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Important Biological and Ecological Aspects of
Strepsicrates macropetana **Meyrick**
(Lepidoptera: Tortricidae)

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Abstract

Strepsicrates macropetana Meyrick (Tortricidae) has a significant impact on eucalypt form and growth, therefore is an important insect pest of young plantations in New Zealand. The current research was undertaken to provide essential information regarding the biology, behaviour, phenology and chemical ecology of *S. macropetana*. All experiments were conducted within laboratories and/or glasshouses located at Massey University, Palmerston North, during the 1998/1999 period. The use of a cage containing eucalypt foliage enabled an efficient, self-maintaining method of rearing.

A full life-cycle of *S. macropetana* was completed within approximately 54 days. Female *S. macropetana* had an average fecundity of 40 eggs, with an egg to adult survival rate of 62.5%. The eucalypt species on which the larva developed on had an effect on the growth of *S. macropetana*. However, no one host species achieved optimal growth on all parameters. When given a choice between eucalypt and non-host (apple) foliage, *S. macropetana* females oviposited more eggs on the eucalypt foliage, depositing significantly more on the lower surface of the leaf, predominately around the central mid-vein region.

Between four and five generations of *S. macropetana* were identified in the field during a 12-month period. The abundance of *S. macropetana* was shown to be related to the larval host, and temperature. A significant relationship was also identified between pupal weight and these factors. The predominant natural enemy of *S. macropetana* in the field was identified as *Trigonospila brevifacies* (Hardy) (Tachinidae), in which larval parasitism rates of up to 45% were found.

Sexual activity was predominant within the first and second hours of the scotophase, reaching a maximum when adults were three to five days old. Oviposition behaviour was most frequent around the second, fifth and seventh hours of the scotophase, peaking when adults were six to eight days old. Egg viability declined as female age increased, from 55% viability on day seven down to 31% on day nine. Male *S. macropetana* were shown to be attracted to female *S. macropetana* in a Y-tube assay. Biologically active compounds were isolated from female *S. macropetana*, and the main compound was preliminarily identified as (*E*)-7-Dodecenyl acetate. This, in addition to moderate amounts of other compounds are likely to constitute the sex pheromone of *S. macropetana*.

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