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No. 42

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URESIPHITA POLYGONALIS MAORIALIS (FELDER)*

KEPT IN
PAMPHLET
BOX

(LEPIDOPTERA : PYRALIDAE)

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Kowhai Moth

M.K. Kay



FIG. 1: Caterpillar of kowhai moth on lupin. The line shows natural length.

*Previously known as *Mecyna maoralis* Felder

Type of injury

The caterpillars of the kowhai moth feed on the foliage of their host plants. Young caterpillars skeletonise leaves, while older ones consume whole leaves, so that plants are often completely defoliated.

Hosts

The caterpillars feed on certain members of the legume family. Common hosts are *Sophora* (kowhai) and *Lupinus arboreus* (yellow tree lupin). Occasionally gorse, clover, and broom are attacked.

Distribution

This native moth is present throughout New Zealand.

Economic importance

Kowhai appear fairly tolerant of heavy defoliation although flowering may be affected.

The importance of this insect to forestry lies in the recurrent defoliation of sown yellow lupin (Fig. 2). In sand stabilisation programmes lupin is sown to provide protection and nitrogen for the young trees. Defoliation of lupin retards its growth and impairs nitrogen fixation by bacteria present on its roots. Caterpillars of the kowhai moth are consistently the major defoliators amongst a complex of other caterpillars such as *Cleora scriptaria* (a looper), *Heliothis armigera* (tomato fruitworm), and various tortricids (leaf-rollers) which attack lupin.

Repeated defoliation of lupin slows the process of sand reclamation and resowing of considerable areas has sometimes been necessary. Flower production and seed setting also appear to suffer following defoliation and make seed collection for future sowings difficult. However, defoliation may sometimes be beneficial by releasing young pines from dense lupin growth.



Lupin, two metres tall, defoliated by caterpillars of kowhai moth. Woodhill Forest, North Auckland.

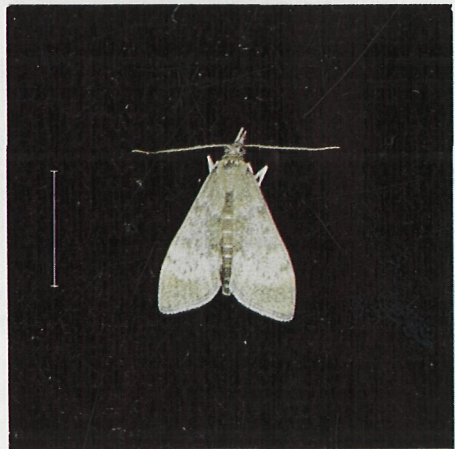
Description, life history, and habits

The moth (Fig. 3) has a wingspan of about 30 mm and when at rest the wings, narrow head, and long maxillary palps form a delta shape (Fig. 4). The colour of the forewings is variable, but usually they are fawn with a lighter grey-fawn band across the wing about one-third



FIG. 3: Kowhai moth. The line shows approximate wingspan.

FIG. 4: Kowhai moth resting. The line shows natural length.



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the distance in from the outer edge, and have some darker markings in the central area. The hindwings are usually bright orange-yellow, edged with a broad blackish band that tapers towards the rear. Dark forms of the moth may have hindwings which are grey-brown. Both sexes are very similar in appearance. The abdomen of the male is only slightly longer and narrower than that of the female.



FIG. 5: Egg mass laid by kowhai moth on leaflet of lupin.

Adults fly in a quick jerky manner. The flight season lasts from October to April but adults are most common in mid-summer. Eggs are laid in batches of 10–30 in a single flat layer on the upper surface of a leaf (Fig. 5), and are similar in appearance to those laid by adults of leafroller caterpillars. The eggs of the kowhai moth are creamy-yellow when first laid and darken during development. They hatch in about seven days and the small caterpillars tend to remain together. To some extent mature caterpillars retain this clumped distribution. The need to provide such groups of offspring with an adequate food supply may explain why the females rarely lay eggs on small lupin plants.

The caterpillar sheds its skin four times during growth to reach full size (about 30 mm long) in 3 to 4 weeks.

The general body colour is pale green, while the head is orange (Fig. 1). There is a conspicuous yellow and white stripe along each side of the body, and along the back there are two rows of white-spotted black bumps. Long fine bristles arise from the white spots.

Mature caterpillars change gradually from pale green to pale yellow, and emigrate in search of crevices, usually in tall objects, in which to pupate. In coastal pine plantations exit holes left in trees by emerging sirenix woodwasps are often used. The caterpillars at this stage are also capable of excavating pupal chambers in soft material. Within a chosen refuge the caterpillar (now a prepupa) constructs a silken cocoon and pupates. Pupae may also be found amongst the leaves of kowhai, but very rarely amongst those of lupin although they may occasionally be present at the base of the plant. Pupation lasts about 3 weeks. There may be up to five generations a year, and in warm conditions populations build up rapidly so that in mid-summer high numbers are common. Caterpillar development appears to be considerably faster when feeding on lupin than when feeding on kowhai. The insect overwinters as a pupa.

Control

Any insecticide suitable for chewing insects may be used to control caterpillars of the kowhai moth in gardens and lupin seed orchards.

The only recorded insect parasite of the insect is *Ecthromorpha intricatoria* (Fabricius) (Hymenoptera : Ichneumonidae) which emerges from the pupa, but this appears to have little effect on the populations on the sand dunes. In this environment the caterpillar also seems remarkably free from predators. If a large caterpillar is disturbed it falls quickly to the ground where it curls in a tight ball, and so may escape enemies such as the predatory bug *Cermatulus nasalis* (Westwood) (Hemiptera : Pentatomidae). It is possible that caterpillars

accumulate toxins while feeding on alkaloid-rich lupins, and this may deter insectivorous birds. Certainly birds do not appear to be interested in the mature caterpillars which boldly migrate during the day.

Food shortage, and viral or bacterial diseases (Fig. 6) may cause the collapse of high populations.



FIG. 6: Caterpillar of kowhai moth killed by disease.

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