Endangered Species Foundation

Protecting New Zealand's rarest of the rare

Foveaux Looper Moth

Asaphodes frivola (Meyrick, 1913)

Windswept beaches

Habitat of *Asaphodes frivola*, Tiwai Point. Brian Patrick

Quickfacts

Now known from only two beaches near Invercargill

Host plant needs to be confirmed

Conservation Status: Nationally Endangered

Finding the host plant

The Foveaux looper moth is endemic to the Invercargill area, where it is known from only two sites. It lives in sheltered, coastal herbfields dominated by either knobby clubrush or silver tussock that occur right on the coast next to shelly or gravel beaches. The herbs *Apium prostratum*, *Selliera radicans*, *Leptinella serrulata*, *Centella uniflora* and *Ranunculus glabrifolius* may be present in this habitat also. This moth exhibits sexual dimorphism as males and females have different body shapes, with females being smaller than males, and they also have shorter, non-functional wings (brachypterous) and are flightless. Although flightless, the females are known to be very agile, and with their long legs can run quite quickly. Larvae are initially a dull green/grey/brown colour with pink tinges, and older larvae have a distinctive herringbone pattern on their backs. They pupate on the soil surface, and adults then emerge from mid-March to mid-April to mate, and are active on the warmest nights during this time. The buttercup *Ranunculus glabrifolius* is thought to be the Foveaux looper moth's host plant, as the *Ranunculus* genus is the main host plant for the 46 other species of *Asaphodes* in New Zealand. It is unusual to find this buttercup species inhabiting coastal areas, as it is more

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frequently found in montane to subalpine wetlands where they are host to this moth's closest relatives in Central Otago. In the Invercargill area this buttercup is found within open-semi open areas and in damp areas, but it is rare, even in areas where the Foveaux looper moth has been found (Oreti River and Awarua Bay). This rarity is likely due to damage of coastal habitats by recreational vehicles and invasion of open damp areas by exotic herbs and grasses.

The Foveaux looper moth lost, and refound

The Foveaux looper moth was first discovered near Invercargill in 1913, by Alfred Philpott, who sent a specimen to London, where it was subsequently formally described by Edward Meyrick. The holotype (specimen that is used to formally identify a species) is lodged in the British Museum of Natural History, in London. The exact location of the specimen collected by Alfred Philpott isn't known, but is thought to have been from the New River estuary. The moth was never found again by Alfred Philpott, and for the next 68 years no other lepidopterist (moth expert) found any trace of it.

It wasn't until 1981, 68 years after its initial discovery, that the Foveaux looper moth was rediscovered, by Brian Patrick, an experienced lepidopterist who was living in the Invercargill area at the time. He found it at Sandy Point in coastal grassland. Further survey work between 1981-2013 revealed other populations of the moth at Otatara, the coastal fringe of Tiwai Spit and the Three Sisters sand dune. This survey work revealed that its habitat of low herbs, coastal grassland and coastal fringe herbfield, was uncommon, and that which remained was threatened by weed invasion. In 2014, a survey of sites where the Foveaux looper moth might be present was undertaken, with the Tiwai Spit site being the only site where it was still present where one male was found. It is likely to also be present in the Three Sisters sand dune, as individuals were found there as recently as 2013. It is now thought that there are no longer populations present at Otatara and Sandy Point, as they were last seen there in 1981.

Foveaux looper moth conservation

Only 34 males and 6 females have ever been found of the Foveaux looper moth despite intensive searching over the past 33 years. In 2014 it was classified as Nationally Critical, based on there being only two known populations, the rare and probably threatened nature of its host plant at these sites, the lack of individuals found despite extensive survey effort, and ongoing threats to it's habitat. Previously in 2012 it had been classified as Nationally Endangered, with the qualifier One Location.

The two remaining sites that the Foveaux looper moth are known from, Tiwai Spit and Three Sisters sand dune, are very small and hence very vulnerable to fire, human-induced damage, and invasion of exotic plants that could swamp its host plant, *Ranunculus glabrifolius*. It is considered that the Foveaux looper moth would very likely become extinct within the next 10-30 years without management, due to the identified existing risks to its survival, its small areas of occupancy and very small population numbers at its two known sites.

What next?

In his 2014 paper, Brian Patrick recommends the following for future work for the Foveaux looper moth:

- Confirm larval host
- Define habitat
- Confirm species range
- Assess and possibly enhance habitat
- Establish monitoring

Confirming the larval host plant requires either searching for the caterpillars and recording the plants they feed on, or raising some caterpillars together with a selection of host species, particularly buttercups (both native and exotic).

This is likely to cost $15,000.

Defining the habitat will require repeated visits to the sites at times when the weather is calm and warm and searching for active adults, mapping their locality and detailing the plants in the surrounding area where they are found.

This is likely to cost $25,000.

Confirming the species range is probably not worth expending additional effort given the recent searches for the species. A watch should be kept for this species at other southern coastal sites, particularly on western Stewart Island's sand beaches.

Enhancing the habitat requires information on what are the species' food plants and habitat (see above). Controlling ecosystem-transforming weeds at the Tiwai Point and Three Sisters sites would be beneficial, and, once the larval host is known, enhancing

populations of that species at the site by removing competing weed species and possibly planting more are likely to benefit this species.

Controlling weeds at the two sites where this species is found is likely to cost c. $15,000 per annum.

More information

Webpage: Landcare Research: *Asaphodes frivola*. Link
Webpage: Life on the Edge. Moths and Butterflies of New Zealand Trust. PDF
Scientific paper: Ecology and Conservation of the rare moth *Asaphodes frivola* Meyrick. By Brian Patrick. The Weta 47: 17-38, 2014. PDF
Article: Awarua Wetland Newsletter. 2014. (DOC). Link
Article: The mystery of the little brown moth. 2014. (DOC). Link
Scientific paper: The Conservation Status of New Zealand Lepidoptera. By Ian Stringer, Rod Hitchmough, John Dugdale, Eric Edwards, Robert Hoare & Brian Patrick. New Zealand Entomologist Vol. 35 (2), pages 120-127, 2012.
Blog post: Moths with flightless females: two New Zealand examples. 2011. Link
Scientific paper: Conservation of New Zealand's tussock grassland moth fauna. By Brian Patrick. Journal of Insect Conservation Vol. 8 (2), pages 199-208, 2004.
Scientific paper: Conservation Status of the New Zealand Lepidoptera. By Brian Patrick and John Dugdale. Science for Conservation, 2000. Department of Conservation PDF

Photos

Museum specimen of *Asaphodes frivola* Landcare Research

Male *Asaphodes frivola* on a *Ranunculus glabrifolius* leaf. Brian Patrick

Short-winged female *Asaphodes frivola* Brian Patrick

Male *Asaphodes frivola* on saltmarsh vegetation Brian Patrick

This webpage represents the views of the Endangered Species Foundation of New Zealand and not necessarily those of other individuals or organisations involved in the conservation of this species.

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