Variation in the flight period of *Declana floccosa*

John E. C. Flux
Mike J. Meads
Ecological Research Associates NZ, PO Box 48147, Silverstream, Upper Hutt (flux@paradise.net.nz)

Introduction

The manuka moth, *Declana floccosa* (Geometridae), is common throughout New Zealand, except in tussock grasslands (White 2002), but its flight period has not been well documented. Thus, Meyrick (1883) gave for Christchurch "August, November, and from March to June (Mr. R. W. Fereday); Thirty specimens.", while Gaskin (1966) stated that it "occurs throughout the year", and Hudson (1928) that the adult "appears about September, and continues in more or less abundance until the end of April".

Methods

In order to examine variation in the flight activity period of *D. floccosa*, 160 individuals have been collected at 230 Hill Road, Belmont, Lower Hutt (41°11'S, 174°54'E) since 1974. Most were found by day settled on walls, inside and outside the house, some were seen at night on the house windows and a few were resting on vegetation in the garden. Apart from the normal interior house lights, no light lure was used, but the white weatherboards may have attracted moths or made them easier to find. Most individuals were collected alive, but 15 were found dead so their dates of flight activity were unknown, and seven escaped before their sex could be determined.

From November 1970 to October 1974, MJM collected moths in a light-trap in the Orongorongo Valley, at a single location on a terrace of Greens Stream (41°21'S, 174°58'E). Moths were attracted by a 160 watt mercury vapour lamp, and killed in the trap with Shell "Vapona" fly strips. The trap ran for seven hours from dusk on four successive nights in the first week of each month. For a detailed description of this mixed podocarp-hardwood and beech forest see Brockie (1992).

Results

The seasonal distribution of *D. floccosa* caught at Belmont (Fig. 1) shows no significant peaks, with collections for all months varying within a range of 1-4 individuals. In contrast, in the Orongorongo Valley there were major peaks of

abundance in January and February of all years, and the average pattern evident in Figure 1 showed months varying over a range of 1-40 individuals captured.

At Belmont, 87 males and 66 females were caught, apparently randomly distributed throughout the year. The sex of specimens caught was not recorded in the Orongorongo Valley.

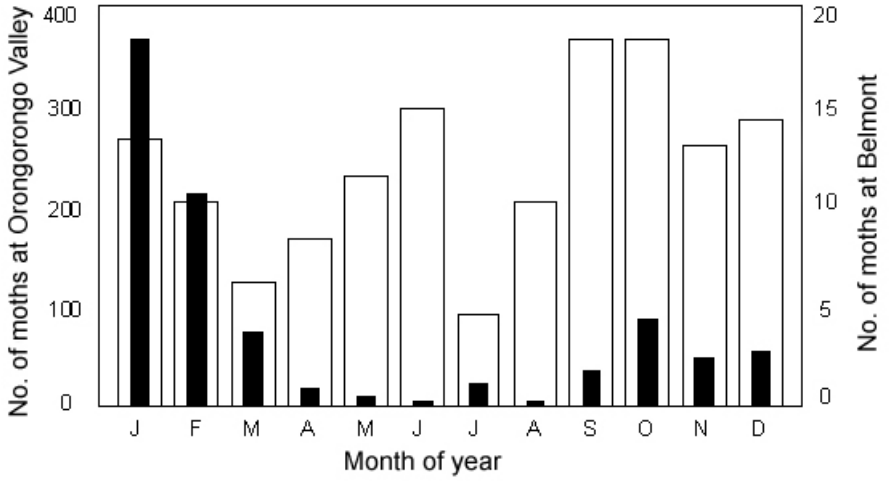

Figure 1. Numbers of *Declana floccosa* caught at Orongorongo (solid columns) and at Belmont (open columns) each month.

Discussion

The two collection areas are only 19km apart, and are at similar elevations (Belmont 190m a.s.l., Greens Stream 130m a.s.l.). The main difference is that Belmont is a suburban garden with the usual mixture of domesticated plants, but with patches of exotic forest, regenerating native forest, and extensive open grassland adjacent, whereas Greens Stream is in largely unmodified native forest.

The different flight patterns at the two sites could result from three possible factors. First, differences in vegetation, although *D. floccosa* feeds on a wide variety of host plants, including manuka (*Leptospermum scoparium*), wineberry (*Aristotelia serrata*), beech (*Nothofagus solandri* var. *cliffortioides*), tawa (*Beilschmiedia tawa*), tutu (*Coriaria* spp.), Macrocarpa (*Cupressus macrocarpa*) and Monterey pine (*Pinus radiata*) (Hudson 1928, Gaskin 1966). Second, competitive exclusion between a larger number of species of competing moths in native forest could exert pressure on

D. floccosa to have a shorter emergence period, although its numerical dominance at Greens Stream argues against this. Third, trapping method varied between sites, but it is unclear why a mercury vapour lamp might introduce temporal peaks in abundance, whereas casual collecting might result in seasonal uniformity. Other moths, for example *Wiseana* spp., certainly show seasonal peaks in abundance at Belmont. One clue may be Hudson's (1928) comment that "as we frequently meet with specimens of the moth on mild days in the middle of winter, it evidently hybernates." Possibly during this phase of their life cycle the moths are not attracted to lights.

We would be interested to know if readers have data on flight periods of *D. floccosa*, or suggestions to explain the difference between the Belmont and Orongorongo results.

Acknowledgements

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