

HEATHER BEETLE

Lochmaea suturalis

The history of heather beetles in New Zealand

Heather was planted in Tongariro National Park (TNP) in 1912 to provide food and cover for introduced grouse. While grouse failed to establish, heather thrived and has now invaded more than 50 000 ha of the Central Plateau, North Island.

Heather beetles are native to north-west Europe where large scale outbreaks can devastate heather. They were first imported from the UK by Landcare Research in 1992 and were released into TNP in 1996 after being cleared of a protozoan parasite. Beetle populations have been slow to establish here and poor climate-matching, genetic bottlenecking and low foliar nitrogen levels appear to be contributing factors. A few large-scale outbreaks have severely damaged about 100 ha of heather at high altitude sites on the Central Plateau 10 years after the beetles were released.

How would I find heather beetles?

Adult beetles are visible during spring and autumn when they feed up on heather foliage. They range in colour from light brown to almost black and are about 6 mm long. Because of their cryptic behaviour and tendency to drop to the



Larva



Adult beetle

ground when disturbed, adults can be hard to see unless present in large numbers. Adults spend the winter in moss or litter at the base of plants until rising temperatures in the spring stimulate them to emerge, feed, and produce eggs. The beetles are capable of flying at least several kilometres after this spring emergence, but they probably only do this when surrounding heather is in poor condition.

The females lay on average 175 pale yellow pinhead-sized eggs which turn dark orange and then brown just before hatching. This process takes about 1-2 weeks. The greyish-white larvae with black heads are difficult to see unless extremely common. They feed on the young shoots and leaves during the summer. The larvae feed and develop through three stages and over 4-5 weeks grow to about 12 mm long. Once fully grown the larvae pupate inside earthen cells. You are unlikely to see these pupae as they are usually formed just below the soil surface or in the litter layer. After about 3-4 weeks new adults emerge. By now it is usually late summer and the new adults spend the autumn feeding until cooler temperatures induce hibernation. There is only one generation per year.

There are no other insects on heather that you are like to confuse with the heather beetle.



OTHER AGENTS



How do heather beetles damage heather?

Both the larvae and the adults feed on the foliage. When present in large numbers they can severely defoliate whole plants causing them to turn reddish-brown and die.

Will heather beetles attack other plants?

No, it is extremely unlikely that the beetles will attack anything other than Scottish heather (*Calluna vulgaris*). Spanish heath (*Erica lusitanica*) and other *Erica* species are not considered to be suitable hosts – heather beetles may be found on them but are unlikely to be damaging.

How effective are heather beetles?

Population establishment and growth tends to be slow at high altitude Central Plateau sites. The beetles establish and spread faster at lower altitude, more fertile sites. Once established in good numbers, the damage caused by the beetles is spectacular and they can reduce heather cover by up to 99%.

Nitrogen fertilizer is being trialled to see if it can speed up establishment and trigger outbreaks, and more genetic material from



Heather killed by the beetles



Adults feeding

areas in the UK with a better climate match to TNP may be required.

How can I get the most out of heather beetles?

Although the adults are capable of flying at least several kilometres after spring emergence, they probably only do this when surrounding heather is in poor condition. Distribution is still quite limited so harvesting and moving the beetles to new areas is likely to be useful.

How do I choose a release site?

Read *Guidelines for selecting release sites for biocontrol agents*.

How do I collect heather beetles for release?

Collect adults with a sweep net off heather foliage on warm calm days during early spring or mid autumn. Only collect from outbreak populations and aim to shift about 500 adults if possible.

How do I manage the release sites?

Avoid activities that will interfere with the heather beetles life cycle. Avoid herbicides if possible.

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