported dried plant products, especially nutmegs and green coffee beans *fasciculatus*

Pronotal disc uneven, with a median and 2 lateral conical protuberances; elytral surface uneven, with a large, angulate humeral callus, a very large, high, elongate sub-basal tubercle, and high interstriae alternating with low ones. Established; associated with various mummified fruits and with fungus-induced galls on *Acacia* *palmaris*

Araecerus fasciculatus (Degeer)

Figures 256, 258, 552-556, and 696-698

Degeer, 1775, Mémoires pour servir à l'histoire des insectes 5: 276, plate 16 figure 2 (*Curculio*); Zimmerman, 1938, Occasional papers of the Bernice P. Bishop Museum 14: 242, figure 1h; Zimmerman, 1942, Bernice P. Bishop Museum bulletin 172: 71, figure 1d. For the synonymy of this species and numerous references, see Wolfrum (1929).

Integument entirely mid brown or with mid brown and dark brown mottling; vestiture drab, almost entirely cream, or variegated cream and brown, rather fine, not obscuring all the integumental surface. Length 2.4-3.4 mm; width 1.2-2.0 mm.

HEAD (Figure 256). Eyes separated by 0.80-0.93× width of rostrum and 0.57-0.65× width across eyes. Antennae (Figure 257) 0.65-0.79× as long as elytra.

THORAX. Pronotum (Figure 258) 1.31-1.51× wider than long, not conspicuously widened at basal angles; surface smooth, uniformly convex; transverse carina not very sinuous.

Elytra 1.86-2.13× longer and 1.00-1.07× wider than pronotum, 1.30-1.38× longer than their combined width; surface smooth except for a small humeral callus, a very small sub-basal swelling, and barely raised interstriae. Front legs not strikingly different from middle and hind legs; colour bands on legs sometimes inconspicuous.

ABDOMEN. Pygidium with cream scales and brown hairs that leave much of the surface exposed.

MALE. Segment 8 and sternite 9, Figure 551. Tegmen, Figures 552 and 553. Aedeagus, Figures 554-556; internal sac with 2 large and several small sclerites.

FEMALE. Segment 8, Figure 696. Genitalia, Figures 697 and 698; bursa copulatrix with a large, partly divided sclerite enclosing base of median oviduct; spermathecal gland smaller than spermatheca.

TYPE DATA. Type material of *coffea* Fabricius: India, in coffee, stated by Fabricius to be in the Sehested Collection (Zoological Museum, København). Type material of *fasciculatus* Degeer: details unknown to me. I have not seen type material of *coffea* nor of *fasciculatus*, but a specimen in NZAC has been identified as *A. fasciculatus* by K. A. J. Duffy of the British Museum (Natural History), and all the specimens examined agree with the description and figures of *fasciculatus* given by Zimmerman (1938, 1942).

MATERIAL EXAMINED. 12 males and 6 females (NZAC), intercepted as follows: 10 males, 5 females, Auckland (AK), infesting coffee beans from Africa, intercepted 15 August 1967 by Plant Quarantine advisor; 1 male, Atawhai (NN), inside a nutmeg, February 1967, J. Waller; 1 male, 1 female, Dunedin (DN), infesting nutmegs from Malaya, intercepted 12 January 1953 by Department of Agriculture.

REMARKS. *A. fasciculatus* is a small, smooth, drab, convex, brown anthribid lacking any special features. The adults jump rapidly when disturbed (Zimmerman 1942).

Originally Indo-Malayan, *A. fasciculatus* is now almost cosmopolitan because of commerce. It is most commonly a pest of stored green coffee beans, hence the common name of coffee bean weevil. Tucker (1909)

gives numerous breeding records, the plant material attacked including betel-nut, Chinese figs, roots of ginger, cacao beans, mace, nutmegs, St Ignatios beans, cotton bolls, seed pods of *Cassia*, live and dead stalks and leaf bases of corn, and dried apples and oranges.

Between 1955 and 1965 *A. fasciculatus* was intercepted on ten separate occasions in consignments of coffee beans, dried mushrooms, nuts, nutmegs, palm seeds, and red peppers entering New Zealand (Manson & Ward 1968). Although a predominantly tropical and subtropical species, it could perhaps become established in warmer parts of New Zealand. The closely related *A. vieillardii* Montrouzier, also of economic importance, is widespread in Oceania but apparently has not been intercepted in New Zealand. According to Zimmerman (1938, 1942) it is very similar in appearance to *fasciculatus*, but can be recognised by the more symmetrical club segments of the antennae, the conical tooth on the middle coxa of the male, and the small but strong apical spine and numerous teeth on the front tibiae of the male.

***Araecerus palmaris* (Pascoe) new combination**

Figures 65, 259-261, 557-562, 699, and 700
Pascoe, 1882, Annals and magazine of natural history (5) 9: 27 (*Doticus*); Waterhouse, 1882, Aid to the identification of insects 2: plate 104 (*Doticus*); Gourlay, 1960, New Zealand entomologist 2 (5): 7-8 (*Doticus*); Miller, 1971, Common insects in New Zealand: 40, figure 82 (*Doticus*); Kuschel, 1972, New Zealand journal of science 15: 275-276, 286 (key) (*Doticus*). For additional references, see Wolfrum (1929).

pestilens Olliff, 1890, Records of the Australian Museum 1: 75-76 (*Metadoticus*); Olliff, 1890, Agricultural gazette of New South Wales 1: 288-289 (*Doticus*); Kirk, 1895, Report of the New Zealand Department of Agriculture 3: 149-151, figures 1-4 (*Doticus*); Tillyard, 1926, Insects of Australia and New Zealand: 240 (*Doticus*); Gourlay, 1929, New Zealand journal of science and technology 10: 367-370, figures 1 and 2 (*Doticus*).

Integument mainly very dark brown to black, but usually with some yellowish-brown spots or patches; vestiture consisting of black, orange, brown, and sometimes cream scales arranged either in a variegated pattern or grouped in unicolorous patches, spots, and stripes, the scales rather coarse and usually obscuring most of the integumental surface. Length 2.8-5.7 mm; width 1.8-3.1 mm.

HEAD (Figures 65 and 259). Eyes separated by 0.82-1.00× width of rostrum and 0.59-0.65× width across eyes. Antennae (Figure 260) 0.50-0.84× as long as elytra, relatively shorter in smallest specimens.

THORAX. Pronotum (Figure 261) 1.75-2.09× wider than long, conspicuously widened at basal angles; surface uneven, with a median and 2 lateral conical protuberances; transverse carina very sinuous. Elytra 2.33-2.82× longer and 1.00-1.09× wider than pronotum, 1.23-1.56× longer than their combined width; surface very uneven, with a large, angulate humeral callus, a large, elongate, high, sub-basal tubercle, and high interstriae alternating with low ones. Front legs very much longer than middle and hind legs, especially in male; first 2 tarsal segments broad, flattened, with dense, long hairs on their ventral surface.

ABDOMEN. Pygidium with very dense, orange and brown scales in male and less dense, orange, brown, and cream scales in female.

MALE. Segment 8 and sternite 9, Figure 557. Tegmen, Figures 558 and 559. Aedeagus, Figures 560-562; internal sac with a single very large sclerite.

FEMALE. Segment 8, Figure 699. Genitalia, Figure 700; bursa copulatrix without sclerites; spermathecal gland as large as spermatheca.

TYPE DATA. Holotype of *palmaris* Pascoe: male, 5.5 × 3.1 mm, Australia - Wide Bay, Queensland (BMNH). Lectotype of *pestilens* Olliff: Australia - Melbourne (Australian Museum). I am indebted to G. Kuschel for examining and measuring the holotype of *palmaris*. The type material of *pestilens* has not been examined.

MATERIAL EXAMINED. 39 males, 37 females (BMNH, FRNZ, NMNZ, NZAC).

ND, AK / NN. From near sea level to

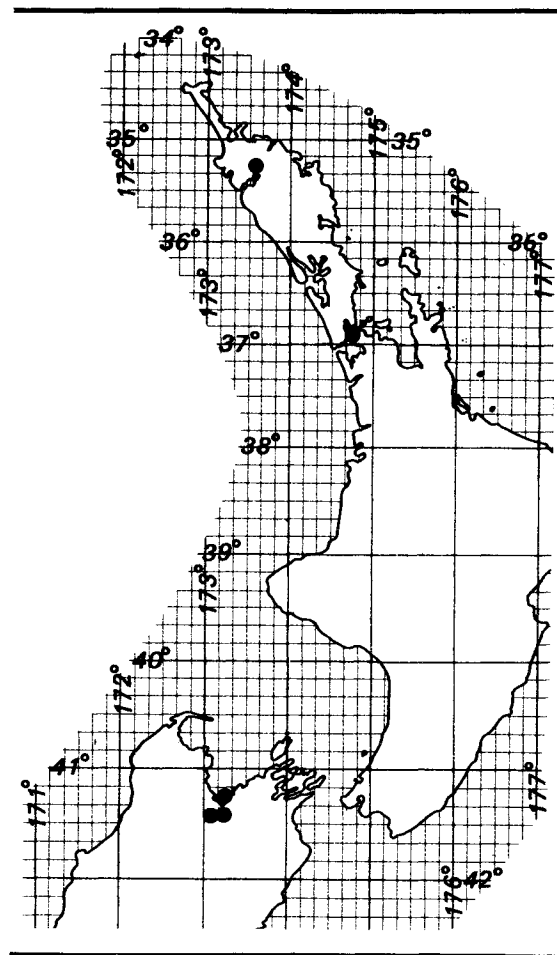
and the galls induced by the rust *Uromycladium notabile* (Basidiomycetes: Uredinales) on *Acacia decurrens* (Mimosaceae).

Adults have been collected in all months.

REMARKS. *A. palmaris* is easily recognised by its very large, angulate sub-basal elytral tubercles and its elongate front legs, which have the first two tarsal segments enlarged and flattened. The colour pattern of the dorsal surface of the body is very variable. In the smallest specimens the pronotal tubercles are proportionately very small and not conspicuously conical.

The first report of *A. palmaris* in New Zealand was based on the discovery in Wellington Province in the summer of 1894-95 of a single larva and numerous mummified apples showing typical larval workings (Kirk 1895).

E. S. Gourlay studied the life history of *A. palmaris* in New Zealand. He found that adults as well as larvae were present inside *Uromycladium* galls on wattle during winter, and that the main emergence of adults from the galls occurred in November (Gourlay 1929). In the laboratory, mummified lemons were continually reinfested for several generations until all the dried pulp had been consumed (Gourlay 1960). The rearing records accompanying the specimens I have examined suggest that in the field there is an emergence period in March-April as well as one at the beginning of summer (September-November). Gourlay (1929) describes the adults as walking about "actively with a quick jerky movement, the fore legs flapping rather ludicrously in front". They can also jump (Tillyard 1926).



about 150 m. Northernmost record: Omahuta, (ND); southernmost record: Appleby (NN).

Larval host-plant records from the material examined are: galls induced by *Uromycladium notabile* on *Acacia verticillata*; old, dry fruit of *Lagunaria patersonii* (Malvaceae); and fruit of *Alectryon excelsus* (Sapindaceae). Large numbers of spores of the basidiomycete *Uromycladium notabile* were present in the hindgut of dissected adults. In addition, Kuschel (1972) lists the following larval foods: mummified fruits of figs (*Ficus carica*; Moraceae); pomegranates (*Punica granatum*; Punicaceae); almonds (*Prunus amygdalus*), apricots (*P. armenica*), peaches (*P. persica*), quinces (*Cydonia* sp.), loquats *Eriobotrya japonica*, and apples (*Malus sylvestris*; all Rosaceae); lemons (*Citrus limon*; Rutaceae);

***Notochoragus* new genus**

TYPE-SPECIES *Anthribus crassus* Sharp, 1876.

(The name *Notochoragus* is derived from the Greek 'notos', meaning 'south, southern', and 'Choragus', a Northern Hemisphere genus of anthribids; gender masculine.)

Small anthribids (length 1.2-2.7 mm). Integument glossy, chestnut brown to black

except for paler appendages; head and pronotum with dense, hexagonal punctures which are sometimes arranged in oblique, curved, or transverse rows or whorls separated by narrow, shiny ridges; elytra puncto-striate, their interstriae with dense, very fine punctures; vestiture consisting of appressed, linear, silvery, yellow, brown, and black scales that do not obscure the integumental surface; elytral disc sometimes with conspicuous, dense patches of curved, golden scales. Rostrum transverse, without tubercles, carinae, or grooves. Antennae short. Eyes entire. Pronotum with discal surface flattened to conical, lacking tufts; transverse carina basal or sub-basal, entire; lateral carina present or absent. Elytra with or without a humeral callus; remaining elytral surface either smooth or with up to 5 pairs of conspicuous, rounded tubercles in addition to various smaller swellings. Wings fully developed or absent. Legs with dense, appressed, fine, short, yellow, brown, and black scales. Sexual dimorphism apparent mainly in the shape of the mandibles and pygidium.

HEAD. Mandibles of male normal, those of female conspicuously concave on outer margin near base. Rostrum with parallel or slightly divergent sides; anterior margin truncate or slightly wavy, not rimmed; interscrobial distance at least $0.75\times$ the interocular distance. Antennae slightly less than half as long as body; scape not very bulbous; segment 2 moderately slender; segments 3-8 slender, cylindrical or slightly compressed, their hairs shorter than the length of individual segments; combined length of segments 3-8 about $1.5-2.0\times$ that of segments 1 and 2; club segments loosely articulated, relatively broad, with both long and short hairs, the long hairs not arranged in whorls; 1st and 2nd club segments asymmetrical, each with a very short, broad process distally which receives the base of the following segment; 3rd segment of club spherical or ovate, with a short stalk. Posterior margin of scrobe rimmed. Eyes large, longitudinal, finely faceted, apparently without hairs, not markedly protruding; dorsomedial edge extending obliquely across vertex, so that distance between eyes is greater anteriorly than posteriorly.

THORAX. Pronotum wider than long, widest near middle or at basal angles; transverse

carina strongly elevated, finely denticulate, sinuous or curved; lateral carina (when present) meeting transverse carina in an acute or obtuse angle, not extending forward beyond pleural suture; declivity oblique, with a denticulate lateral margin but no secondary carinae. Pleural suture exposed or indiscernible; sterno-pleural region with moderately dense, discrete punctures similar in size to those on disc. Scutellum (if visible) very small. Elytra widest near middle but almost parallel-sided; base proclinate, rimmed; sutural margin not conspicuously raised; striole present or absent; striae often sinuous, their punctures large, deep, and discrete; interstriae low or conspicuously raised; declivity deep, almost vertical. Legs moderately slender; front tibiae conspicuously longer than middle and hind tibiae; tarsi with segment 1 about as long as segments 2 and 3 together; tooth of claw small.

ABDOMEN. Pygidium not asperate, wider than long, with a marginal rim which is very setose at the apex in females but sparsely setose in males; surface convex, with dense punctures and curved, pale, linear scales; apex rounded in both sexes. Ventrites with coarse punctures near anterior and posterior margins, fine punctures elsewhere; surface rounded on midline in both sexes, without asperities, tubercles, or keels; vestiture consisting of appressed, pale, linear scales; posterior margin of ventrite 4 only slightly more indented in males than in females.

MALE. Tergite 8 weakly sclerotised, with a rounded apex, and bearing a few short marginal setae; sternite mainly membranous. Sternite 9 apodeme very long, with short arms. Tegmen with a rather slender, almost parallel-sided ring which is longer than the parallel-sided apodeme; apical region usually with tip expanded, setose, and rounded; preapical flange notched. Aedeagus $0.50-0.75\times$ as long as elytra; apodemes continuous with pedon, widely separated from one another by the large bridge, which is close to base of pedon; pedon broad, with apex entire, rounded, pointed, or truncate in dorsal aspect; tectum short or long, rounded or pointed at apex; internal sac simple, reaching almost to end of apodemes, without spinules but sometimes with a small sclerite near base of pedon; ejaculatory duct inserted dorsally near apex of internal sac.

FEMALE. Segment 8 about 0.3x as long as hemisternites; tergite rounded at apex, membranous on midline, with few if any setae; sternite somewhat spade-shaped, with a well developed apodeme. Hemisternites very long and slender, about as long as elytra; body not demarcated from lateral rods; apex elongate, with 3 minute teeth all in the same plane, without a stylus but with a strong, laterally directed bristle near base; median rods fused to form a very slender, almost parallel-sided spike which does not project beyond ends of lateral rods. Vulva enclosed by a small, membranous area ventrally. Bursa copulatrix narrow in apical half, without sclerites. Spermatheca moderately large, not very bulbous; spermathecal gland small, stalked, spherical or oval; spermathecal duct inserted on bursa copulatrix away from base of median oviduct, expanded near its insertion on spermatheca.

RANGE. New Zealand.

REMARKS. *Notochoragus* is the only chora-gine genus in New Zealand with sexually dimorphic mandibles. Other distinguishing features are its large, obliquely placed eyes, loosely articulated antennal club with short projections on the distal ends of the first two segments, lack of asperities on the pygidium, and lack of asperities, keels, and tubercles on the abdominal ventrites. The relatively short, broad apodeme and expanded tip of the tegmen are characteristic features of the male genitalia. Distinctive features of the female genitalia are the somewhat spade-shaped sternite of segment 9, the single, slender median rod of the hemisternites, and the long seta and three minute, flattened teeth at the apex of the hemisternites.

Notochoragus has many features in common with the Northern Hemisphere genus *Choragus* Kirby and the Indo-Pacific genus *Melanopsacus* Jordan. The main similarities and differences, based on examination of the type-species of both genera, are summarised below.

Choragus (type-species *C. sheppardi* Kirby, 1818)

Mandibles - similar to those of *Notochora-gus*

Antennae - similar to those of *Notochora-gus*, especially in the size of the

processes and the form of the vestiture on the club segments, although the setae of the funicle segments are moderately long in relation to the length of the segments themselves

Eyes - interocular distance as in *Notochora-gus*

Ventrite 5 - apex entire in both sexes, as in *Notochoragus*

Tegmen - differs markedly from that of *Notochoragus* in having a very narrow apodeme, and the apical part of the ring with a ventral flange at its base and a narrow apex

Aedeagus - differs from that of *Notochora-gus* in having the apodemes widely separated by a very slender, arched bridge

Segment 9 of female - has a somewhat spade-shaped sternite, as in *Notochoragus*

Hemisternites - very similar to those of *Notochoragus*, except that the median rod is compressed from side to side, expanded at its tip, and reaches almost to the ends of the lateral rods.

Melanopsacus (type-species *M. fortis* Jordan, 1924)

Mandibles - very different from those of *Notochoragus*; in the female they are very small, almost concealed when closed, not excavated at the base, and sharply pointed at the apex; in the male they are slightly larger than in the female and have a blunter tip

Antennae - markedly different from those of *Notochoragus*; the club is much more slender, with greatly attenuated processes at the distal end of the first two segments each of which has a few very long hairs arranged in a whorl, and the funicle segments have setae that are longer than the individual segments and arranged in a whorl

Eyes - interocular distance very much less than in *Notochoragus*

Ventrite 5 - apex entire in male but, unlike *Notochoragus*, notched in female

Tegmen - very similar to that of *Notochora-gus*

Aedeagus - apodemes and bridge very similar to those of *Notochoragus*

Segment 9 of female - differs from that of *Notochoragus* in having the sternite almost parallel-sided rather than spade-shaped

Hemisternites - very similar to those of *Notochoragus*.

Five species of *Notochoragus* occur in New Zealand. Three of these are fully winged and two, including a species known only from the Chatham Islands, are apterous.

KEY TO SPECIES OF *Notochoragus*

- 1 Pronotum with transverse carina directed backwards at sides, meeting lateral margin in a sharp acute angle (Figure 270); elytra with a humeral callus but lacking other protuberances; none of the elytral striae sinuous *fungicola*
- Pronotum with transverse carina not directed backwards at sides, meeting lateral margin in a rather blunt obtuse or right angle (e.g., Figures 264 and 267); elytra with or without a humeral callus, and with at least one pair of discal tubercles; some of the elytral striae sinuous 2
- 2 Pronotum almost as long as elytra;
- (1) humeral callus of elytron absent; wings absent 3
- Pronotum about half as long as elytra; humeral callus of elytron present; wings fully developed 4
- 3 Pronotal surface coarsely wrinkled;
- (2) median tubercle of elytron similar in shape and size to preapical tubercle. North Island, South Island *thoracicus*
- Pronotal surface finely wrinkled; median tubercle of elytron higher and more conical than preapical tubercle. Chatham Islands *chathamensis*

- 4 Pronotum with a conspicuous conical tubercle on centre of disc; elytral surface very uneven, with 3 conspicuous tubercles in a longitudinal row behind sub-basal tubercle *nanus*
- Pronotum without a conspicuous tubercle on centre of disc, though discal surface distinctly humped; elytral surface only slightly uneven, with no large tubercles behind sub-basal tubercle *crassus*

Notochoragus chathamensis new species

Figures 262-264, 563-567, 701, and 702

Integument black. Length 1.3-1.5 mm; width 0.7-0.8 mm.

HEAD (Figure 262). Surface with dense, fine, hexagonal punctures. Eyes separated by 0.62-0.75× width of rostrum and 0.42-0.50× width across eyes. Interscrobial distance 0.82-1.00× the interocular distance. Antennae (Figure 263) 0.40-0.48× as long as elytra.

THORAX. Pronotum (Figure 264) 1.11-1.13× wider than long, widest near middle; surface slightly convex, with dense, fine, hexagonal punctures arranged in whorls and oblique and curved rows separated by inconspicuous ridges, and with the interstices between punctures mainly distinct; vestiture consisting of patches of fine, brown scales and some slightly coarser, yellow scales; transverse carina sub-basal, slightly sinuous on either side of midline; lateral carina reaching almost to pleural suture, meeting transverse carina in an obtuse angle. Scutellum not visible. Elytra 1.26-1.41× longer and 1.03-1.07× wider than pronotum, 1.06-1.23× longer than their combined width, not fused along suture; humeral callus absent, but elytra each with a very low sub-basal swelling, a large, rounded post-median tubercle, a low, elongate preapical swelling, and about 4 other moderately large, elongate swellings elsewhere on disc; striole not discernible;

striae moderately impressed, wavy where they pass around tubercles; some interstriae convex; vestiture fine, mainly brown but with some moderately coarse, yellow scales that are conspicuous on the postmedian tubercle. Wings absent.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 563. Tegmen, Figures 564 and 565; apodeme rather narrow; apex wide, fringed with moderately long setae. Aedeagus, Figures 566 and 567; apex of tectum not very sharply pointed, reaching almost to apex of pedon, which is sharply pointed and upcurved; internal sac without sclerites.

FEMALE. Segment 8, Figure 701. Genitalia, Figure 702; spermathecal gland almost spherical.

TYPE DATA. Holotype: male, 1.5 × 0.8 mm, Chatham Islands, south end of Pitt Island, in litter, 2 March 1967, J. S. Dugdale (NZAC). Paratypes (all Chatham I.). 2 males, Awatōtara, 21-23 Feb 1967, G. Kuschel; 1 female, Two Mile Bush, Waitangi, 5 Mar 1967, A. K. Walker; 1 female, Rotoparaoa, 12 Feb 1967, A.K.W.; (all NZAC).

● Chatham Islands (44°S, 176°W)

MATERIAL EXAMINED. Type series only (NZAC).

Chatham Islands - Chatham I., Pitt I.
From near sea level to about 135 m.

N. chathamensis has not been reared. One specimen was extracted from leaf litter. No recognisable plant material was present in the gut of dissected adults.

Adults have been collected in February and March.

REMARKS. *N. chathamensis* is very similar to *N. thoracicus*, but the two species are easily differentiated by the characters given in the key. In *chathamensis* the tegmen of the male has a much broader apex and fewer, shorter setae than in *thoracicus*. The female genitalia are distinctive in having a very long apodeme on the ninth sternite, and extremely slender hemisternites which are slightly longer than the elytra.

***Notochoragus crassus* (Sharp) new combination**

Figures 66, 265-267, 568-572, 703, and 704

Sharp, 1876, Annals and magazine of natural history (4) 17: 426 (key), 432-433 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 560-561 and corrigenda (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 312 (*Brachytarsus*); Hudson, 1934, New Zealand beetles and their larvae: 127 (*Anthribus*).

minor Broun, 1893, Manual of New Zealand Coleoptera 5: 1260-1261 (*Anthribus*); Bovie, 1906: 313 (*Brachytarsus*). NEW SYNONYMY.

Integument black. Length 1.4-2.6 mm; width 0.7-1.2 mm.

HEAD (Figures 66 and 265). Surface with dense, fine, hexagonal punctures. Eyes separated by 0.61-0.70× width of rostrum and 0.42-0.48× width across eyes. Interscrobial distance 0.79-0.91× the interocular distance. Antennae (Figure 266) 0.60-0.67× as long as elytra.

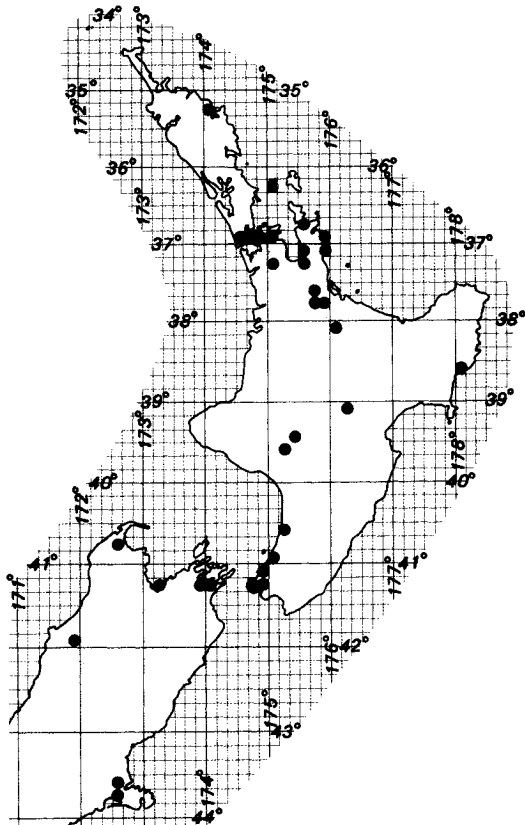
THORAX. Pronotum (Figures 66 and 267) 1.20-1.41× wider than long, widest posteriorly; surface convex, with fine, hexagonal punctures, some of which are arranged in curving rows, the walls between the rows thickened and the interstices between the punctures sometimes obsolete; vestiture mainly brown, with a few yellow scales on sides of disc; transverse carina almost basal, hardly sinuous; lateral carina reaching almost to pleural suture, meeting transverse carina in an obtusely rounded angle. Scutellum very small. Elytra 1.66-2.00× longer than pronotum, together 0.98-1.10× as wide as pronotum, 1.41-1.50× longer than their combined width; elytra each with a small humeral callus, a large sub-basal tubercle, at least 3 very low, rounded tubercles on posterior half of disc, and the remaining surface very uneven; striole absent; some striae slightly wavy; interstriae low; vestiture dark except for distinctively shaped patches of curved, golden scales near centre of disc (Figure 66) and scattered spots of small, silvery scales. Wings fully developed, about 2.4× longer than elytra and 3× longer than wide, with weak anal veins and a very small anal lobe.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 568. Tegmen, Figures 569 and 570; apodeme very broad; apex not conspicuously widened, mainly with short hairs. Aedeagus, Figures 571 and 572; apex of tectum pointed, not reaching as far as apex of pedon, which is also pointed; internal sac with a small ventral sclerite near base of pedon.

FEMALE. Segment 8, Figure 703. Genitalia, Figure 704; spermathecal gland oval.

TYPE DATA. Holotype of *crassus* Sharp: male, 2.20×1.10 mm, Tairua (CL), Broun (BMNH). Holotype of *minor* Broun: sex undetermined, 1.70×0.77 mm, Paparoa (ND), Broun (BMNH). I am indebted to G. Kuschel for examining and measuring the holotype of *crassus*.

In the original description of *minor*, Paparoa is incorrectly stated to be near Howick (AK).



MATERIAL EXAMINED. Holotype of *minor*, 65 males, 60 females, 13 unsexed (BMNH, FRNZ, NMNZ, NZAC, UCNZ).

AK, CL including Little Barrier I., WO, BP, GB, TO, TK, RI, WN / SD, NN, BR, MC. From near sea level to about 975 m. Northernmost record: Waitangi (ND); southernmost record: Puke Atua Bush, Banks Peninsula (MC).

Reared from dead *Nothofagus menziesii* (Fagaceae), dead *Beilschmiedia tawa* (Lauraceae), and fruiting body of *Hypoxylon* (Ascomycetes: Xylariaceae) on *Beilschmiedia tawa*. Xylariaceous ascospores were present in the hindgut of dissected adults.

Adults have been collected in all months.

REMARKS. *N. crassus* is the commonest and most widespread species of *Notochoragus*. It has some resemblance to *fungicola*, but is distinguished by its more convex pronotal disc, the right angle between the transverse and lateral carinae of the pronotum, and the uneven elytral surface. The patch of curved, golden scales on the centre of the elytral disc is extensive and conspicuous in large specimens but less obvious in very small ones. The Fijian species *Melanopsacus veitchi* Jordan has a very similar patch of golden scales on the elytra.

Notochoragus fungicola (Broun) new combination

Figures 268-270, 573-577, 705, and 706

Broun, 1893, Manual of New Zealand Coleoptera 5: 1261 (*Anthribus*). Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 312 (*Brachytarsus*).

Integument chestnut brown. Length 1.7-2.0 mm; width 0.85-1.07 mm.

HEAD (Figure 268). Surface with fine, discrete, hexagonal punctures. Eyes separated by $0.65-0.77\times$ width of rostrum and $0.39-0.45\times$ width across eyes. Interscrobial distance $0.75-0.90\times$ the interocular distance. Antennae (Figure 269) about $0.59\times$ as long as elytra.

THORAX. Pronotum (Figure 270) $1.37-1.95\times$ wider than long, widest posteriorly;

surface slightly convex, with fine, hexagonal punctures that are uniformly distributed (not arranged in curved rows); vestiture consisting of pale yellow scales; transverse carina almost basal, sinuous on either side of midline, directed backwards at sides, and meeting lateral margin of pronotum in a sharp, acute basal angle; lateral carina absent. Scutellum small. Elytra about 2.5× longer and about 1.03× wider than pronotum, about 1.34× longer than their combined width; elytra each with a well developed humeral callus but no other tubercles or swellings; striole present; interstriae low, parallel; vestiture almost entirely pale, evenly distributed. Wings fully developed, about 2.5× longer than elytra and about 3× longer than wide, with weak anal veins and a small anal lobe.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 573. Tegmen, Figures 574 and 575; apodeme short and broad; apex very slightly expanded, fringed with short hairs. Aedeagus, Figures 576 and 577; apex of tectum rounded, reaching to rounded apex of pedon which has a subapical constriction; internal sac with a very small sclerite ventrally near base of pedon.

FEMALE. Segment 8, Figure 705. Genitalia, Figure 706; spermathecal gland spherical.

TYPE DATA. Lectotype: male, 1.70 × 0.95 mm, Howick (AK), January 1885, Broun (NZAC).

MATERIAL EXAMINED. Lectotype, 1 male, 2 females, 3 unsexed (BMNH, NZAC).

AK. From near sea level to about 100 m. Known only from Howick and the Waitakere Range.

N. fungicola has not been reared. The type series (see Remarks) was collected from fungi on the underside of a log. Xylariaceous ascospores were abundant in the hindgut of dissected adults.

Adults have been collected in January.

REMARKS. *N. fungicola* is the only species of *Notochoragus* in which the transverse carina of the pronotum is drawn backwards at the sides and forms a sharp, acute, basal angle with the lateral margin of the pronotum. The vestiture is longer than in the other species and somewhat shaggy.

N. fungicola has not been collected in recent years. The lectotype is one of a series of three specimens collected by Broun in 1885. The other four specimens examined were also collected by Broun, presumably at about the turn of the century. This species is able to jump (Broun 1893).

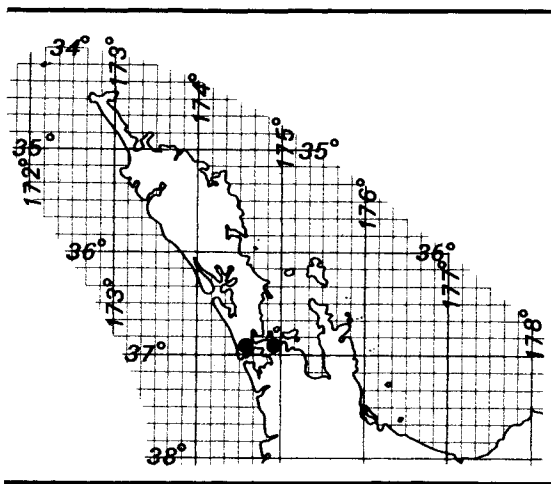
Notochoragus nanus (Sharp) new combination

Figures 18, 271-273, 578-582, 707, and 708

Sharp, 1876, Annals and magazine of natural history (4) 17: 426 (key), 433 (*Anthribus*); Broun, 1880, Manual of New Zealand Coleoptera 1: 561 and corrigenda (*Anthribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 313 (*Brachytarsus*).

Integument black. Length 1.8-2.7 mm; width 0.9-1.4 mm.

HEAD (Figure 271). Surface with fine, discrete, hexagonal punctures. Eyes separated by 0.61-0.65× (males) or 0.89-0.92× (females) width of rostrum and 0.42-0.43× width across eyes. Interscrobial distance 0.91-0.92× the interocular distance. Antennae (Figure 272) 0.41-0.45× as long as elytra.



THORAX. Pronotum (Figure 273) 1.20-1.39× wider than long, widest posteriorly; disc with a conspicuous, conical, median tubercle; punctures fine, hexagonal, some arranged in curved rows separated by narrow walls; vestiture consisting mainly of dark scales, but with a few yellow scales on sides of disc; transverse carina sub-basal, markedly sinuous on either side of midline; lateral carina usually fragmented, not completely visible in dorsal aspect, reaching almost to pleural suture, meeting transverse carina in a right angle. Scutellum small. Elytra 1.80-1.97× longer and 1.00-1.22× wider than pronotum, 1.16-1.42× longer than their combined width; elytra each with a large humeral callus, a large sub-basal tubercle, at least 6 elongate or round tubercles on posterior half of disc, and remainder of surface very uneven; striae sinuous where they pass around the tubercles; some interstriae raised; vestiture dark in overall appearance, but including numerous yellow scales, some of which are dense on a pair of tubercles near centre of disc. Wings (Figure 18) fully developed, about 2.5× longer than elytra and about 3× longer than wide, with weak anal veins and a very small anal lobe.

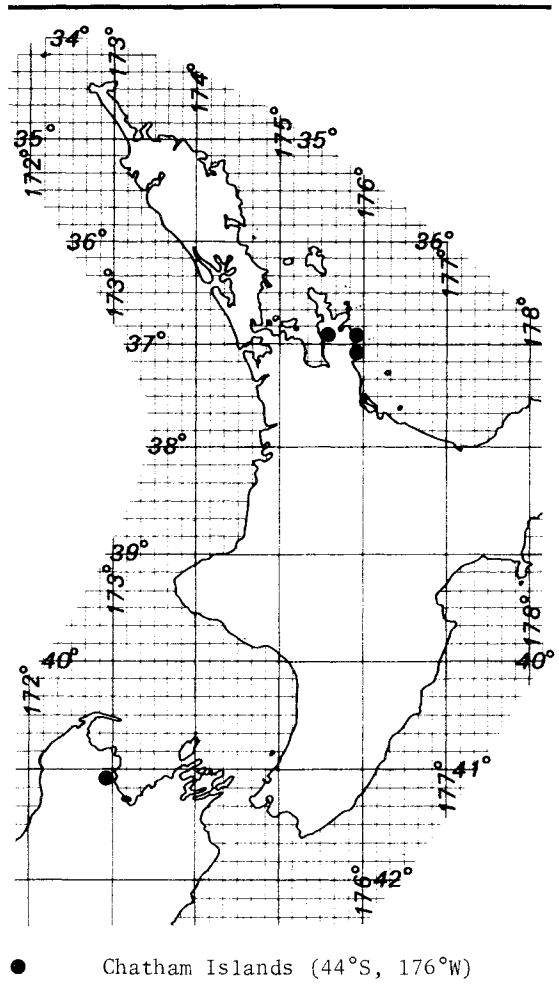
ABDOMEN. MALE. Segment 8 and sternite 9, Figure 578. Tegmen, Figure 579 and 580; apodeme moderately broad; apex conspicuously expanded, fringed with short hairs. Aedeagus, Figures 581 and 582; apex of tectum pointed, almost reaching to apex of pedon, which also is pointed; internal sac with a very small, pale sclerite near base of pedon.

FEMALE. Segment 8, Figure 707. Genitalia, Figure 708; spermathecal gland almost spherical.

TYPE DATA. Holotype: sex undetermined, 1.8 × 0.9 mm, Tairua (CL), Broun (BMNH). I am indebted to G. Kuschel for examining and measuring the holotype.

MATERIAL EXAMINED. 5 males, 9 females, 1 unsexed (BMNH, NZAC).

CL / NN / Chatham Islands - Chatham I. From near sea level to about 610 m. Northernmost record: summit of Tapu Road (CL); southernmost record: Awatotara (Chatham Island).



N. nanus has not been reared. Adults have been collected on rotten wood and on a white fungus, possibly polyporaceous, encrusting a log. Ascospores and fragments of fungal fructifications and thin-walled, pale brown hyphae were present in the hindgut of dissected adults.

Adults have been collected in November, February, and March.

REMARKS. *N. nanus* is easily recognised by the large, conical tubercle on the centre of the pronotum and the numerous elytral tubercles. The patch of yellow scales on the centre of the elytral disc is much smaller than that in *crassus*, and does not extend on to the sutural margin.

***Notochoragus thoracicus* (Broun) new combination**

Figures 38, 274-276, 583-587, 709, and 710

Broun, 1893, Manual of New Zealand Coleoptera 5: 1261 (*Anthrribus*); Bovie, 1906, Annales de la Société Entomologique de Belgique 49: 315 (*Brachytarsus*).

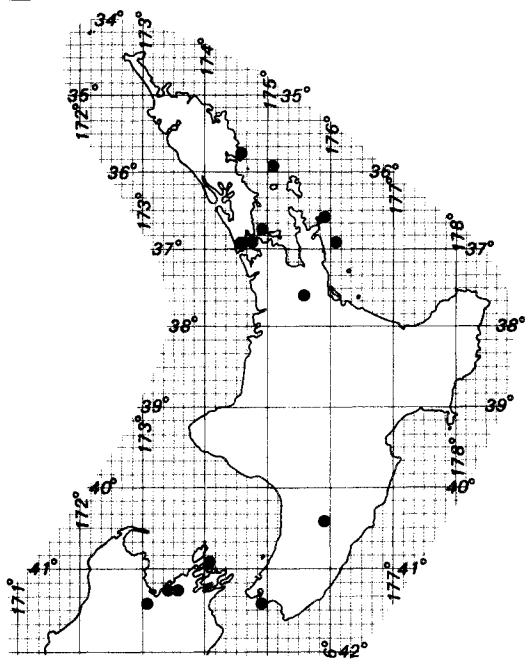
Integument black. Length 1.2-1.5 mm; width 0.6-0.8 mm.

HEAD (Figure 274). Surface with dense, fine punctures arranged in curved, transverse rows separated by conspicuous, shiny ridges. Eyes separated by 0.64-0.75× width of rostrum and 0.44-0.53× width across eyes. Interscrobial distance 0.75-0.93× the interocular distance. Antennae (Figure 275) 0.42-0.48× as long as elytra.

THORAX. Pronotum (Figure 276) 1.07-1.14× wider than long, widest near middle; disc strongly convex, but without a distinct tubercle; punctures dense, fine, arranged in whorls and curved rows separated by broad, conspicuous, shiny ridges, very few of the punctures in the rows separated by side walls; vestiture very fine, brown and yellowish; transverse carina sub-basal, strongly sinuous on either side of midline, where it may be angulate or rounded; lateral carina reaching to pleural suture, meeting transverse carina in an obtuse, rounded angle. Scutellum not visible. Elytra 1.19-1.36× longer and 1.00-1.04× wider than pronotum, 1.04-1.15× longer than their combined width, not fused along suture; elytra without a humeral callus, but each with a large, rounded tubercle in the sub-basal, post-median, and pre-apical positions and about 5 other moderately large tubercles; striole absent; striae sinuous where they pass around the tubercles; some interstriae strongly raised; vestiture fine, brownish, not in dense patches. Wings absent.

ABDOMEN. MALE. Segment 8 and sternite 9, Figure 583. Tegmen, Figures 584 and 585; apodeme moderately broad; apex moderately expanded, fringed with extremely long hairs. Aedeagus, Figures 586 and 587; apex of tectum rounded, reaching to apex of pedon, which is pointed and upcurved; internal sac without sclerites.

FEMALE. Segment 8, Figure 709. Genitalia, Figures 38 and 710; spermathecal gland oval.



TYPE DATA. Holotype: sex undetermined, 1.38 × 0.77 mm, Mokohinau Islands (ND), Sandager (BMNH).

MATERIAL EXAMINED. Holotype, 8 males, 20 females, 2 unsexed (BMNH, NZAC).

ND including Mokohinau Islands, AK, CL (Mercury Is and The Aldermen), BP, WA, WN / SD, NN, MB. From near sea level to about 370 m. Northernmost record: Mt Manaia (ND); southernmost record: Wairoa Gorge (NN).

N. thoracicus has not been reared. Adults have been beaten from fronds of *Cyathea* sp. (Cyatheaceae), bases of *Gahnia* sp. (Cyperaceae), and dead wood, and extracted from leaf litter. The only plant material found in the hindgut of dissected adults was a fragment of a fungal hypha.

Adults have been collected in April and from August to November.

REMARKS. *N. thoracicus* is easily recognised by its very large pronotum, which is more coarsely and conspicuously rugose than in any of the other species. The shape of the tegmen and the length and arrangement of the setae at its apex are very distinctive features of the male genitalia. This species jumps when disturbed.

Species deleted from the N.Z. fauna

The following four species were incorrectly recorded from New Zealand by Wolfrum (1959), apparently through the mislabelling of material collected in Fiji in 1956 by G. Frey.

Araecerus greenwoodi Jordan, 1924

Wolfrum (1959) states that he examined material of this species from Fiji collected by G. Frey in November 1956, and also 3 specimens that Frey collected at Tongariro and Rotorua (misspelt "Rotorus") in December 1956.

Araecerus nitidus Jordan, 1924

The New Zealand records of this Fijian species (Wolfrum 1959) are based on specimens allegedly collected at Rotorua (misspelt "Rotorus") and Tongariro National Park in December 1956 by G. Frey.

Plesiobasis externa Wolfrum, 1959

This species is based on a male and a female supposedly collected at Rotorua (misspelt "Rotorus") on 1-6 December 1956 by G. Frey. It has very distinctive stripes on the pronotum and elytra. Two specimens in NZAC, collected in Viti Levu, Fiji, in October 1977 by G. Kuschel, fit the description of this species.

Proscopus liber Wolfrum, 1959

The single specimen on which this species is based is stated to have been collected in Tongariro National Park on 8 December 1956 by G. Frey. Wolfrum's description fits that of *Proscopus rudicollis* Jordan, 1939 from Fiji.

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APPENDIX 1. Geographical distribution

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Summary of the present known distribution of New Zealand's Anthribidae. Area code letters (Crosby *et al.* 1976) inside parentheses indicate northern and southern limits of distribution; *, flightless species. Each species is confined to the 'area' under which it is listed.

THREE KINGS ISLANDS: *Cerius tthreegius*; **Dysnocryptus balthasar*; **D. gaspar*; **D. melchior*; **Tribasileus noctivagus*.

THREE KINGS ISLANDS AND NORTH ISLAND: **Dasyanthribus purpureus* (Three Kings - CL and WO).

THREE KINGS, NORTH, AND SOUTH ISLANDS: *Lawsonia variabilis* (Three Kings - NN).

NORTH ISLAND: **Dysnocryptus dignus* (ND - BP); **D. inflatus* (ND - CL); **D. rugosus* (ND - AK); *Eugonissus conulus*, which has macropterous and brachypterous forms (ND - TO); *Garyus altus* (ND - WN); *Notochoragus fungicola* (AK only).

NORTH AND SOUTH ISLANDS: *Androporus discedens* (ND - SL); *Araecerus palmaris* (ND - NN); *Arecopais spectabilis* (ND - NN); *Cacephatus huttoni* (ND - NN); *C. incertus* (ND - SL); *C. inornatus* (ND - SL); *C. vates* (ND - DN); **Caliobius littoralis* (CL - NN); **Dysnocryptus pallidus* (WI - MC); *Euciodes suturalis* (ND - CO); *Gynarchaeus ornatus* (AK - SL); *Helmoresus sharpi* (CL - SL); *Hoherius meinertzhageni* (AK - SL); *Hoplorhaphus nodifer* (TO - SL); *Isanthribus proximus* (AK - DN); *Liromus pardalis* (ND - SL); *Lophus lewisi* (TO - MC); **Micranthribus atomus* (ND - MC); *Notochoragus crassus* (ND - MC); **N. thoracicus* (ND - NN); *Phymatus phymatodes* (ND - MC); *Sharpius brouni* (ND - SL); **S. sandageri* (WN - DN); *S. venustus* (BP - SL).

NORTH, SOUTH, AND CHATHAM ISLANDS: *Hoplorhaphus spinifer* (ND - Chathams); *Notochoragus nanus* (CL - Chathams); *Phymatus hetaera* (ND - SD).

NORTH, SOUTH, AND STEWART ISLANDS: *Etnalis spinicollis* (AK - SI); *Pleosporius bullatus* (ND - SI); *Sharpius imitarius* (WN - SI).

NORTH, SOUTH, CHATHAM, AND STEWART ISLANDS: *Lophus rudis* (ND - SI).

SOUTH ISLAND: **Cerius otagensis* (CO only); **Dysnocryptus maculifer* (KA - DN); *Etnalis obtusus* (NN only); *Isanthribus dracophylli* (NN only); **I. phormii* (NN - WD); *Phymatus*

cucullatus (NN - SL); **Xenanthribus hirsutus* (SD - SL).

CHATHAM ISLANDS: **Cacephatus propinquus*; **Dysnocryptus pilicornis*; **Lichenobius silvicola*; **Lophus cristatellus*; **Notochoragus chathamensis*; **Sharpius chathamensis*.

BOUNTY ISLANDS: **Lichenobius maritimus*.

STEWART ISLAND AND THE SNARES: **Lichenobius littoralis*.

STEWART ISLAND, THE SNARES, AND AUCKLAND ISLANDS: **Cacephatus aucklandicus*.

APPENDIX 2. Altitudinal range

Altitudinal ranges of New Zealand's Anthribidae. Unless otherwise indicated, the numbers in parentheses are the known upper limits (often approximate) in metres above sea level; *, flightless species.

FROM NEAR SEA LEVEL TO AT MOST 500 m: *Araecerus palmaris* (150); **Cacephatus aucklandicus* (50); *C. huttoni* (350); **C. propinquus* (137); **Caliobius littoralis* (sea level only); **Cerius otagensis* (260); *C. triregius* (100); **Dasyanthribus purpureus* (460); **Dysnocryptus balthasar* (100); **D. dignus* (245); **D. gaspar* (100); **D. inflatus* (70); **D. maculifer* (300); **D. melchior* (100); **D. pallidus* (500); **D. pilicornis* (140); **D. rugosus* (60); *Garyus altus* (300); *Lawsonia variabilis* (305); **Lichenobius littoralis* (sea level only); **L. maritimus* (sea level only); **L. silvicola* (185); **Lophus cristatellus* (137); **Notochoragus chathamensis* (135); *N. fungicola* (100); **N. thoracicus* (370); **Sharpius chathamensis* (137); **Tribasileus noctivagus* (100); **Xenanthribus hirsutus* (400).

FROM NEAR SEA LEVEL TO BETWEEN 500 m AND 1000 m: *Arecopais spectabilis* (650); *Cacephatus incertus* (900); *C. inornatus* (900); *C. vates* (600); *Etnalis obtusus* (610); *Eugonissus conulus*, has macropterous and brachypterous forms (600); *Gynarchaeus ornatus* (830); *Helmoresus sharpi* (600); *Hoplorhaphus spinifer* (835); **Isanthribus phormii* (610); *Liromus pardalis* (610); **Micranthribus atomus* (550); *Notochoragus crassus* (975); *N. nanus* (610); *Phymatus cucullatus* (915); *P. hetaera* (610); *Pleosporius bullatus* (810); *Sharpius brouni* (930); **S. sandageri* (1000).

FROM NEAR SEA LEVEL TO MORE THAN 1000 m: *Androporus discedens* (1066); *Etnalis spinicollis* (1067); *Euciodes suturalis* (1695); *Hoherius meinertzhageni* (1067); *Hoplorhaphus nodifer* (152-1067); *Isanthribus dracophylli* (?-1250); *I. proximus* (1128); *Lophus lewisi* (150-1500); *L. rudis* (1200); *Phymatus phymatodes* (1220); *Sharpius imitarius* (1036); *S. venustus* (1525).

APPENDIX 3. Habitats of adults/larvae

Habitats of adults and larvae of New Zealand's Anthribidae. Only 40 of the 60 established species have been reared; larval habitats are assumed for the remaining species. *, flightless species; nr, not reared.

ADULTS EXCLUSIVELY ON STANDING VEGETATION, LARVAE INSIDE STEMS AND BRANCHES OF STANDING VEGETATION: *Androporus discedens*; *Araecerus palmaris* (larvae sometimes in mummified fruit); *Cacephatus huttoni*; *C. incertus*; *C. inornatus*; *C. vates*; **Cerius otagensis* (nr); *C. triregius* (nr); **Dasyanthribus purpureus*; *Etnalis obtusus*; *E. spinicollis*; *Euciodes suturalis*; *Garyus altus*; *Gynarchaeus ornatus*; *Helmoresus sharpi*; *Hoherius meinertzhageni*; *Hoplorhaphus nodifer*; *H. spinifer*; *Isanthribus dracophylli*; *I. proximus*; **Lichenobius silvicola* (in lichens); *Liromus pardalis*; **Lophus cristatellus*; *L. lewisi*; *L. rudis*; *Notochoragus fungicola* (nr); *N. nanus* (nr); *Phymatus cucullatus*; *P. hetaera*; *P. phymatodes*; *Pleosporius bullatus*; *Sharpius imitarius*; *S. venustus* (nr); **Tribasileus noctivagus* (nr).

ADULTS ON STANDING VEGETATION OR IN LITTER, LARVAE INSIDE STEMS AND BRANCHES OF STANDING VEGETATION: *Arecopais spectabilis*; **Cacephatus aucklandicus*; **C. propinquus*; **Dysnocryptus dignus*; **D. gaspar* (nr); **D. inflatus*; **D. pallidus* (nr); **D. pilicornis*; **D. rugosus*; *Eugonissus conulus* (nr), has macropterous and brachypterous forms; **Isanthribus phormii* (nr); *Lawsonia variabilis* (nr); **Micranthribus atomus* (nr); *Notochoragus crassus*; **N. thoracicus* (nr); *Sharpius brouni*; **S. chathamensis* (nr); **S. sandageri*.

ADULTS EXCLUSIVELY IN LITTER, LARVAE IN LITTER: **Caliobius littoralis* (nr); **Dysnocryptus balthasar* (nr); **D. maculifer* (nr); **D. melchior* (nr); **Notochoragus chathamensis* (nr); **Xenanthribus hirsutus* (nr).

ADULTS AND LARVAE IN OR ON MARITIME LICHENS OR FUNGI: **Lichenobius littoralis*; **L. maritimus* (nr).

APPENDIX 4. Host plants of larvae

Host plants of the larvae of New Zealand's Anthribidae. Common European and Maori names are given in parentheses after the scientific name of the plant. Scientific and common names of native dicotyledons and gymnosperms are, in general, those used by Allan (1961) and Poole & Adams (1964); those used for monocotyledons are mainly from Moore & Edgar (1970). The scientific and common names for introduced plants are based on Bailey (1949) and Lam-brechtzen (1975). *, introduced species; ?, assumed larva/plant association based on numbers of adults occurring on the plant.

FUNGI: ASCOMYCETES (ascomycetes)

1. Xylariaceae

Hypoxylon fruiting body on *Beilschmiedia tawa*: *Notochoragus crassus*.

Hypoxylon fruiting body on *Nothofagus solandri* var. *cliffortioides*: *Lophus rudis*; *Pleosporium bullatus*.

FUNGI: BASIDIOMYCETES (basidiomycetes)

1. Uredinales (rusts)

**Uromycladium notabile*-induced galls on **Acacia*: **Araecerus palmaris*.

LICHENES (lichens)

Pertusaria graphica: *Lichenobius littoralis*.

Unidentified filmy lichen on live branches of trees and shrubs: *Lichenobius silvicola*.

FILICOPSIDA (ferns)

1. Cyatheaceae

Cyathea sp. (tree-fern): ?*Dysnocryptus rugosus*.

GYMNOSPERMAE (conifers)

1. Araucariaceae

Agathis australis (kauri): *Androporus discedens*; *Cacephatus inornatus*; *Phymatus hetaera*; *Sharpius brouni*.

2. Cupressaceae

**Chamaecyparis lawsoniana* (Lawson cypress, lawsoniana): *Cacephatus incertus*; *Phymatus phymatodes*.

3. Pinaceae

**Pinus nigra* (Austrian pine): *Androporus discedens*.

**Pinus patula* (Mexican yellow pine): *Phymatus phymatodes*.

**Pinus ponderosa* (Western yellow pine): *Phymatus cucullatus*.

**Pinus radiata* (Monterey pine, radiata pine): *Androporus discedens*; *Helmoreus sharpi*; *Phymatus phymatodes*; *Sharpius brouni*.

**Pseudotsuga menziesii* (Douglas fir): *Phymatus cucullatus*.

4. Podocarpaceae

Dacrycarpus dacrydioides (white pine, kahikatea): *Cacephatus incertus*.

Dacrydium cupressinum (red pine, rimu): *Cacephatus aucklandicus*; *C. incertus*; *C. inornatus*.

Podocarpus sp.: *Androporus discedens*.

ANGIOSPERMAE: MONOCOTYLEDONES (monocotyledons)

1. Agavaceae

Phormium sp. (New Zealand flax): ?*Isanthribus phormii*.

2. Arecaceae (= Palmae)

Rhopalostylis sapida (nikau palm): *Arecopais spectabilis*; *Phymatus hetaera*.

3. Cyperaceae

Carex trifida: *Cacephatus aucklandicus*. *Carex* sp.: ?*Dysnocryptus dignus*.

Gahnia lacera (cutty grass): *Dysnocryptus dignus*; *D. inflatus*; *D. rugosus*; ?*Micranthribus atomus*.

Lepidosperma sp.: ?*Dysnocryptus inflatus*.

Uncinia sp. (hook grass): ?*Dysnocryptus dignus*.

4. Liliaceae

Astelia sp.: ?*Dysnocryptus inflatus*.

5. Pandanaceae

Freycinetia baueriana subsp. *banksii* (kiekie): ?*Dysnocryptus rugosus*; *Cacephatus huttoni*.

6. Poaceae (= Gramineae)

- **Arrhenatherum elatius* (tall oat grass):
**Euciodes suturalis*.
**Bromus* sp. (brome): **Euciodes suturalis*.
**Cortaderia jubata* (purple pampas grass):
? *Dysnocryptus dignus*; ? *D. inflatus*;
? *D. rugosus*.
Cortaderia splendens (toetoe): ? *Micranthribus atomus*.
**Dactylis glomerata* (cocksfoot): **Euciodes suturalis*.
**Festuca arundinacea* (tall fescue):
**Euciodes suturalis*.
**Holcus lanatus* (Yorkshire fog): **Euciodes suturalis*.

7. Restionaceae

- Leptocarpus similis* (jointed rush, oi oi):
? *Dysnocryptus inflatus*.

ANGIOSPERMAE: DICOTYLEDONES (dicotyledons)

1. Antherospermataceae

- Laurelia novae-zelandiae* (pukatea):
Cacephatus vates.

2. Apocynaceae

- Parsonsia* sp. (New Zealand jasmine):
? *Dysnocryptus inflatus*; ? *Lawsonia variabilis*; *Phymatus hetaera*.

3. Araliaceae

- Meryta sinclairii* (puka): *Dysnocryptus inflatus*.
Pseudopanax arboreus (five-finger):
Cacephatus vates; *Phymatus hetaera*;
P. phymatodes; *Pleosporius bullatus*;
Sharpius brouni.
Pseudopanax chathamicus (Chatham Island five-finger): *Dysnocryptus pilicornis*;
Lichenobius silvicola (in encrusting lichen).
Pseudopanax sp.: *Phymatus hetaera*; *P. phymatodes*.

4. Asteraceae (= Compositae)

- Cassinia* sp. (tauhinu): *Phymatus phymatodes*; *Sharpius brouni*.
Olearia furfuracea (akepiro): *Dasyanthribus purpureus*; *Sharpius brouni*.
Olearia lyallii: *Cacephatus aucklandicus*.
Olearia traversii (akeake): *Lophus cristatellus*.
Olearia sp.: *Cacephatus vates*.
Senecio reinoldii (muttonbird scrub):
Sharpius imitarius.

5. Caprifoliaceae

- **Lonicera japonica* (honeysuckle): ? *Dysnocryptus pallidus*.

6. Coriariaceae

- Coriaria arborea* (tree tutu): *Etnalis obtusus* (in galls).

7. Cornaceae

- Corokia macrocarpa*: *Lichenobius silvicola* (in encrusting lichen).

8. Epacridaceae

- Dracophyllum longifolium* (inanga):
Cacephatus aucklandicus; *Lophus rudis*.
Dracophyllum traversii (neinei): *Isanthribus dracophylli*; *Lophus rudis*.

9. Fabaceae (= part Leguminosae)

- Carmichaelia* sp. (New Zealand broom):
? *Cerius otagensis*.
Clianthus puniceus (kaka beak, kowhai ngutu kaka): *Phymatus phymatodes*.
**Cytisus scoparius* (scotch broom):
Sharpius sandageri.
**Cytisus* sp. (broom): *Sharpius brouni*;
S. imitarius.
**Laburnum anagyroides* (golden chain):
Phymatus cucullatus.
**Lupinus* sp. (lupin): *Phymatus cucullatus*;
P. hetaera; *P. phymatodes*.
Sophora microphylla (kowhai): *Phymatus hetaera*.
**Ulex europaeus* (gorse): *Dysnocryptus inflatus*; *Sharpius brouni*.

10. Fagaceae

- Nothofagus fusca* (red beech): *Gynarchaeus ornatus*; *Isanthribus proximus*; *Lophus lewisi*; *L. rudis*; *Pleosporius bullatus*.
Nothofagus menziesii (silver beech):
Gynarchaeus ornatus; *Helmcoreus sharpi*;
Lophus rudis; *Notochoragus crassus*;
Pleosporius bullatus; *Sharpius brouni*.
Nothofagus solandri var. *cliffortioides* (mountain beech): *Lophus rudis*.
Nothofagus solandri var. *solandri* (black beech): *Helmcoreus sharpi*; *Sharpius brouni*.
Nothofagus sp. (beech): *Cacephatus huttoni*; ? *Hoplorhaphus nodifer*; *Lophus lewisi*.
**Quercus suber* (cork oak): *Phymatus phymatodes*.

11. Lauraceae

- Beilschmiedia tawa* (tawa): *Notochoragus crassus*.
Litsea calicularis (mangeao): *Hoplorhaphus spinifer*.
Hoheria glabrata (mountain ribbonwood):
? *Hoherius meinertzhageni*.
Hoheria sp.: *Hoherius meinertzhageni*.

12. Malvaceae

- Hoheria glabrata* (mountain ribbonwood):
? *Hoherius meinertzhageni*.
Hoheria sp.: *Hoherius meinertzhageni*.

- **Lagunaria patersonii* (Norfolk Island hibiscus): **Araecerus palmaris* (in mummified fruit).
- Plagianthus betulinus* (lowland ribbonwood, manatu): ?*Hoherius meinertzhageni*; *Phymatus hetaera*.
- Plagianthus betulinus* var. *chathamicus* (Chatham Island ribbonwood): *Lichenobius silvicola* (in encrusting lichen).
- Plagianthus divaricatus* (shore ribbonwood): ?*Hoherius meinertzhageni*.
13. Meliaceae
Dysoxylum spectabile (kohekohe): ?*Notochoraqus crassus*; *Sharpius browni*.
14. Mimosaceae (= part Leguminosae)
 **Acacia dealbata* (silver wattle): *Sharpius sandageri*.
 **Acacia decurrens* (green wattle):
 **Araecerus palmaris* (in galls).
 **Acacia mearnsii* (black wattle): *Sharpius browni*.
 **Acacia melanoxylon* (Tasmanian blackwood): *Sharpius browni*.
 **Acacia verticillata* (prickly acacia):
 **Araecerus palmaris* (in galls); *Sharpius browni*.
 **Acacia* sp. (wattle): *Sharpius browni* (in seed pods).
 **Albizia lophantha* (brush wattle):
Sharpius browni.
15. Monimiaceae
Hedycarya arborea (pigeonwood, porokai-whiri): *Phymatus cucullatus*.
16. Moraceae
 **Ficus carica* (common fig): **Araecerus palmaris* (in mummified fruit).
 **Ficus* sp. (fig): *Garyus altus*; *Pleosporius bullatus*; *Sharpius browni*.
17. Myoporaceae
Myoporum laetum (ngaio): *Cacephatus vates*.
18. Myrsinaceae
Myrsine chathamica: *Cacephatus propinquus*; *Hoplorhaphus spinifer*; *Lichenobius silvicola* (in encrusting lichen); *Lophus cristatellus*; *Phymatus hetaera*.
Myrsine coxii: *Lophus rudis*.
Myrsine divaricata: *Cacephatus aucklandicus*.
19. Myrtaceae
Leptospermum sp. (tea-tree, manuka or kanuka): ?*Dysnocryptus maculifer* (in leaf litter).
20. Onagraceae
Fuchsia excorticata (tree fuchsia, kotukutuku): *Etnalis spinicollis*.
21. Piperaceae
Macropiper excelsum (pepper-tree, kawakawa): *Cacephatus huttoni*; *C. propinquus*; *Lichenobius silvicola* (in encrusting lichen).
22. Pittosporaceae
Pittosporum eugenioides (lemonwood, tarata): *Pleosporius bullatus*.
Pittosporum tenuifolium (kohuhu):
Pleosporius bullatus.
Pittosporum sp.: *Phymatus phymatodes*.
23. Polygonaceae
Muehlenbeckia australis: ?*Dysnocryptus pilicornis*.
Muehlenbeckia sp.: ?*Dysnocryptus maculifer* (in leaf litter).
24. Proteaceae
Toronia toru (toru): *Androporus discedens*.
25. Punicaceae
 **Punica granatum* (pomegranate): **Araecerus palmaris* (in mummified fruit).
26. Ranunculaceae
Clematis sp. (New Zealand clematis):
Phymatus hetaera.
27. Rosaceae
 **Crataegus* sp. (hawthorn): *Pleosporius bullatus*; *Sharpius sandageri*.
 **Cydonia* sp. (quince): **Araecerus palmaris* (in mummified fruit).
 **Eriobotrya japonica* (loquat): **Araecerus palmaris* (in mummified fruit).
 **Malus sylvestris* (apple): **Araecerus palmaris* (in mummified fruit).
 **Prunus amygdalus* (almond): **Araecerus palmaris* (in mummified fruit).
 **Prunus armenica* (apricot): **Araecerus palmaris* (in mummified fruit).
 **Prunus persica* (peach): **Araecerus palmaris* (in mummified fruit).
28. Rubiaceae
Coprosma linariifolia; *Liromus pardalis*.
Coprosma lucida (karamu): *Cacephatus aucklandicus*.
Coprosma robusta (karamu): *Cacephatus huttoni*; *Liromus pardalis*; *Phymatus phymatodes*; *Sharpius browni*.
Coprosma sp.: *Etnalis obtusus*; *E. spinicollis*; *Gynarchaeus ornatus*.

29. Rutaceae
 **Calodendrum capense* (Cape chestnut):
Sharpius brouni.
 **Citrus limon* (lemon): **Araecerus palmaris*
 (in mummified fruit); *Phymatus hetaera*.
30. Salicaceae
 **Salix* sp. (willow): *Helmoresus sharpi*.
31. Sapindaceae
Alectryon excelsus (titoki): **Araecerus*
palmaris (in fruit); *Sharpius brouni*.
32. Scrophulariaceae
Hebe elliptica: *Cacephatus aucklandicus*.
Hebe stricta: *Cacephatus vates*.
33. Solanaceae
 **Solanum mauritianum* (woolly nightshade):
Pleosporius bullatus.
34. Ulmaceae
 **Ulmus* sp. (elm): *Sharpius brouni*.
35. Violaceae
Hymenanchera chathamica: *Lichenobius*
silvicola (in encrusting lichen).
Meliclytus sp.: *Pleosporius bullatus*.

APPENDIX 5. Hindgut contents of adults

Plant material identified from the hindgut of adults of New Zealand's Anthribidae. The list does not include *Isanthribus dracophylli*, known only from a single reared specimen, and *Notochoragus chathamensis*, in which no recognisable plant material was found.

FUNGI

Ascomycetes

- Euantennariaceae: *Cacephatus inornatus*;
Dasyanthribus purpureus; *Garyus altus*;
Pleosporius bullatus.
 Pleosporaceae: *Pleosporius bullatus*.
 Sordariaceae: *Hoplorhaphus nodifer*;
H. spinifer.
 Xylariaceae: *Cacephatus incertus*; *C. propinquus*;
Dysnocryptus balthasar; *D. rugosus*;
Etnalis spinicollis; *Isanthribus phormii*;
Lophus rudis; *Micranthribus atomus*;
Notochoragus crassus.

Unidentified Ascomycetes: *Androporus discedens*;
Cacephatus vates; *Dysnocryptus dignus*;
D. inflatus; *D. melchior*; *Euciod-es suturalis*;
Gynarchaeus ornatus; *Lawsonia variabilis*;
Lophus cristatellus; *Notochoragus nanus*;
Phymatus cucullatus; *P. hetaera*;
Sharpius imitarius; *S. sandageri*;
S. venustus; *Xenanthribus hirsutus*.

Basidiomycetes

Uredinales: *Araecerus palmaris*; *Cacephatus propinquus*;
Euciodes suturalis.

Fungi Imperfecti: *Androporus discedens*;
Cacephatus aucklandicus; *C. incertus*;
C. propinquus; *Caliobius littoralis*;
Cerius otagensis; *Dysnocryptus balthasar*;
D. inflatus; *D. pallidus*; *D. pilicornis*;
D. rugosus; *Euciodes suturalis*; *Eugonissus conulus*;
Gynarchaeus ornatus; *Helmoresus sharpi*;
Hoplorhaphus nodifer; *Isanthribus proximus*;
Lawsonia variabilis; *Liromus pardalis*;
Lophus rudis; *Sharpius brouni*.

Unidentifiable fungal material only (spores and tissue):
Arecopais spectabilis; *Cacephatus huttoni*;
Cerius triregius; *Dysnocryptus gaspar*;
D. maculifer; *Etnalis obtusus*;
Hoherius meinertzhageni; *Lichenobius maritimus*;
Lophus lewisi; *Notochoragus thoracicus*;
Phymatus phymatodes; *Tribasileus noctivagus*.

LICHENES

Unidentifiable material: *Cacephatus aucklandicus*;
Lichenobius littoralis; *L. silvicola*.

HIGHER PLANTS

Unidentifiable tissue (epidermal hairs, bark cells, epidermal cells):
Arecopais spectabilis; *Cacephatus aucklandicus*;
Cerius triregius; *Dysnocryptus gaspar*;
Eugonissus conulus; *Gynarchaeus ornatus*;
Hoherius meinertzhageni; *Lawsonia variabilis*;
Liromus pardalis; *Lophus lewisi*;
Phymatus hetaera; *P. phymatodes*;
Sharpius chathamensis; *S. imitarius*.

SYNOPTIC KEYS TO NEW ZEALAND ANTHRIBIDAE

The following keys have been constructed along the lines suggested by Jacobs (1966), Leenhouts (1966), and Korf (1972). Korf's paper in particular is worth reading as it presents a persuasive case for greater use of synoptic keys, rather than the traditional dichotomous keys, as aids to identification.

In the present key the taxa are numbered consecutively to correspond with their order of treatment in the text. The subfamilies are denoted by Roman numerals (I, II) and the genera by Arabic numerals (1-28). Morphological characters are listed in consecutively numbered couplets which contain two or more alternative character states, called 'leads'. The first lead, 'a', is to the character state which applies to the fewest taxa, and these taxa have their numbers recorded beside the lead. The alternative lead 'b' is placed in parentheses beneath 'a', and has no taxon numbers recorded after it. When a couplet contains more than two leads, parentheses are not used for any of these, and the numbers of all the taxa appear within the couplet. Underlined numbers indicate taxa of which only some members have the character state referred to.

To use the key, select any couplet containing an obvious character that is present in the specimen to be identified. List all the taxon numbers included in the appropriate lead of the couplet. Then select a second relevant couplet and lead and delete from your list all the taxon numbers that do not appear in this lead.

Continue selecting couplets and leads and eliminating numbers from your original list until a single taxon number remains. In order to keep track of your procedure, write down the couplet numbers as they are used.

EXAMPLE. Suppose that we have an anthribid that is distinctly greenish and has lateral scrobes, entire eyes, short antennae, and a tubercle in the middle of the pronotal disc. We see from couplet 1-1 of the synoptic key to subfamilies that some anthribines but no choragines have greenish integument. The lateral position of the scrobes (see couplet 2-3a) also indicates that the specimen must belong in Anthribinae. Turning to the synoptic key to genera of Anthribinae, we note that couplet 1-1 also refers to greenish integument and has four genus numbers beside it. We jot down the genus numbers and the couplet number:

1, 8, 20, 21 Anthribinae 1-1

We then look for a further obvious character, e.g., eye shape. Our specimen has entire eyes, a character state that appears in couplet 2-20a. We now find that we can cross off numbers 20 and 21 from our list, as neither genus has entire eyes. Our numbers then read:

1, 8, 20, ~~21~~ Anthribinae 1-1, 2-20a

We then look at pronotal characters, and find that couplet 3-9 refers to the tubercle in the centre of the pronotal disc. This tubercle, which is present in our specimen, occurs in genera 2 and 8 but not genus 1. Our list then reads:

~~1~~, 8, ~~20~~, ~~21~~ Anthribinae 1-1, 2-20a,

3-9

From the list of numbers assigned to taxa we find that number 8 refers to the genus *Garyus*, which contains a single species. Our anthribid is therefore a specimen of *Garyus altus*. Had the genus contained more than one species, it would have been necessary to use the dichotomous key to species of that genus to complete the identification.

KEY TO SUBFAMILIES

Subfamilies: I, Anthribinae;
II, Choraginae.

GENERAL CHARACTERS

- 1-1. Integument
 a. entirely green, or with green areas, or tinged with green: I
 (b. black and/or shades of brown and/or yellow)

HEAD CHARACTERS

- 2-1. Rostrum
 a. longer than wide: I
 (b. as wide as long, or wider)
- 2-2. Rostrum
 a. with horns, or conspicuous longitudinal carinae, or pits, or grooves on the dorsal surface: I
 (b. with no horns, etc.)
- 2-3. Scrobes
 a. lateral (Figure 5): I
 (b. dorsal (Figure 7) or dorsolateral (Figure 6))
- 2-4. Antennae
 a. longer than the body: I
 (b. not longer than the body)
- 2-5. First and second antennal segments
 a. arched, asymmetrical, the external margin of both much more convex than the internal margin when antennae folded against body (Figure 11): II
 (b. not arched, instead almost symmetrical, and cylindrical; pyriform, or expanded apically, with the external margin no more convex than the internal margin (Figures 9 and 10))

- 2-6. Eyes
 a. with distinct upper and lower lobes (Figures 152 and 207): I
 (b. entire (Figures 3 and 4) or with a minute notch on the anterior (Figure 155) or anteromedial (Figure 256) edge)

KEY TO GENERA - ANTHRIBINAE

Genera: 1, *Gynarchaeus*; 2, *Lophus*; 3, *Pleosporius*; 4, *Sharpius*; 5, *Hoplorhaphus*; 6, *Helmoreus*; 7, *Cacephatus*; 8, *Garyus*; 9, *Xenanthribus*; 10, *Caliobius*; 11, *Lichenobius*; 12, *Eugonissus*; 13, *Etnalis*; 14, *Isanthribus*; 15, *Tribasileus*; 16, *Cerius*; 17, *Androporus*; 18, *Arecopais*; 19, *Phymatus*; 20, *Hoherius*; 21, *Lawsonia*; 22, *Euciodes*; 23, *Dasyanthribus*.

GENERAL CHARACTERS

- 1-1. Integument of dorsal surface
 a. predominantly green, or with some green areas, or tinged with green: 1, 8, 20, 21
 b. predominantly brown: 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21
 c. predominantly black: 2, 3, 4, 5, 7, 11, 15, 22, 23
- 1-2. Vestiture of dorsal surface
 a. predominantly silvery or bronze: 11, 22
 (b. not predominantly silvery or bronze)
- 1-3. Vestiture of dorsal surface
 a. including numerous very long, dense, standing hairs in addition to the shorter appressed or decumbent vestiture: 9, 10, 23
 (b. including at most only scattered, moderately long hairs in addition to the appressed or decumbent hairs and scales)

HEAD CHARACTERS

- 2-1. Rostrum
 a. longer than wide: 2, 4, 5, 6, 7
 (b. as wide as long or wider)
- 2-2. Rostrum
 a. with concave, entire sides and expanded apex (Figure 98): 4, 5, 6, 8, 9, 11
 b. with almost parallel, entire sides (Figure 76): 1, 2, 3, 7, 8, 9, 10, 11

- c. with curved or straight sides emarginate at the scrobes (Figure 152): 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23
- 2-3. Rostrum
 a. expanded, flattened, shield-like (Figures 196 and 202): 20, 21
 (b. not expanded, flattened, etc.)
- 2-4. Rostrum
 a. with a naked, shiny pit or small, naked, shiny depression on dorsal midline (Figures 67 and 196): 1, 8, 15, 16, 19, 20, 22
 (b. without a naked, shiny pit, etc.)
- 2-5. Rostrum
 a. with a groove on part of dorsal midline (Figure 196): 1, 8, 13, 14, 15, 17, 18, 19, 20, 21, 22
 (b. without a groove, etc.)
- 2-6. Rostrum
 a. with a carina on part of dorsal midline (Figure 104): 1, 2, 3, 4, 5, 6, 7, 8, 11, 15, 19, 21
 (b. without a carina, etc.)
- 2-7. Rostrum
 a. with mid-lateral longitudinal carinae dorsally (Figure 202): 2, 5, 15, 21
 (b. without mid-lateral longitudinal carinae)
- 2-8. Rostrum
 a. with a pair of horns between scrobes in males (Figure 181): 19
 (b. without horns, etc.)
- 2-9. Rostrum
 a. with a pair of elongate tubercles between scrobes in males (Figure 177): 17, 18
 (b. without elongate tubercles between the scrobes)
- 2-10. Rostrum
 a. with large amounts of white or silver or cream or yellow vestiture: 1, 2, 3, 4, 6, 8, 11, 13, 14, 15, 16, 18, 19, 20, 21, 22
 (b. without large amounts of such vestiture)
- 2-11. Rostrum
 a. with a median keel on underside: 2, 4, 5, 7, 8
 (b. without this keel)
- 2-12. Antennae
 a. inserted laterally on rostrum, with no part of floor or sides of scrobe visible in dorsal aspect (Figures 73 and 82): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
 (b. inserted dorsally (Figure 210) or dorsolaterally (Figure 158) on rostrum, with at least part of floor or sides or posterior wall of scrobe visible in dorsal aspect)
- 2-13. Antennae
 a. not reaching to base of elytra: 1, 2, 4, 6, 7, 9, 10, 11, 23
 b. reaching to base of elytra but not to elytral declivity: 3, 4, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 19
 c. reaching at least to elytral declivity: 15, 16, 17, 18, 19, 20, 21, 22
- 2-14. Antennae
 a. with first segment gradually expanding from base to apex, the stalk basal and in about same plane as rest of segment (Figure 9): 1, 2, 3, 4, 5, 6, 8, 9, 10, 11
 (b. with first segment pyriform, or cylindrical and with a truncate base, or expanded and flattened dorsoventrally at the apex, the stalk antebasal and almost at right angles to rest of segment (Figure 10))
- 2-15. Antennae
 a. very robust (Figure 138): 11
 (b. moderately robust to very slender)
- 2-16. Antennae
 a. with first segment about twice as long as second: 20, 21
 b. with first segment about half as long as second: 6
 c. with first segment about as long as second: 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23
- 2-17. Antennae
 a. with conspicuous white vestiture on eighth segment: 5
 (b. without this vestiture)
- 2-18. Antennae
 a. with some of the hairs on funicle

- segments longer than individual segments: 9, 10, 11
- (b. with all hairs on funicle segments shorter than individual segments)
- 2-19. Eyes
- a. somewhat dorsal: 6
- (b. lateral)
- 2-20. Eyes
- a. entire or very indistinctly indented: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
- b. notched to deeply emarginate, with upper lobe longer than lower lobe: 13, 22
- c. notched to deeply emarginate, with upper lobe shorter than lower lobe: 11, 12, 14, 15, 16, 17, 18, 19, 20
- d. notched to deeply emarginate, with upper lobe about as long as lower lobe: 13, 21, 23
- 2-21. Eyes
- a. separated by a distance greater than narrowest width of rostrum: 4, 5, 6, 14, 15, 17, 23
- (b. separated by a distance less than narrowest width of rostrum)
- 2-22. Eyes
- a. with some very long hairs between ommatidia: 11
- (b. with short or moderately long hairs, or none)
- 2-23. Vertex
- a. with an H-shaped patch of white vestiture between eyes: 6
- (b. without such a patch)
- THORACIC CHARACTERS
- 3-1. Pronotum
- a. more than 1.5× wider than long: 20
- (b. less than 1.5× wider than long)
- 3-2. Pronotum
- a. with dull surface, granulose minisculpture, and barely discernible shallow punctures: 8, 15, 18, 21
- (b. with shiny surface, no minisculpture, and conspicuous deep punctures)
- 3-3. Pronotum
- a. with no transverse carina: 7, 9, 10, 11
- b. with a basal transverse carina (Figure 12): 2, 13
- c. with a sub-basal transverse carina (Figure 13): 1, 2, 4, 7, 8, 12, 13, 14, 16, 17, 18, 20, 21, 22
- d. with an antebasal transverse carina (Figure 14): 3, 4, 5, 6, 7, 9, 11, 14, 15, 16, 19, 20, 23
- 3-4. Pronotum
- a. with a fragmented or weakened transverse carina: 2, 4, 5, 7, 9, 11, 14, 15, 16, 19, 22, 23
- (b. with an entire transverse carina)
- 3-5. Pronotum
- a. with a wavy transverse carina (Figure 201): 20
- (b. with a straight, curved, or sinuous transverse carina)
- 3-6. Pronotum
- a. with lateral carina short or absent: 4, 6, 7, 9, 10, 11, 12, 13, 14, 16, 22, 23
- (b. with lateral carina reaching to about pleural suture)
- 3-7. Pronotum
- a. with disc tuberculate or very uneven: 1, 2, 8, 17, 19, 20
- (b. with disc smooth, flattened, or slightly convex)
- 3-8. Pronotum
- a. with a pair of tubercles on disc: 1, 2, 17
- (b. without these tubercles)
- 3-9. Pronotum
- a. with a median tubercle on disc: 2, 8
- (b. without this tubercle)
- 3-10. Pronotum
- a. with a pair of tufts on anterior margin: 19
- (b. without these tufts)
- 3-11. Pronotum
- a. with a tuft or tufts on centre of disc (not associated with tubercles): 2, 20
- (b. with no such tuft or tufts)
- 3-12. Pronotum
- a. with a white median patch or streak and a pair of lateral black patches or streaks in front of transverse carina: 2
- (b. without these patches or streaks)

- 3-13. Pronotum
 a. with acute, laterally projecting basal angles (Figure 148): 7, 12, 13, 14
 (b. with obtuse, non-projecting basal angles (Figure 160))
- 3-14. Legs
 a. with tibial integument green or tinted green: 1, 8, 20, 21
 (b. with tibial integument yellow, brown, or black)
- 3-15. Legs
 a. with femoral vestiture ringed or spotted: 2, 4, 5, 6, 12, 17
 (b. with femoral vestiture unicolorous)
- 3-16. Legs
 a. with a large, oval sensory pit (filled with hairs) on ventral surface of hind femur in male (Figure 176): 17
 (b. with no such pit in either sex)
- 3-17. Legs with tibial vestiture
 a. unicolorous: 5, 7, 11, 13, 14, 16, 17, 18, 19, 21, 22, 23
 b. consisting of pale scales or hairs on proximal half and dark scales or hairs on distal half: 12, 15
 c. consisting of pale proximal and distal bands separated by a dark median band: 17, 19, 20
 d. consisting of a pale band of scales or hairs at apex and dark scales or hairs elsewhere: 9
 e. dark except for a pale median or postmedian band: 4, 5, 6
 f. consisting of 2 pale bands alternating with 2 dark bands: 2, 3, 10, 19
 g. consisting of 2 pale bands alternating with 3 dark bands: 2
 h. consisting of 3 pale bands alternating with 2 dark bands: 8
 i. cream except for a black apical band: 1
- 3-18. Legs
 a. with very long, white scales fringing tibiae: 20
 (b. with no such fringe)
- 3-19. Legs
 a. with numerous long, curly, brown hairs on outer edge of proximal half of tibiae: 9
 (b. with no such hairs)
- 3-20. Legs
 a. with extensive white vestiture on posterior (retrolateral) surface of mid tibiae: 5
 (b. with no such vestiture)
- 3-21. Elytra
 a. with no tubercles, swellings, or tufts: 4, 7, 10, 11, 14, 16, 23
 (b. with at least some of these)
- 3-22. Elytra
 a. with some tufts not associated with swellings or tubercles: 2, 3, 8, 9, 17, 20
 (b. with no such tufts)
- 3-23. Elytra
 a. with no humeral callus or swelling: 2, 4, 7, 9, 10, 11, 14, 16, 23
 (b. with this structure)
- 3-24. Elytra
 a. with no sub-basal tubercle or swelling: 2, 4, 5, 6, 7, 9, 10, 11, 14, 15, 16, 18, 22, 23
 (b. with this structure)
- 3-25. Elytra
 a. with a median tubercle or swelling: 1, 2, 3, 17, 19, 20
 (b. without this structure)
- 3-26. Elytra
 a. with a preapical tubercle: 1, 2, 3, 19, 20
 (b. without this tubercle)
- 3-27. Elytra
 a. with a tufted, rounded, or bispinous tubercle on suture: 5
 (b. without this structure)
- 3-28. Elytra
 a. with vestiture of some interstriae directed towards centre of interstriae and forming long, low crests: 17, 18, 19
 (b. without this sort of vestiture)
- 3-29. Elytra
 a. with a dark, transverse band near middle of disc: 4, 7, 13, 15, 16, 20, 21, 22
 (b. without this band)
- 3-30. Elytra
 a. with a yellowish-brown, longitudinal, median patch on disc: 4, 8
 (b. without this patch)

- 3-31. Elytra
 a. with a silvery, longitudinal, median patch on disc: 14, 22
 (b. without this patch)
- 3-32. Elytra
 a. with a white or cream transverse band at top of declivity: 4, 13, 15, 16
 (b. without this band)
- 3-33. Elytra
 a. with a tawny declivity contrasting in colour with rest of elytral vestiture: 3
 (b. without a contrasting tawny declivity)
- 3-34. Wings
 a. fully developed: 1, 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22
 b. vestigial: 2, 4, 7, 11, 12, 14, 15, 16, 23
 c. absent: 9, 10

ABDOMINAL CHARACTERS

- 4-1. Fifth ventrite of male
 a. asperate: 7
 (b. not asperate)
- 4-2. Fifth ventrite of female
 a. asperate: 4, 5, 6, 7, 8, 10, 11, 15
 (b. not asperate)
- 4-3. Pygidium of male
 a. asperate: 7, 20
 (b. not asperate)
- 4-4. Pygidium of female
 a. asperate: 4, 5, 6, 7, 8, 10, 11, 15, 20
 (b. not asperate)
- 2-2. Antennae
 a. with second segment much shorter than first: 27
 (b. with second segment about as long as first)
- 2-3. Antennae
 a. with third to eighth segments slender, almost parallel-sided, each with a whorl of inconspicuous short setae never as long as individual segments: 27, 28
 (b. with third to eighth segments stout, expanding apically, each with a whorl of conspicuous long setae, some of them at least as long as individual segments)
- 2-4. Antennae
 a. with fifth, sixth, and seventh segments asymmetrical, more convex on external (anterior) margin than on internal (posterior) margin (Figure 214): 24
 (b. with fifth, sixth, and seventh segments symmetrical (Figure 245))
- 2-5. Antennae
 a. with club slender, elongate, loosely articulated, the external (anterior) margin of each segment convex, the internal (posterior) margin almost straight (Figures 260 and 266): 26, 27, 28
 (b. with club broad, short, compact, the external and internal margins with about the same curvature (Figures 213 and 218))
- 2-6. Rostrum
 a. with a short carina running forward obliquely towards midline from near anteromedial edge of eye (Figure 256): 27
 (b. with no such carina)
- 2-7. Eyes
 a. with a small notch on anteromedial edge containing a cluster of pale, dense hairs (Figure 256): 27
 (b. with no notch and no closely associated dense hairs)

KEY TO GENERA - CHORAGINAE

Genera: 24, *Liromus*; 25, *Micranthribus*;
26, *Dysnocryptus*; 27, *Araecerus*;
28, *Notochoragus*.

GENERAL CHARACTERS

- 1-1. Integument of dorsal surface
 a. predominantly black: 25, 26, 28
 (b. predominantly brown)

HEAD CHARACTERS

- 2-1. Mandibles
 a. strongly concave on outer edge at base in female (Figure 265): 28

THORACIC CHARACTERS

- 3-1. Pronotum
 a. with surface dull: 25, 26

- (b. with surface shiny)
- 3-2. Pronotum
 a. with granulose minisculpture and barely discernible punctures: 25, 26
 (b. without minisculpture, with conspicuous punctures)
- 3-3. Pronotum
 a. with no transverse carina: 26
 b. with a basal transverse carina: 24, 25, 26, 27, 28
 c. with a sub-basal transverse carina: 26, 28
 d. with an antebasal transverse carina: 26
- 3-4. Pronotum
 a. with a fragmented or weakened transverse carina: 26
 (b. with an entire transverse carina)
- 3-5. Pronotum
 a. with lateral carina very short or absent: 26, 28
 (b. with lateral carina reaching to about pleural suture)
- 3-6. Pronotum
 a. with disc tuberculate or very uneven: 27, 28
 (b. with disc smooth, gently convex)
- 3-7. Legs
 a. with middle and hind tibial vestiture banded: 27
 (b. with vestiture unicolorous)
- 3-8. Legs
 a. with greatly enlarged fore tarsi in males: 27
 (b. with normal tarsi)
- 3-9. Elytra
 a. with reticulate sculpture: 26
 b. with deep striae: 25, 26, 27
 c. with shallow striae: 24, 26, 27, 28
 d. with neither reticulate sculpture nor striae: 26
- 3-10. Elytra
 a. with a humeral callus: 24, 27, 28
 (b. without this callus)
- 3-11. Elytra
 a. with a sub-basal tubercle or swelling: 24, 27, 28
 (b. without this structure)
- 3-12. Elytra
 a. with a median tubercle or swelling: 27, 28
 (b. without this structure)
- 3-13. Elytra
 a. with humeral callus, when present, yellow and somewhat translucent: 24
 (b. with humeral callus brown or black and opaque)
- 3-14. Elytra
 a. with long, conspicuous, standing hairs in addition to short, appressed scales and hairs: 26
 (b. with only short, appressed scales and hairs)
- 3-15. Metepisternum
 a. with a narrow band of dense, minute, oval, silver scales along entire lateral margin: 25, 28
 (b. bare, or with long scales or hairs, or with only a small patch of oval scales)
- 3-16. Wings
 a. fully developed: 24, 27, 28
 b. vestigial: 25
 c. absent: 26, 28
- ABDOMINAL CHARACTERS
- 4-1. First ventrite of male
 a. with a setose keel on midline: 26
 (b. with no keel)
- 4-2. Third ventrite of male
 a. with a broad keel on midline: 24
 (b. with no keel)
- 4-3. Fifth ventrite of male
 a. asperate: 27
 (b. not asperate)
- 4-4. Fifth ventrite of female
 a. asperate: 24, 27
 (b. not asperate)
- 4-5. Pygidium of male
 a. asperate: 27
 (b. not asperate)
- 4-6. Pygidium of female
 a. asperate: 24, 26, 27
 (b. not asperate)

Figures 1-38 Morphological features of the Anthribidae, as typified by representative species (semi-diagrammatic).

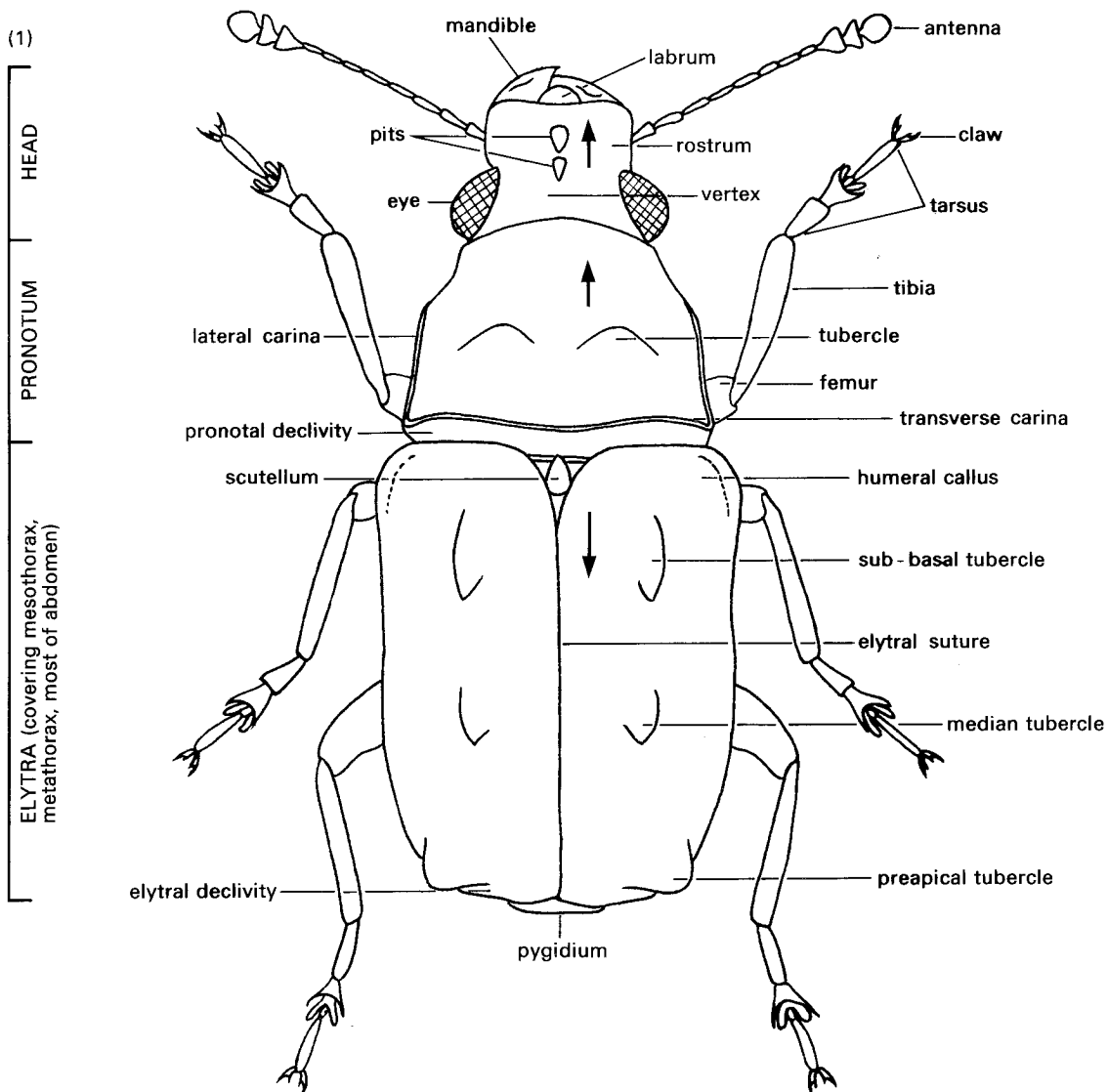
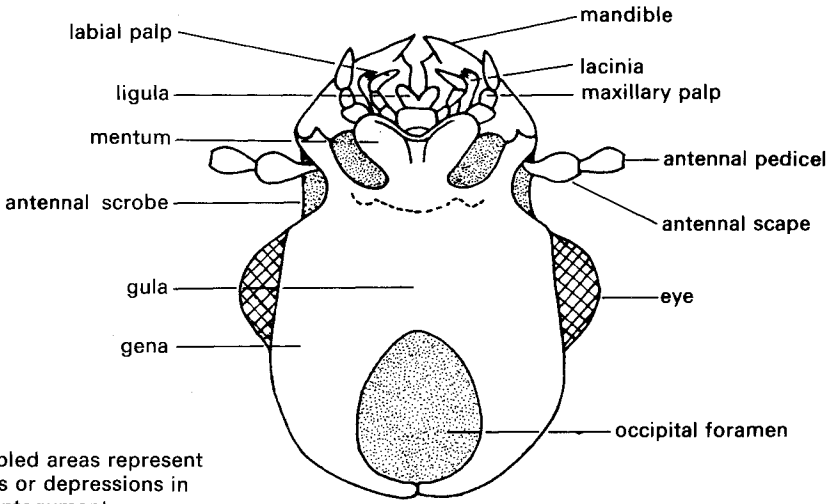


Figure 1 Features visible in dorsal aspect; *Gynarchaeus ornatus*, female (arrows indicate direction of vestiture).

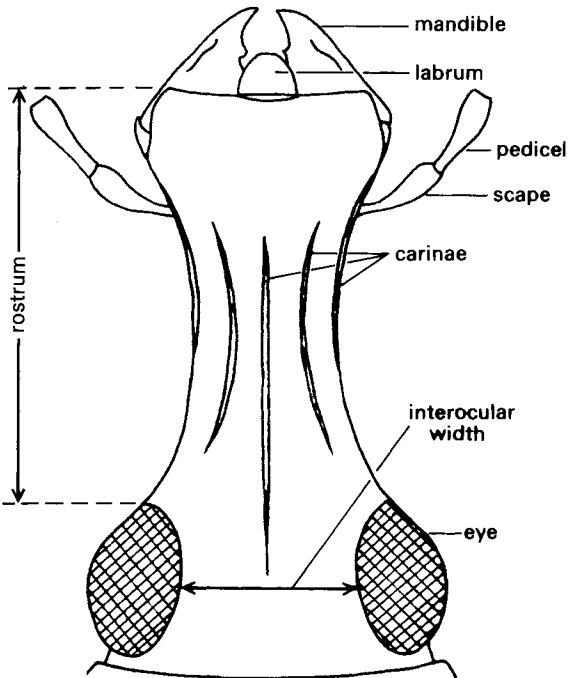
Figure 2 Features of head and mouthparts visible in ventral aspect; *G. ornatus*, male.

Figures 3 and 4 Features of head and mouthparts visible in dorsal and lateral aspect; *Hoplorhaphus spinifer*, female (antennae omitted in Figure 4).

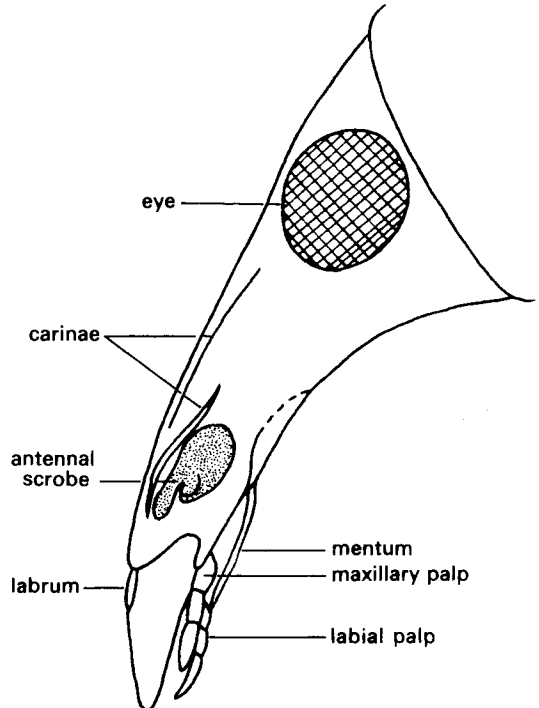
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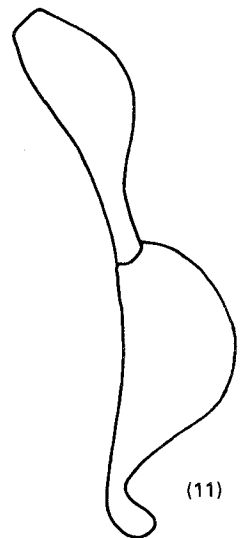
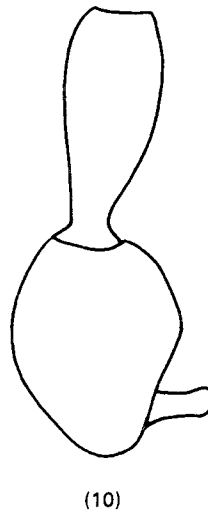
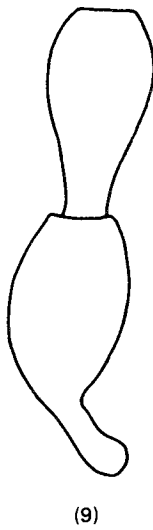
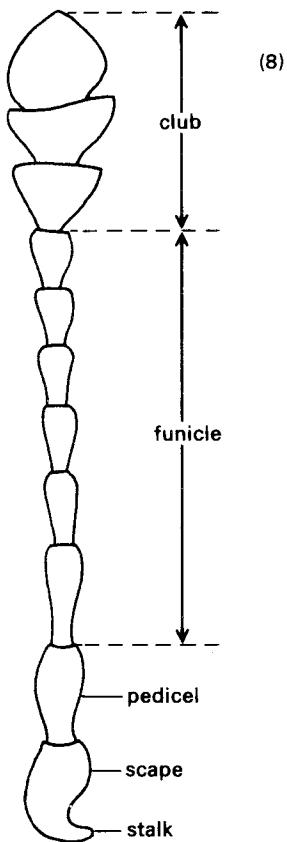
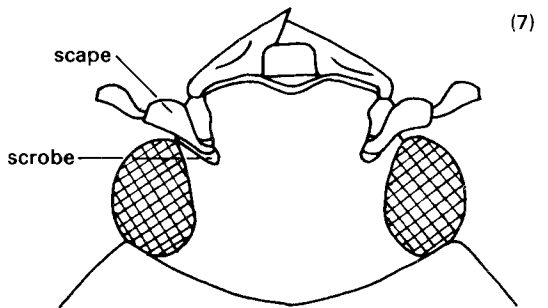
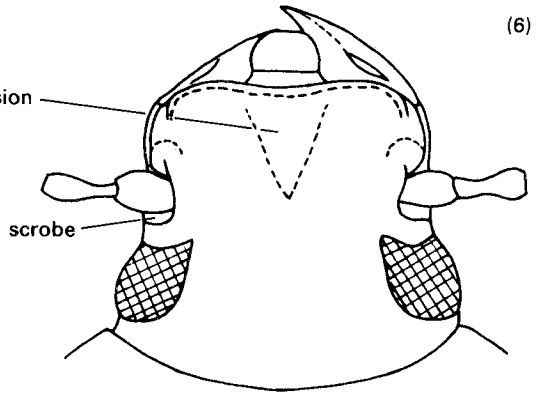
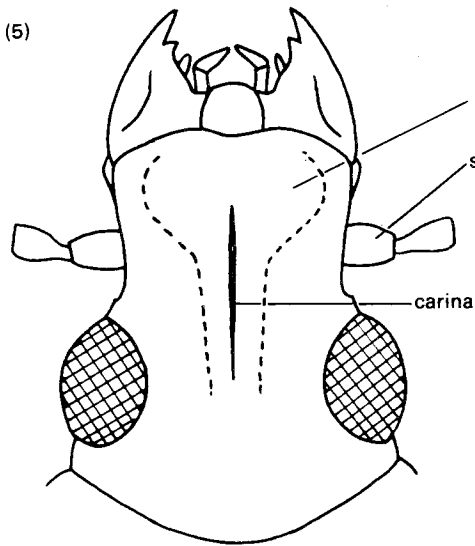


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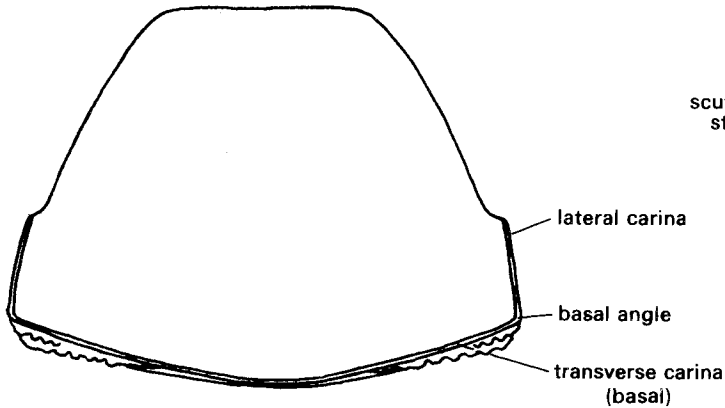


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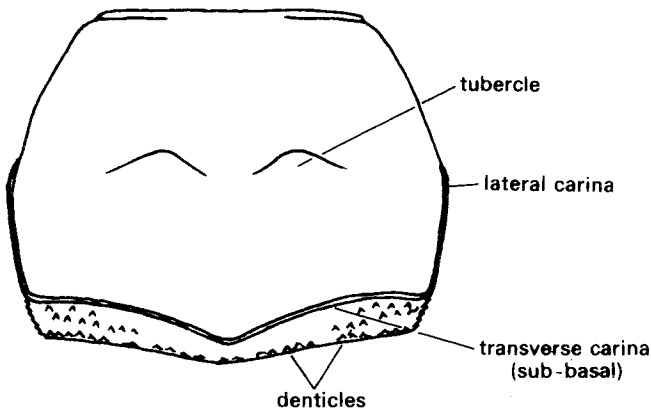




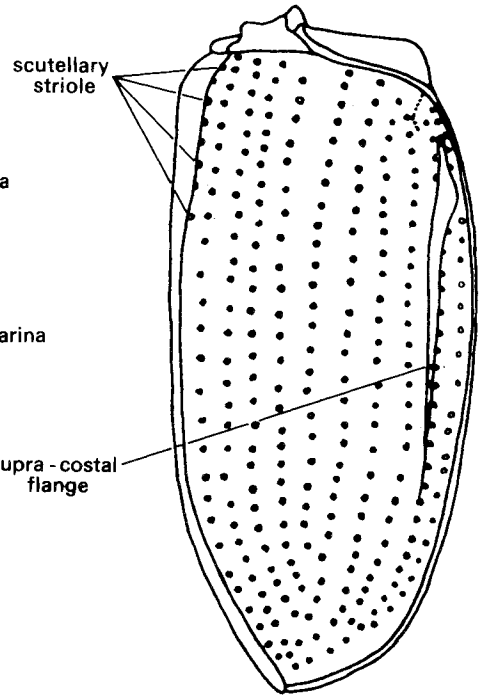
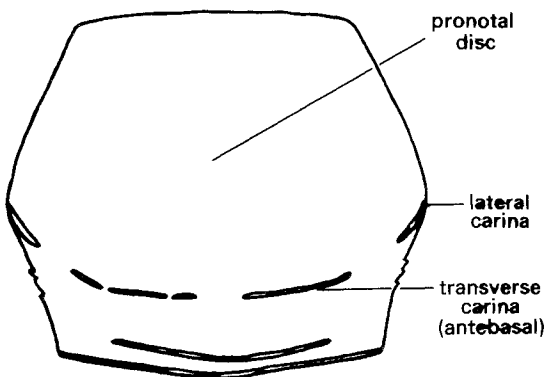
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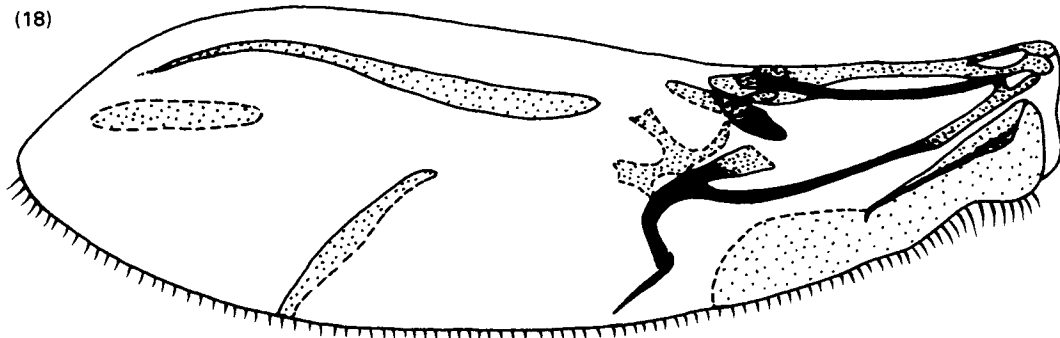
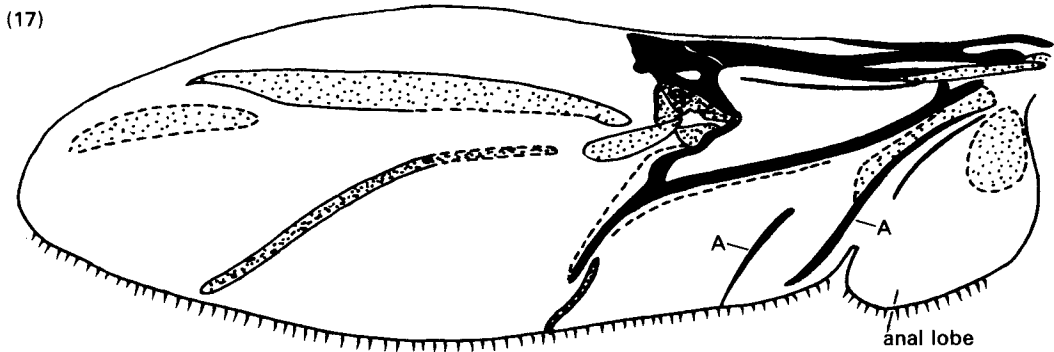
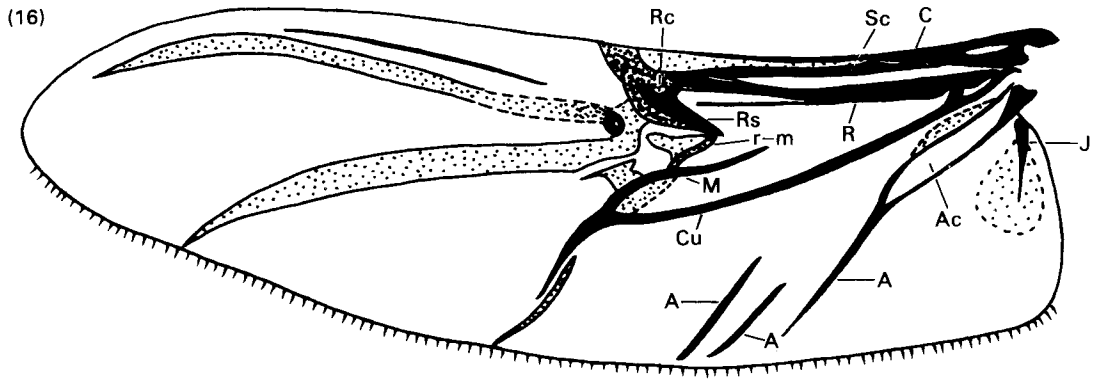
Figures 5-7 Heads of females, dorsal aspect: (5) *Cacephatus aucklandicus*; (6) *Cerius otagensis*; (7) *Liromus pardalis*.

Figure 8 Features of left antenna; *Lichenobius maritimus*, female.

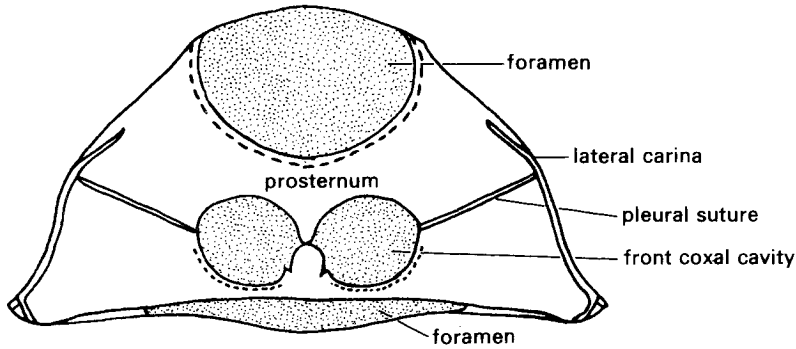
Figures 9-11 Scape and pedicel of left antenna: (9) *Gynarchaeus ornatus*, male; (10) *Arecopais spectabilis*, female; (11) *Dysnocryptus inflatus*, female.

Figures 12-14 Pronota: (12) *Liromus pardalis*, female; (13) *Androporus discedens*, male; (14) *Sharpius imitarius*, male.

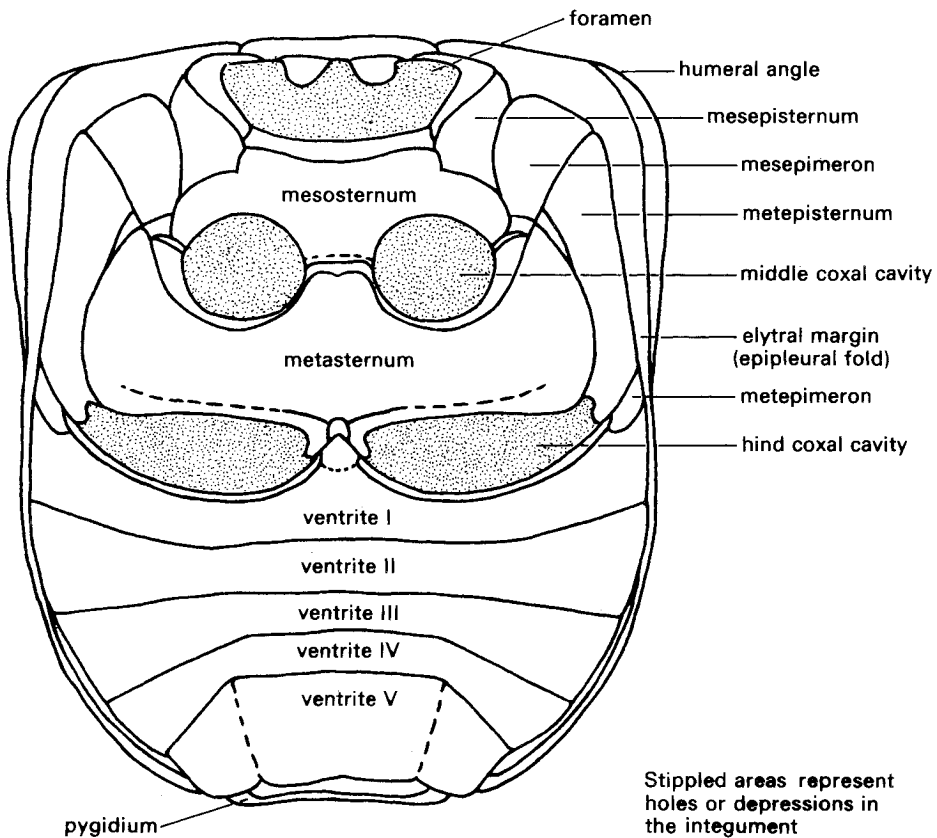
Figure 15 Features of left elytron, ventral aspect; *Sharpius brouni*, male.



Figures 16–18 Features of left wing of males of: (16) *Gynarchaeus ornatus*; (17) *Helmoreus sharpi*; (18) *Notochoragus nanus*.
Key: A, anal vein; Ac, anal cell; C, costa; Cu, cubitus; J, jugal vein; M, media; R, radius; Rc, radial cell; Rs, radial sector; r-m, radio-medial cross-vein; Sc, subcosta.



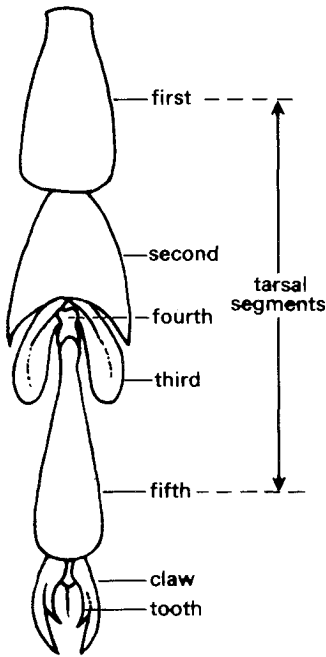
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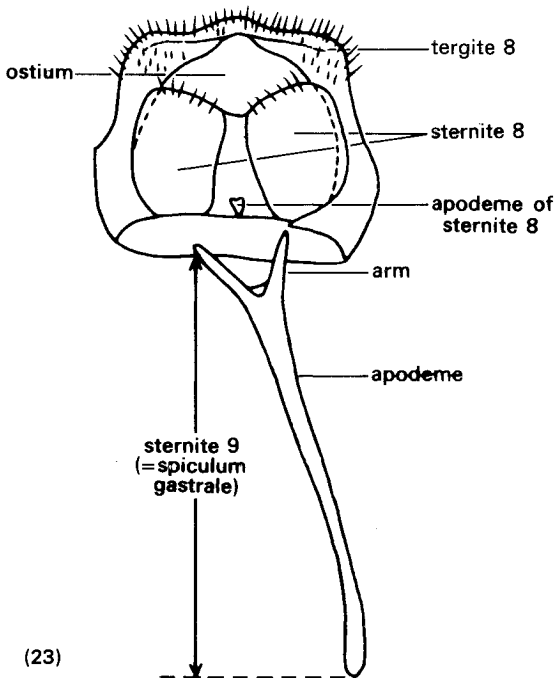
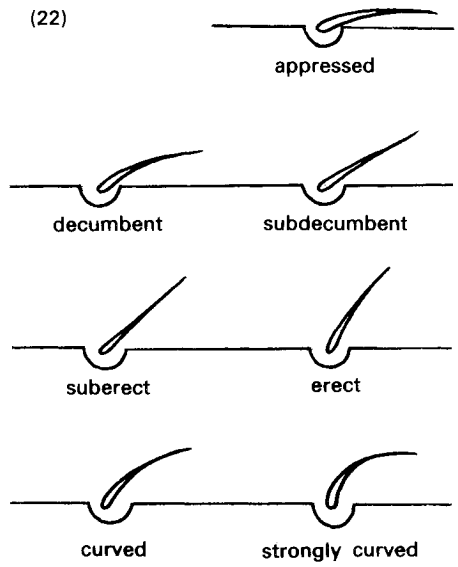
(20)

Figures 19 and 20 Features of thorax and abdomen visible in ventral aspect; *Gynarchaeus ornatus*, male.

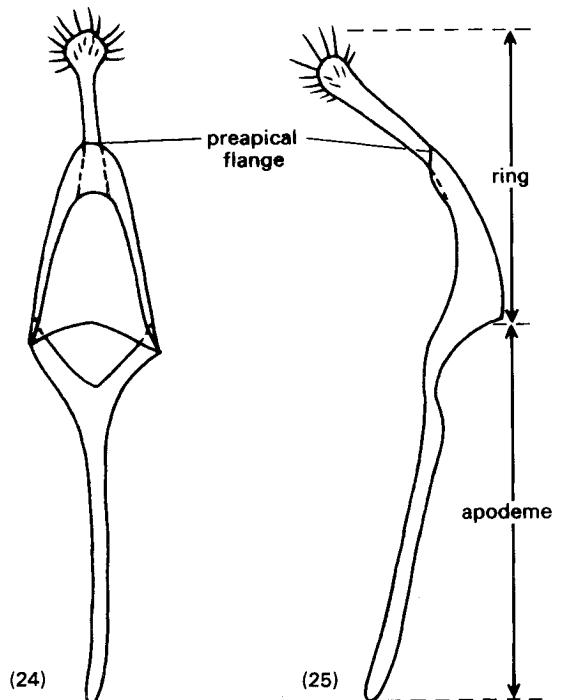
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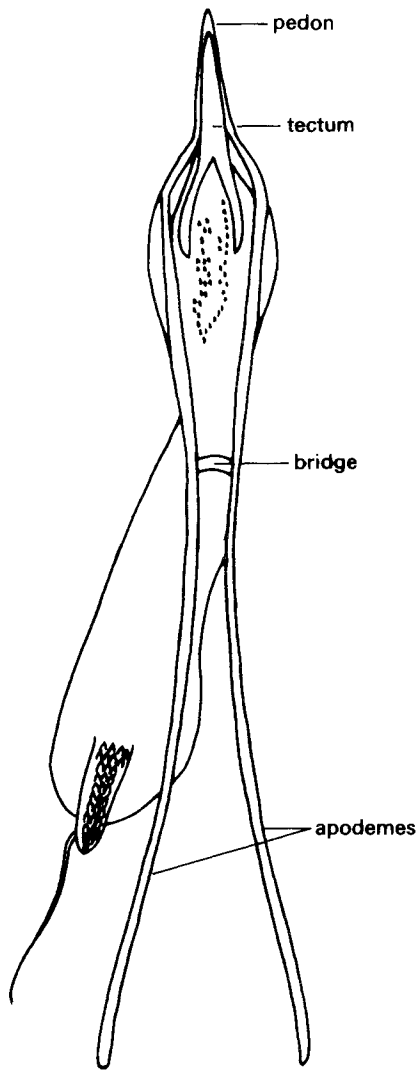


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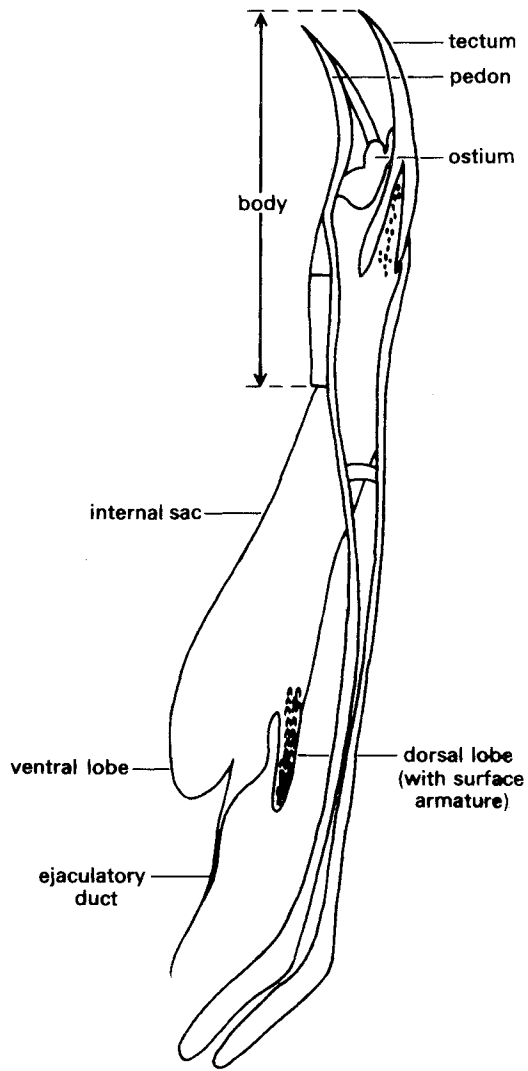


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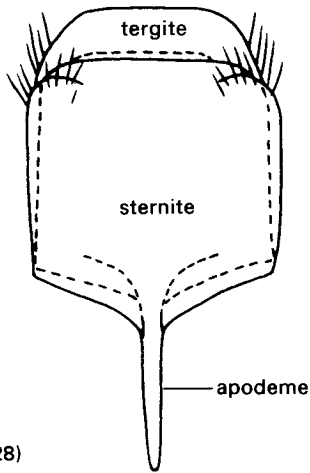


(27)

Figure 21 Features of hind tarsus; *Gynarchaeus ornatus*, male.

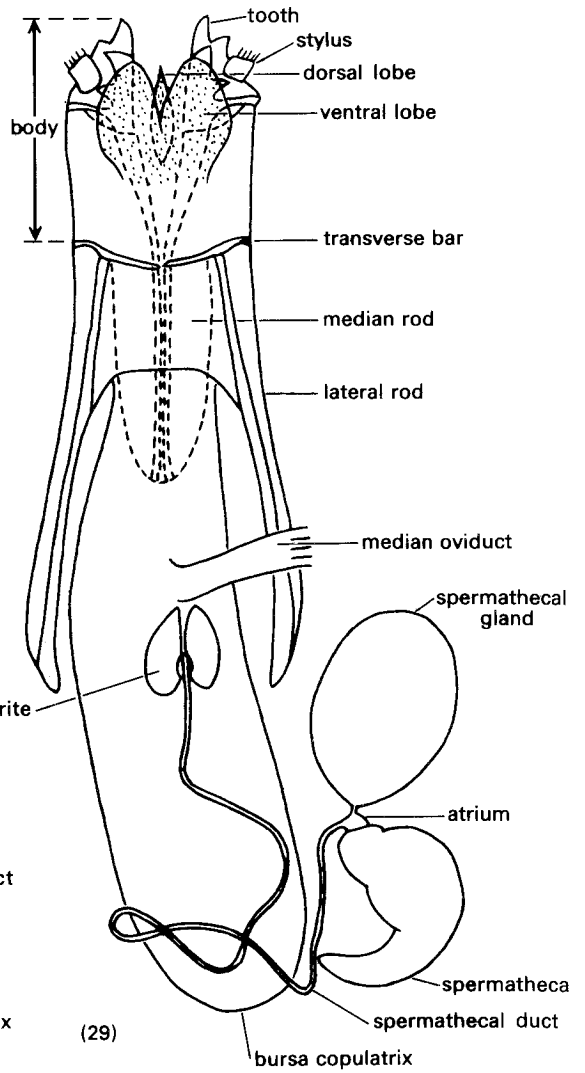
Figure 22 Terminology applied to curvature and angle of inclination of vestiture.

Figures 23–27 Features of the male genitalia and surrounding structures, *Sharpius imitarius*: (23) segment 8 and sternite 9; (24, 25) tegmen, dorsal and lateral aspect; (26, 27) aedeagus, dorsal and dorsolateral aspect.

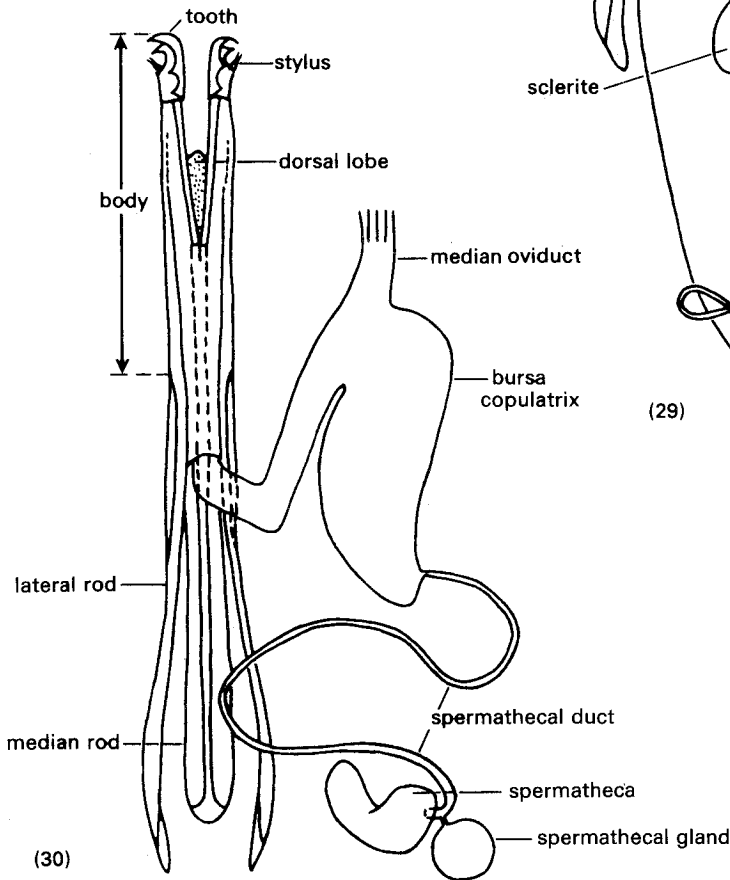


ostium internal,
between tergite
and sternite

(28)



(29)



(30)



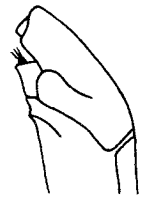
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(36)



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(38)

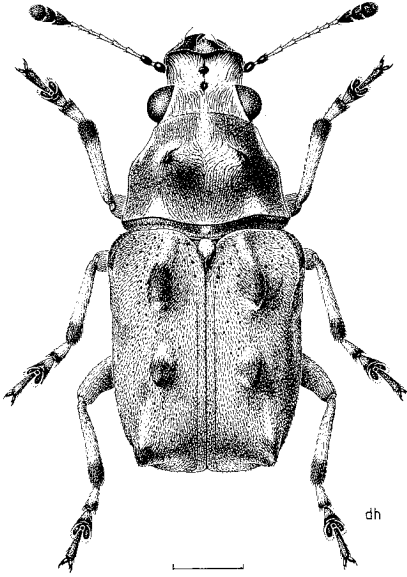
Figures 28–30 Features of the female genitalia and surrounding structures, ventral aspect: (28) segment 8, *Sharpius imitarius*; (29, 30) genitalia, *S. imitarius* and *Micranthribus atomus*.

Figures 31–38 Apex of left hemisternite, females: (31) *Gynarchaeus ornatus*; (32) *Lophus rudis*; (33) *Xenanthribus hirsutus*; (34) *Cerius triregius*; (35) *Lawsonia variabilis*; (36) *Micranthribus atomus*; (37) *Dysnocryptus inflatus*; (38) *Notochoragus thoracicus*.

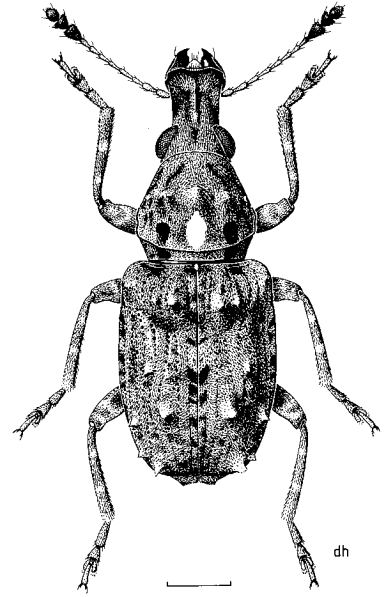


Figures 39–66 Habitus drawings of species representative of the genera of New Zealand Anthribidae; scale lines represent 1 mm (artist: D. W. Helmore).

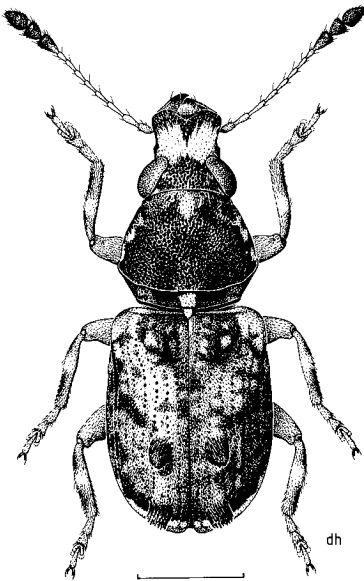
Figures 67–710 Structures of New Zealand's anthribid species with characters that are diagnostic or aid identification (semi-diagrammatic).



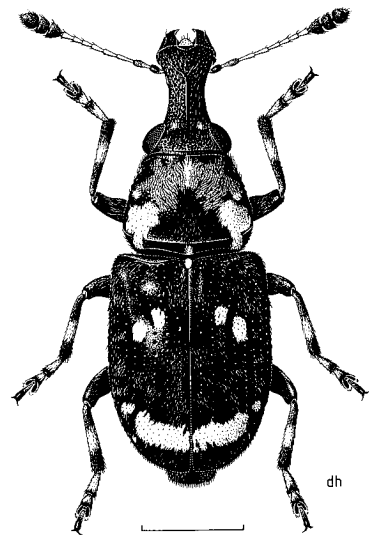
39. *Gynarchaeus ornatus*, ♀



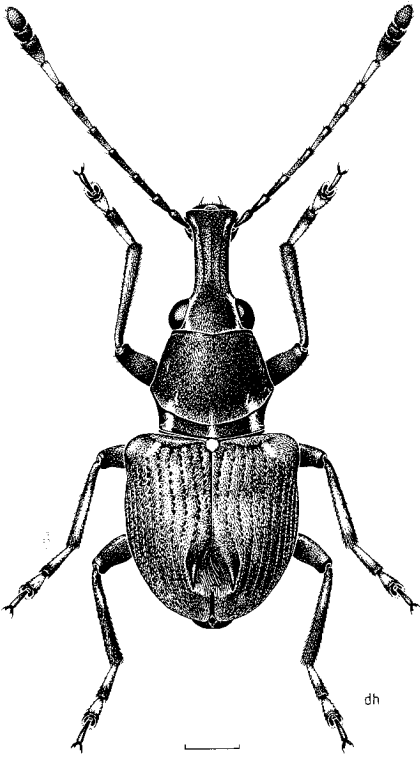
40. *Lophus rudis*, ♂



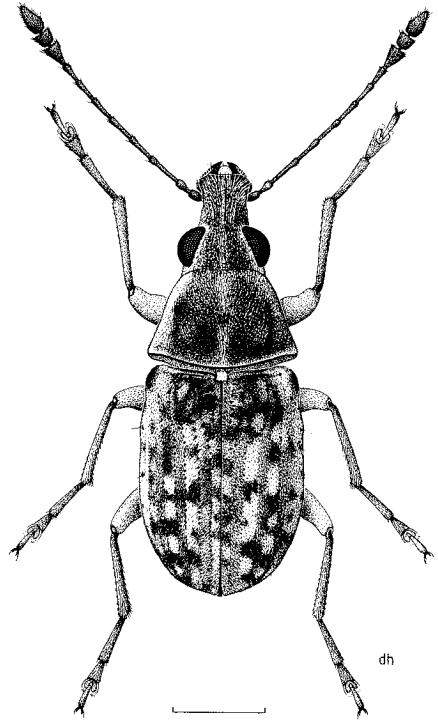
41. *Pleosporius bullatus*, ♂



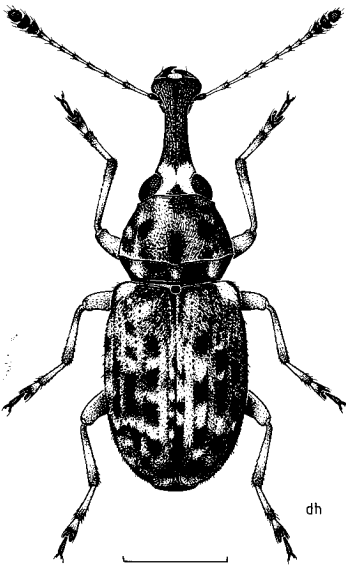
42. *Sharpius venustus*, ♀



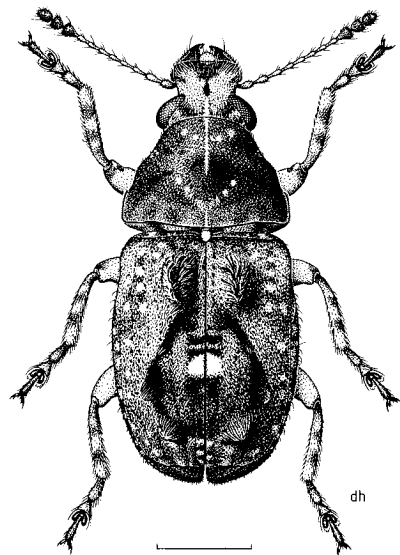
43. *Hoplorhaphus spinifer*, ♂



45. *Cacephatus huttoni*, ♂



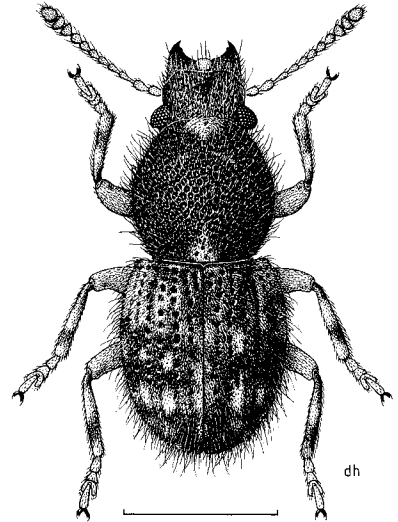
44. *Helmoreus sharpi*, ♀



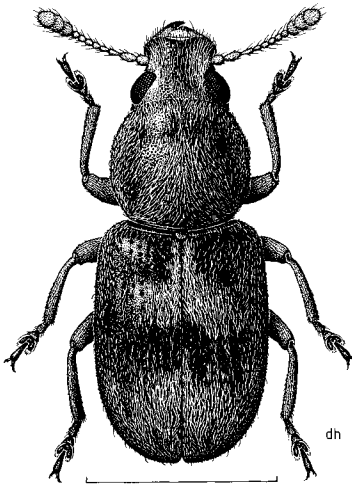
46. *Garyus altus*, ♀



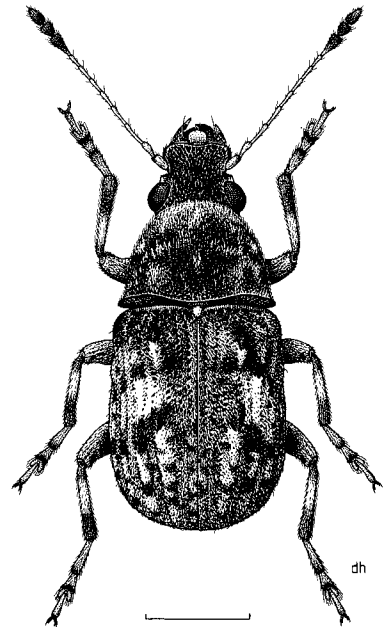
47. *Xenanthribus hirsutus*, ♂



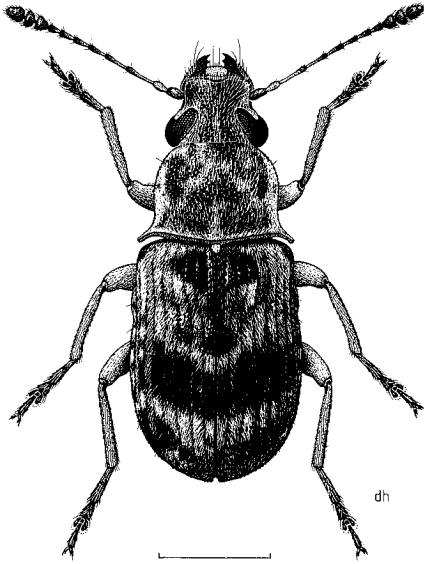
48. *Callobius littoralis*, ♂



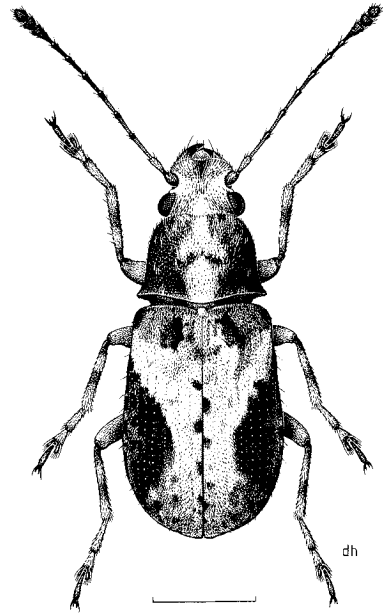
49. *Lichenobius littoralis*, ♀



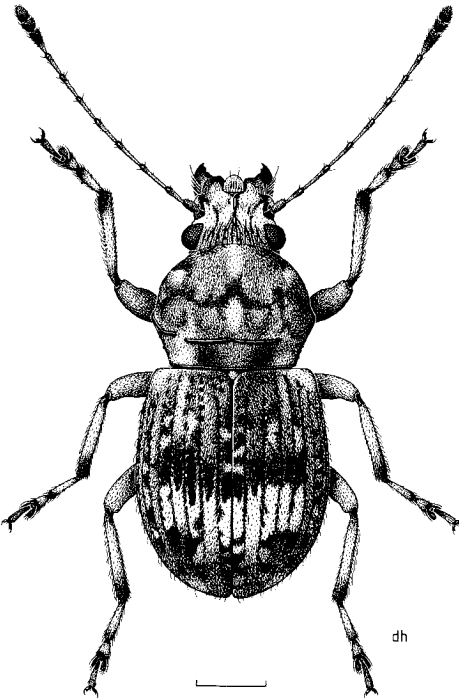
50. *Eugonissus conulus*, ? sex



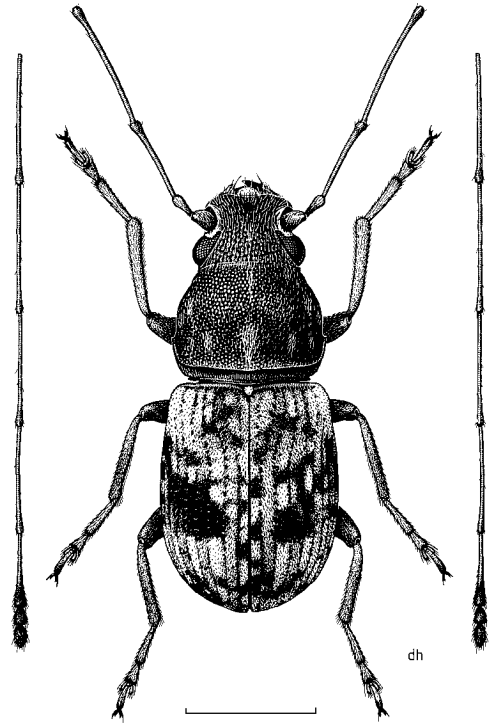
51. *Etnalis spinicollis*, ♀



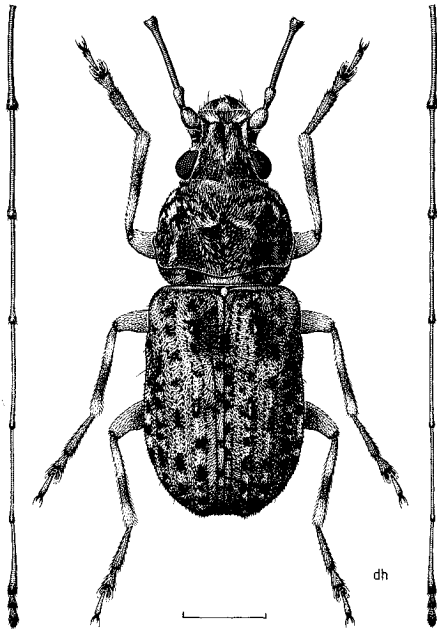
52. *Isanthribus proximus*, ♀



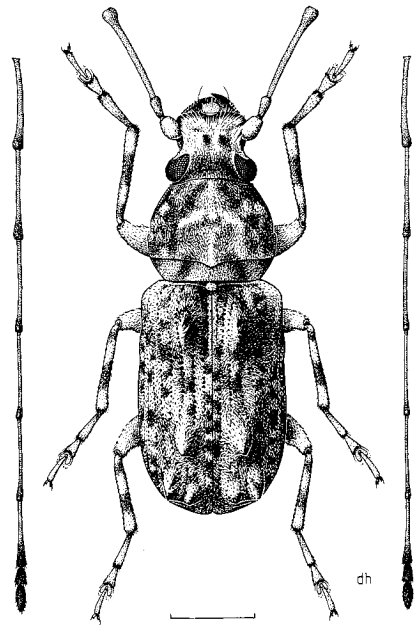
53. *Tribasileus noctivagus*, ♀



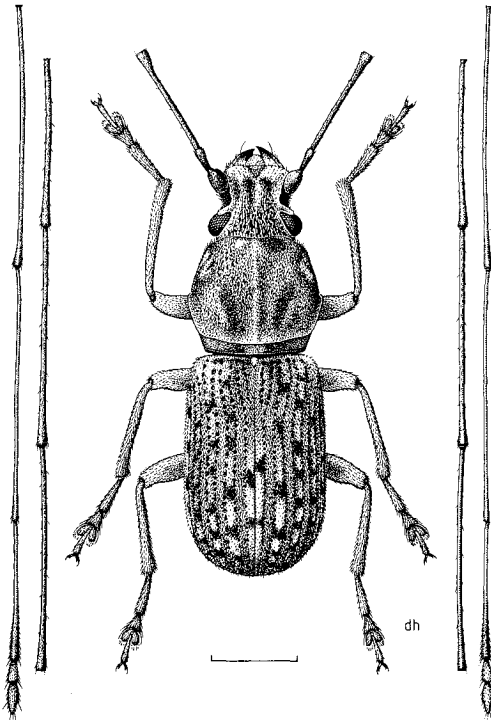
54. *Cerius triregius*, ♂



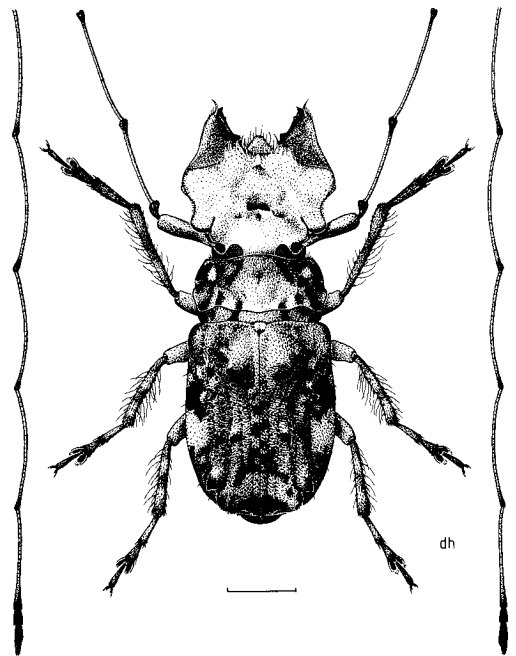
55. *Androporus discedens*, ♂



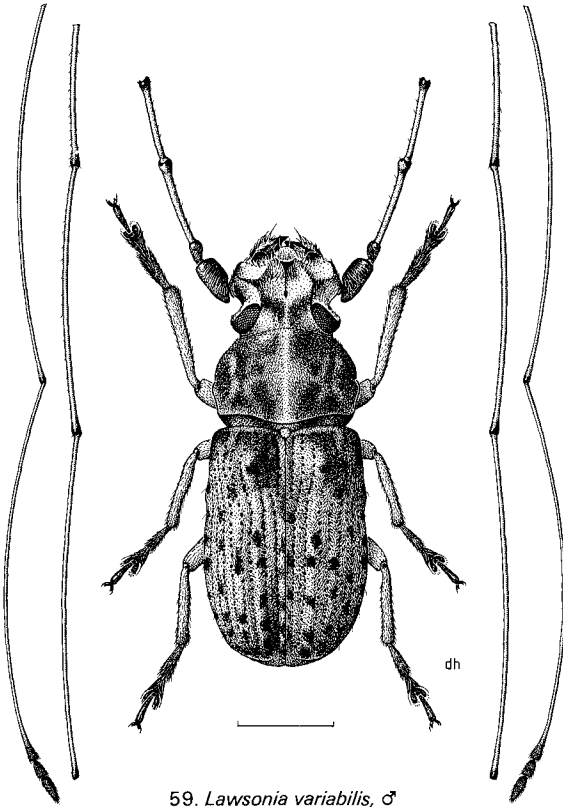
57. *Phymatus phymatodes*, ♂



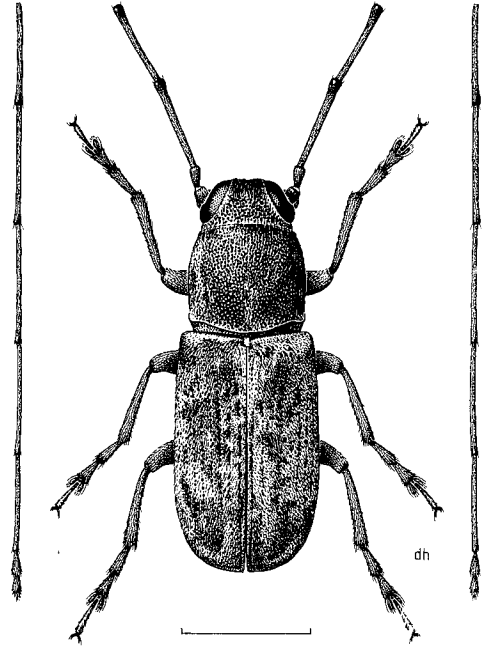
56. *Arecopais spectabilis*, ♂



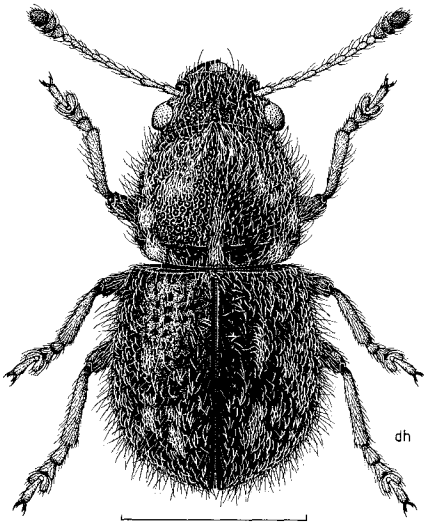
58. *Hoherius meinertzhageni*, ♂



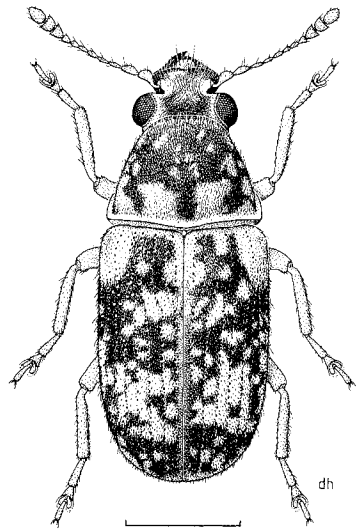
59. *Lawsonia variabilis*, ♂



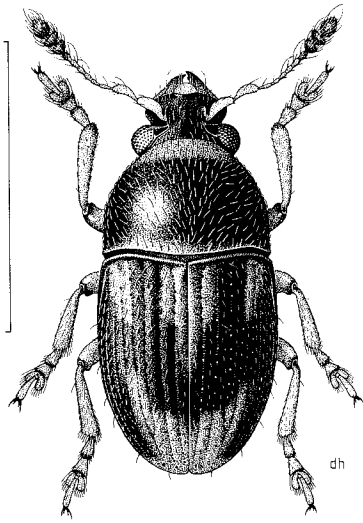
60. *Euciodes suturalis*, ♂



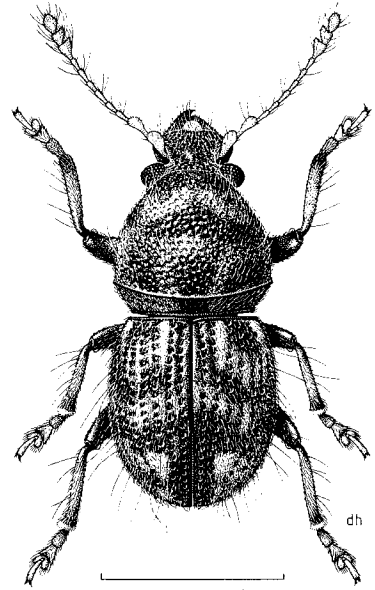
61. *Dasyanthribus purpureus*, ♀



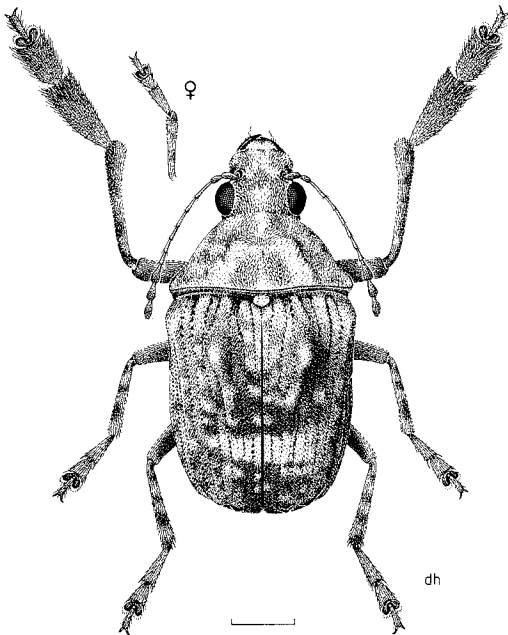
62. *Liromus pardalis*, ♀



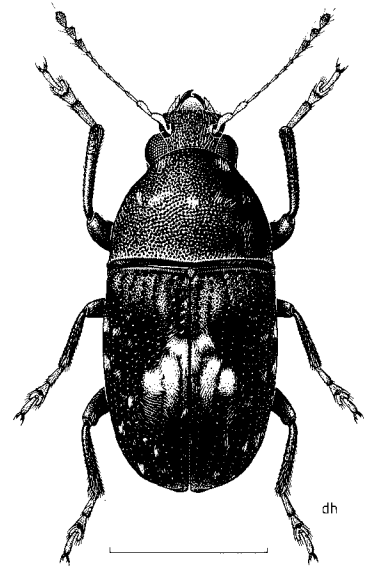
63. *Micranthribus atomus*, ♂



64. *Dysnocryptus pallidus*, ♂

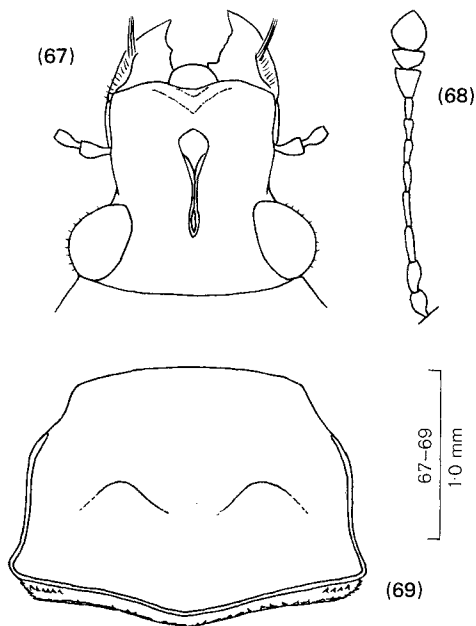


65. *Araecerus palmaris*, ♂, and part of front leg of ♀

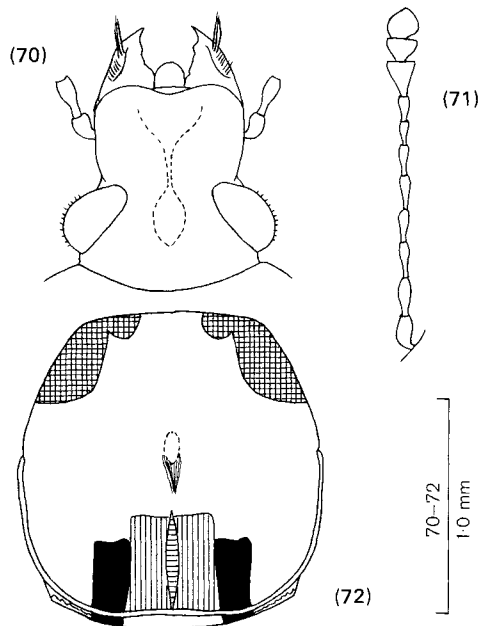


66. *Notochoragus crassus*, ♂

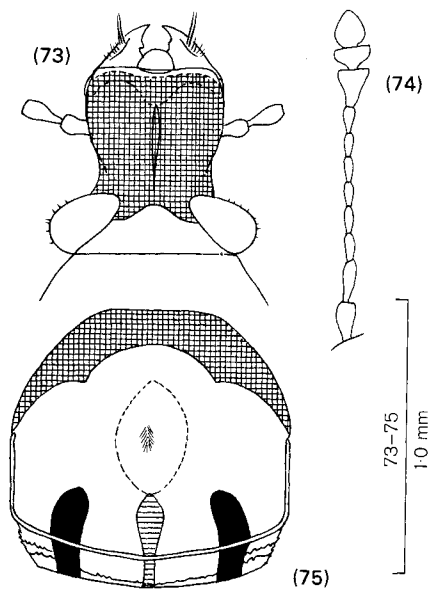
Figures 67-276 Head, left antenna, and pronotum, dorsal aspect; supplementary figures as individually labelled.



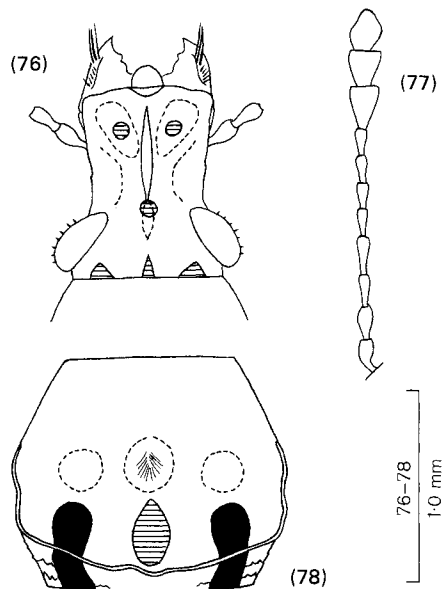
67-69. *Gynarchaeus ornatus*, female



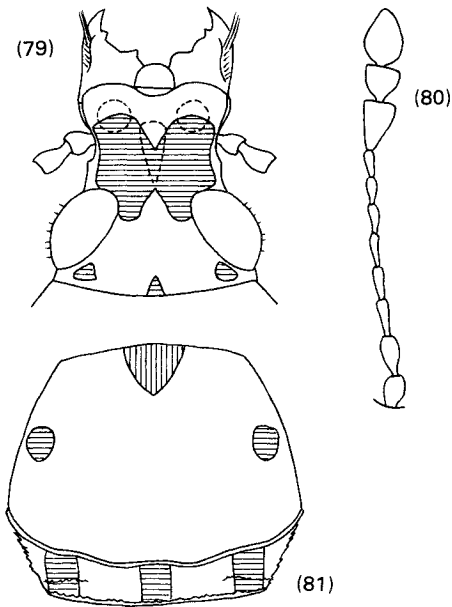
70-72. *Lophus cristatellus*, male



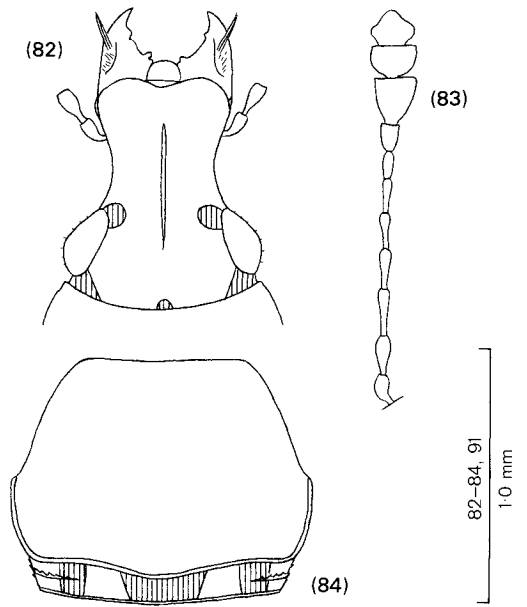
73-75. *Lophus lewisi*, male



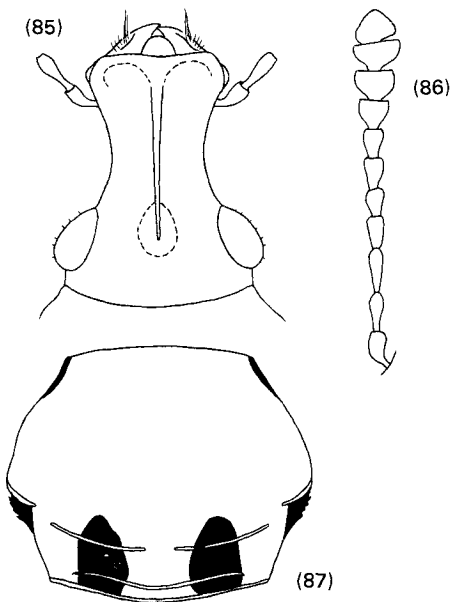
76-78. *Lophus rudis*, male



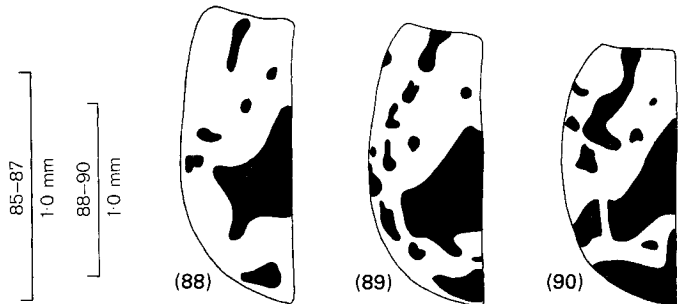
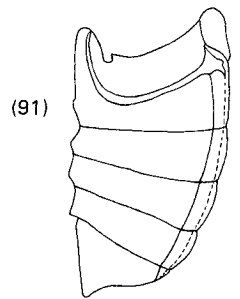
79-81. *Pleosporius bullatus*, male

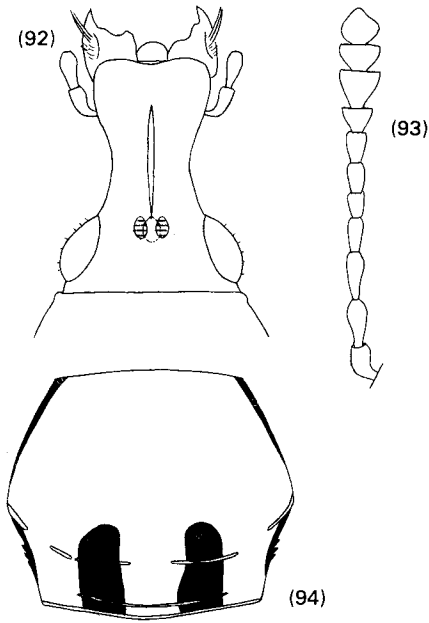


82-84. *Sharpius brouni*, female

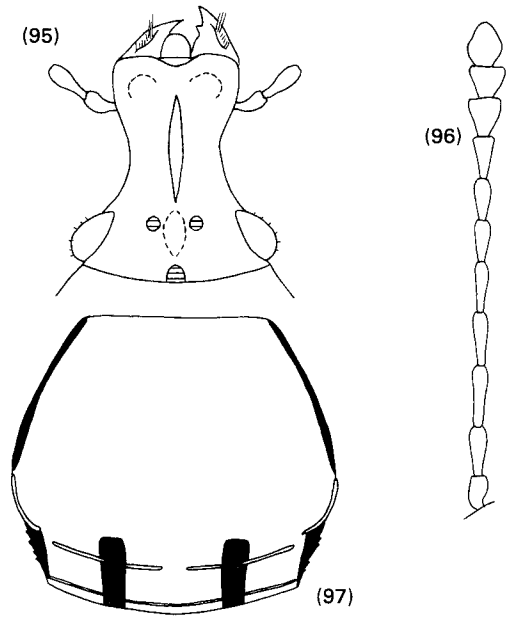


85-91. *Sharpius chathamensis*, male (88-90, left elytra, Chatham I., Pitt I., and South East I.; 91, abdomen, left lateral aspect)



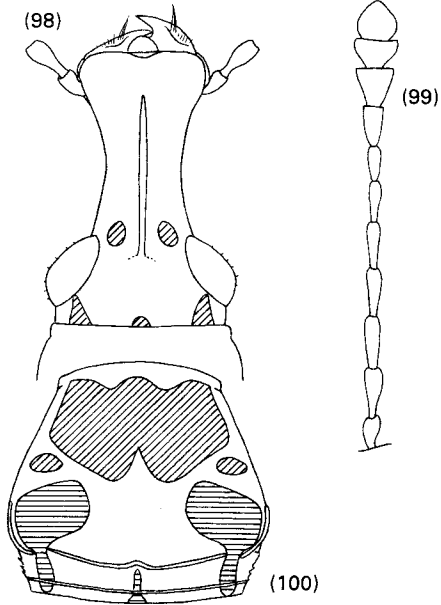


92-94. *Sharpius imitarius*, male

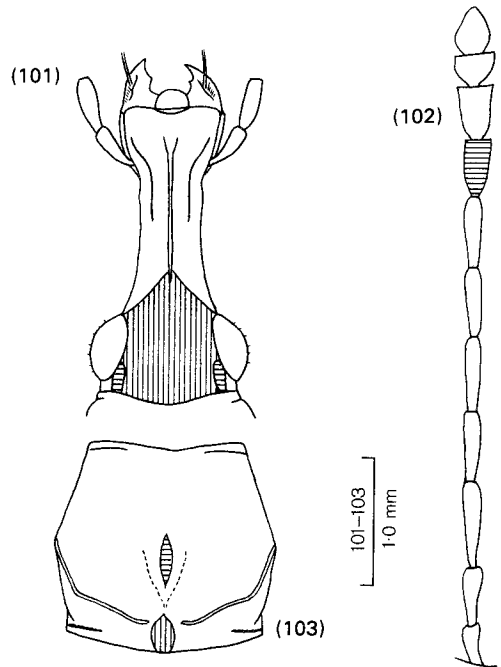


95-97. *Sharpius sandageri*, male

92-100
1.0 mm

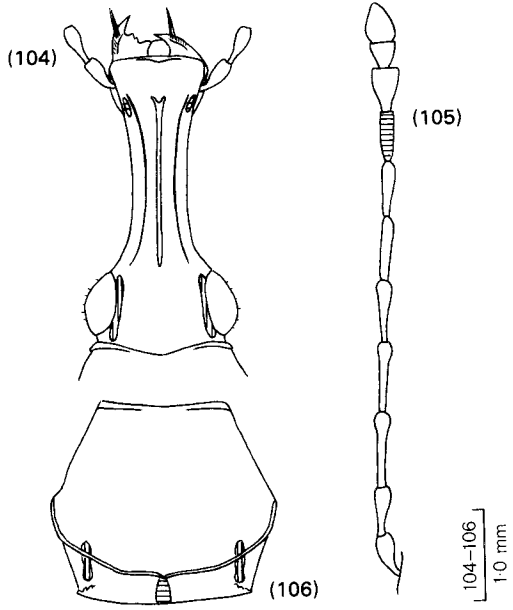


98-100. *Sharpius venustus*, male

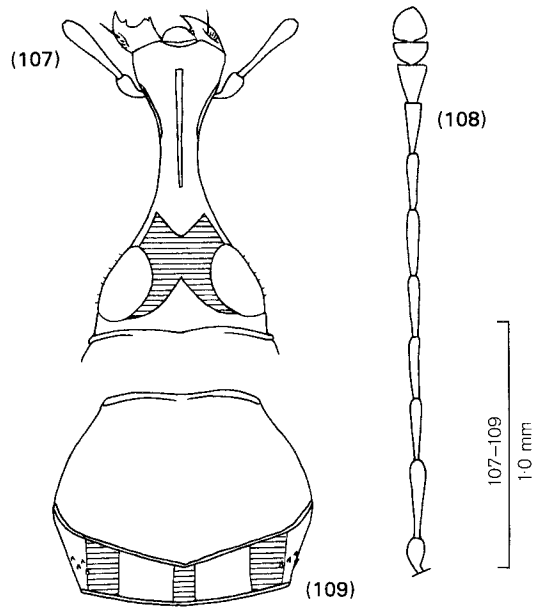


101-103. *Hoplorhaphus nodifer*, male

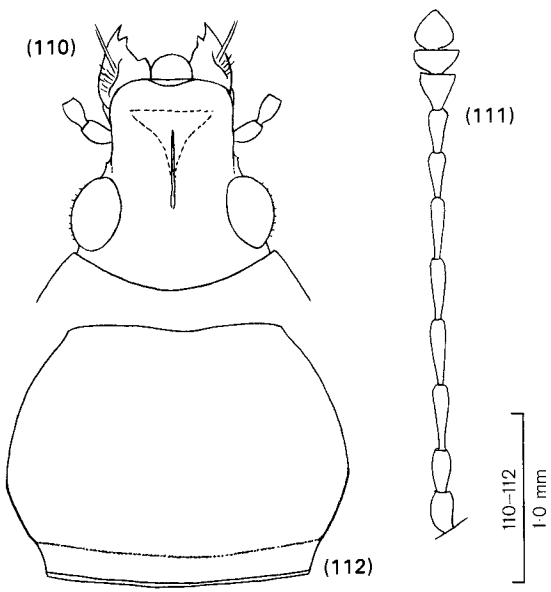
101-103
1.0 mm



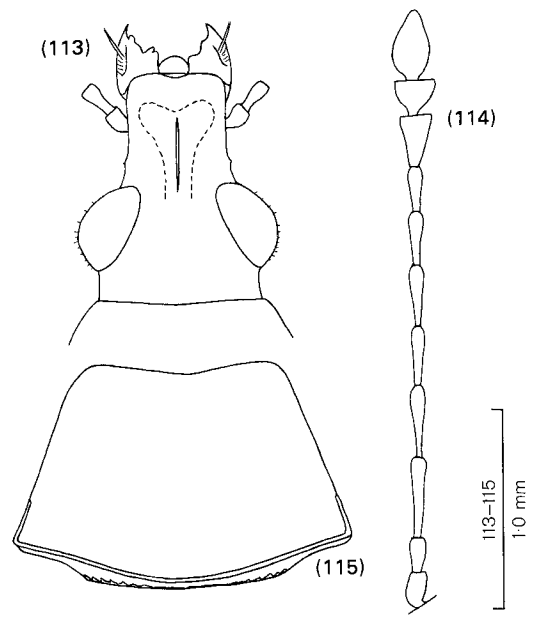
104-106. *Hoplorhaphus spinifer*, male



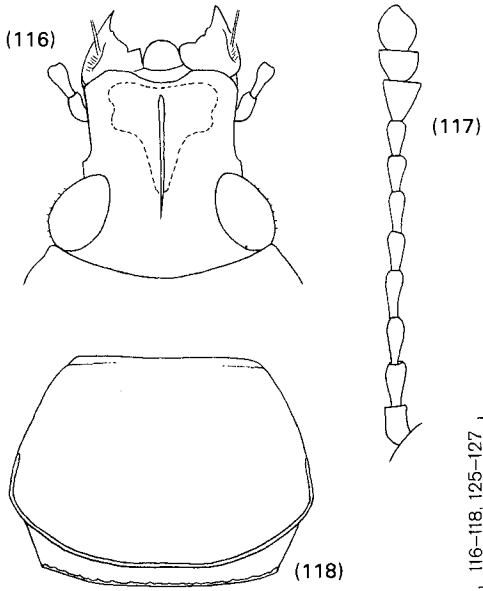
107-109. *Helmoreus sharpi*, male



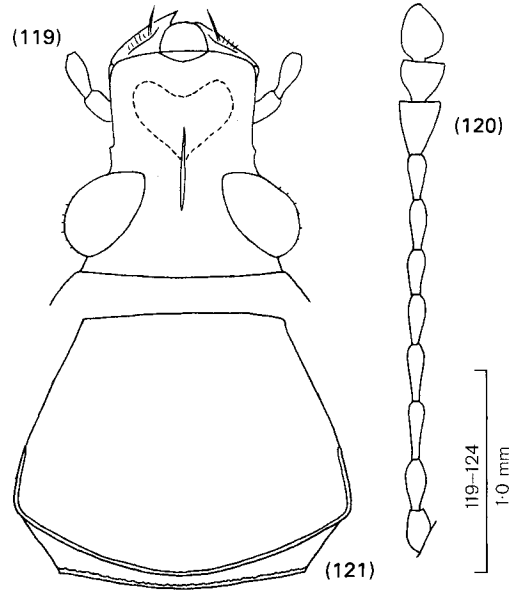
110-112. *Cacephatus aucklandicus*, female



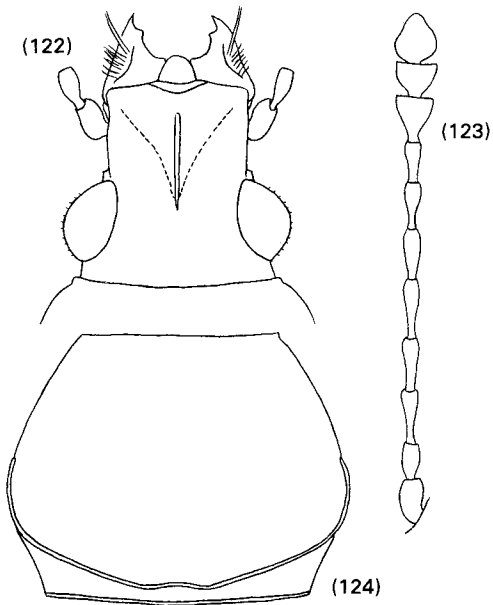
113-115. *Cacephatus huttoni*, male



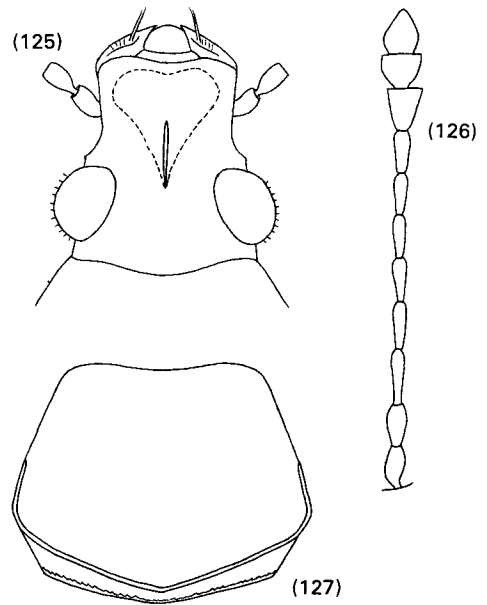
116-118. *Cacephatus incertus*, male



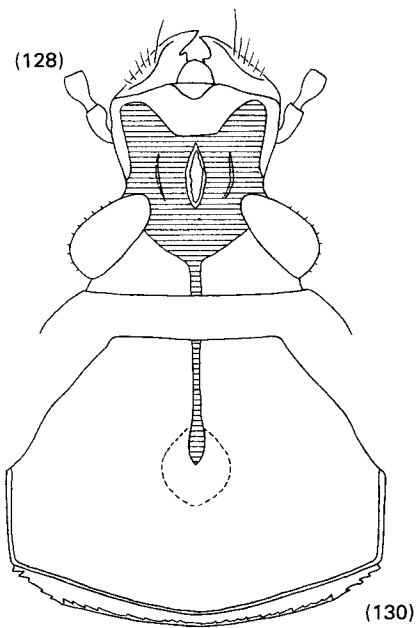
119-121. *Cacephatus inornatus*, male



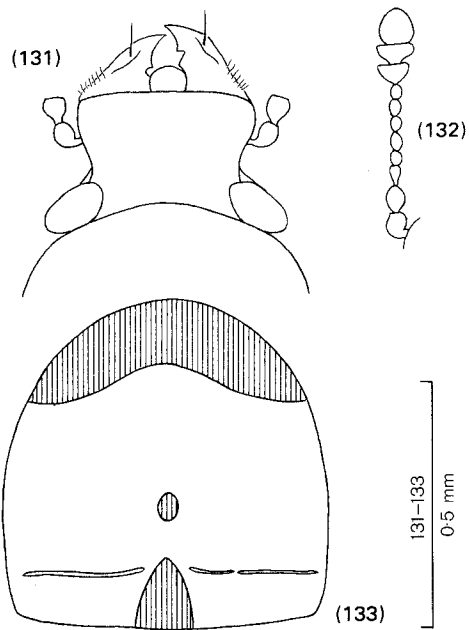
122-124. *Cacephatus propinquus*, female



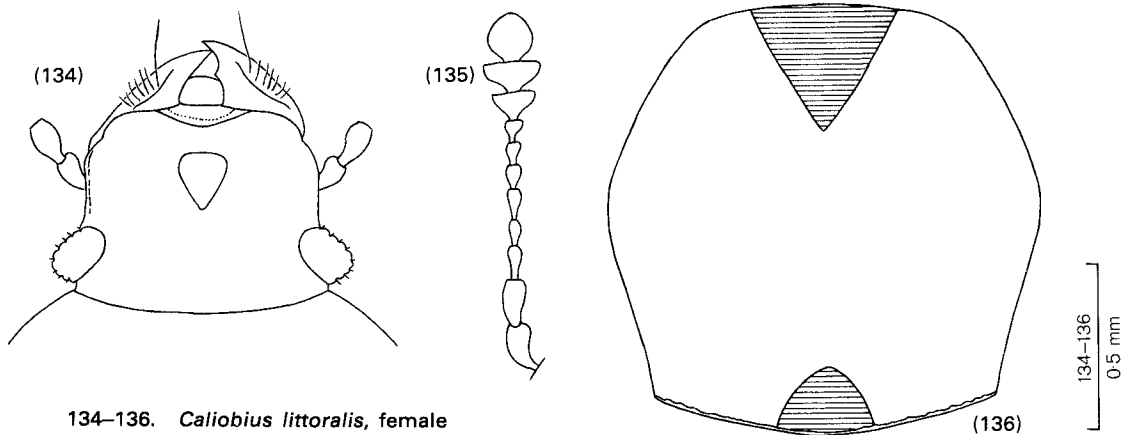
125-127. *Cacephatus vates*, male



128-130. *Garyus altus*, male



131-133. *Xenanthribus hirsutus*, female



134-136. *Calibius littoralis*, female

Colour codes

(relating to figures on pages 201-213)



white or cream



orange



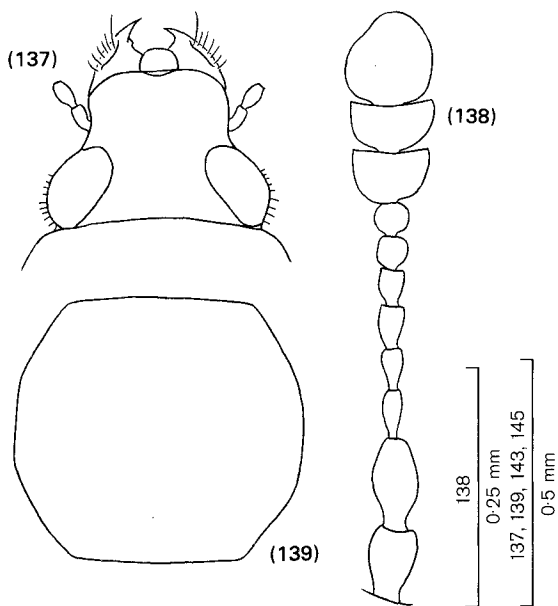
variegated orange/white/cream



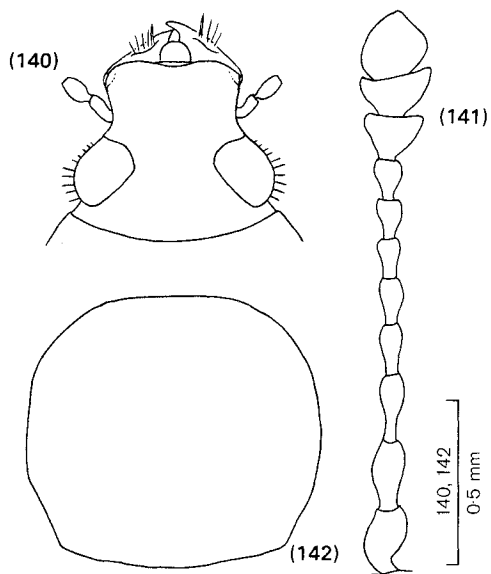
yellow or yellowish brown



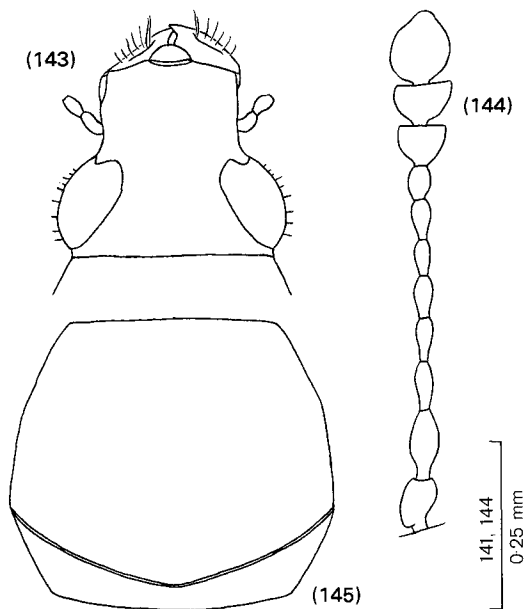
black or very dark brown



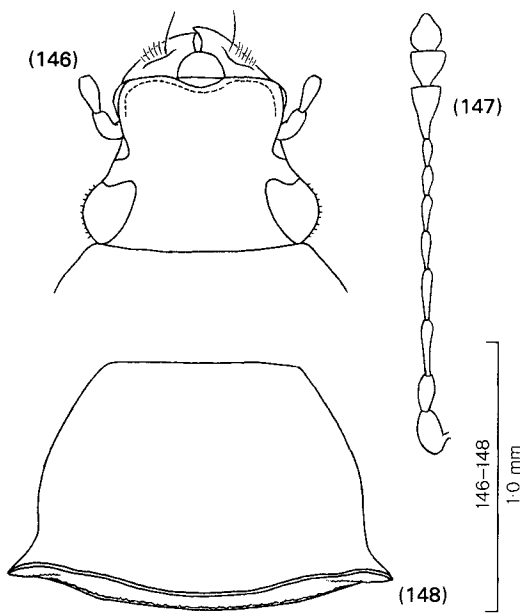
137-139. *Lichenobius littoralis*, female



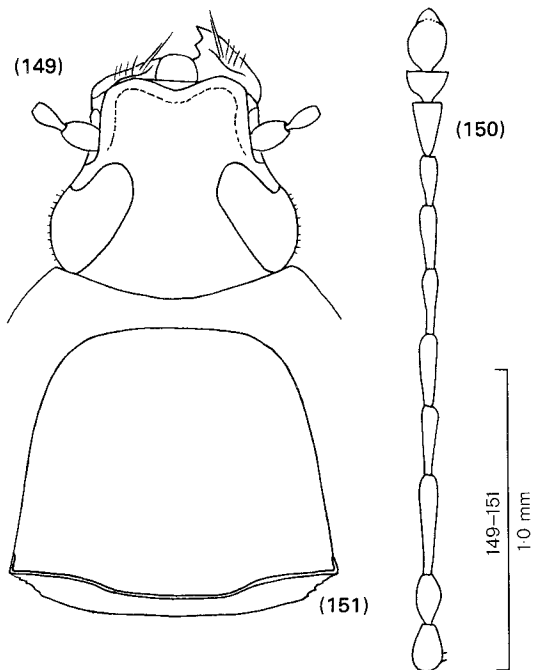
140-142. *Lichenobius maritimus*, female



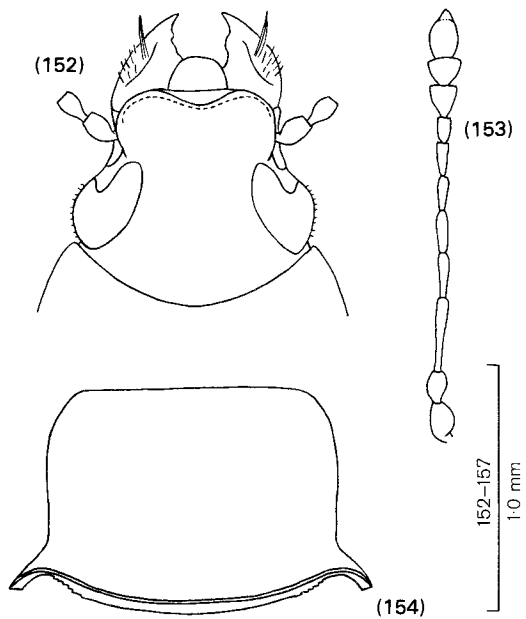
143-145. *Lichenobius silvicola*, female



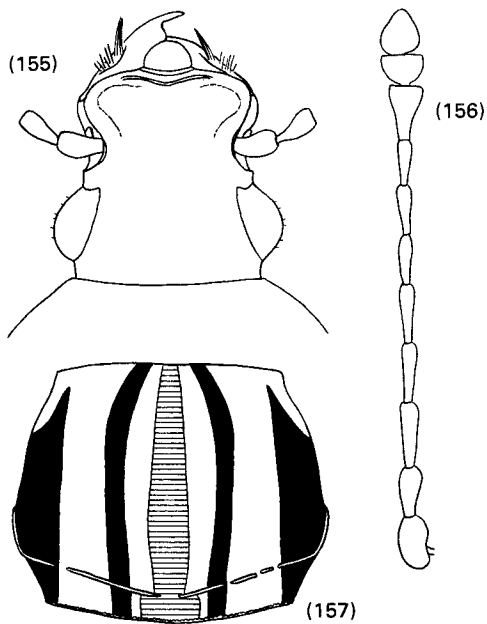
146-148. *Eugonissus conulus*, female



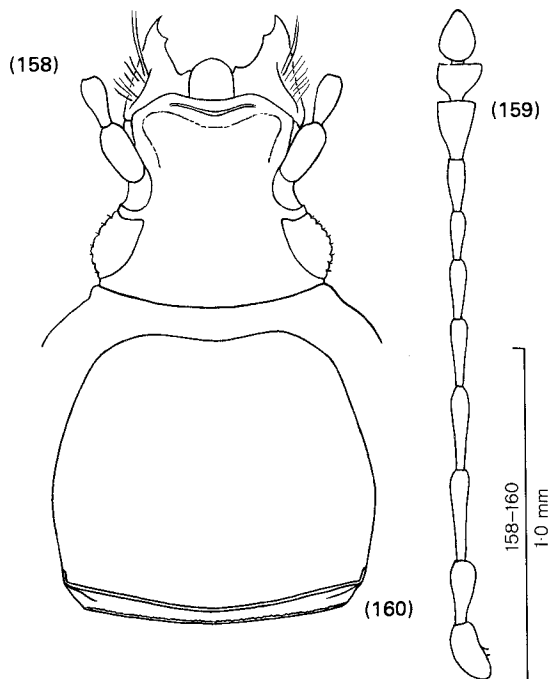
149-151. *Etnalis obtusus*, male



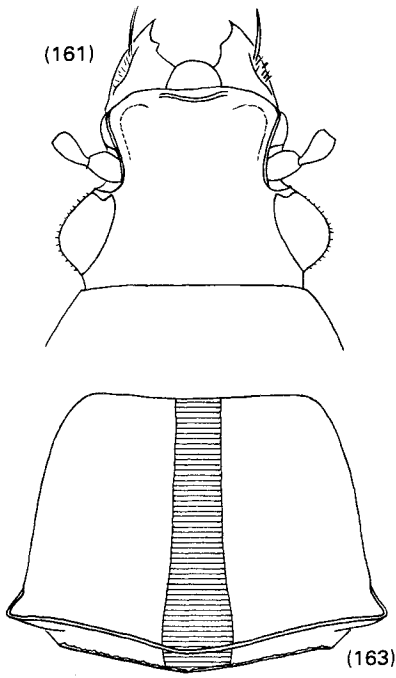
152-154. *Etnalis spinicollis*, female



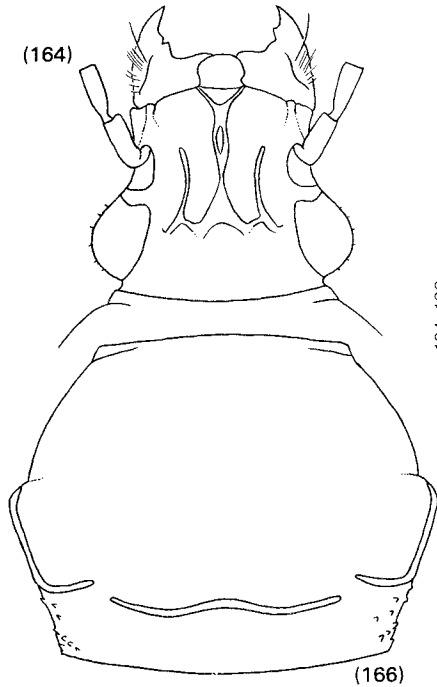
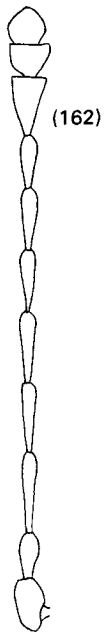
155-157. *Isanthribus dracophylli*, female



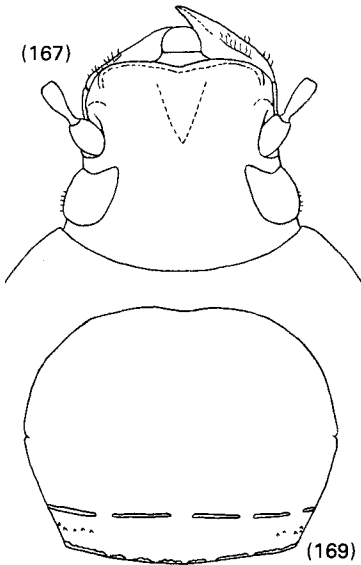
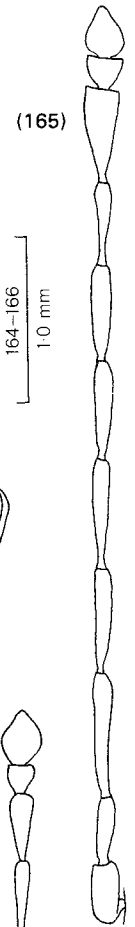
158-160. *Isanthribus phormii*, female



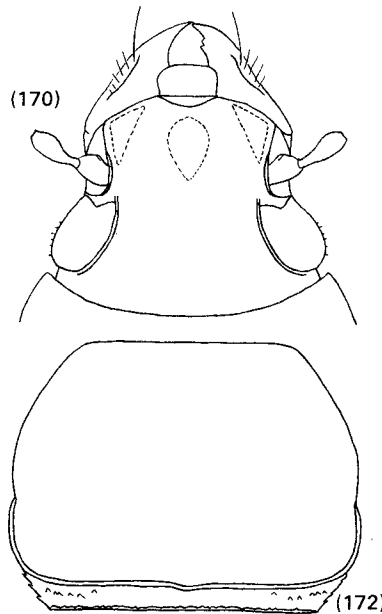
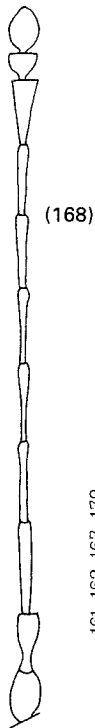
161-163. *Isanthribus proximus*, female



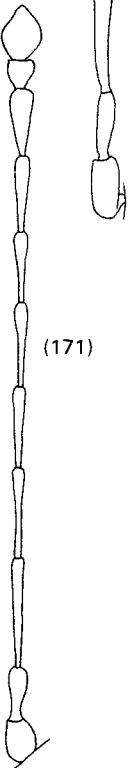
164-166. *Tribasileus noctivagus*, male

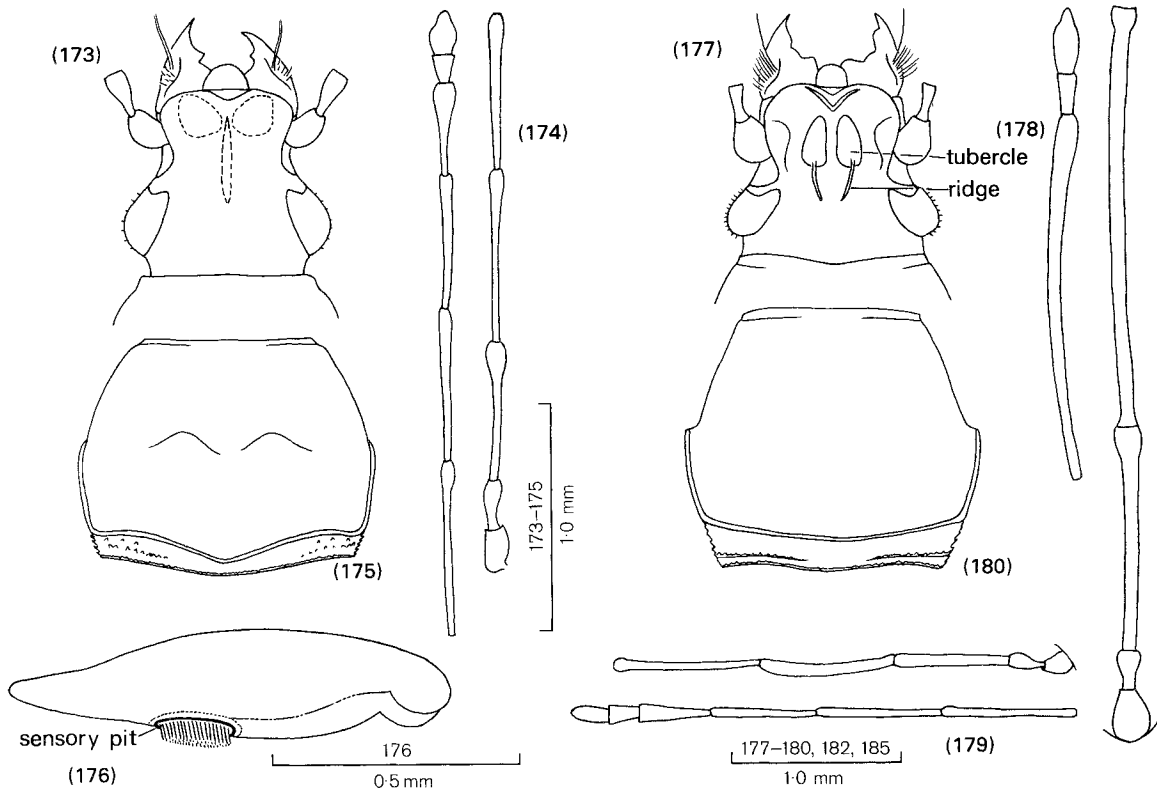


167-169. *Cerius otagensis*, female



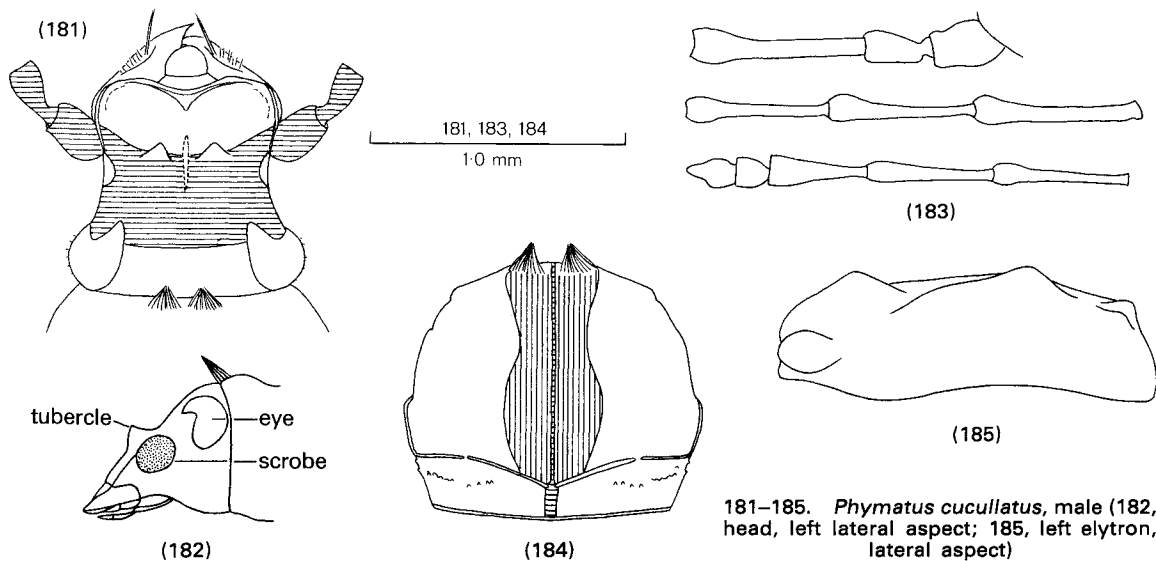
170-172. *Cerius triregius*, female



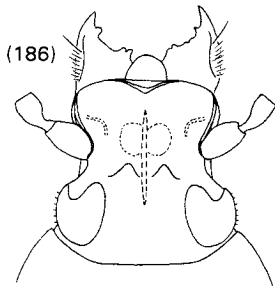


173-176. *Androporus discedens*, male
(176, left hind femur)

177-180. *Arecopais spectabilis*, male
(178, segments I-IV and IX-XI of left
antenna; 179, left antenna of female)



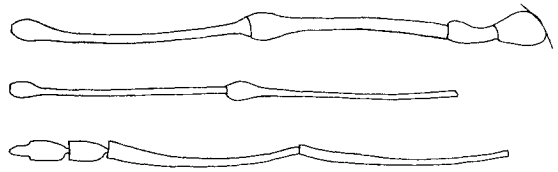
181-185. *Phymatus cucullatus*, male (182,
head, left lateral aspect; 185, left elytron,
lateral aspect)



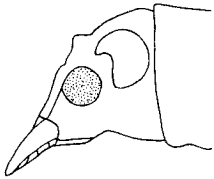
(186)

186, 188,
189, 192, 195
1.0 mm

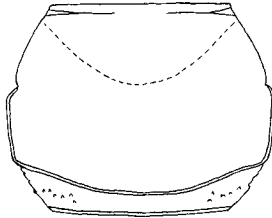
187, 190
1.0 mm



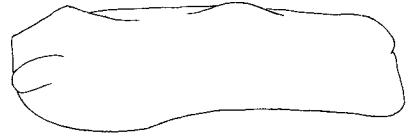
(188)



(187)

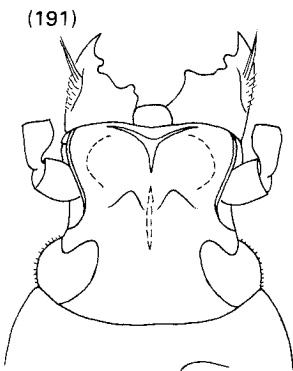


(189)



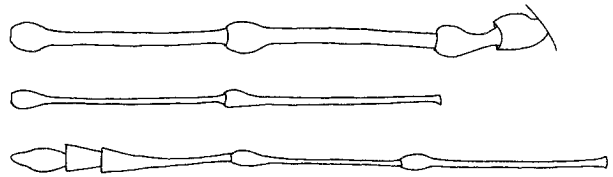
(190)

186–190. *Phymatus hetaera*, male (187, head, left lateral aspect; 190, left elytron, lateral aspect)

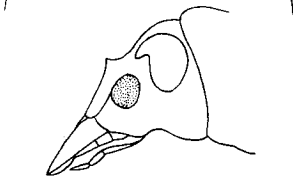


(191)

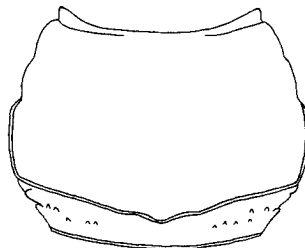
191, 193, 194
1.0 mm



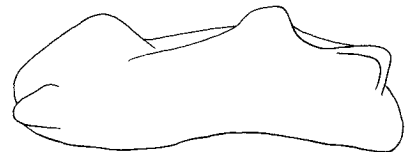
(193)



(192)

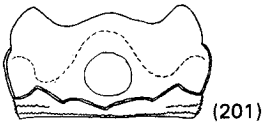
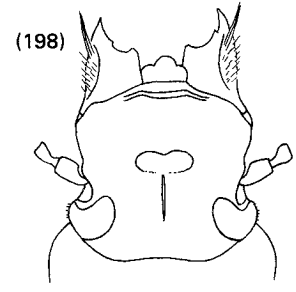
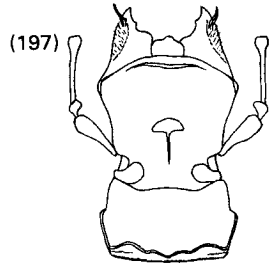
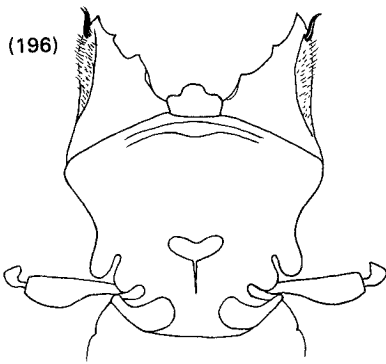


(194)

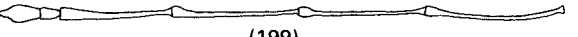
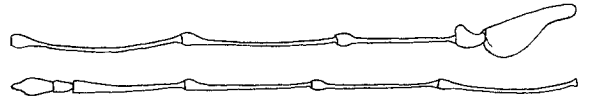


(195)

191–195. *Phymatus phymatodes*, male (192, head, left lateral aspect; 195, left elytron, lateral aspect)



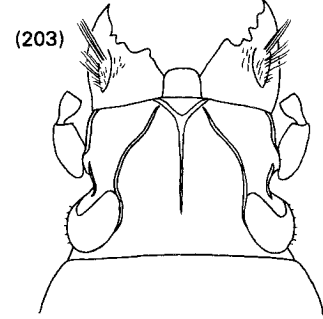
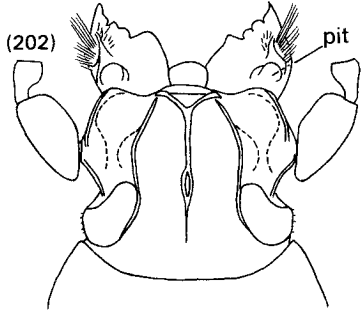
196-201
1.0 mm



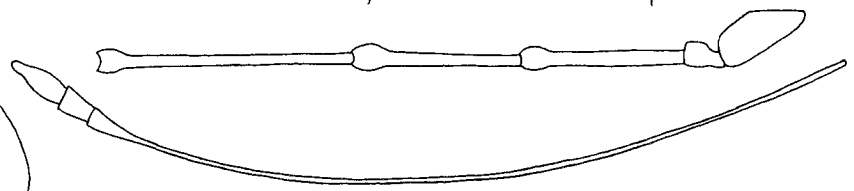
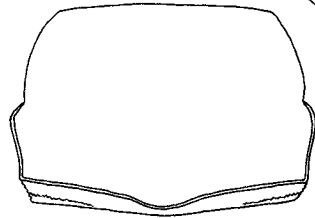
(199)

(200)

196-201. *Hoherius meinertzhageni*, large male (197, head, small male; 198, head, female; 200, left antenna, female)



202-206
1.0 mm

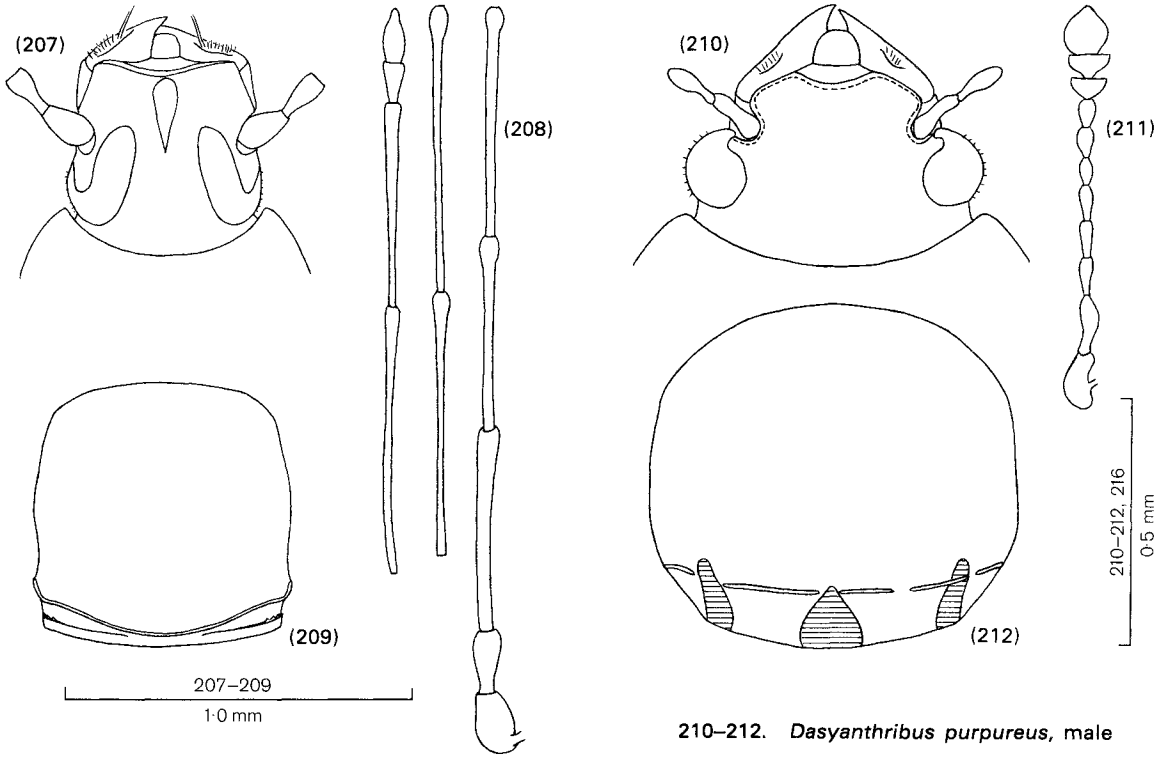


(204)

(205)

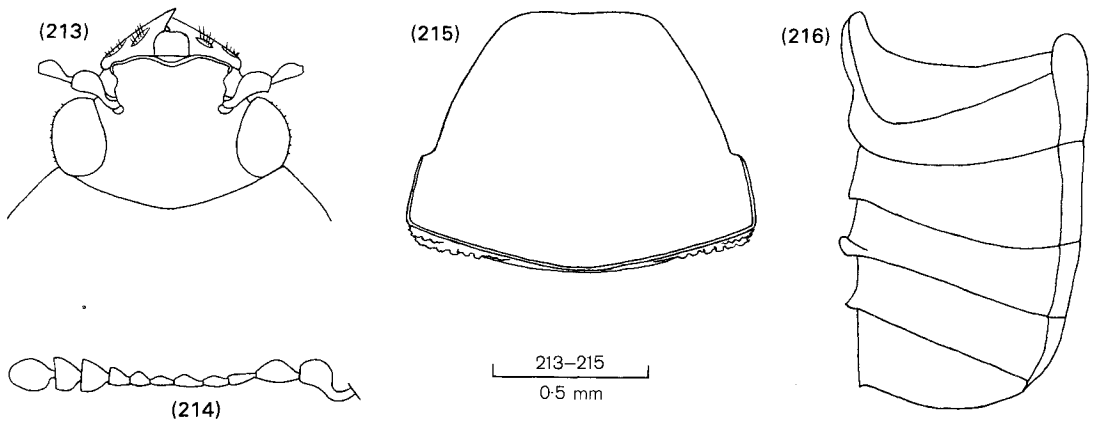
(206)

202-206. *Lawsonia variabilis*, male (203, head, female; 205, left antenna, female); only basal and apical portions of antennae are shown

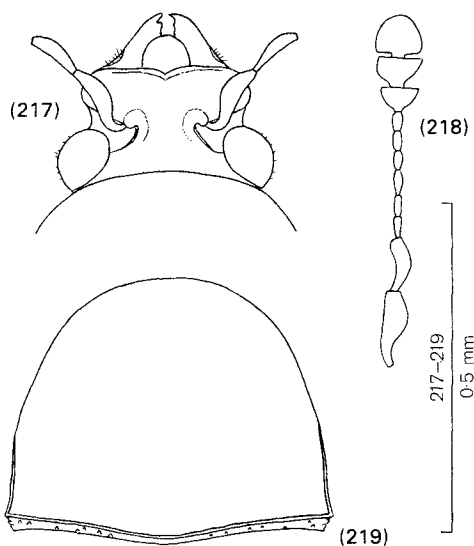


207-209. *Euciodes suturalis*, male

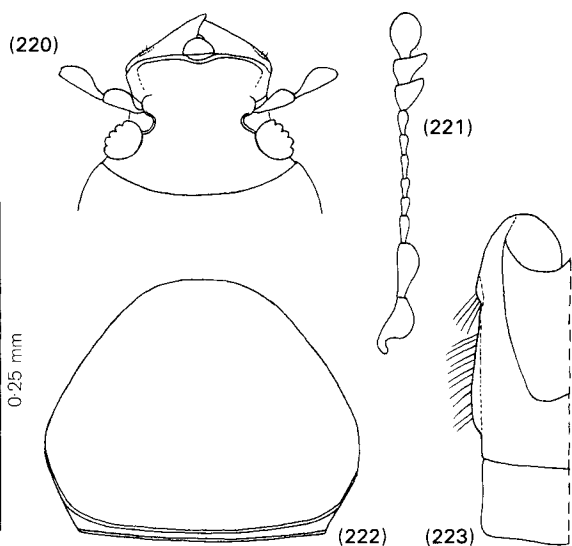
210-212. *Dasyanthribus purpureus*, male



213-216. *Liromus pardalis*, female (216, abdomen, male, left lateral aspect)

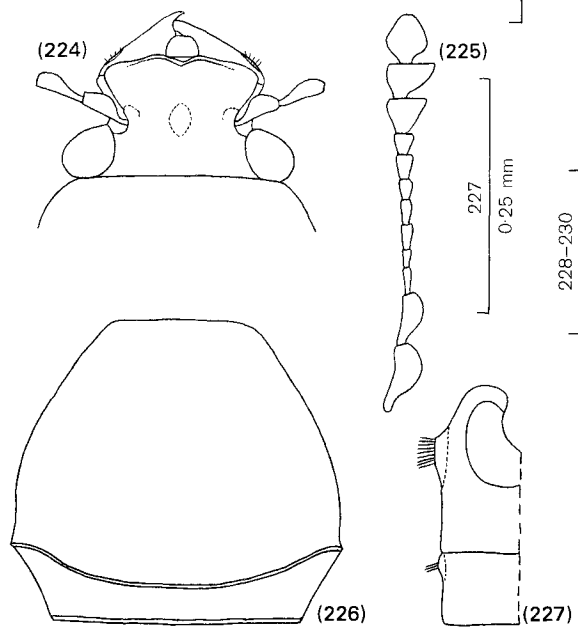


217-219. *Micranthribus atomus*, female

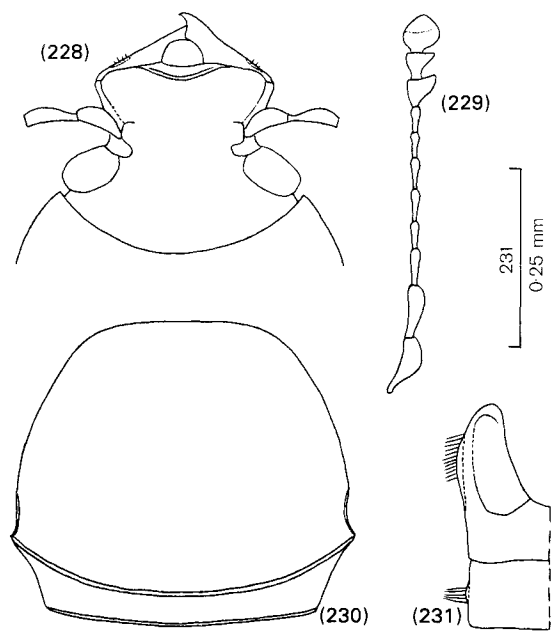


220-223. *Dysnocyrtus balthasar*, male
(223, abdominal ventrites I and II, lateral aspect)

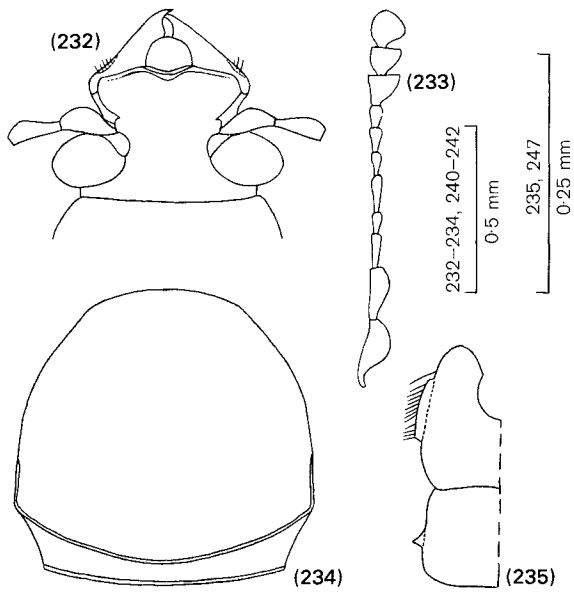
220-222, 224-226
0.5 mm



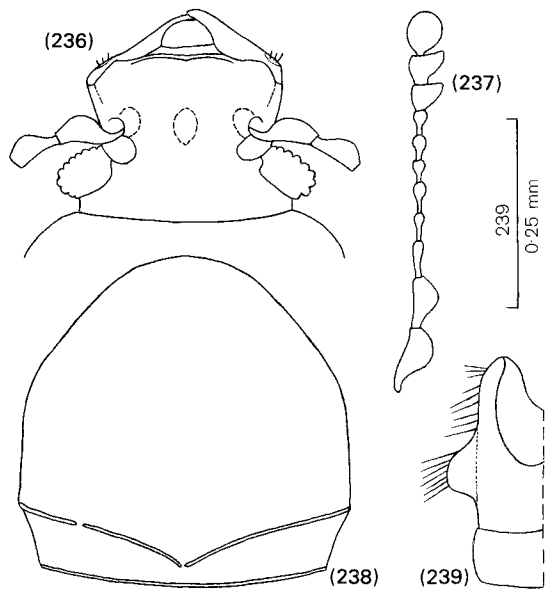
224-227. *Dysnocyrtus dignus*, male
(227, abdominal ventrites I and II, lateral aspect)



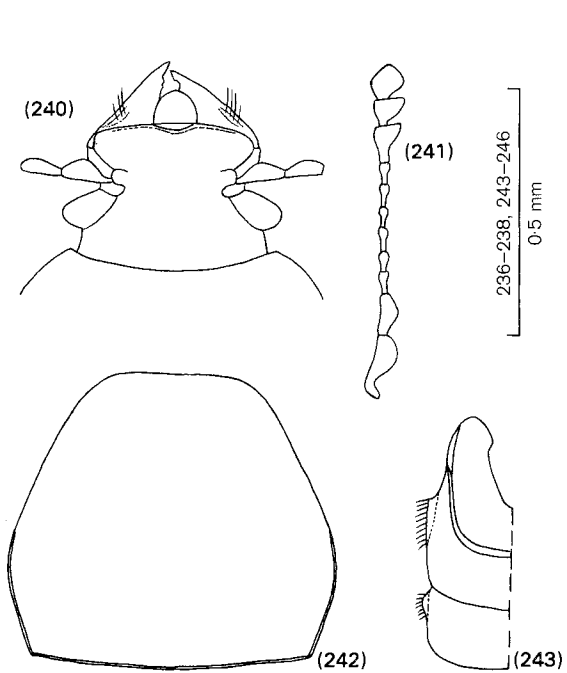
228-231. *Dysnocyrtus gaspar*, female
(231, abdominal ventrites I and II, lateral aspect)



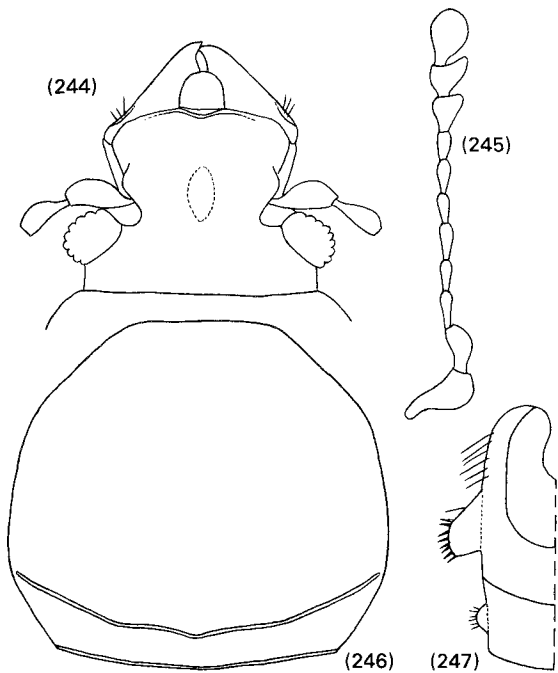
232-235. *Dynocryptus inflatus*, male
(235, abdominal ventrites I and II, lateral aspect)



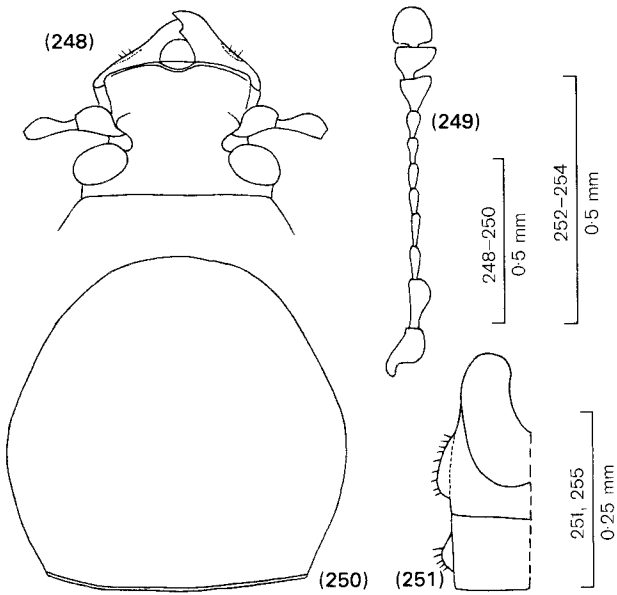
236-239. *Dynocryptus maculifer*, female
(239, abdominal ventrites I and II, male, lateral aspect)



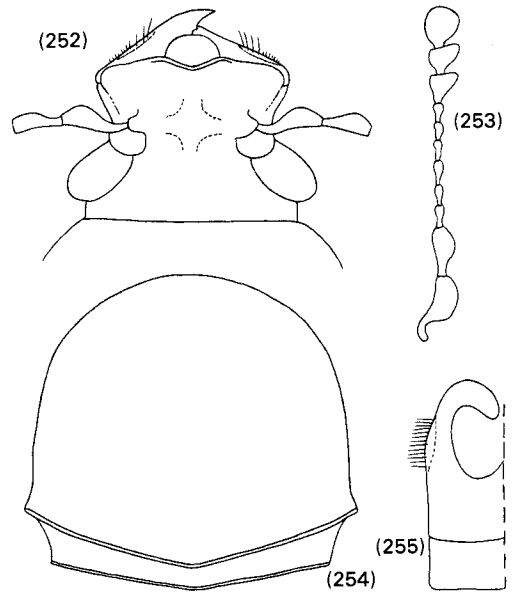
240-243. *Dynocryptus melchior*, male
(243, abdominal ventrites I and II, lateral aspect)



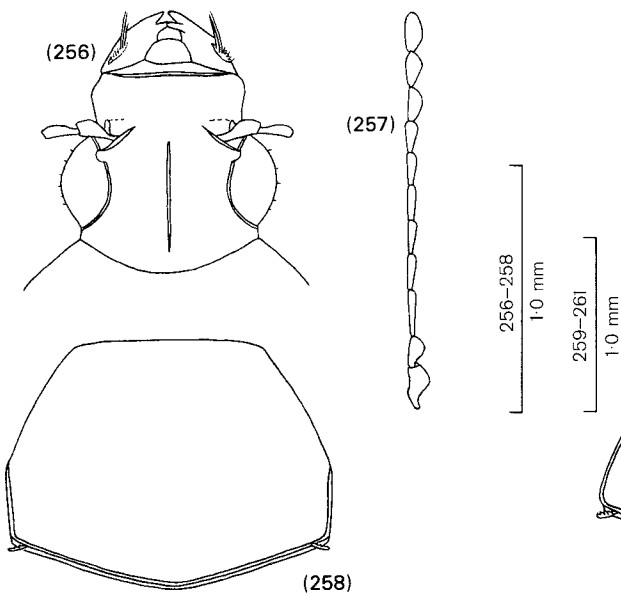
244-247. *Dynocryptus pallidus*, female
(247, abdominal ventrites I and II, male, lateral aspect)



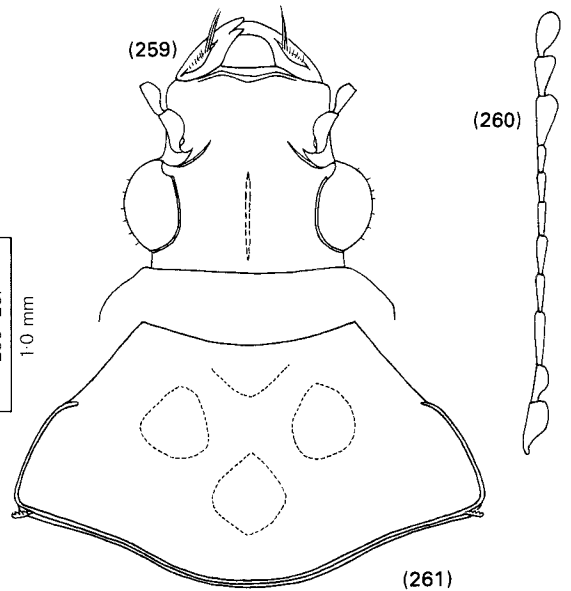
248–251. *Dysnocyptus pilicornis*, female
(251, abdominal ventrites I and II, male,
lateral aspect)



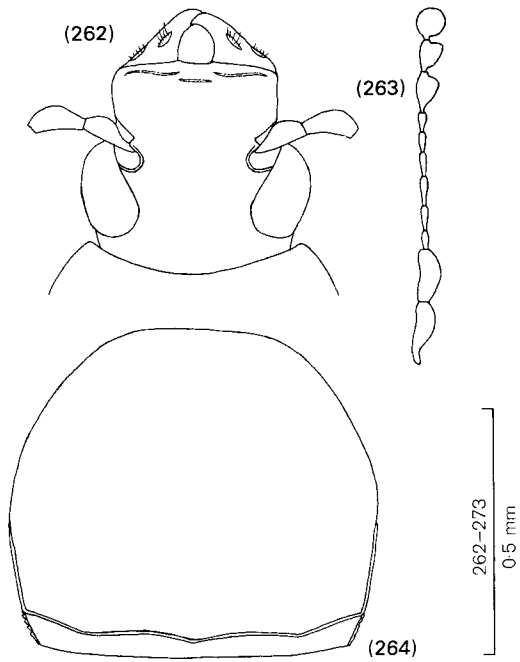
252–255. *Dysnocyptus rugosus*, female
(255, abdominal ventrites I and II, male,
lateral aspect)



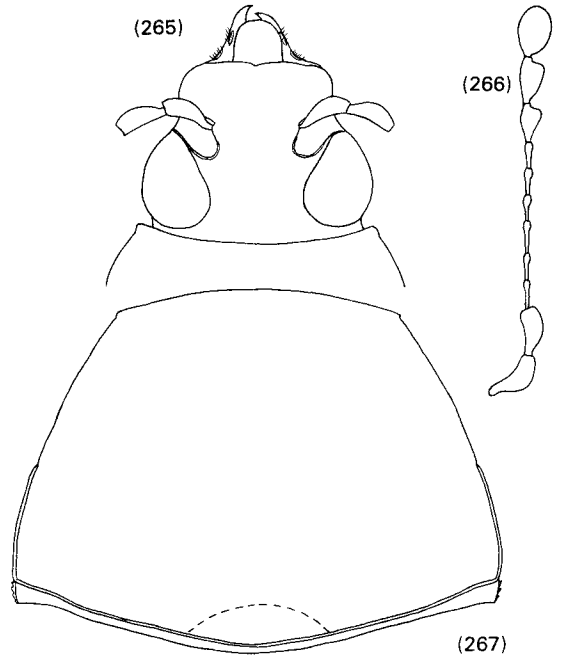
256–258. *Araecerus fasciculatus*, male



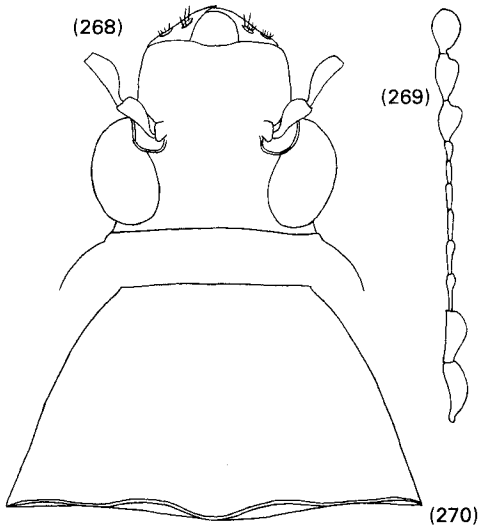
259–261. *Araecerus palmaris*, female



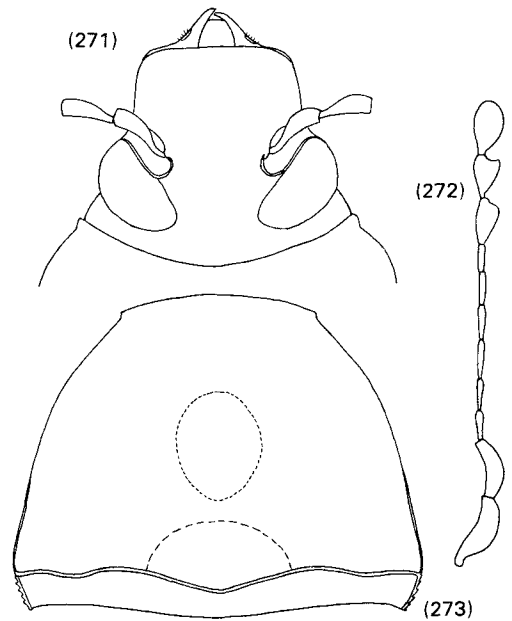
262-264. *Notochoragus chathamensis*, male



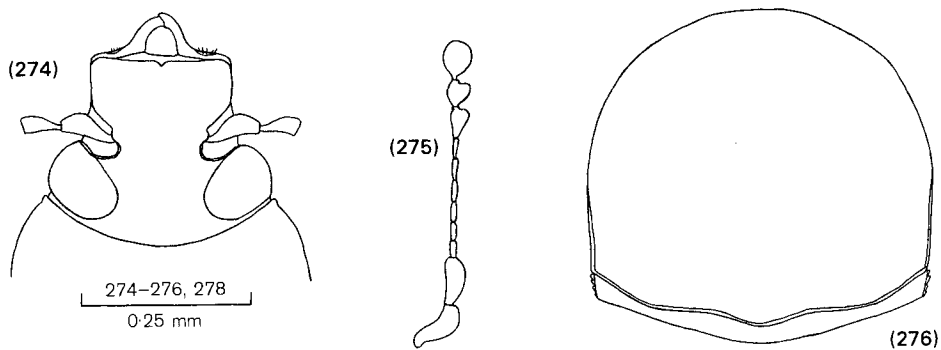
265-267. *Notochoragus crassus*, female



268-270. *Notochoragus fungicola*, male

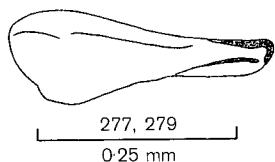


271-273. *Notochoragus nanus*, female

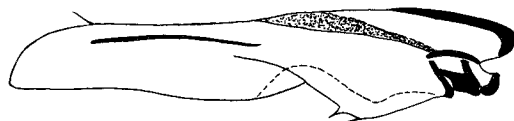


274–276. *Notochoragus thoracicus*, female

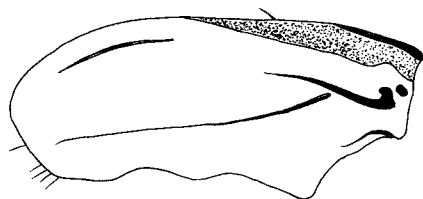
Figures 277–290 Left wing of vestigial-winged species. Wing/elytron ratios: 277, 0.20; 278, 0.45; 279, 0.25; 280, 0.43; 281, 0.46; 282, 0.46; 283, 0.26; 284, 0.97; 285, 0.20; 286, 0.84; 287, 1.03; 288, 0.25; 289, 0.35; 290, 0.92.



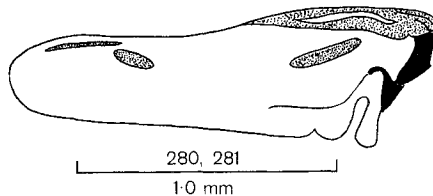
277. *Lophus cristatellus*, male



278. *Sharpius chathamensis*, male



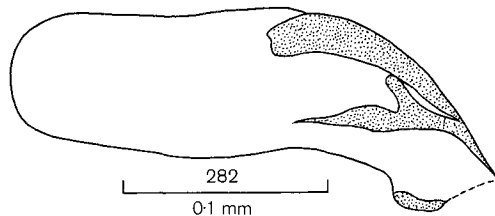
279. *Sharpius sandageri*, male



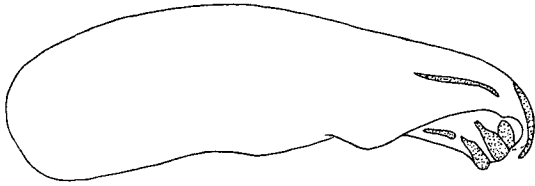
280. *Cacephatus aucklandicus*, female



281. *Cacephatus propinquus*, female

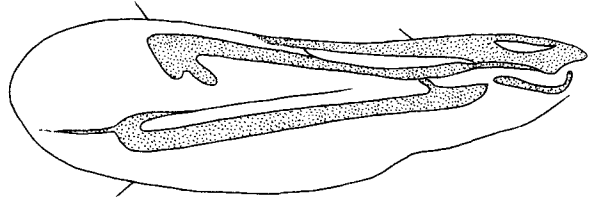


282. *Lichenobius littoralis*, female



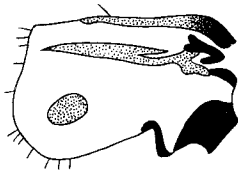
283
0.25 mm

283. *Lichenobius maritimus*, female

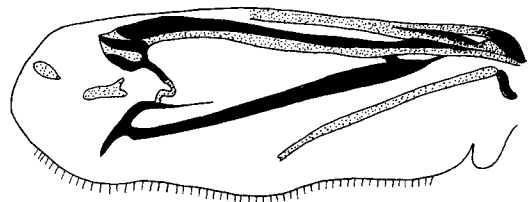


284, 285, 289
0.25 mm

284. *Lichenobius silvicola*, female

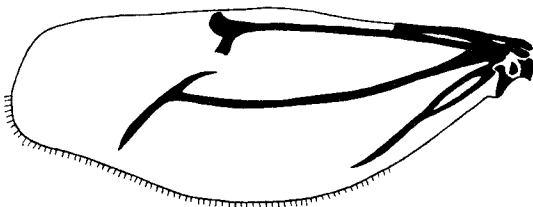


285. *Eugonissus conulus*, male



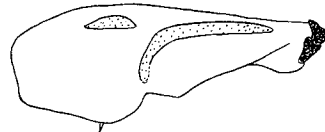
286
0.5 mm

286. *Isanthribus phormii*, female



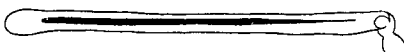
287
1.0 mm

287. *Tribasileus noctivagus*, male

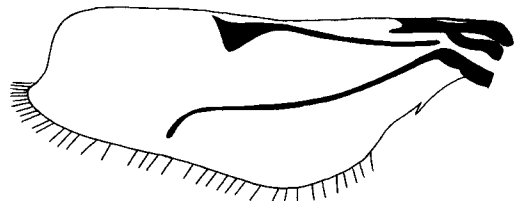


288
0.25 mm

288. *Cerius otagensis*, female



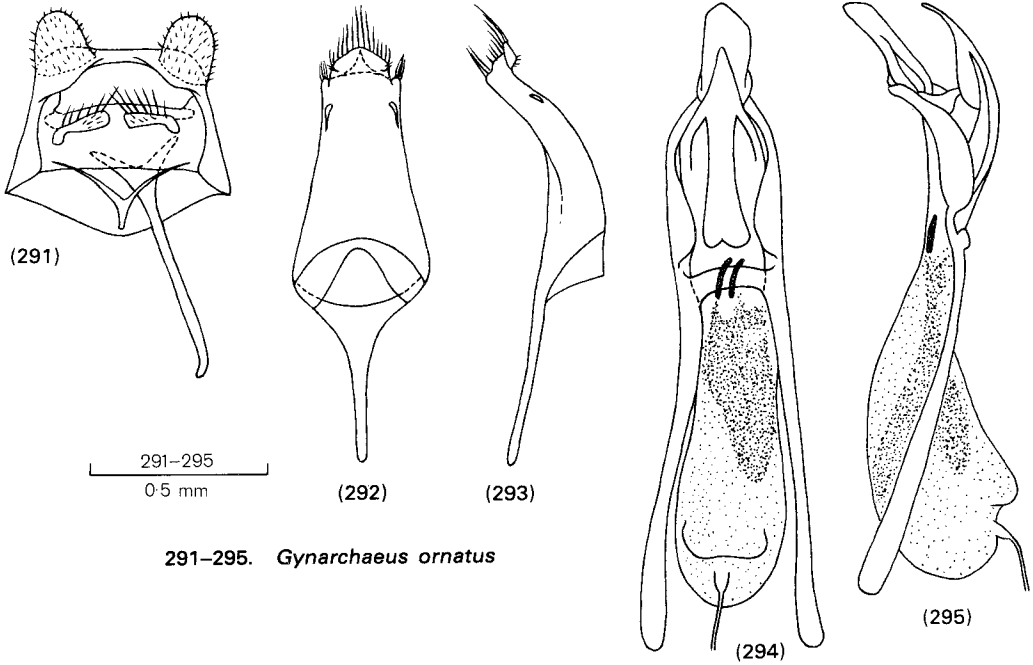
289. *Dasyanthribus purpureus*, female



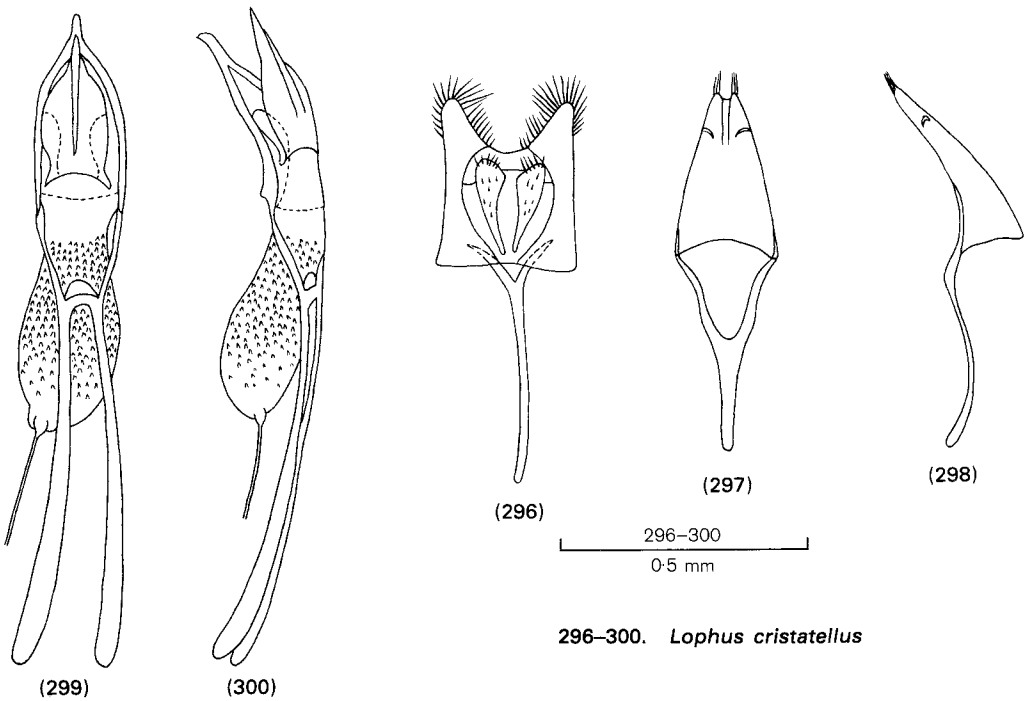
290
0.25 mm

290. *Micranthribus atomus*, female

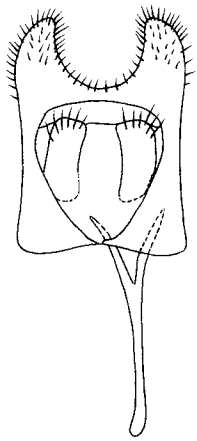
Figures 291–587 Male terminalia: segment 8 plus sternite 9, ventral aspect; tegmen, dorsal and lateral aspects; and aedeagus, dorsal and dorsolateral or lateral aspects. Supplementary figures as individually labelled.



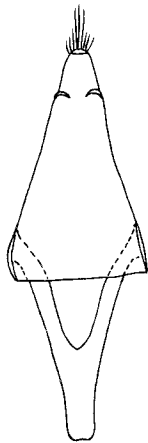
291–295. *Gynarchaeus ornatus*



296–300. *Lophus cristatellus*



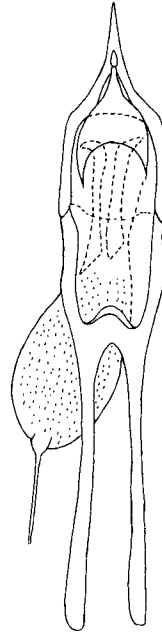
(301)



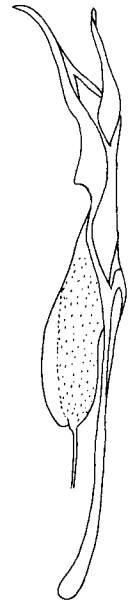
(302)



(303)



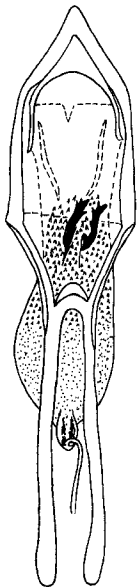
(304)



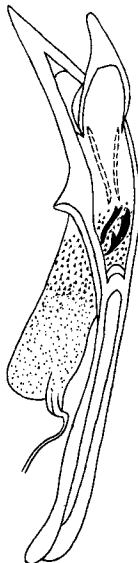
(305)

301-305. *Lophus lewisi*

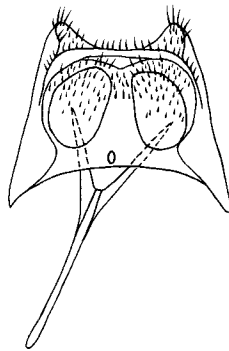
301-310
0.5 mm



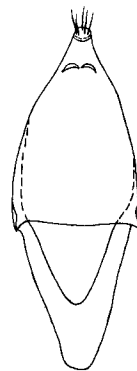
(309)



(310)



(306)

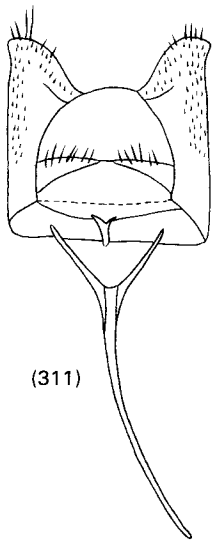


(307)

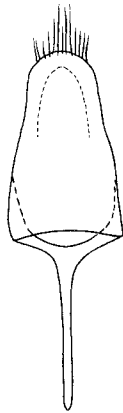


(308)

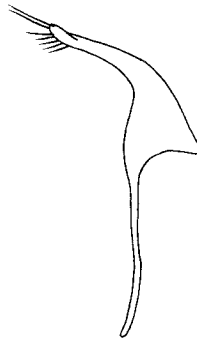
306-310. *Lophus rudis*



(311)

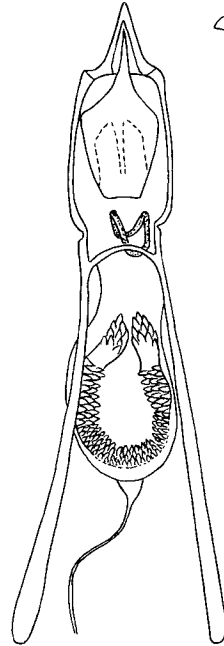


(312)

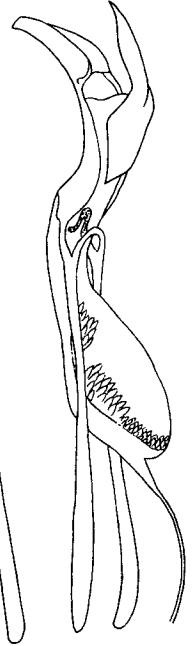


(313)

311-315. *Pleosporius bullatus*

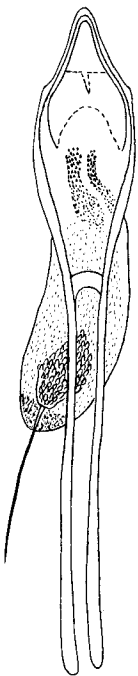


(314)

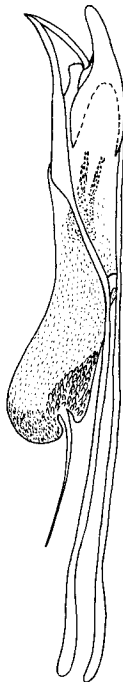


(315)

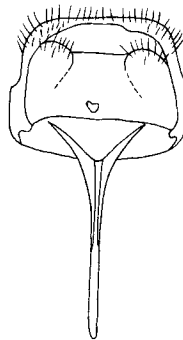
311-320
0.5 mm



(319)



(320)



(316)

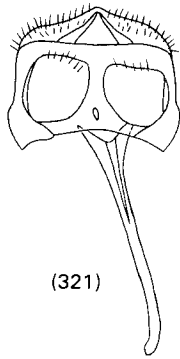


(317)



(318)

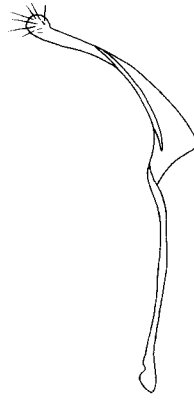
316-320. *Sharpius brouni*



(321)



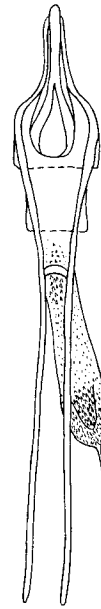
(322)



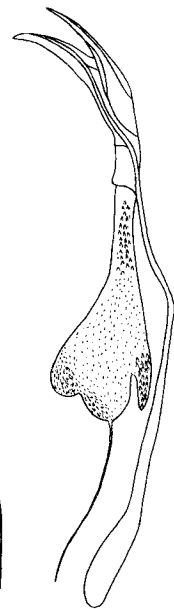
(323)

321-325
0.5 mm

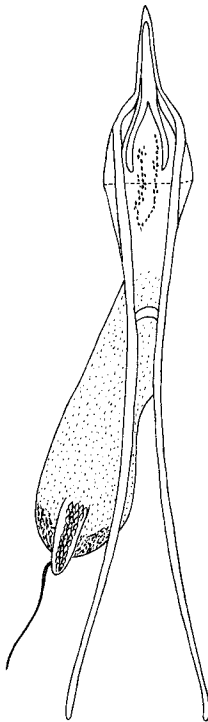
321-325. *Sharpius chathamensis*



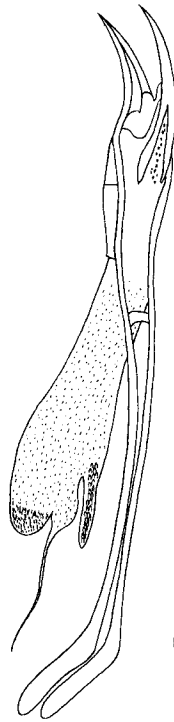
(324)



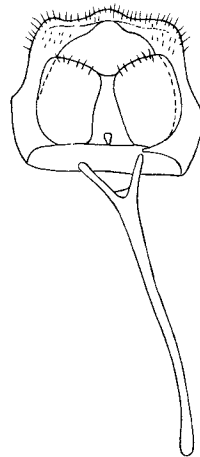
(325)



(329)



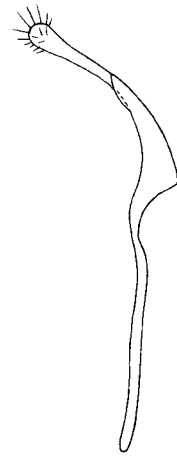
(330)



(326)



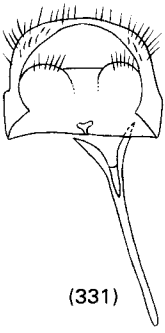
(327)



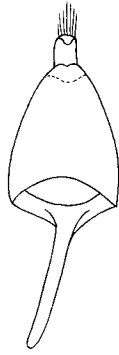
(328)

326-330
0.5 mm

326-330. *Sharpius imitarius*



(331)



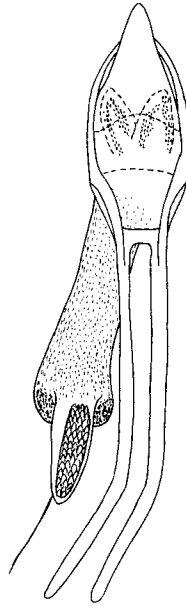
(332)



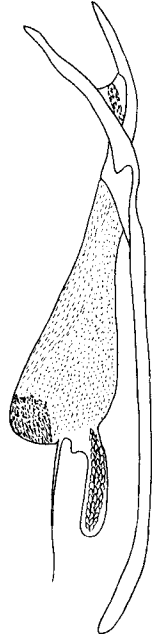
(333)

331-335
0.5 mm

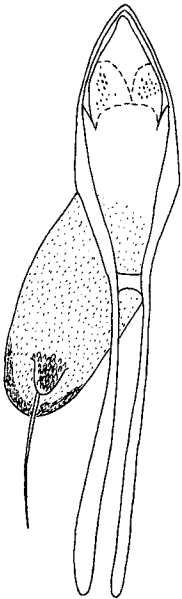
331-335. *Sharpius sandageri*



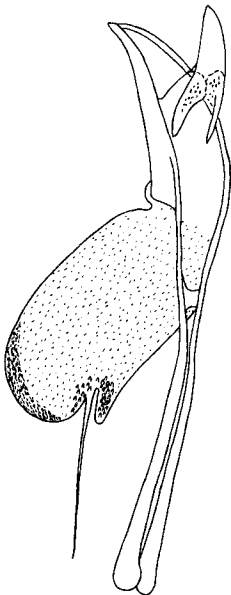
(334)



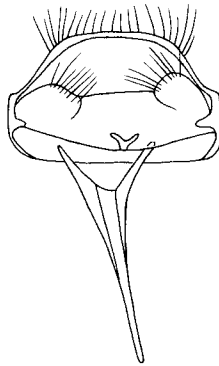
(335)



(339)



(340)



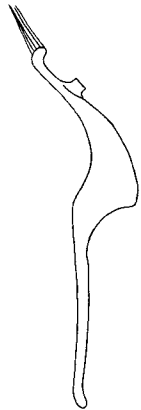
(336)

336-340
0.25 mm

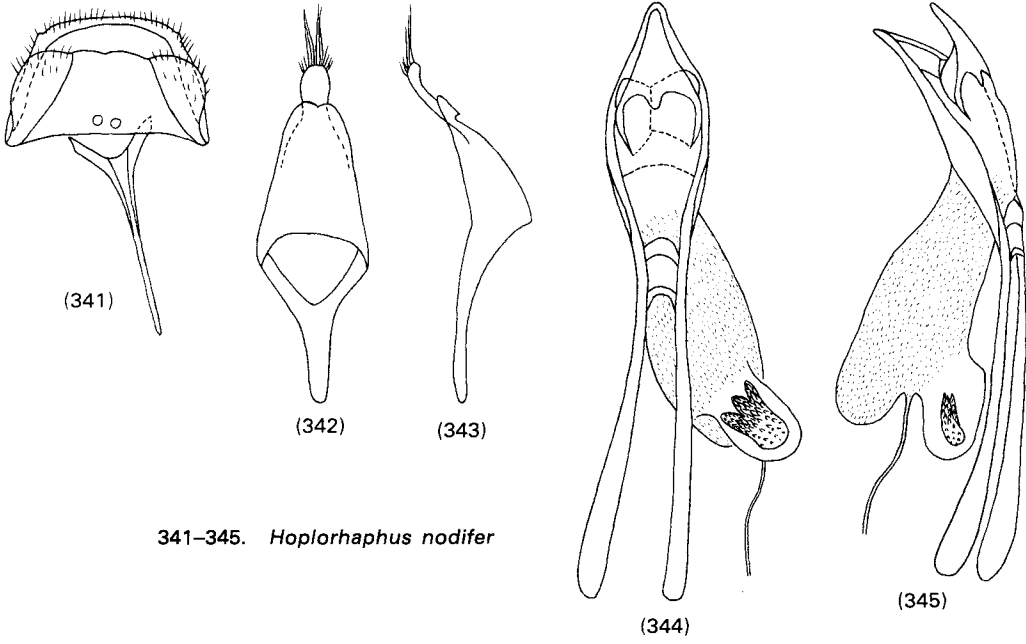
336-340. *Sharpius venustus*



(337)

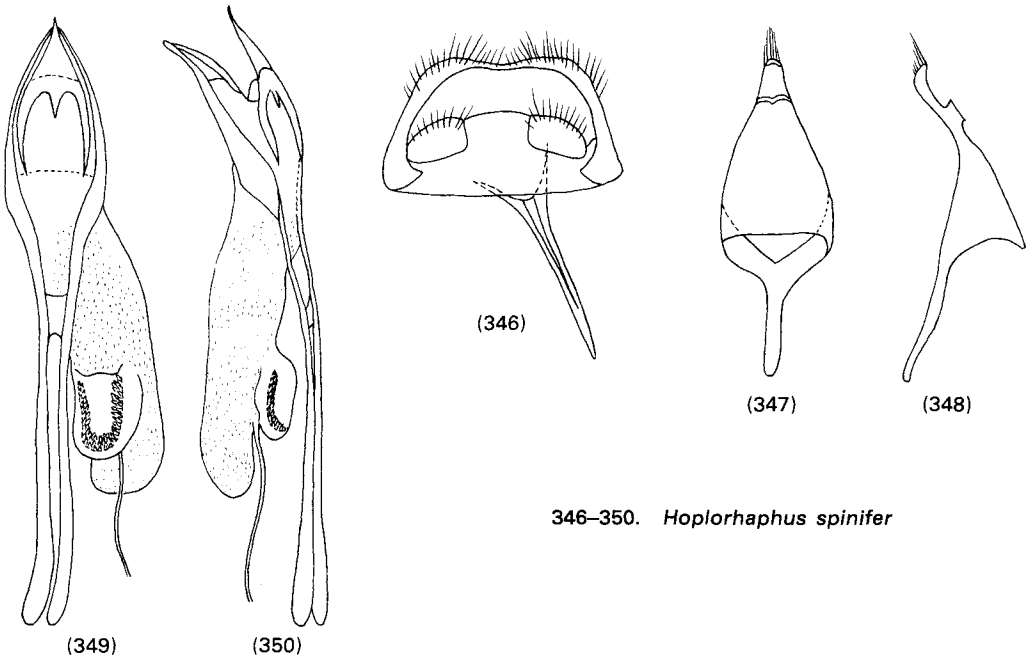


(338)

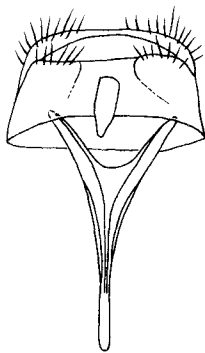


341-345. *Hoplorhaphus nodifer*

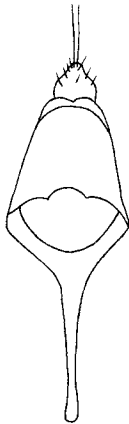
341-350
0.5 mm



346-350. *Hoplorhaphus spinifer*



(351)

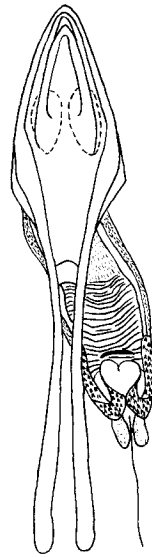


(352)

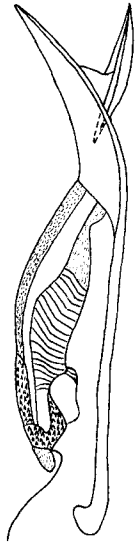


(353)

351-355
0.25 mm

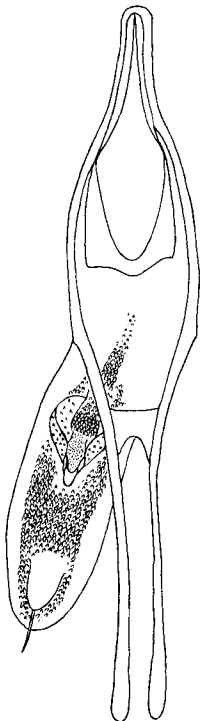


(354)

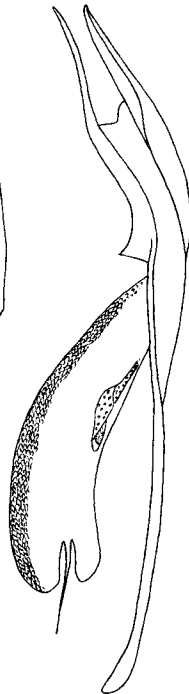


(355)

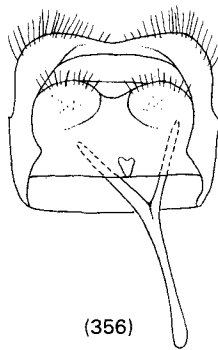
351-355. *Helmoreus sharpi*



(359)

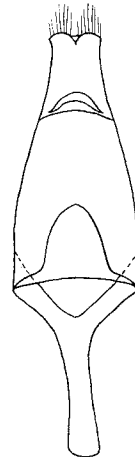


(360)

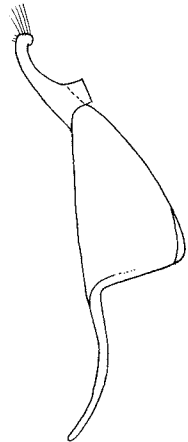


(356)

356-360
0.5 mm

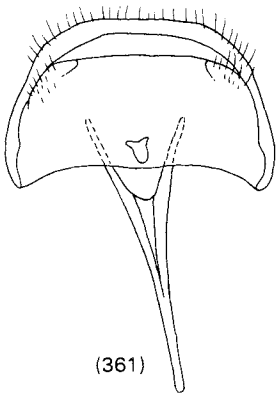


(357)

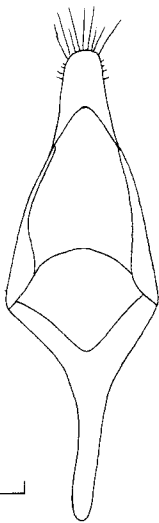


(358)

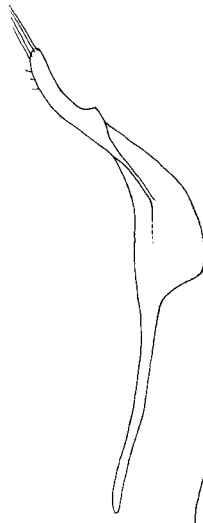
356-360. *Cacephatus aucklandicus*



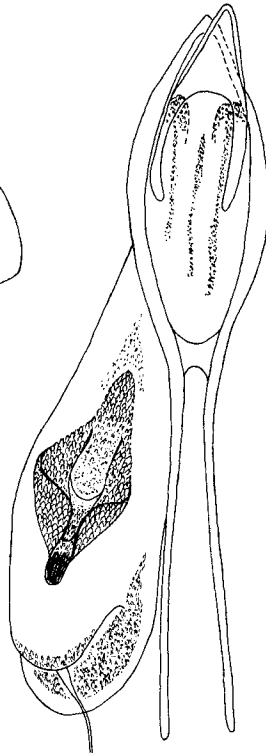
(361)



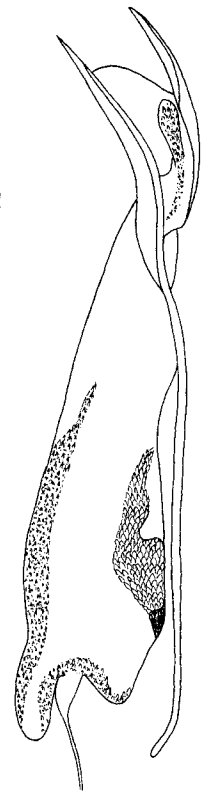
(362)



(363)



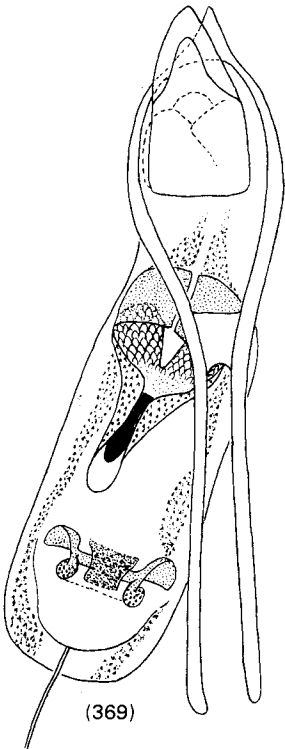
(364)



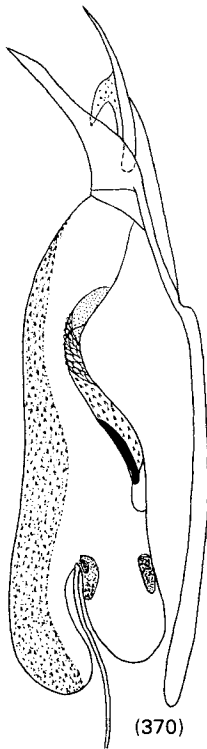
(365)

361-365
0.5 mm

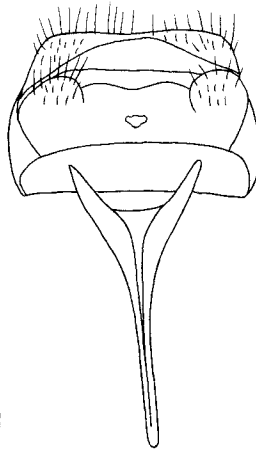
361-365. *Cacephatus huttoni*



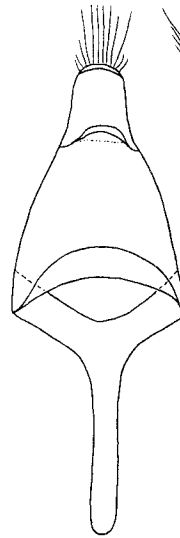
(369)



(370)



(366)



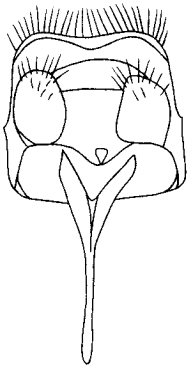
(367)



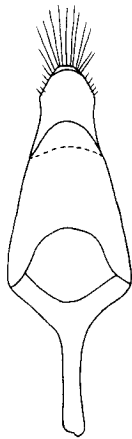
(368)

366-370
0.5 mm

366-370. *Cacephatus incertus*



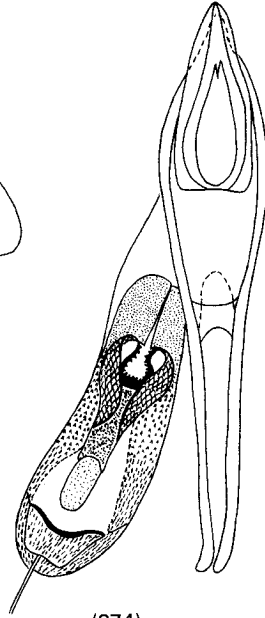
(371)



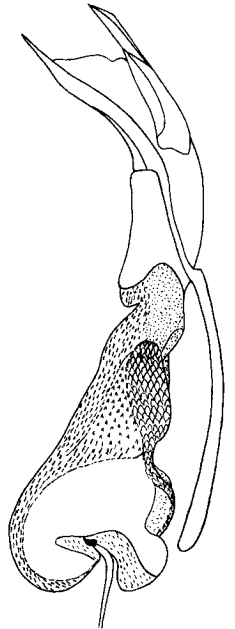
(372)



(373)



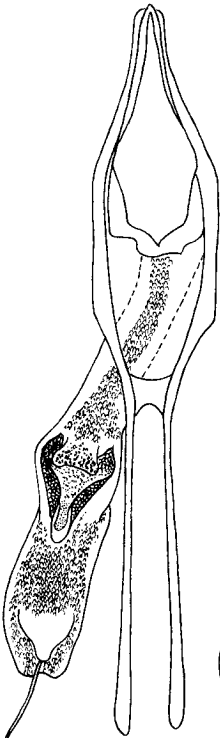
(374)



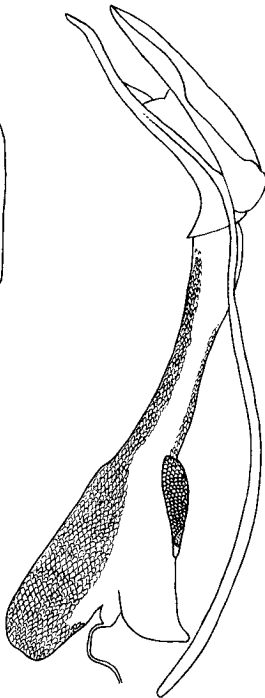
(375)

371-375. *Cacephatus inornatus*

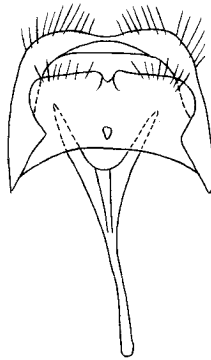
371-380
0.5 mm



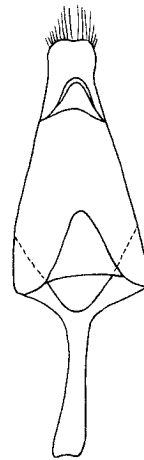
(379)



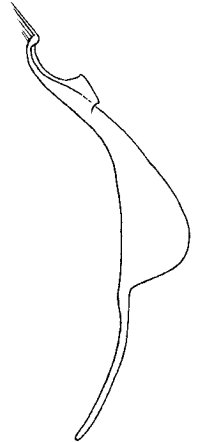
(380)



(376)

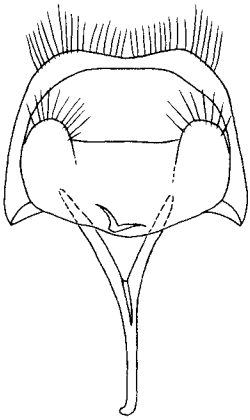


(377)

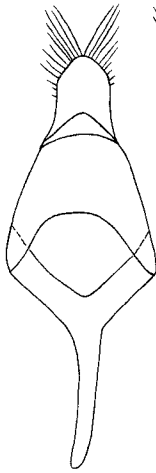


(378)

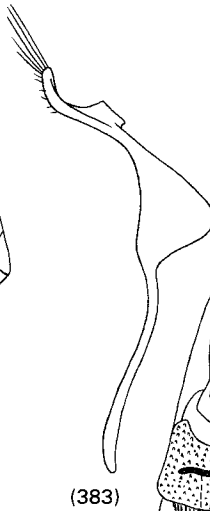
376-380. *Cacephatus propinquus*



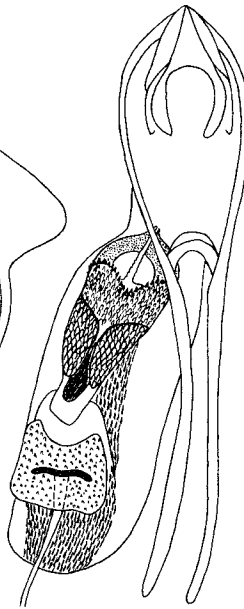
(381)



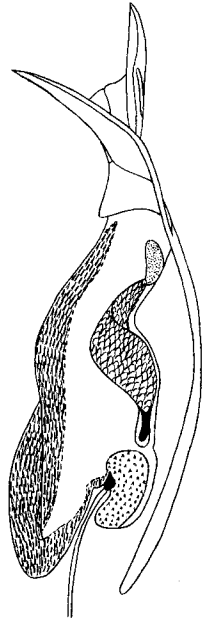
(382)



(383)



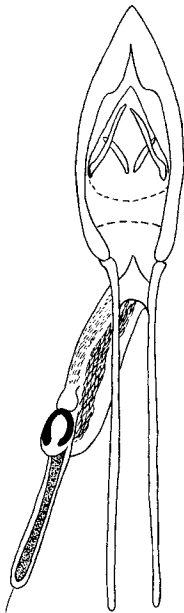
(384)



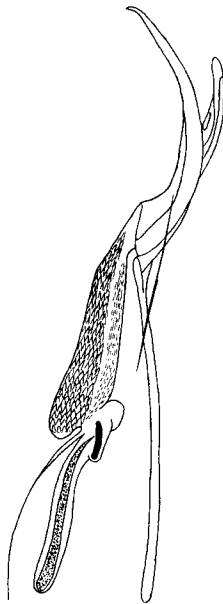
(385)

381-385
0.5 mm

381-385. *Cacephatus vates*



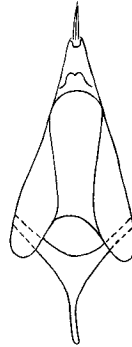
(389)



(390)



(386)



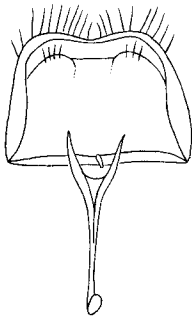
(387)



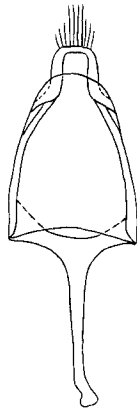
(388)

386-390
0.5 mm

386-390. *Garyus altus*



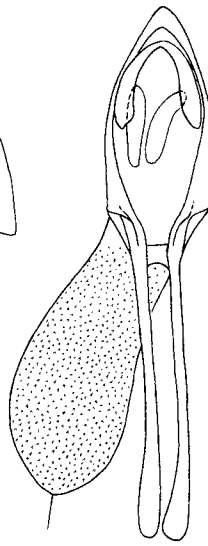
(391)



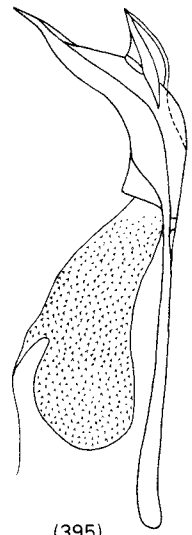
(392)



(393)



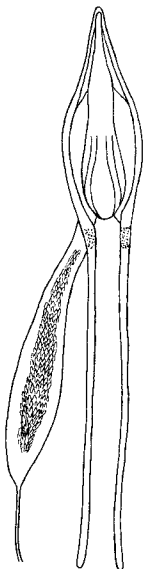
(394)



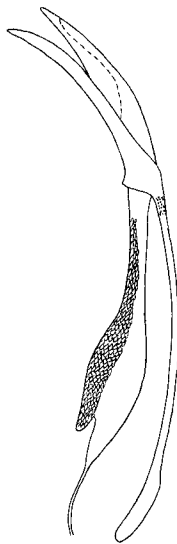
(395)

391-395
0.5 mm

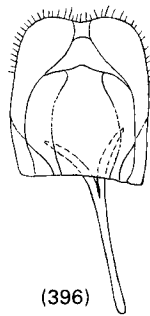
391-395. *Xenarthribus hirsutus*



(399)



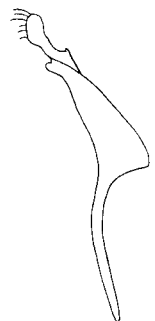
(400)



(396)



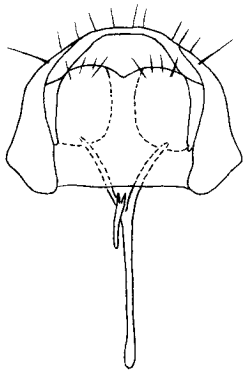
(397)



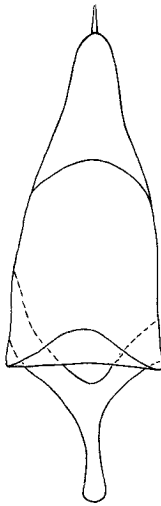
(398)

396-400
0.5 mm

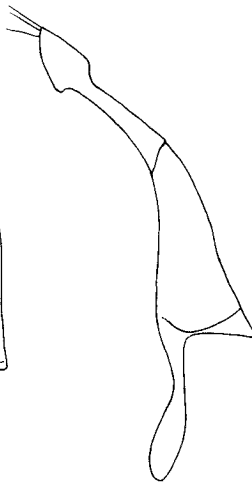
396-400. *Calibius littoralis*



(401)



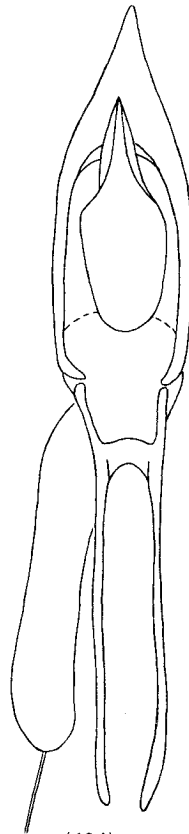
(402)



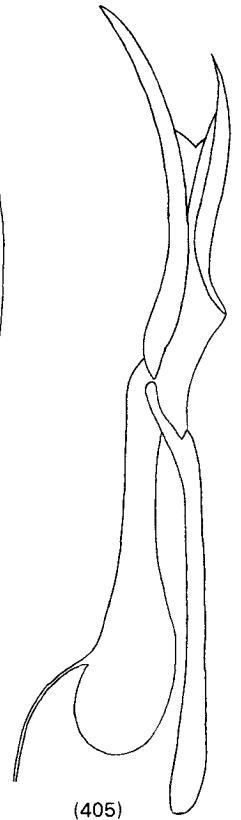
(403)

401-405
0.25 mm

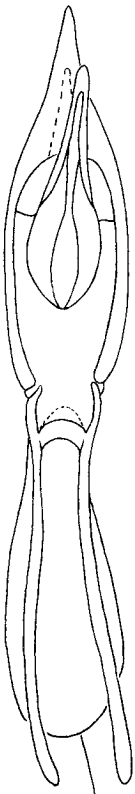
401-405. *Lichenobius littoralis*



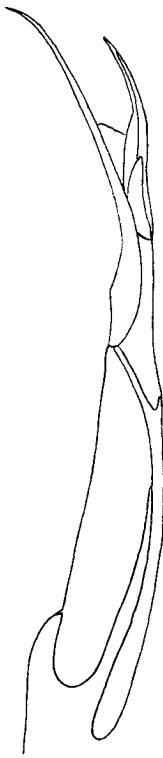
(404)



(405)



(409)



(410)



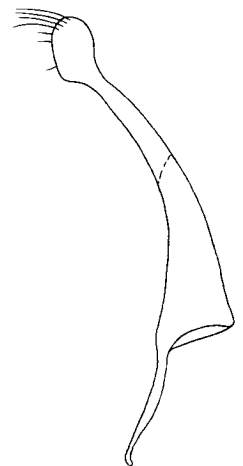
(406)

406-410
0.25 mm

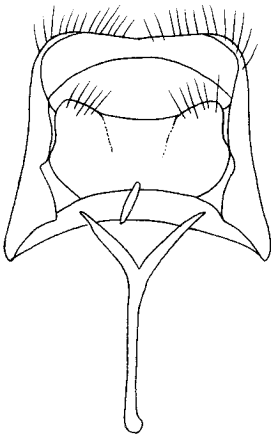
406-410. *Lichenobius maritimus*



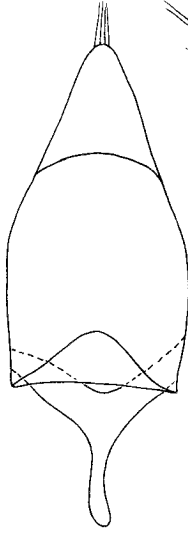
(407)



(408)



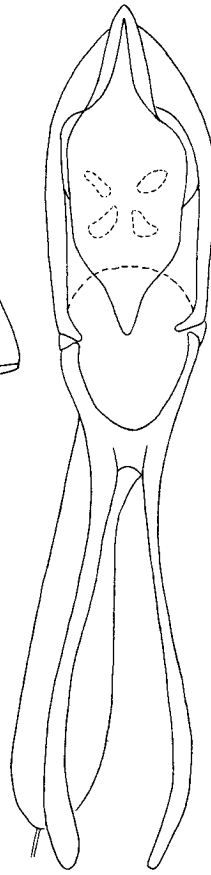
(411)



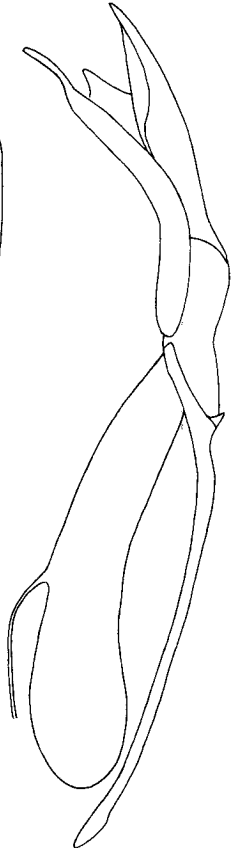
(412)



(413)



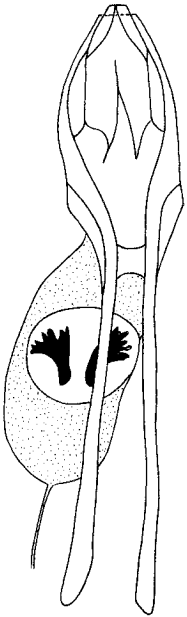
(414)



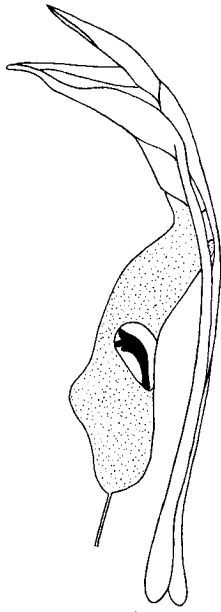
(415)

411-415. *Lichenobius silvicola*

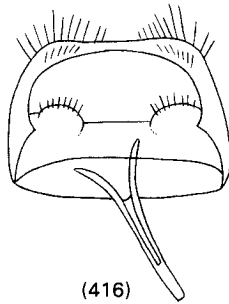
411-420
0.25 mm



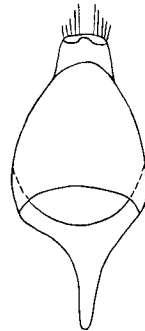
(419)



(420)



(416)

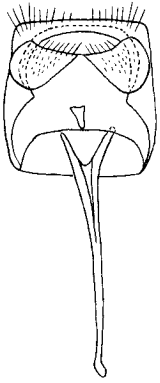


(417)

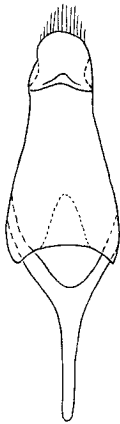


(418)

416-420. *Eugonissus conulus*



(421)

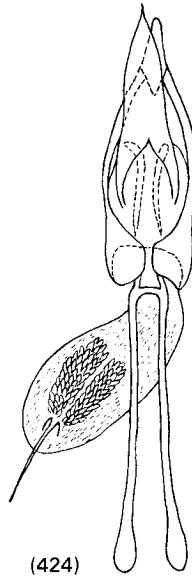


(422)

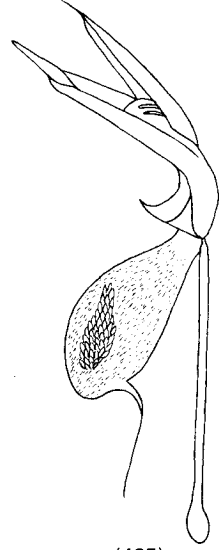


(423)

421-425. *Etnalis obtusus*

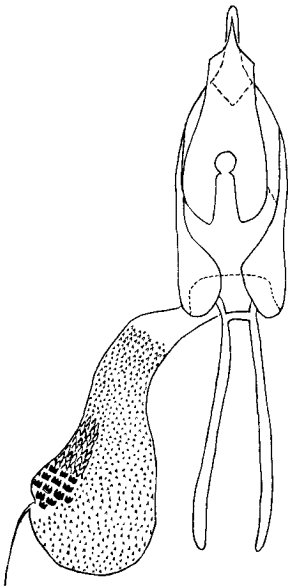


(424)

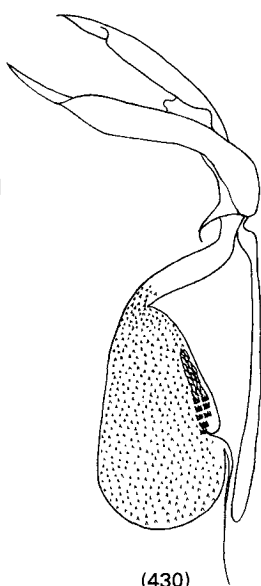


(425)

421-430
0.5 mm

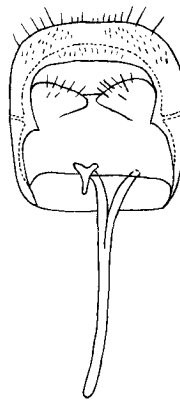


(429)

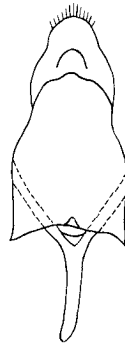


(430)

426-430. *Etnalis spinicollis*



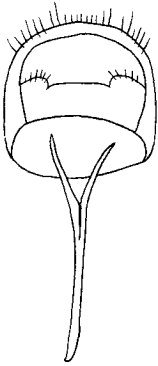
(426)



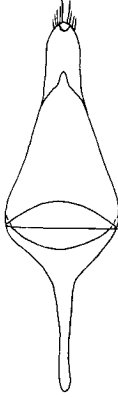
(427)



(428)



(431)



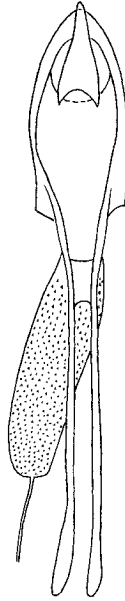
(432)



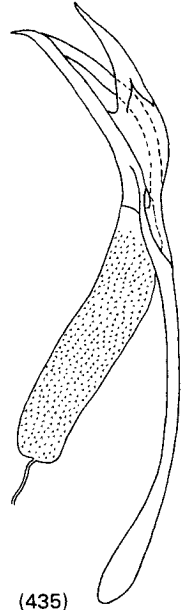
(433)

431-435
0.5 mm

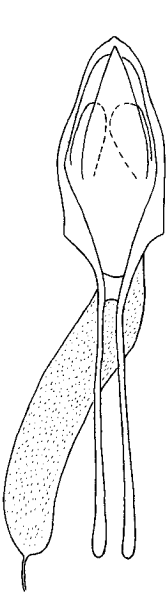
431-435. *Isanthribus phormii*



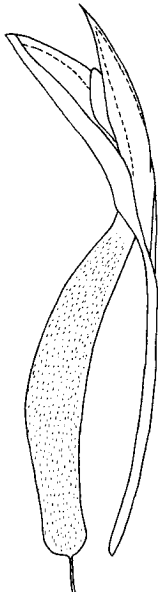
(434)



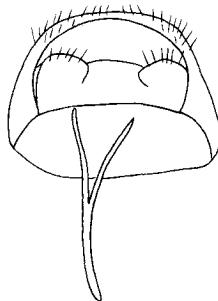
(435)



(439)



(440)



(436)



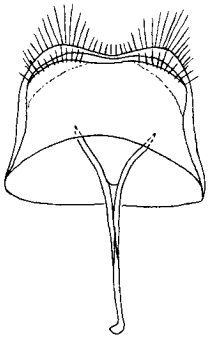
(437)



(438)

436-440
0.5 mm

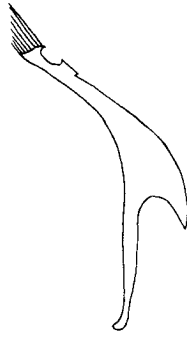
436-440. *Isanthribus proximus*



(441)



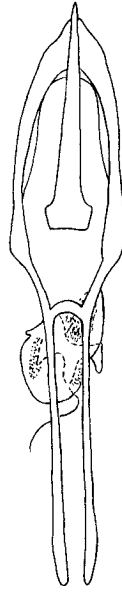
(442)



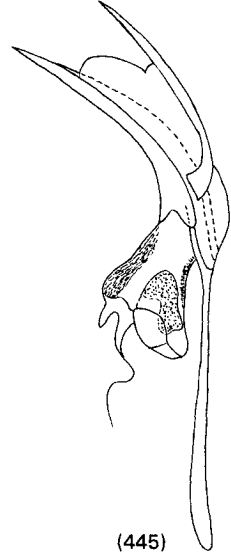
(443)

441-445
1.0 mm

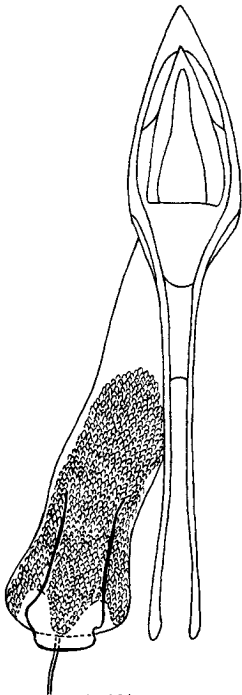
441-445. *Tribasileus noctivagus*



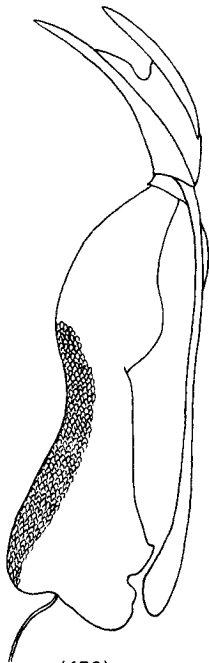
(444)



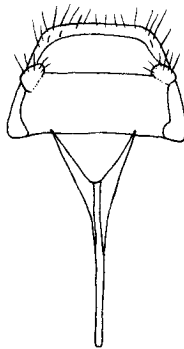
(445)



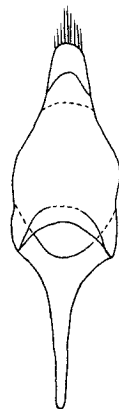
(449)



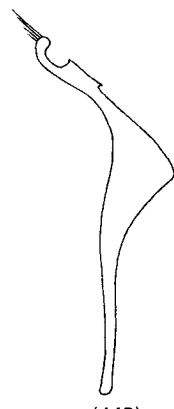
(450)



(446)



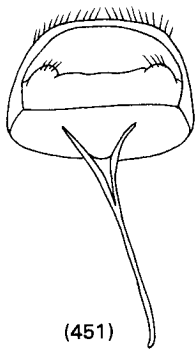
(447)



(448)

446-450
0.5 mm

446-450. *Cerius triregius*



(451)



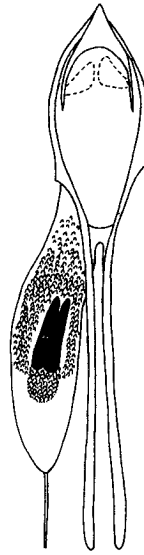
(452)



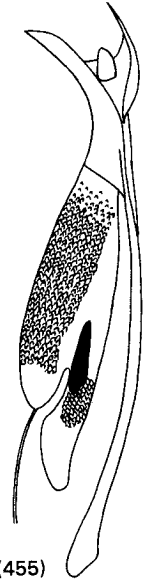
(453)

451-455
0.5 mm

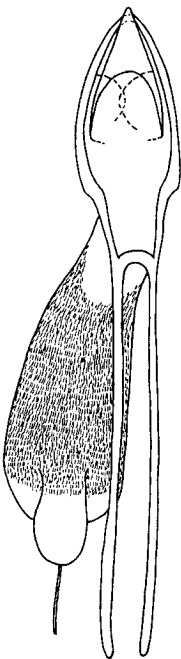
451-455. *Androporus discedens*



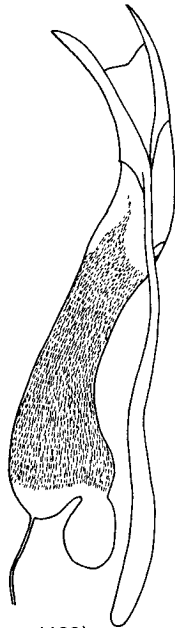
(454)



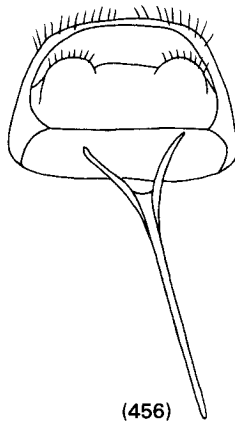
(455)



(459)



(460)



(456)



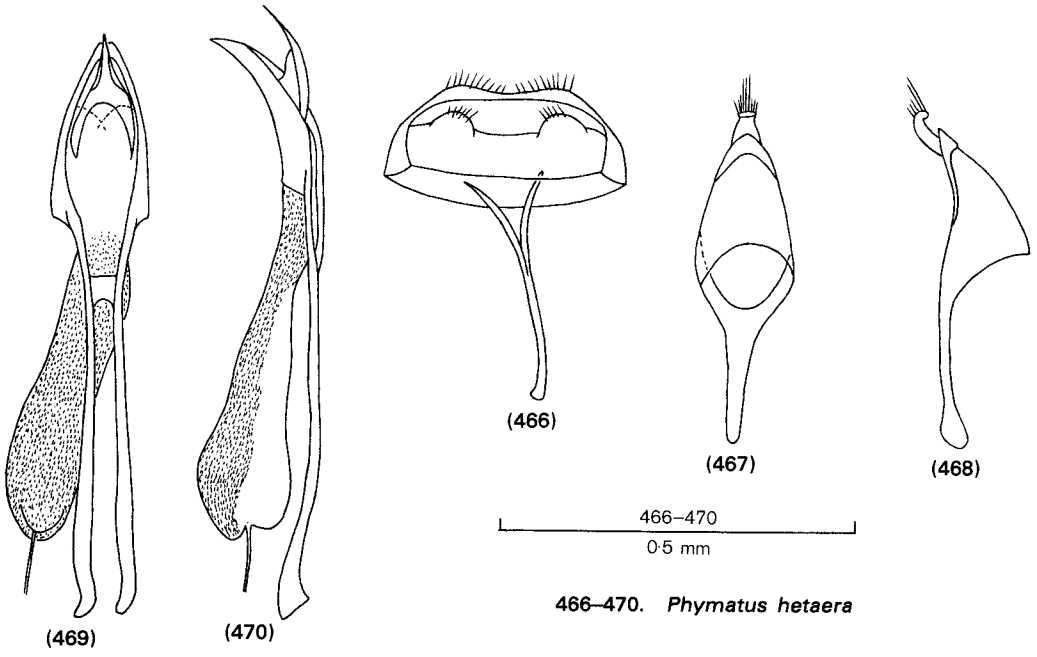
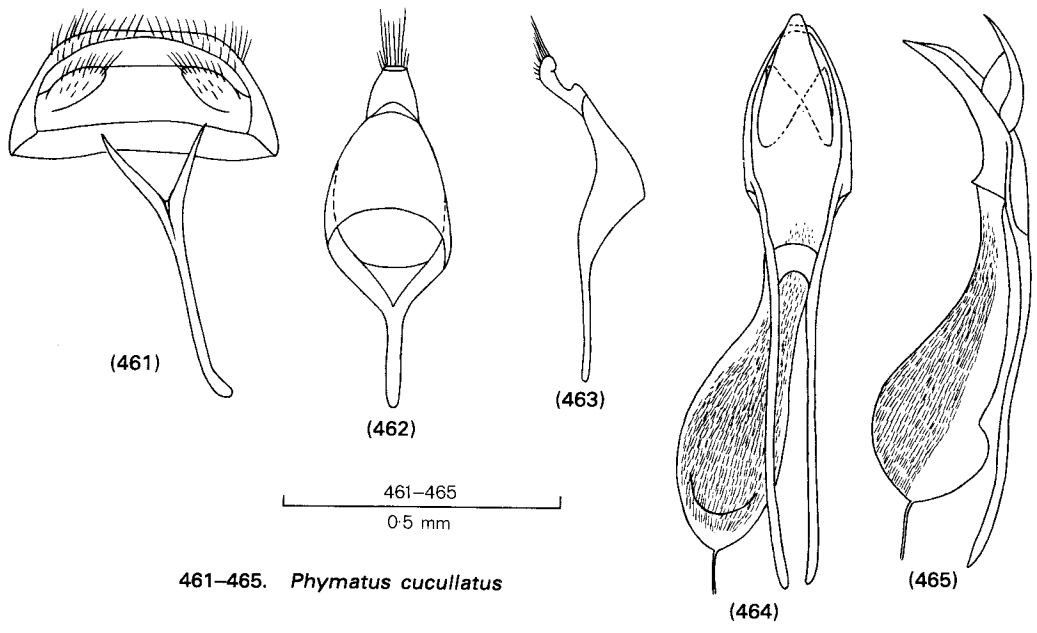
(457)

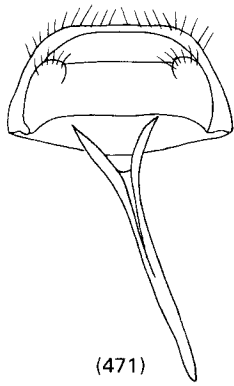


(458)

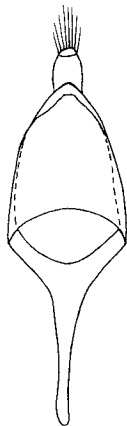
456-460
0.5mm

456-460. *Arecopais spectabilis*





(471)

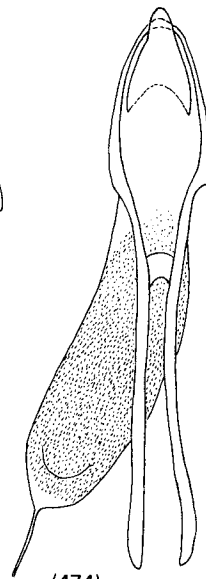


(472)

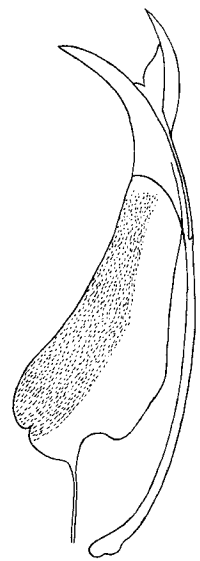


(473)

471-475
0.5 mm

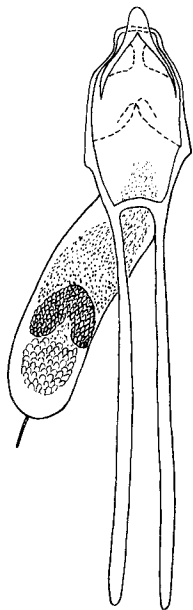


(474)

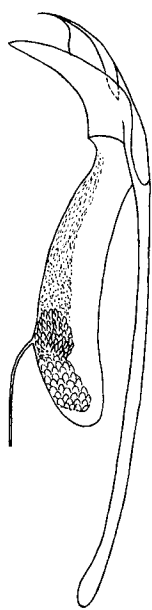


(475)

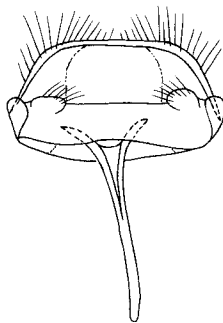
471-475. *Phymatus phymatodes*



(479)



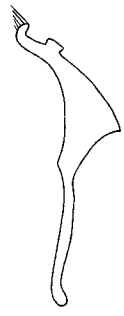
(480)



(476)



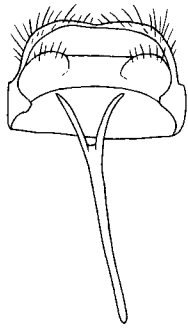
(477)



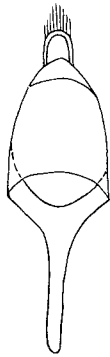
(478)

476-480
0.5 mm

476-480. *Hoherius meinertzhageni*



(481)



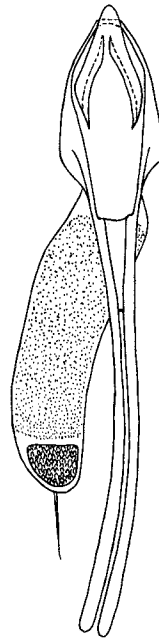
(482)



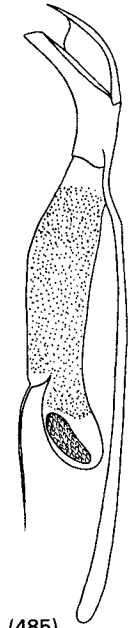
(483)

481-485
0.5 mm

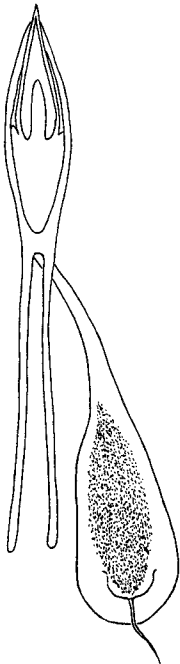
481-485. *Lawsonia variabilis*



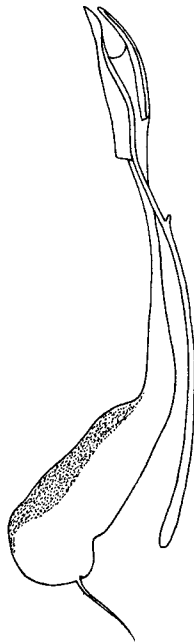
(484)



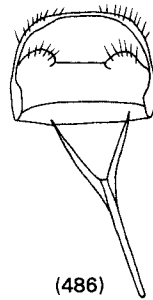
(485)



(489)



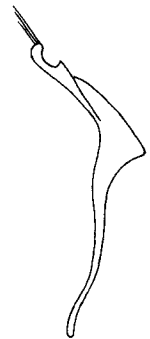
(490)



(486)



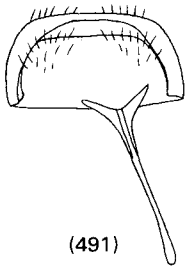
(487)



(488)

486-490
0.25 mm

486-490. *Euciodos suturalis*



(491)

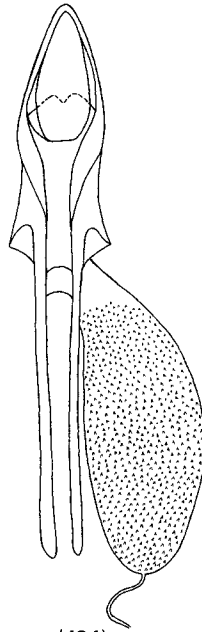


(492)

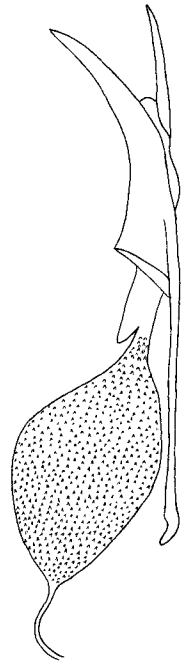


(493)

491-495
0.25 mm

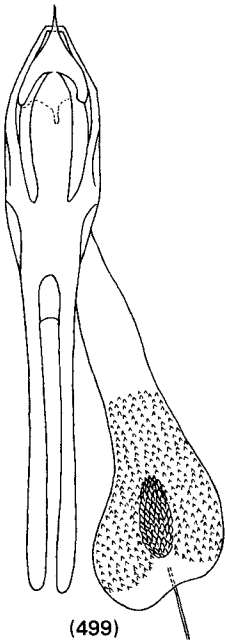


(494)



(495)

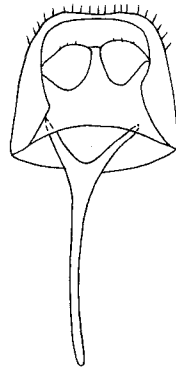
491-495. *Dasyanthribus purpureus*



(499)



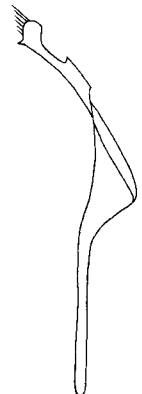
(500)



(496)



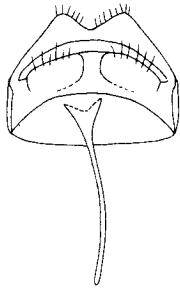
(497)



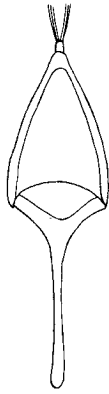
(498)

496-500
0.5 mm

496-500. *Liromus pardalis*



(501)



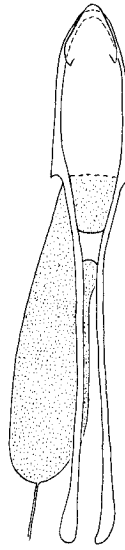
(502)



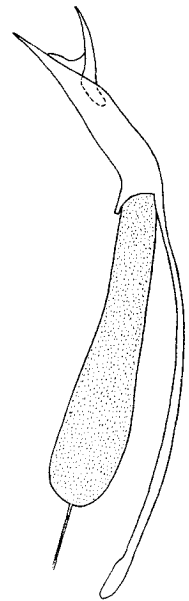
(503)

501-505
0.1 mm

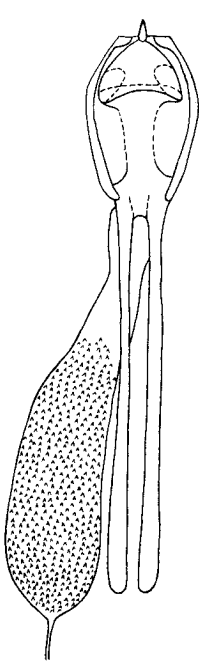
501-505. *Micranthribus atomus*



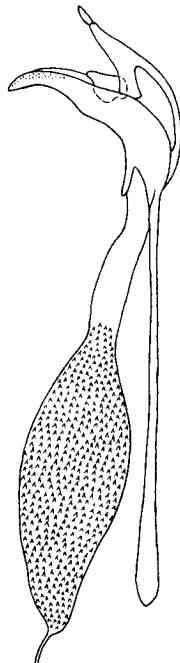
(504)



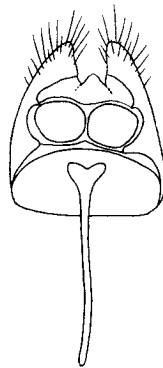
(505)



(509)



(510)



(506)



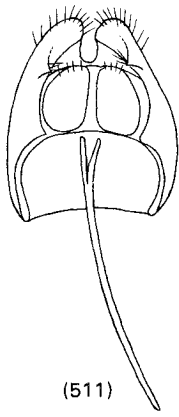
(507)



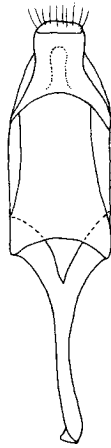
(508)

506-510
0.25 mm

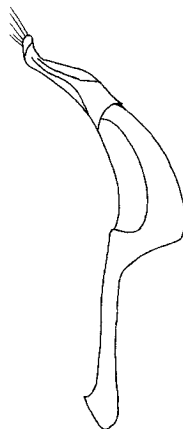
506-510. *Dysnocryptus balthasar*



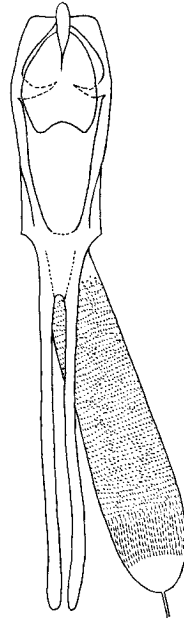
(511)



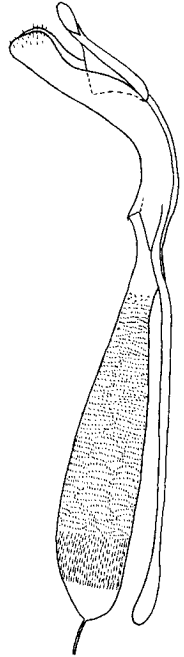
(512)



(513)



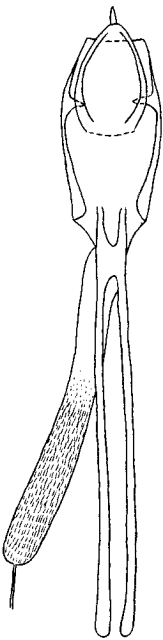
(514)



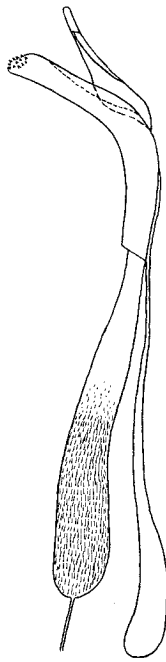
(515)

511-515
0.25 mm

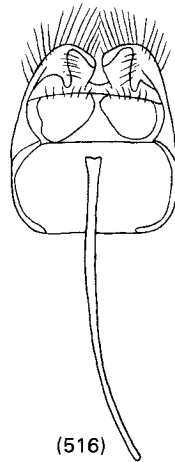
511-515. *Dysnocryptus dignus*



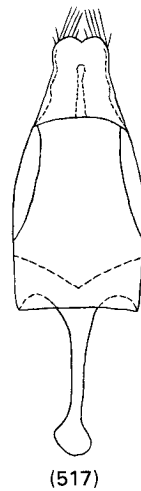
(519)



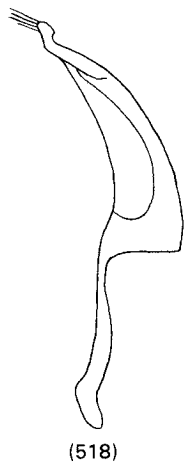
(520)



(516)



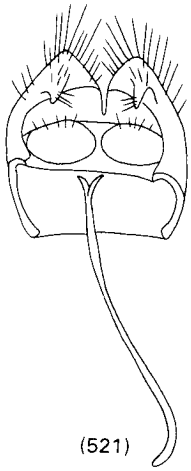
(517)



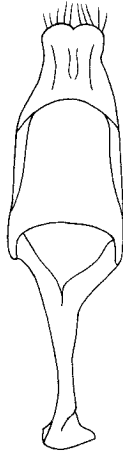
(518)

516-520
0.25 mm

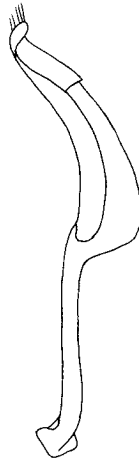
516-520. *Dysnocryptus gaspar*



(521)



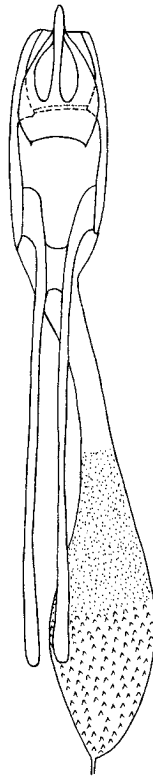
(522)



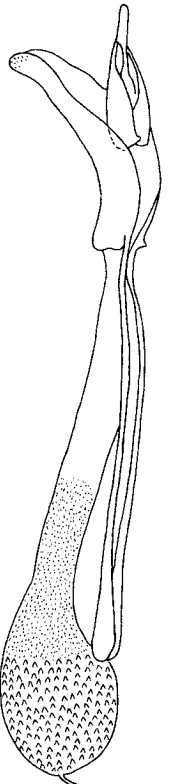
(523)

521-525
0.25 mm

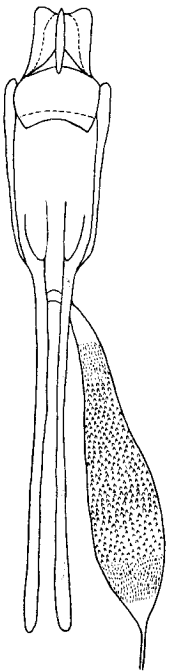
521-525. *Dysnocryptus inflatus*



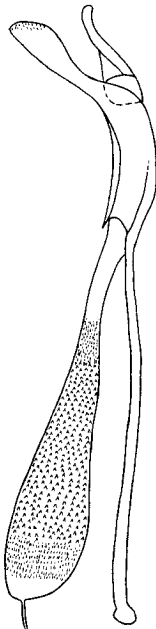
(524)



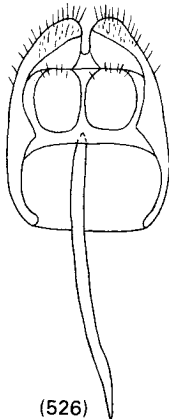
(525)



(529)



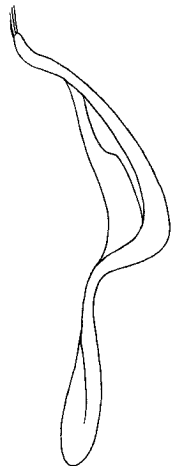
(530)



(526)



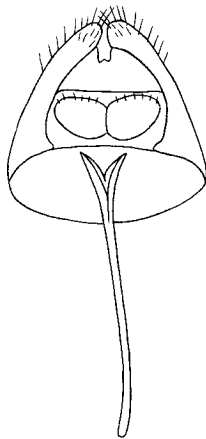
(527)



(528)

526-530
0.25 mm

526-530. *Dysnocryptus maculifer*



(531)



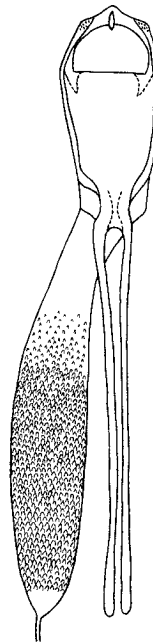
(532)



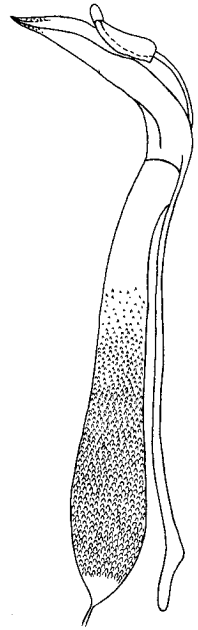
(533)

531-535
0.5 mm

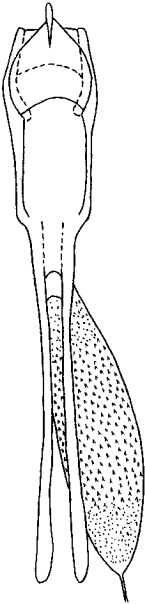
531-535. *Dysnocryptus melchior*



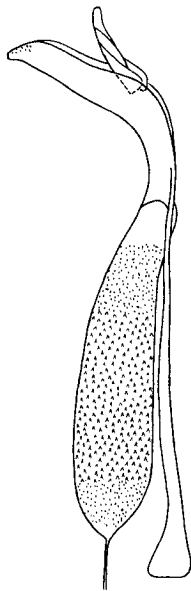
(534)



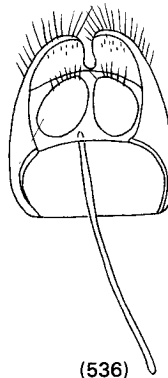
(535)



(539)



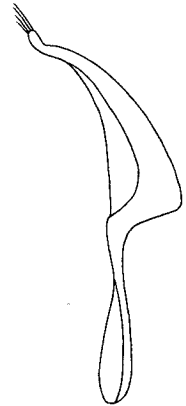
(540)



(536)



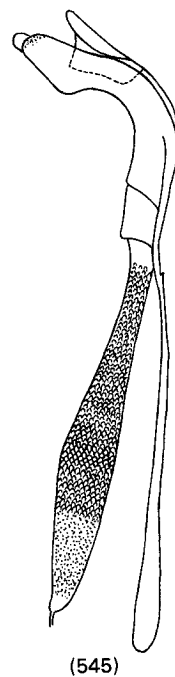
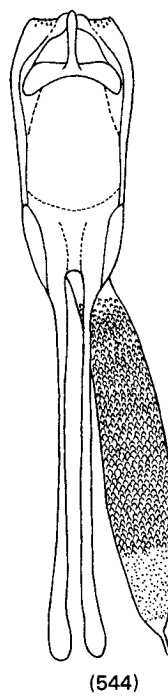
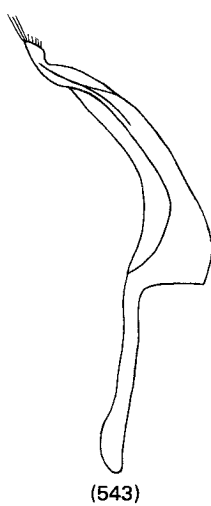
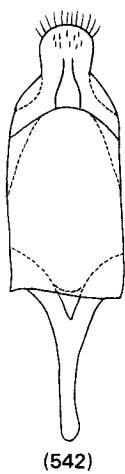
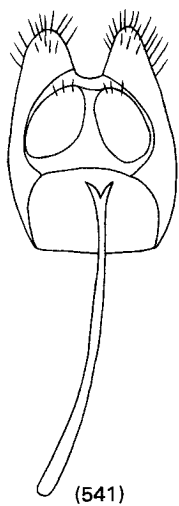
(537)



(538)

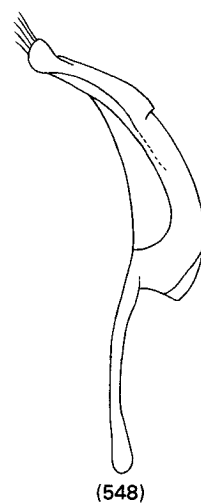
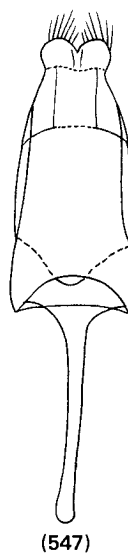
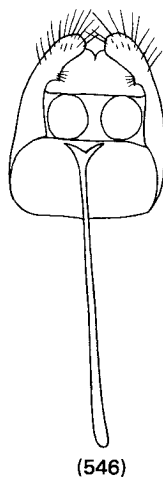
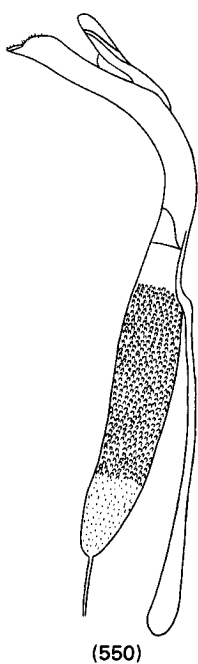
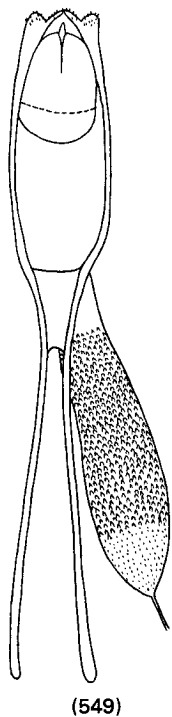
536-540
0.5 mm

536-540. *Dysnocryptus pallidus*

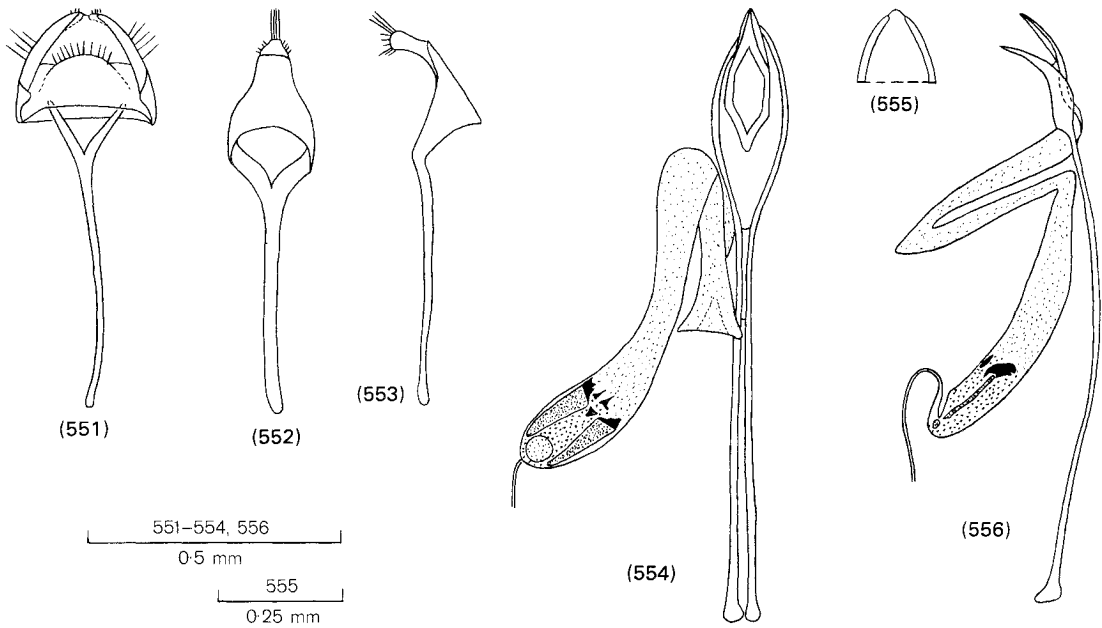


541-545. *Dysnocryptus pilicornis*

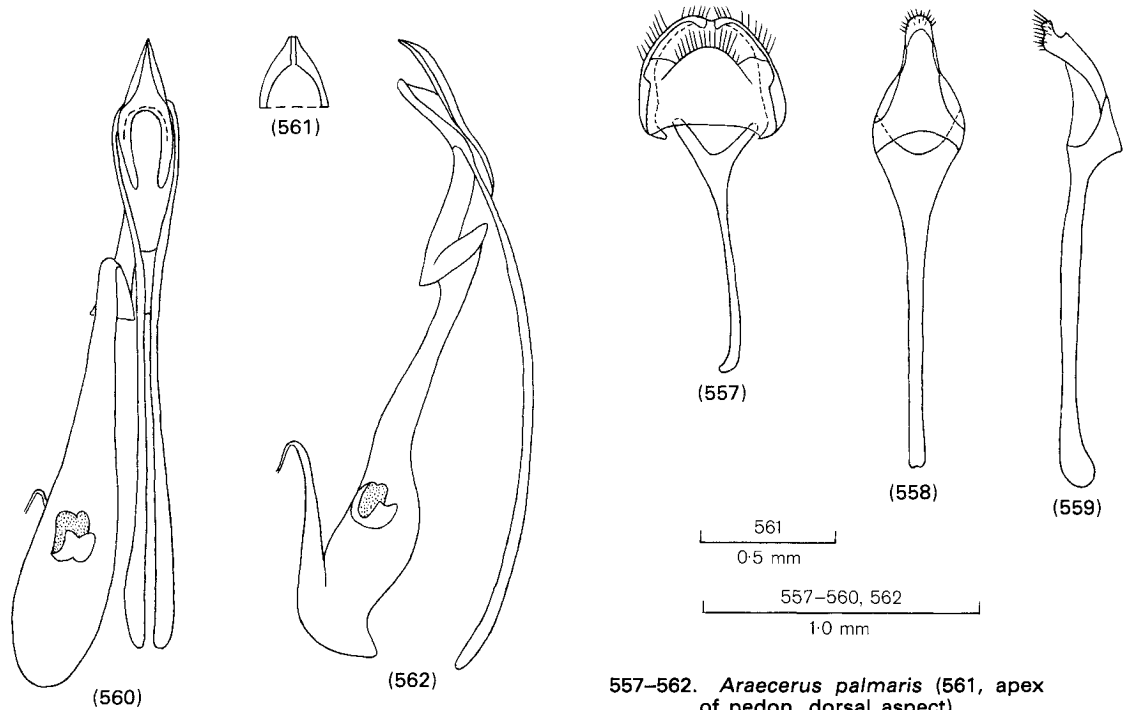
541-550
0.25 mm



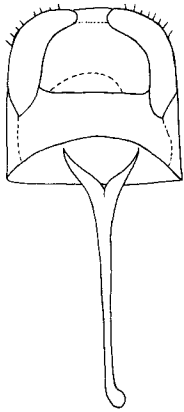
546-550. *Dysnocryptus rugosus*



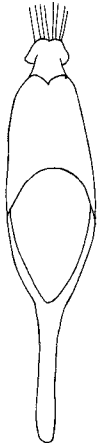
551-556. *Araecerus fasciculatus* (555, apex of pedon, dorsal aspect)



557-562. *Araecerus palmaris* (561, apex of pedon, dorsal aspect)



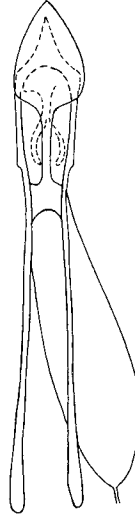
(563)



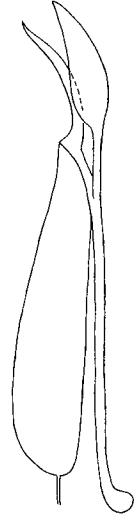
(564)



(565)



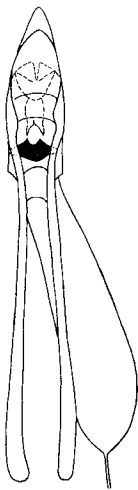
(566)



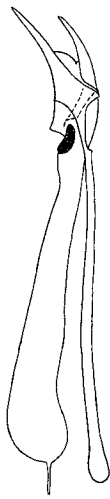
(567)

563-567. *Notochoragus chathamensis*

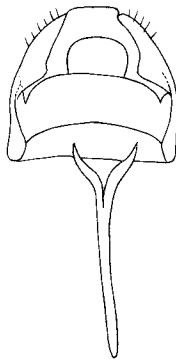
563-572
0.25 mm



(571)



(572)



(568)

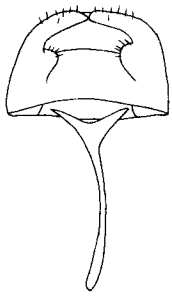


(569)



(570)

568-572. *Notochoragus crassus*



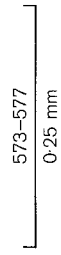
(573)



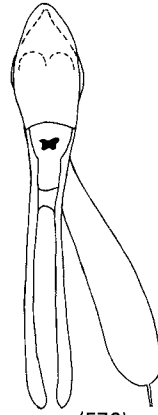
(574)



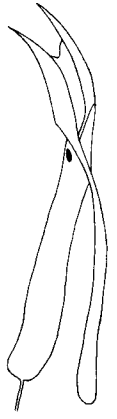
(575)



573-577
0.25 mm

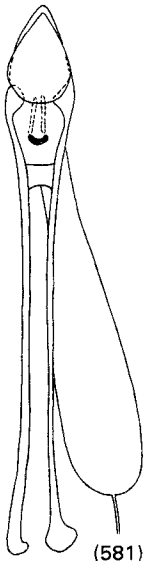


(576)



(577)

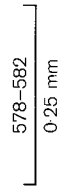
573-577. *Notochoragus fungicola*



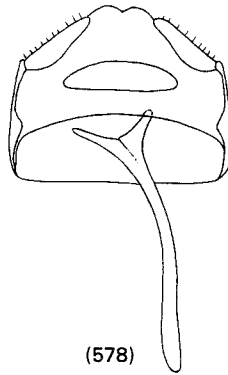
(581)



(582)



578-582
0.25 mm



(578)

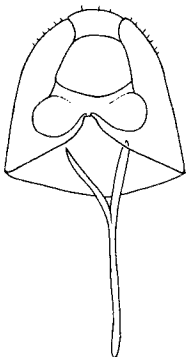


(579)

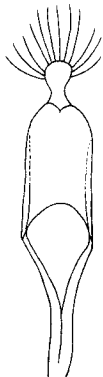


(580)

578-582. *Notochoragus nanus*



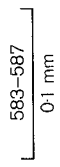
(583)



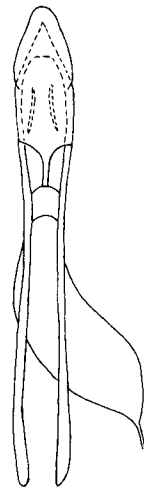
(584)



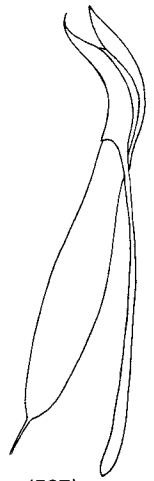
(585)



583-587
0.1 mm



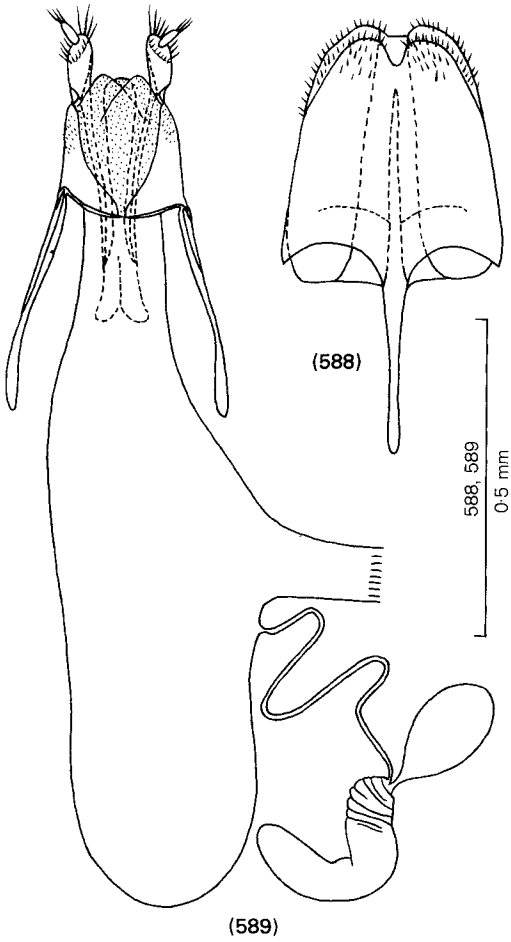
(586)



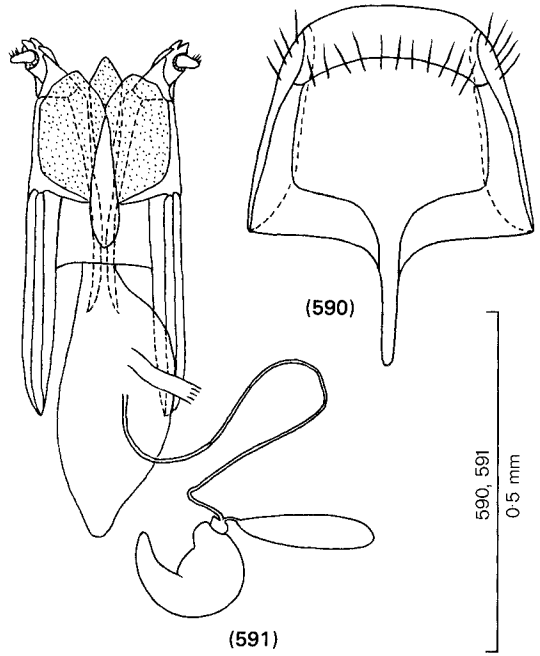
(587)

583-587. *Notochoragus thoracicus*

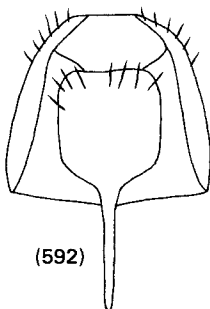
Figures 588-710 Female terminalia: segment 8, ventral aspect; genitalia, ventral aspect; supplementary figures as individually labelled.



588, 589. *Gynarchaeus ornatus*

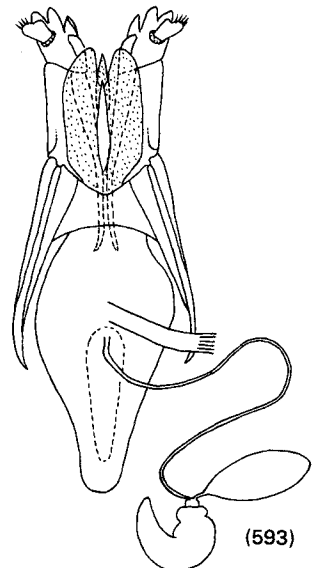


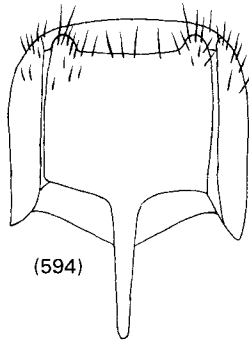
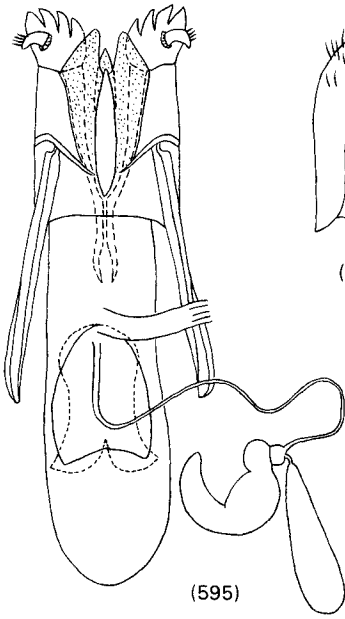
590, 591. *Lophus cristatellus*



592, 593
0.5 mm

592, 593. *Lophus lewisi*



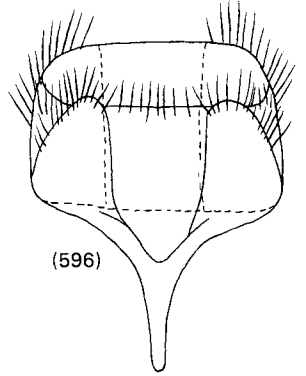
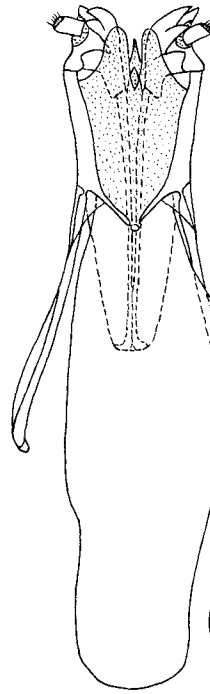


(594)

(595)

594, 595, 600, 601
0.5 mm

594, 595. *Lophus rudis*

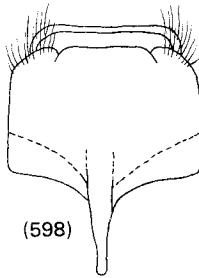
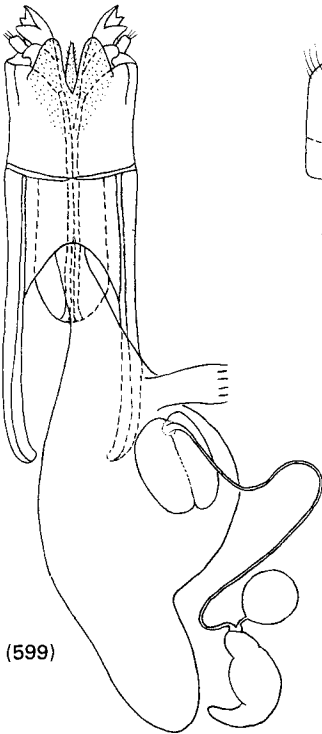


(596)

(597)

596, 597
0.25 mm

596, 597. *Pleosporius bullatus*

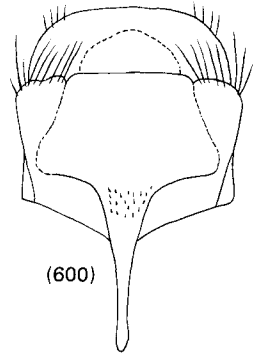
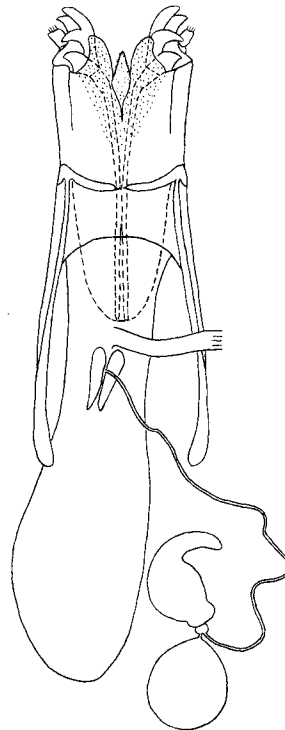


(598)

(599)

598, 599
0.25 mm

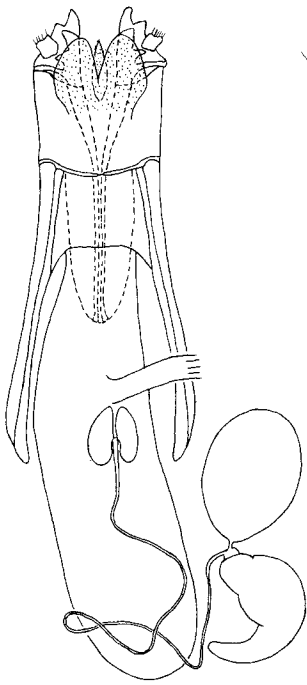
598, 599. *Sharpius brouni*



(600)

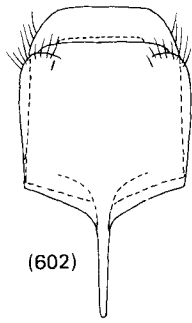
(601)

600, 601.
Sharpius chathamensis



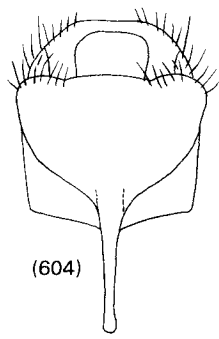
(603)

602, 603. *Sharpius imitarius*



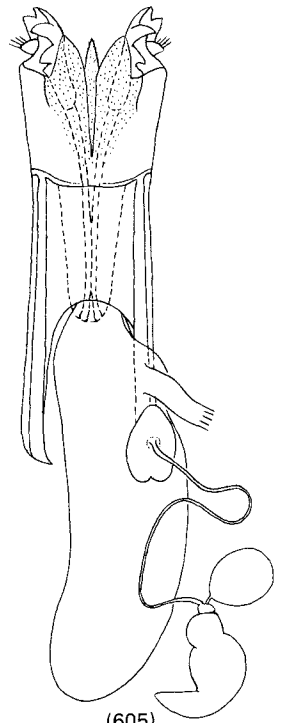
(602)

602-605
0.5 mm

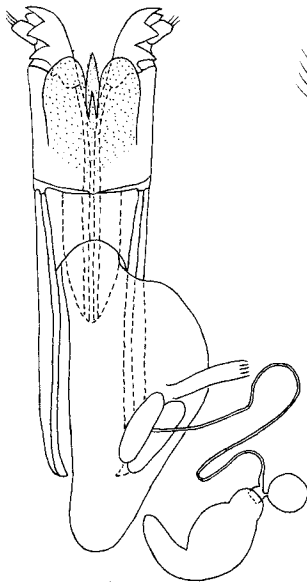


(604)

604, 605. *Sharpius sandageri*

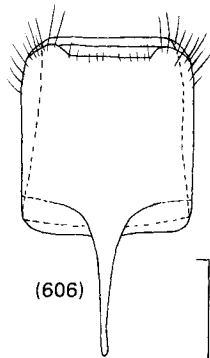


(605)



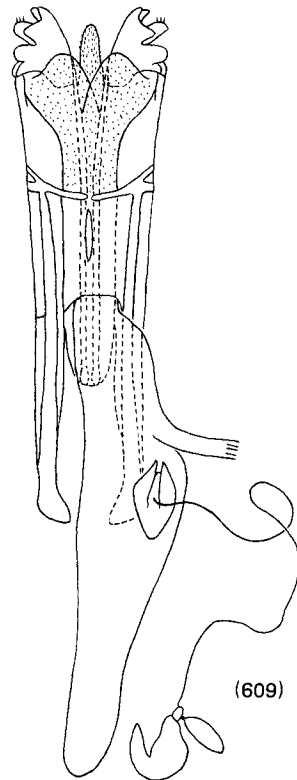
(607)

606, 607. *Sharpius venustus*



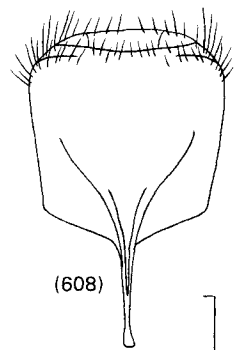
(606)

606, 607
0.5 mm



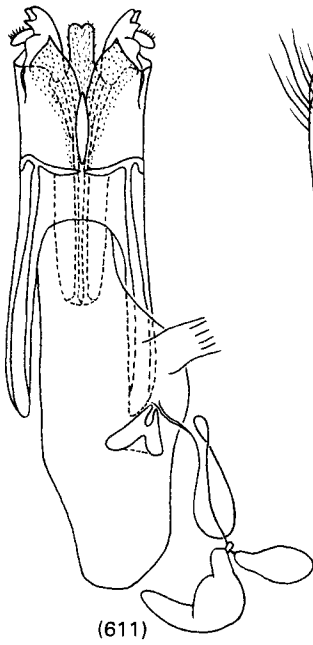
(609)

608, 609. *Hoplorhaphus nodifer*



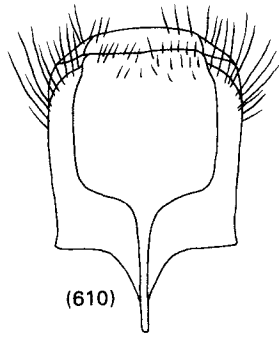
(608)

608, 609
0.5 mm



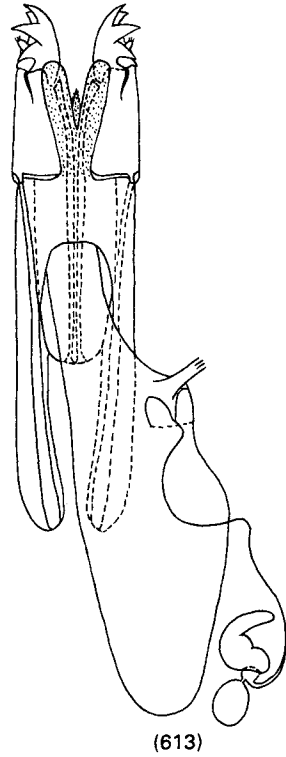
(611)

610, 611. *Hoplorhaphus spinifer*



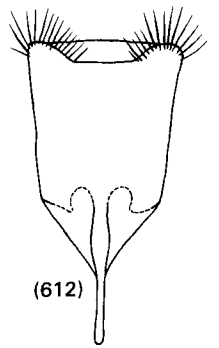
(610)

610, 611, 616, 617
0.5 mm



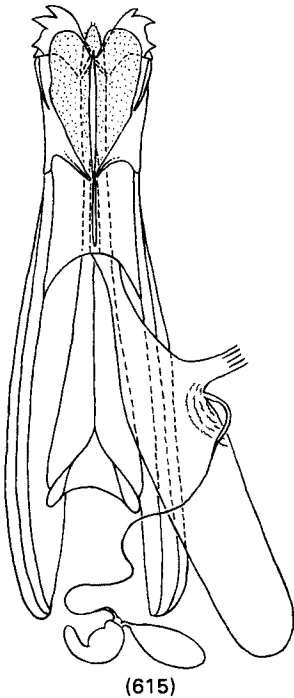
(613)

612, 613. *Helmoreus sharpi*



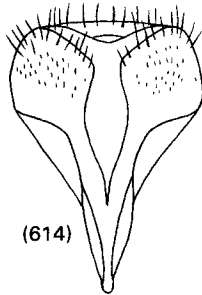
(612)

612, 613
0.5 mm



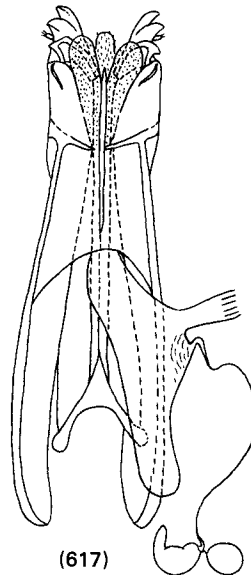
(615)

614, 615. *Cacephatus aucklandicus*



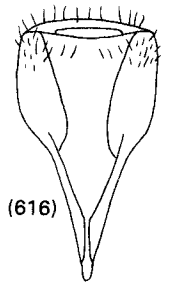
(614)

614, 615
0.5 mm

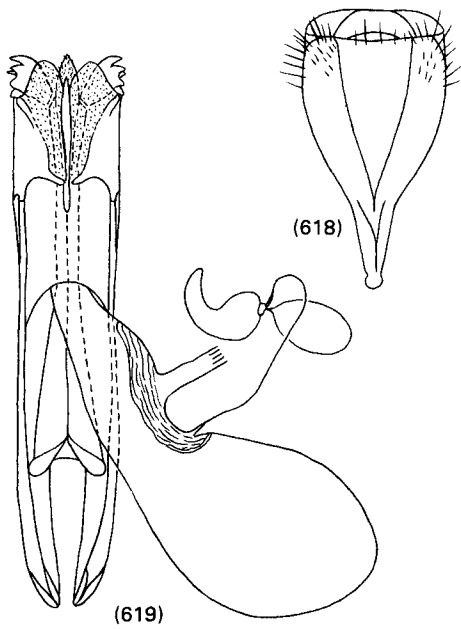


(617)

616, 617. *Cacephatus huttoni*



(616)

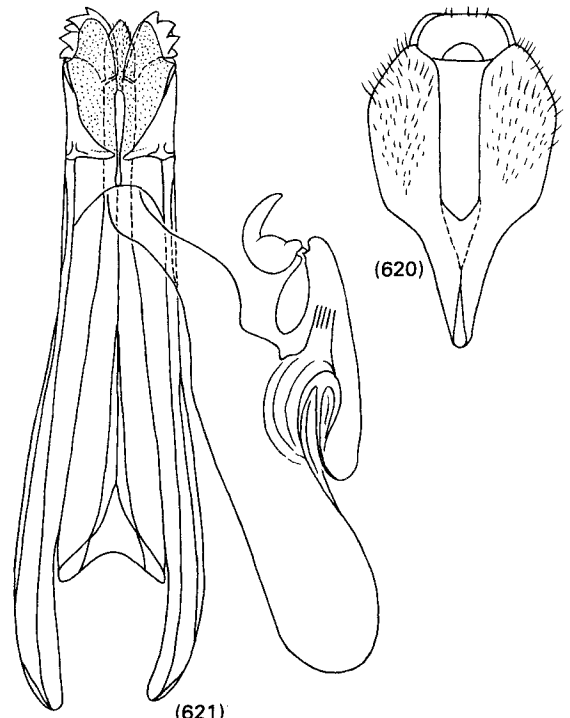


(618)

(619)

618, 619. *Cacephatus incertus*.

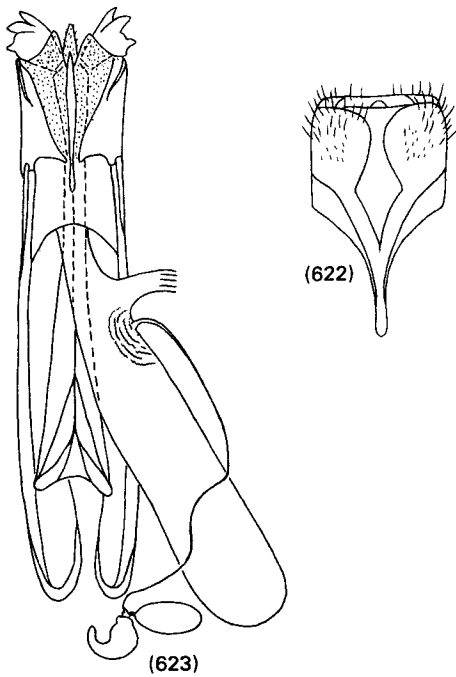
618, 619, 622, 623
1.0 mm



(620)

(621)

620, 621. *Cacephatus inornatus*

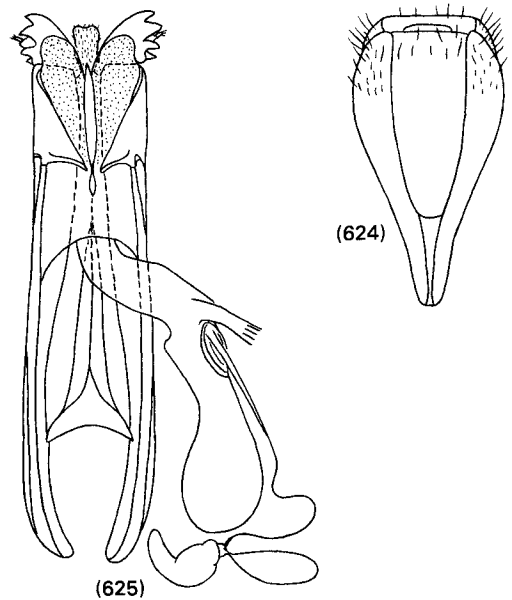


(622)

(623)

622, 623. *Cacephatus propinquus*

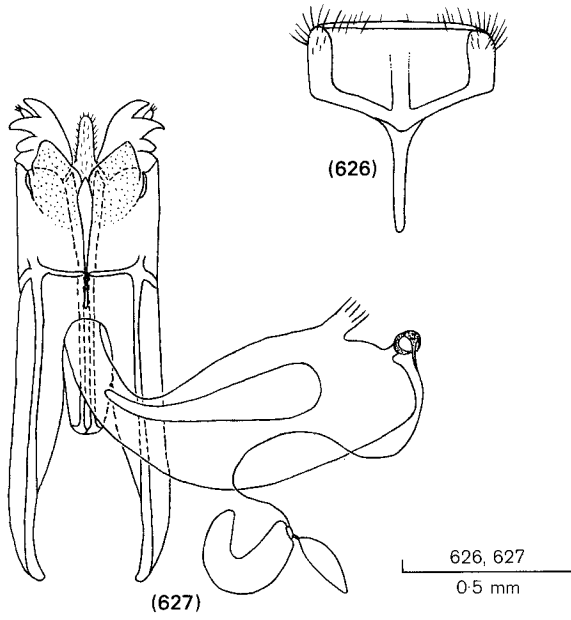
620, 621, 624, 625
0.5 mm



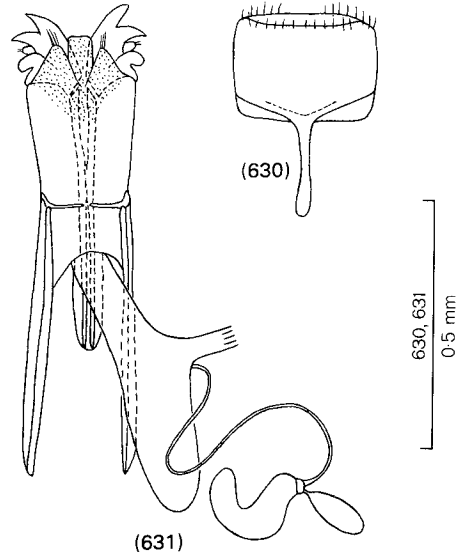
(624)

(625)

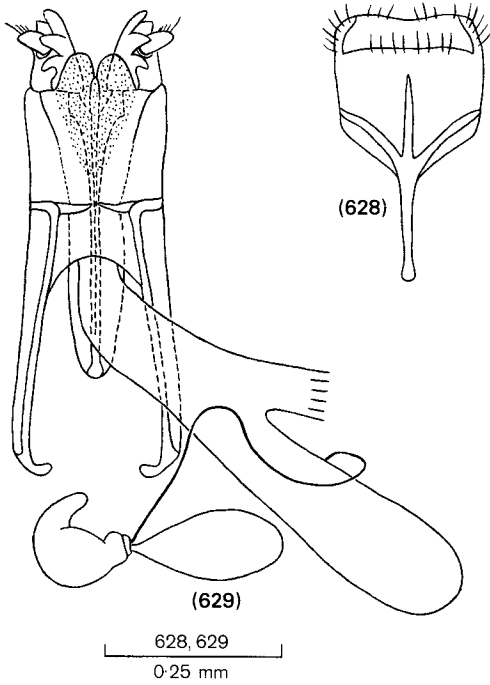
624, 625. *Cacephatus vates*



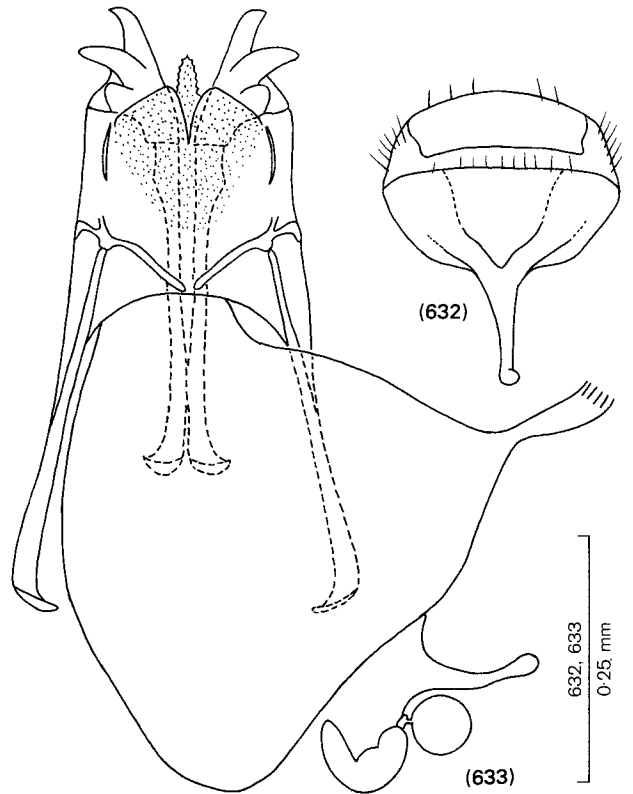
626, 627. *Garyus altus*



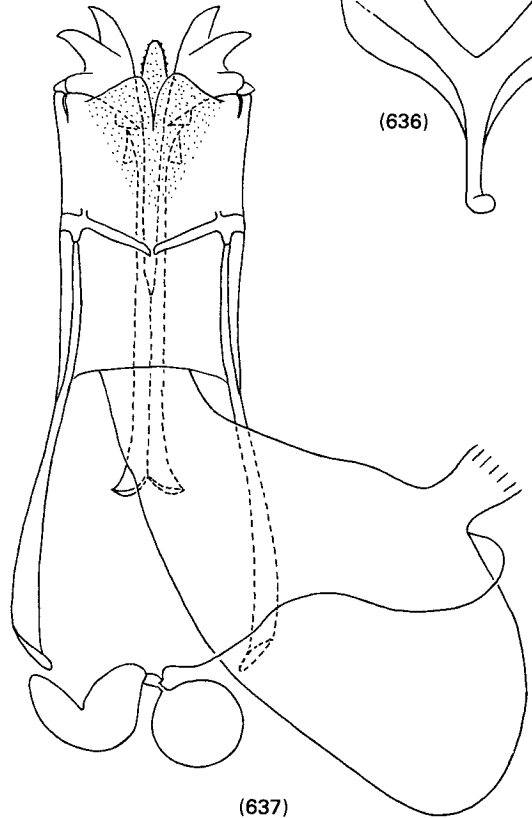
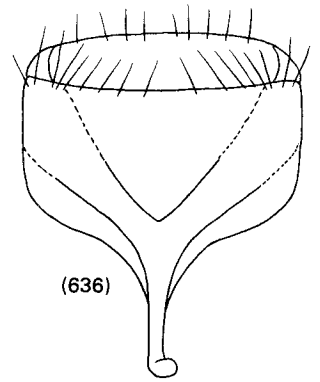
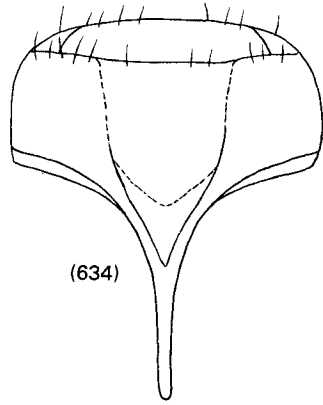
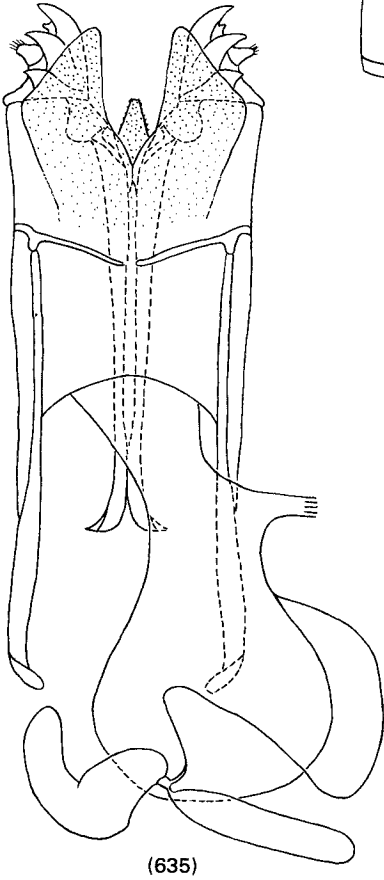
630, 631. *Calibobius littoralis*



628, 629. *Xenanthribus hirsutus*



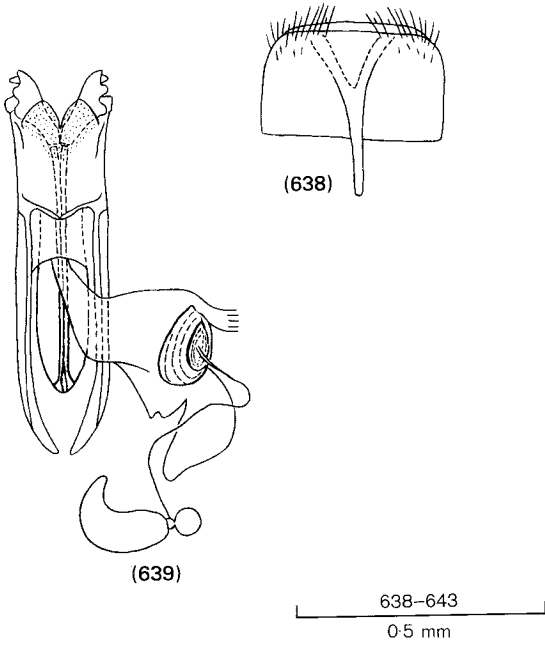
632, 633. *Lichenobius littoralis*



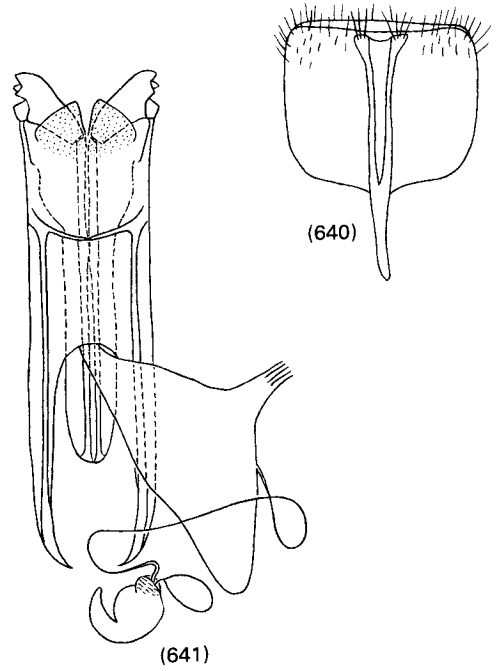
634, 635. *Lichenobius maritimus*

636, 637. *Lichenobius silvicola*

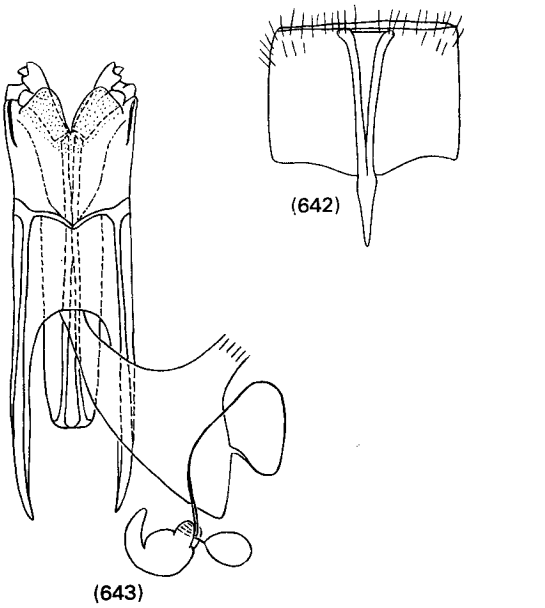
634-637
0.25 mm



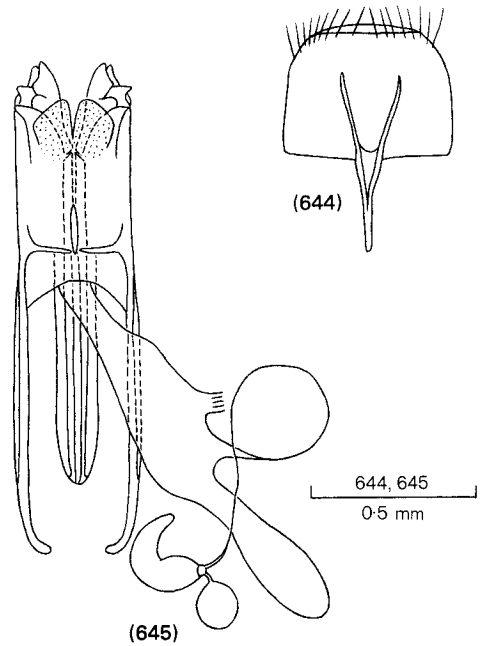
638, 639. *Eugonissus conulus*



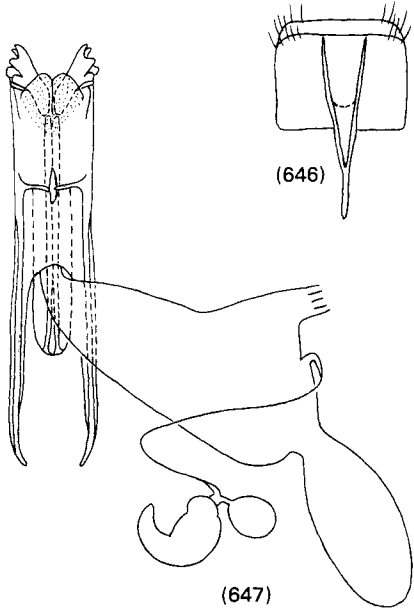
640, 641. *Etnalis obtusus*



642, 643. *Etnalis spinicollis*



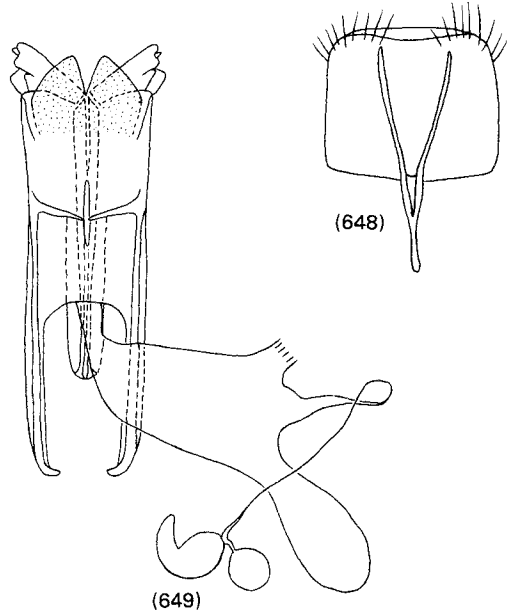
644, 645. *Isanthribus dracophylli*



(646)

(647)

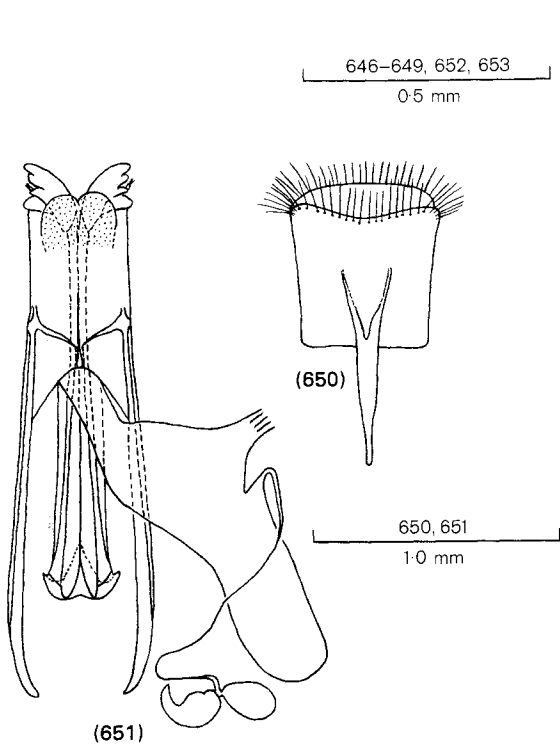
646, 647. *Isanthribus phormii*



(648)

(649)

648, 649. *Isanthribus proximus*

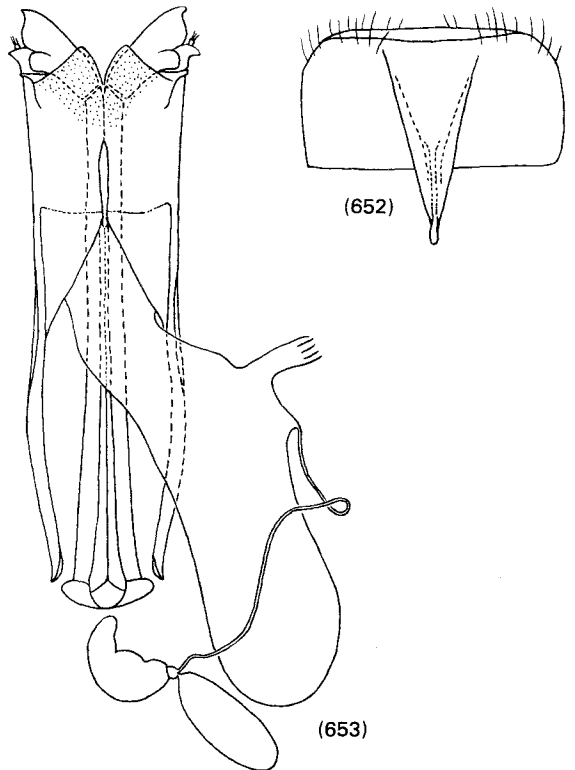


646-649, 652, 653
0.5 mm

(650)

(651)

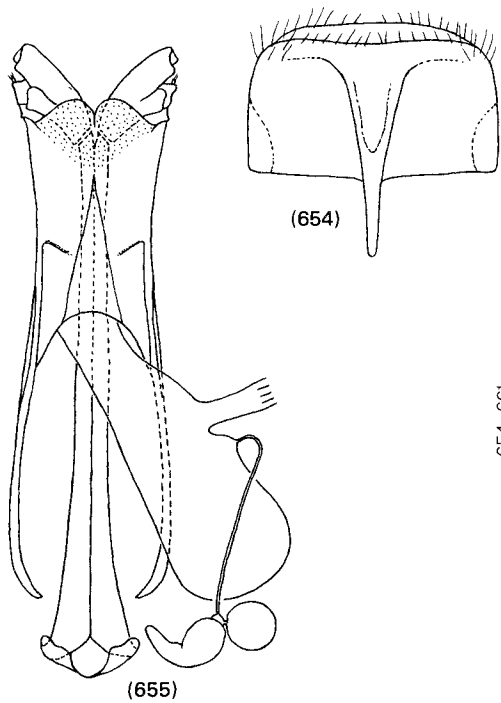
650, 651. *Tribasileus noctivagus*



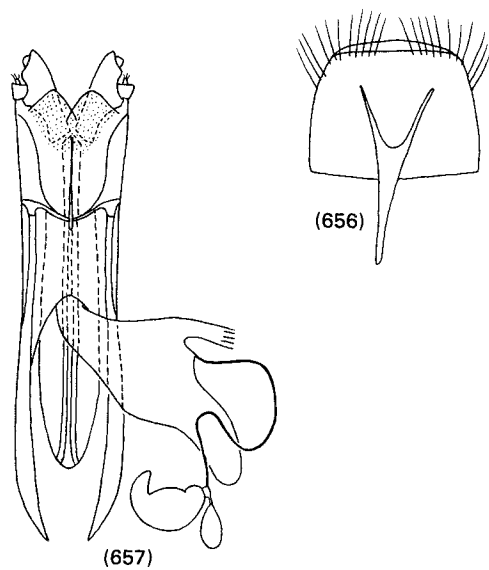
(652)

(653)

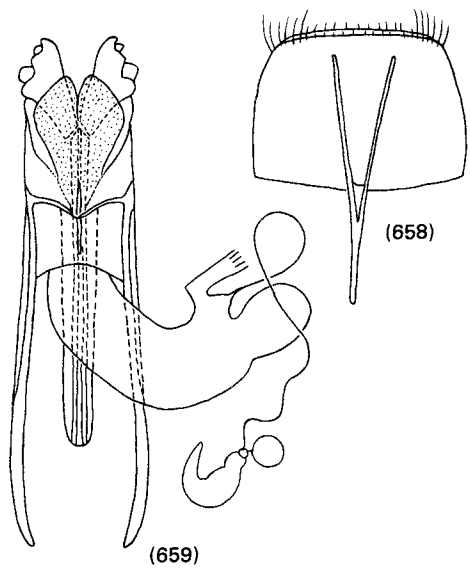
652, 653. *Cerius otagensis*



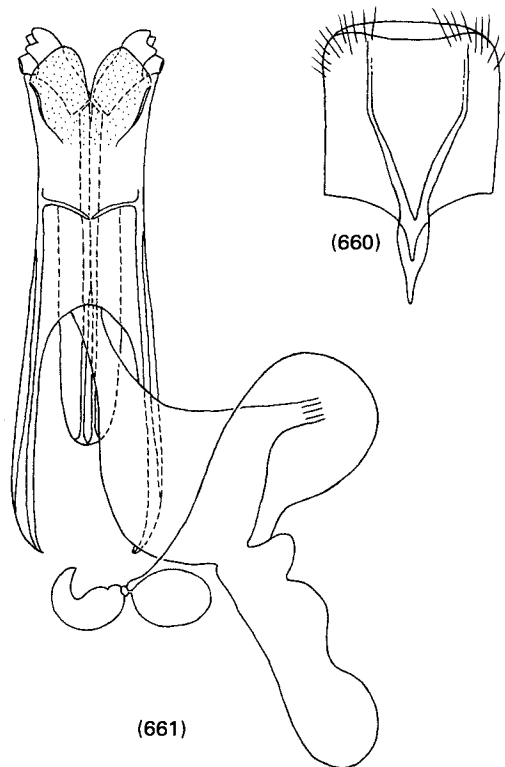
654, 655. *Cerius triregius*



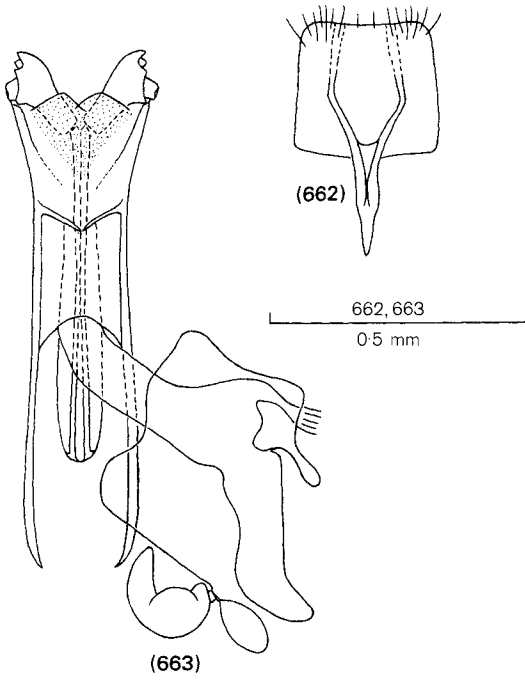
656, 657. *Androporus discedens*



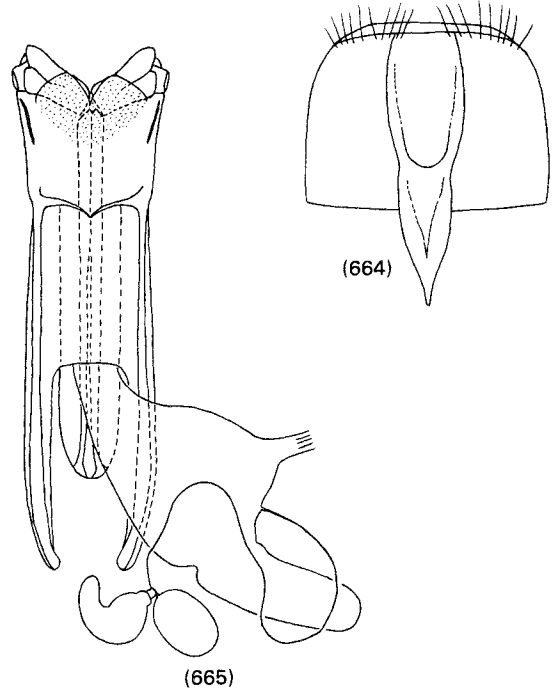
658, 659. *Arecopais spectabilis*



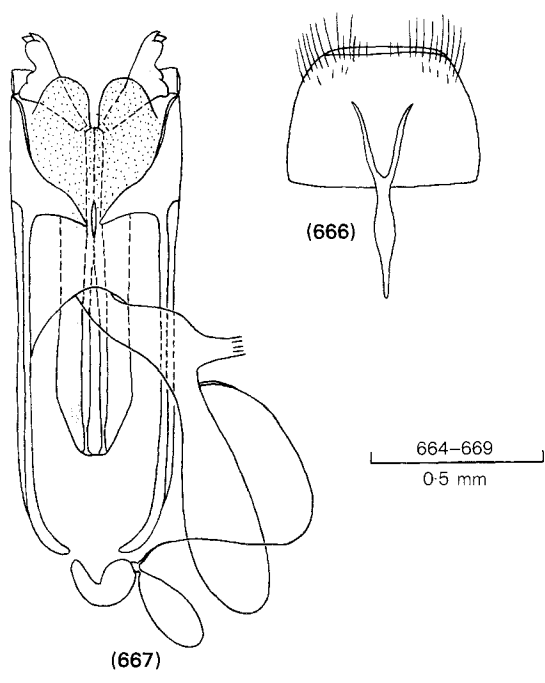
660, 661. *Phymatus cucullatus*



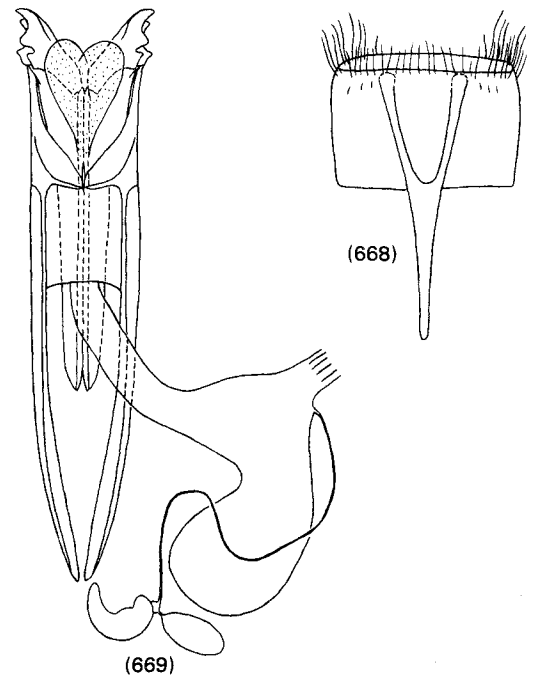
662, 663. *Phymatus hetaera*



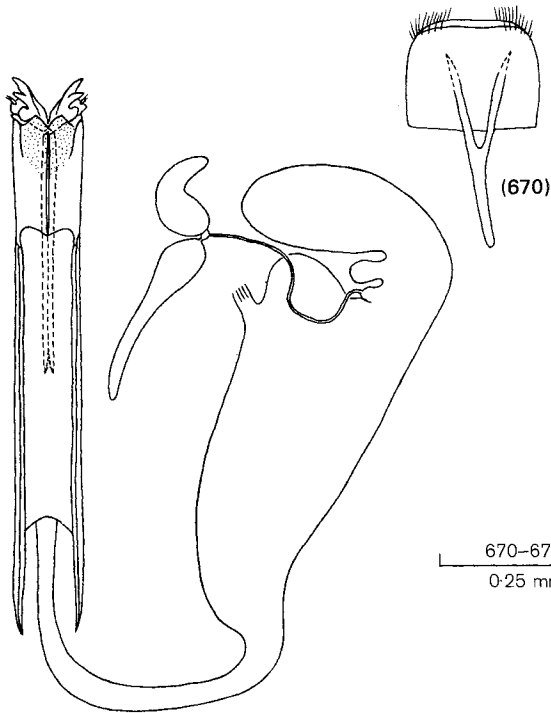
664, 665. *Phymatus phymatodes*



666, 667. *Hoherius meinertzhageni*

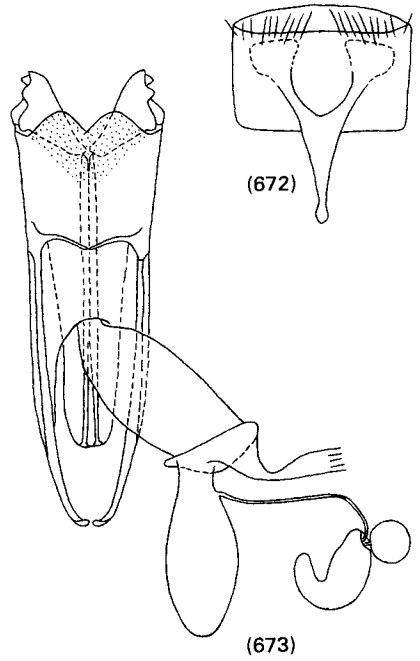


668, 669. *Lawsonia variabilis*



(671)

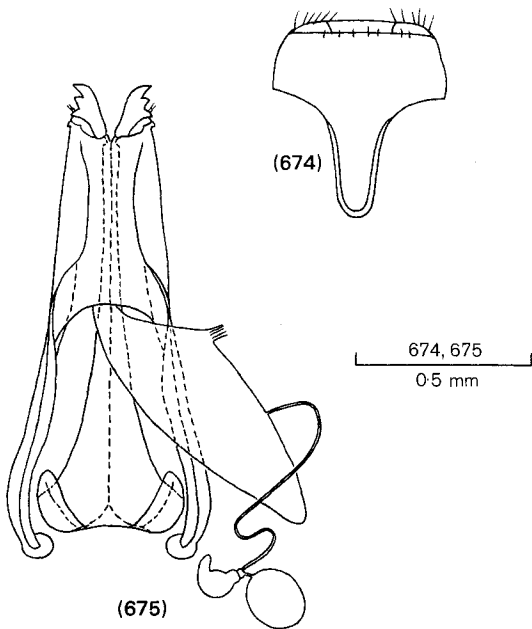
670, 671. *Euciodes suturalis*



(672)

(673)

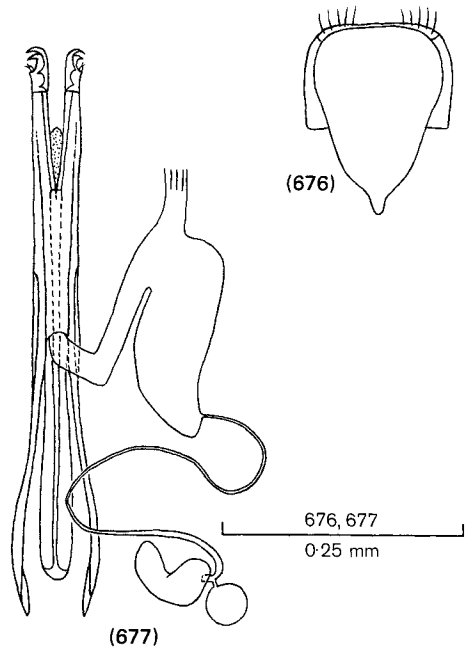
672, 673. *Dasyanthribus purpureus*



(674)

(675)

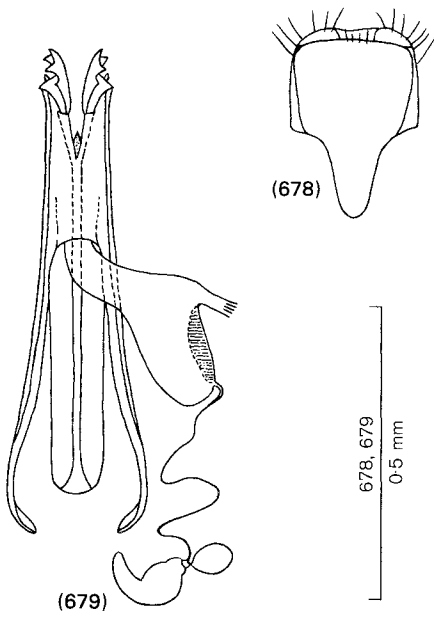
674, 675. *Liromus pardalis*



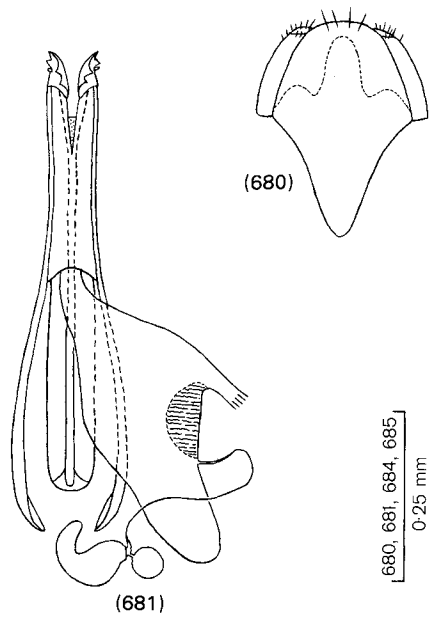
(676)

(677)

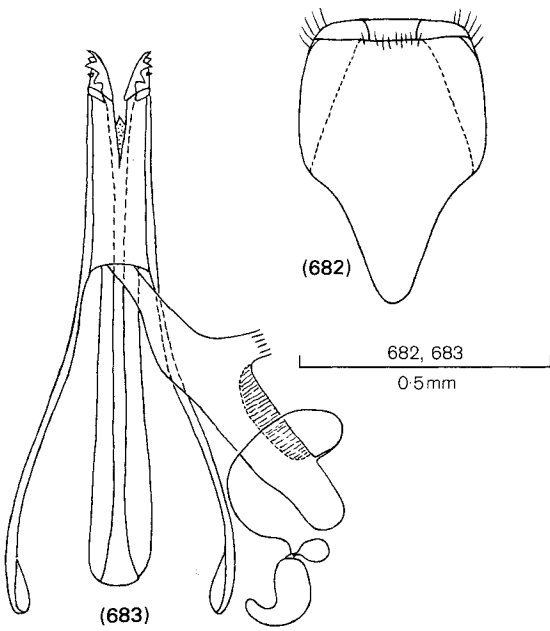
676, 677. *Micranthribus atomus*



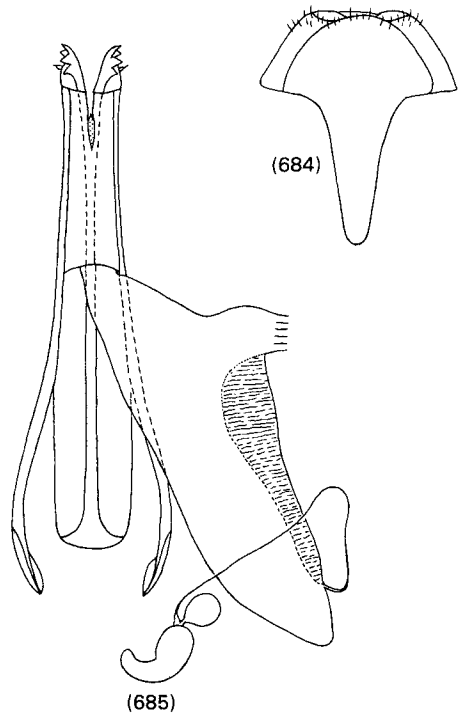
678, 679. *Dysnocyrtus balthasar*



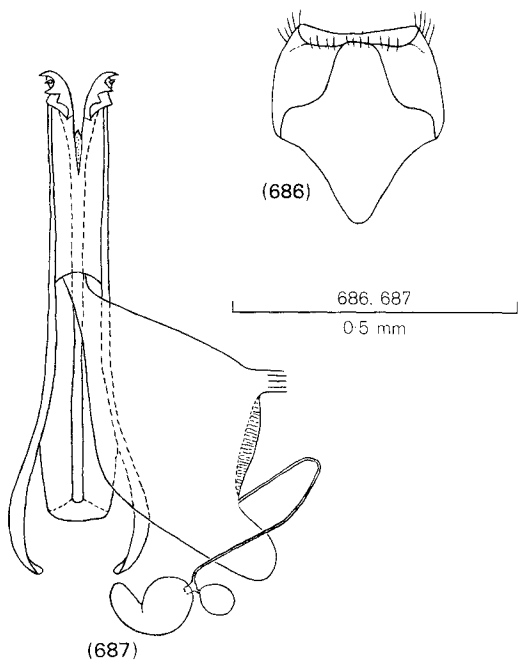
680, 681. *Dysnocyrtus dignus*



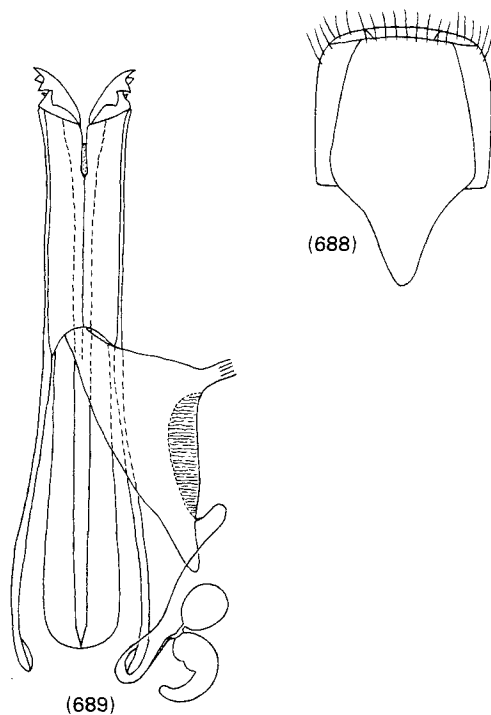
682, 683. *Dysnocyrtus gaspar*



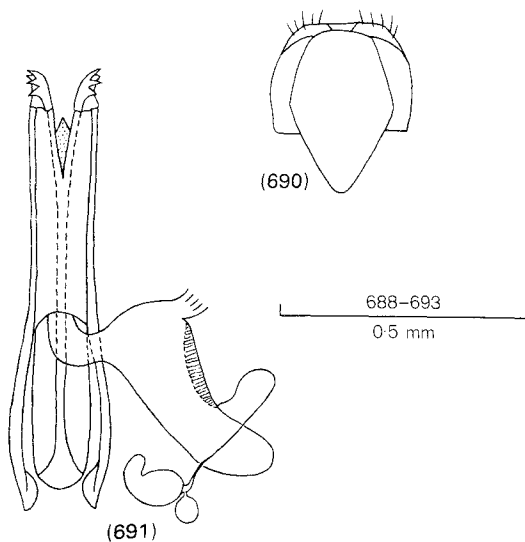
684, 685. *Dysnocyrtus inflatus*



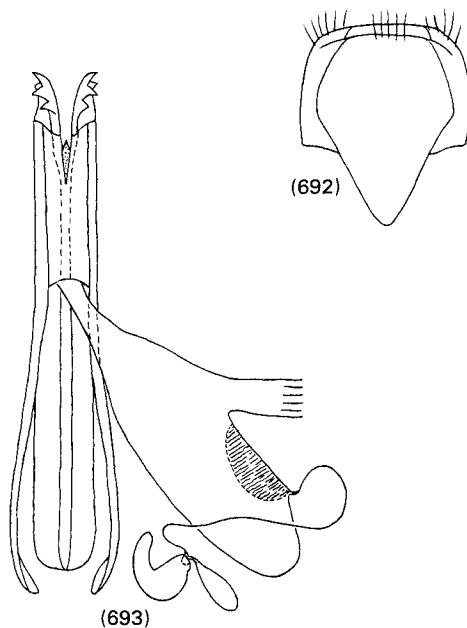
686, 687. *Dysnocryptus maculifer*



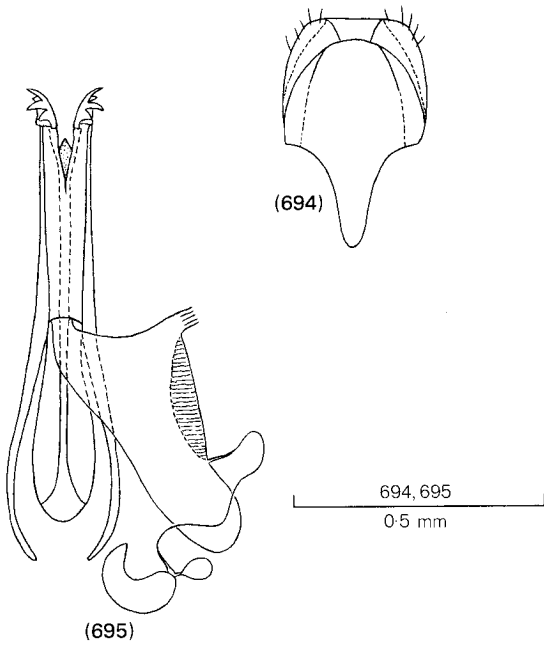
688, 689. *Dysnocryptus melchior*



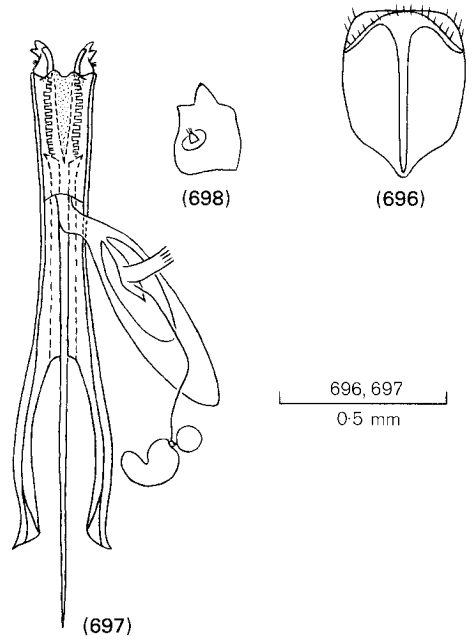
690, 691. *Dysnocryptus pallidus*



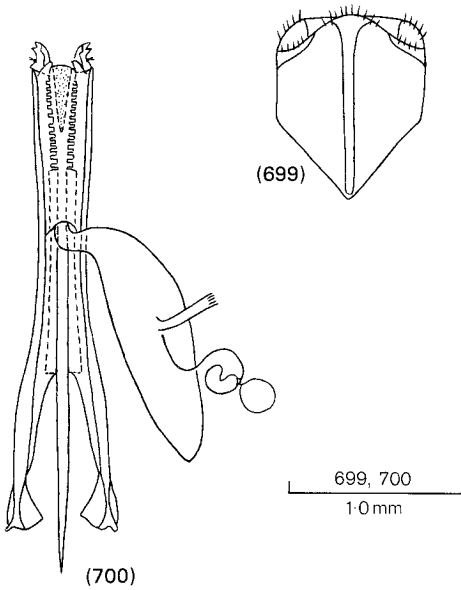
692, 693. *Dysnocryptus pilicornis*



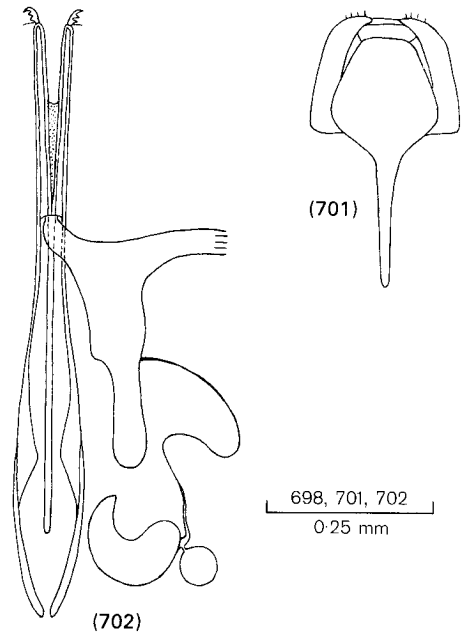
694, 695. *Dysnocyrtus rugosus*



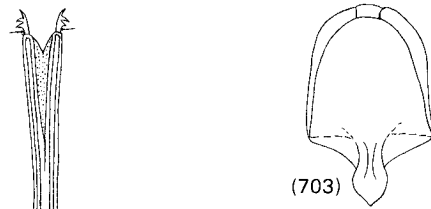
696–698. *Araecerus fasciculatus* (698, apex of right hemisternite, lateral aspect)



699, 700. *Araecerus palmaris*



701, 702. *Notochoragus chathamensis*

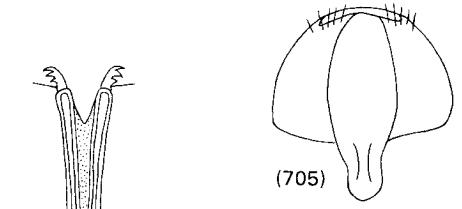


(703)

(704)

703, 704. *Notochoragus crassus*

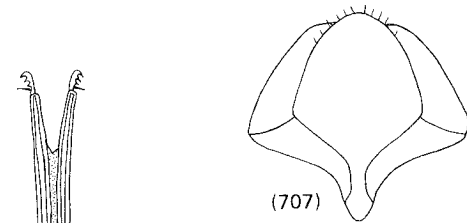
703-710
0.25 mm



(705)

(706)

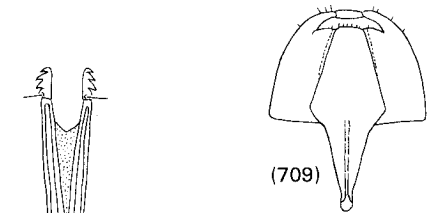
705, 706. *Notochoragus fungicola*



(707)

(708)

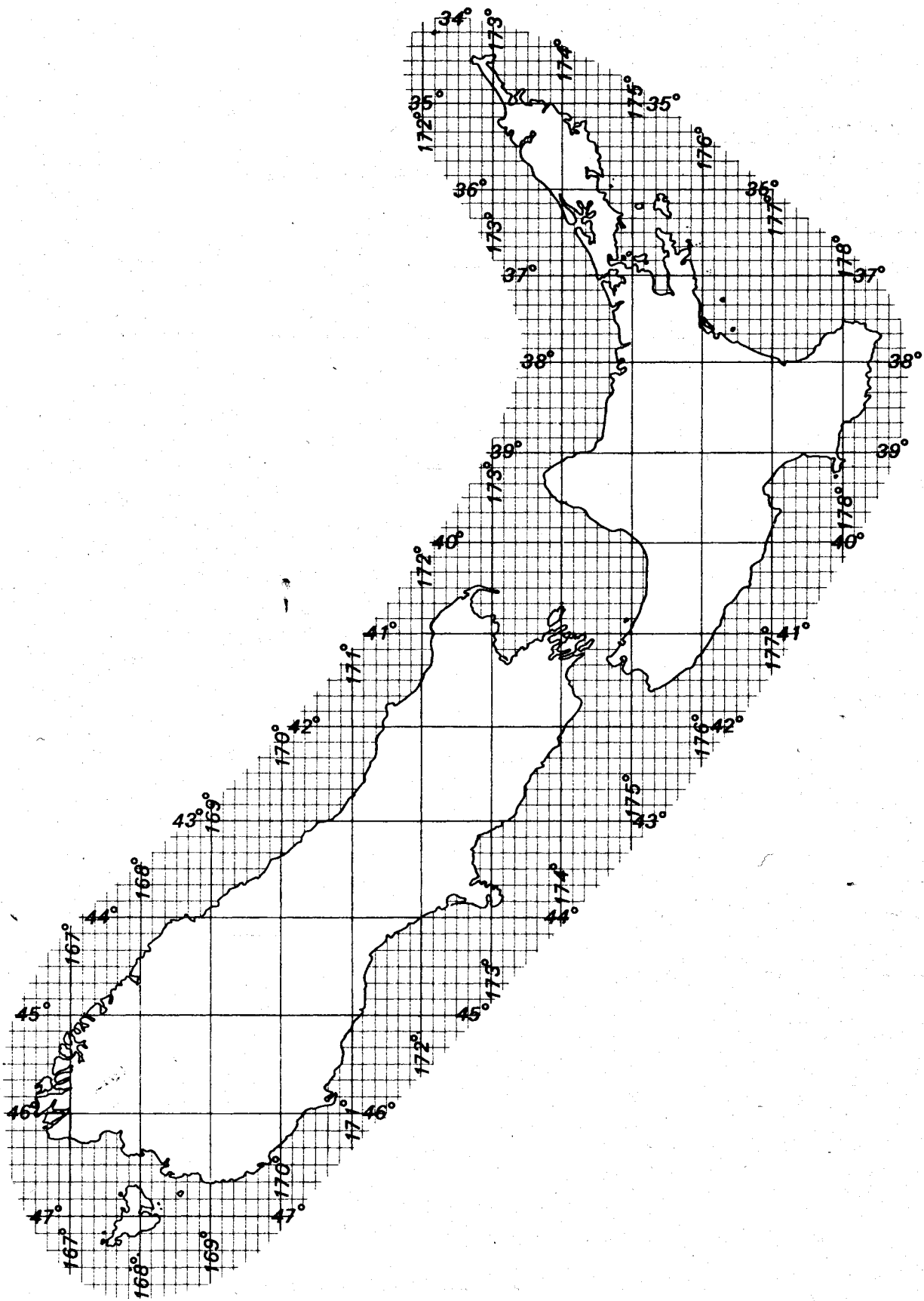
707, 708. *Notochoragus nanus*



(709)

(710)

709, 710. *Notochoragus thoracicus*



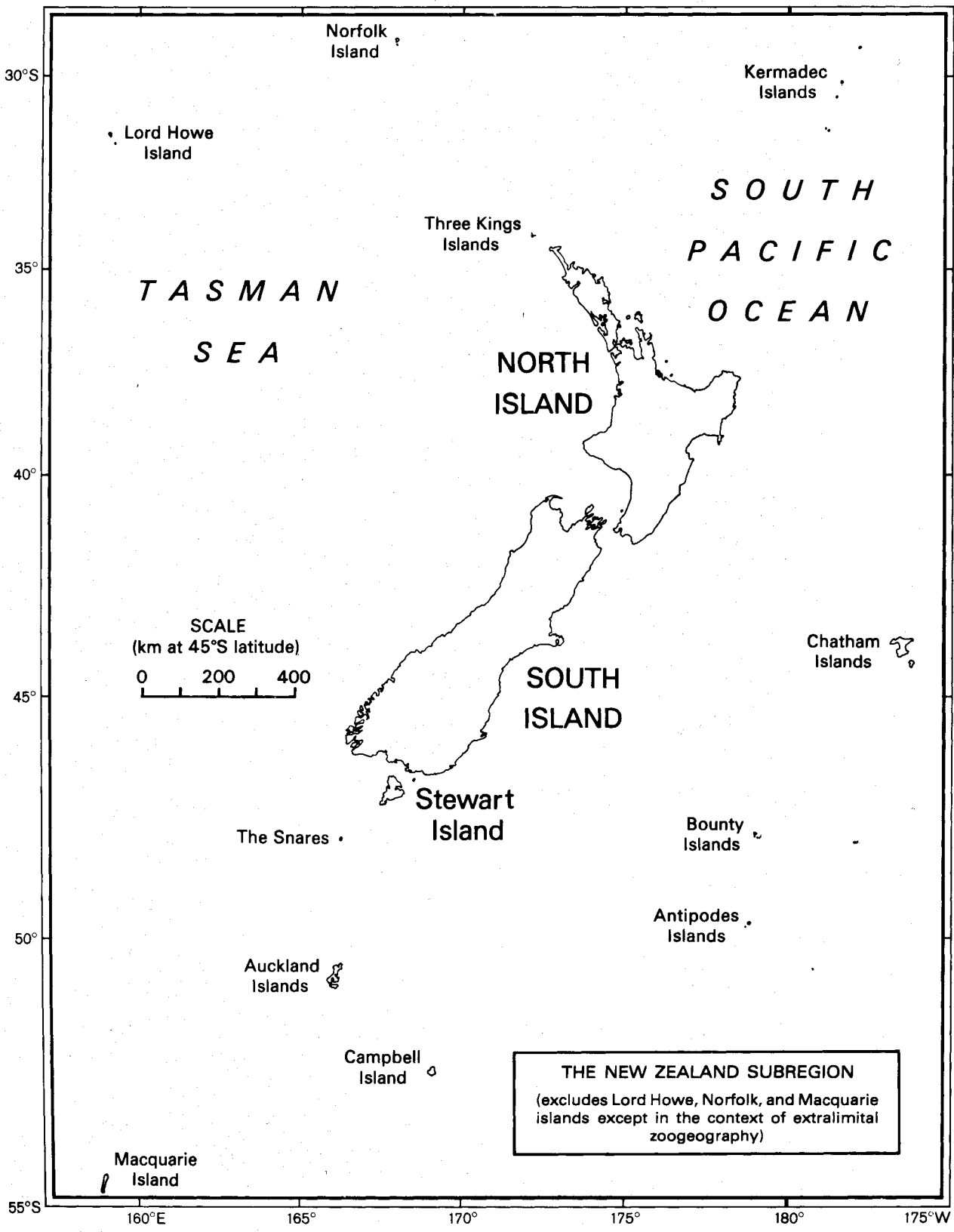
Fauna of New Zealand



Number 3

Anthribidae (Insecta: Coleoptera)

B. A. Holloway



Norfolk Island

Kermadec Islands

Lord Howe Island

SOUTH
PACIFIC
OCEAN

Three Kings Islands

TASMAN
SEA

NORTH
ISLAND

Chatham Islands

SCALE
(km at 45°S latitude)
0 200 400

SOUTH
ISLAND

Stewart Island

The Snares

Bounty Islands

Antipodes Islands

Auckland Islands

Campbell Island

THE NEW ZEALAND SUBREGION
(excludes Lord Howe, Norfolk, and Macquarie islands except in the context of extralimital zoogeography)

Macquarie Island

55°S 160°E 165° 170° 175° 180° 175°W

North Island

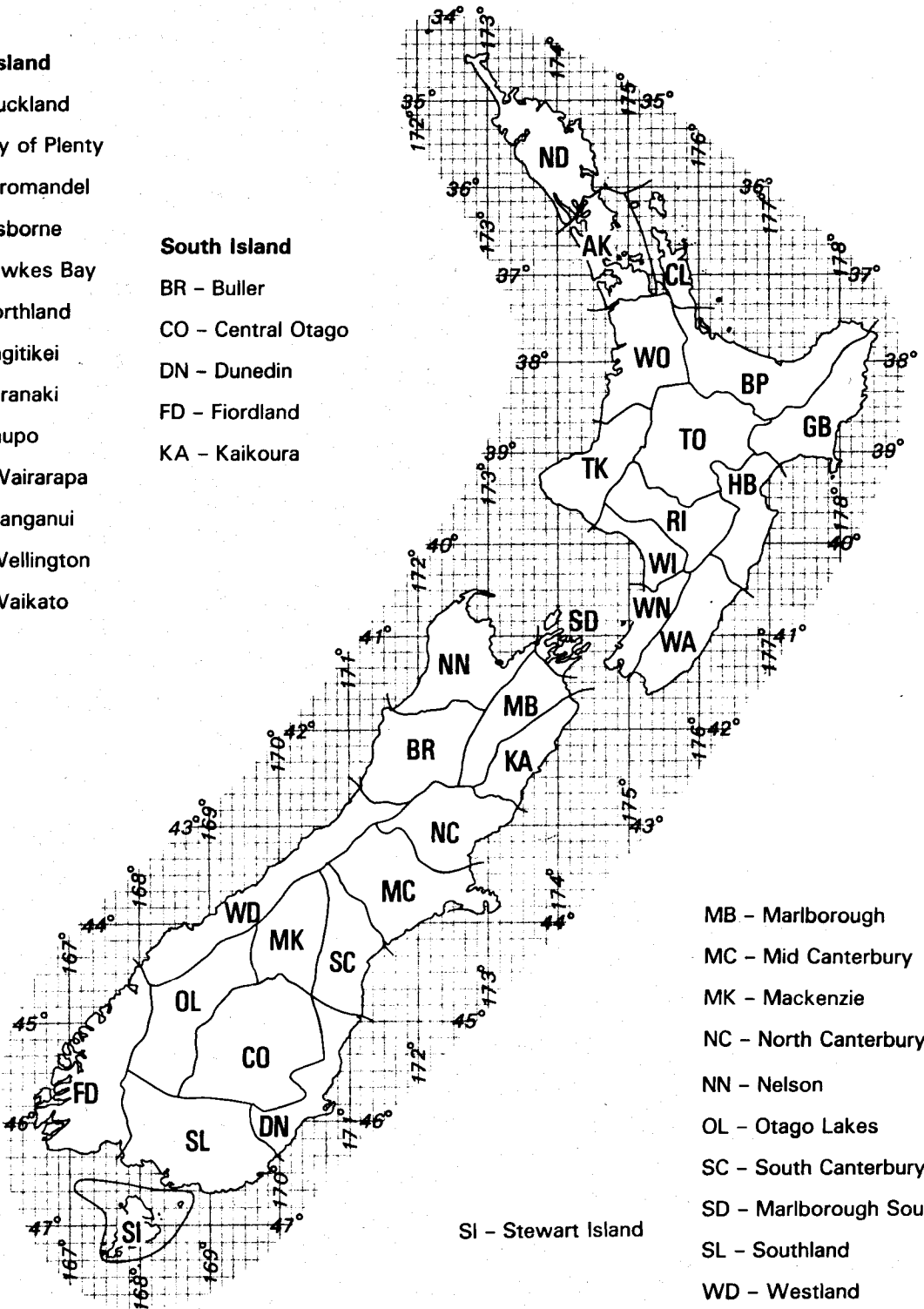
- AK - Auckland
- BP - Bay of Plenty
- CL - Coromandel
- GB - Gisborne
- HB - Hawkes Bay
- ND - Northland
- RI - Rangitikei
- TK - Taranaki
- TO - Taupo
- WA - Wairarapa
- WI - Wanganui
- WN - Wellington
- WO - Waikato

South Island

- BR - Buller
- CO - Central Otago
- DN - Dunedin
- FD - Fiordland
- KA - Kaikoura

- MB - Marlborough
- MC - Mid Canterbury
- MK - Mackenzie
- NC - North Canterbury
- NN - Nelson
- OL - Otago Lakes
- SC - South Canterbury
- SD - Marlborough Sounds
- SL - Southland
- WD - Westland

SI - Stewart Island



Area codes and boundaries proposed by Crosby *et al.* (1976)
for use with specimen locality data

Fauna of New Zealand

This series of occasional publications has been established with two major objectives: to encourage those with expert knowledge of elements in the New Zealand fauna to publish concise yet comprehensive accounts; and to provide a means of identification accessible to the non-specialist. It will deal largely with non-marine invertebrates, since the vertebrates are well documented, and marine forms are covered by the series *Marine Fauna of New Zealand*.

Contributors should discuss their intentions with an appropriate member of the Editorial Advisory Group or with the Series Editor before commencing work (for names and addresses, see page ii). All necessary guidance will be given.

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IN PRINT

No. 1 Terebrantia (Insecta: Thysanoptera), by Laurence A. Mound & Annette K. Walker. ISBN 0-477-06687-9. *Published December 1982. Price to be announced.

No. 2 Osoriinae (Insecta: Coleoptera: Staphylinidae), by H. Pauline McColl. ISBN 0-477-06688-7. *Published December 1982. Price to be announced.

No. 3 Anthribidae (Insecta: Coleoptera), by B. A. Holloway. ISBN 0-477-06703-4. *Published December 1982. Price to be announced.

* Provisional: see this list in later numbers for confirmation.

IN PRESS

No. 4-6 Eriophyoidea (Arachnida: Acari), by D. C. M. Manson. No. 4 — Introduction and keys to the superfamily, Sierraphytoptidae, and Diptilomiopidae; No. 5 — Eriophyidae except Phytocoptinae; No. 6 — Phytocoptinae.

No. 7 Hydraenidae (Insecta: Coleoptera), by R. G. Ordish.

No. 8 Calliphoridae (Insecta: Diptera), by J. P. Dear.

IN PREPARATION

Mollusca: Gastropoda — Punctidae, by F. M. Climo; Introduced Pulmonata, by G. M. Barker.

Arachnida: Acari — Ixodidae, by G. W. Ramsay.

Insecta: Coleoptera — Nemonychidae, by G. Kuschel; Introduced Curculionidae, by G. Kuschel; Key to families, by J. C. Watt. Hymenoptera — Chalcidoidea, by J. S. Noyes & E. W. Valentine. Thysanoptera — Tubulifera, by L. A. Mound & A. K. Walker. Hemiptera — Psyllidae, by P. Dale. Diptera — Bibionidae, by R. A. Harrison. Protura, by S. L. Tuxen. A further eleven contributions had been promised up to the time this number went to press.

CHECKLIST OF TAXA

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KEY TO TAXA

DESCRIPTIONS

ILLUSTRATIONS

TAXONOMIC INDEX

This index lists alphabetically all names and combinations that relate directly to Anthribidae and that appear in the main text (pp. 12-168). The appendices and the synoptic key do not lend themselves to indexing, and the illustrations of taxa may be found by reference to the figure numbers at the start of each description. Primary references to taxa are indicated by a suffix after the page number, thus: d - first page of description; k - page on which taxon is keyed out.

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CORRIGENDA

to first impression

Page 13, column 1, line 19: change '*Proscopis*' to '*Proscopus*'

Page 38, column 1, couplet 4, line 7: change 'longer' to 'shorter'

Page 135, column 2, Remarks, line 4: change '*Dasanthribus*' to '*Dasyanthribus*'

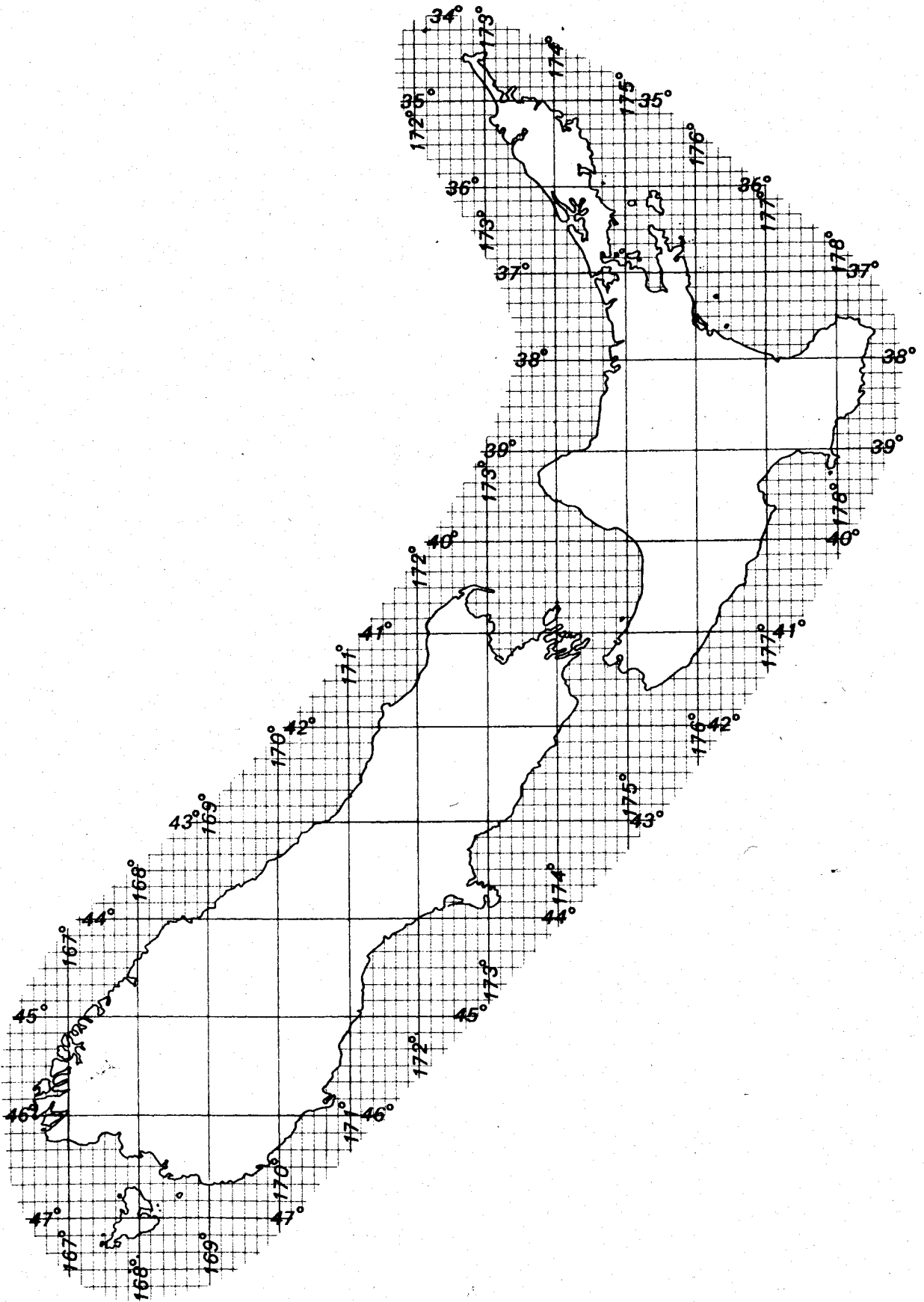
Page 157, column 1, *Araecerus fasciculatus* (Degeer): under heading add
'Figures 256, 258, 552-556, and 696-698'

Page 171, column 1, Zimmerman, E.C. 1938, line 3: change '*Panahi*' to '*Pauahi*'

Page 180, column 1, choice 2-19: change 'Antennae' to 'Eyes'

Page 181, column 1, choice 3-17e: add '5' to list of numbers representing
species

Page 193, Figures 37-38 caption, line 1: change 'right' to 'left'



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Series Editor

Mr C. T. Duval
Systematics Section, Entomology Division
Department of Scientific and Industrial Research
Mount Albert Research Centre
Private Bag, Auckland, New Zealand

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