RECENT ADVANCES IN BIOLOGICAL CONTROL OF *LANTANA CAMARA*

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Nine and possibly ten insect enemies of *Lantana camara* are now established in Australia (see table). Two hispine beetles, *Octotoma scabripennis* and *Uroplata girardi*, are widely established in Queensland but only limited liberations have been made in New South Wales. A cerambycid stem borer, *Plagiohammus spinipennis*, has recently been liberated in large numbers in both Queensland and New South Wales. In Queensland it appears to be established at one or two localities as a result of earlier small liberations. However, none of these beetles has been established sufficiently long enough to reach its full potential as a control agent.

Early in 1969 CSIRO imported a number of colonies of the leaf-feeding bug, *Teleonemia scrupulosa*, from South America and Mexico. Incorporation of this material into the established strain is expected to result in a considerable increase in the gene pool with consequent increase in the effectiveness of this species.

Three other species of tingid bugs were imported at the same time. *Leptobyrsa decora* from Peru will probably attack all Australian taxa of *L. camara* including the widespread common pink variety. This bug attacks foliage at all stages of growth and may cause severe defoliation over extensive areas. Experimental liberations have been made in southern and northern Queensland. Adults of the second species, *Teleonemia elata*, attack most plant parts but particularly the young stems. The terminal 2-3 in. (5-7.5 cm) of stems wilt and often die following attack. The nymphs feed on the foliage, killing large areas of tissue. This species has been approved for liberation, and distribution should commence in the spring of 1970. The third species *Teleonemia harleyi* attacks and kills flower buds and terminal and secondary meristems. This insect is still in quarantine pending completion of studies of its host specificity.

A preliminary evaluation of the effects of the insect complex established on *Lantana* has indicated that it considerably depresses both growth and reproduction of the weed. In experiments in the Brisbane district plants carrying comparatively light infestations of *T. scrupulosa* and the seed fly *Ophiomyia lantanae* suffered almost complete suppression of seeding, and growth was reduced by about half, compared with plants protected from attack by application

Insects Imported into Australia For Biological Control of *Lantana Camara*

Species	Date Imported	Status
Ophiomyia lantanae (Froggatt)	1914 & 1917	Established: probably major importance in reducing seeding.
Platyptillia pusillidactyla (Walker)	No record	Established: minor importance
Epinotia lantana (Busck)	1914 & 1917	Established: minor importance
Eutreta xanthochaeta Aldrich	1914	Not established
Thecla agra Hew.	1914	Not established
Teleonemia scrupulosa Stal	1935 & 1969	Established: major importance
Syngamia haemorrhoidalis Guen	1956	Established: minor importance
Catabena esula (Druce)	1956 & 1957	Established: minor importance
Diastema tigris Guen	1956 & 1957	Not established
Hypena strigata (Fabricius) (African strain)	1965 & 1966	Indistinguishable from Australian strain with which it interbreeds. Probably established: minor importance
Uroplata girardi girardi Pic	1966	Established: importance increasing
Octotoma scabripennis Guerin	1966	Established: importance increasing
Plagiohammus spinipennis (Thoms.) (Jalapa strain)	1966	Probably recently established
Leptobyrsa decora Drake	1969	Experimental liberations in southern & northern Queensland
Teleonemia elata Drake	1969	Liberations scheduled for spring 1970
Teleonemia harleyi Froesch	1969 & 1970	Small colony in quarantine

of insecticides. However, the effectiveness of all established imported insects is seriously impaired by major population fluctuations correlated with seasonal conditions. In addition the overall effectiveness of several species, including *T. scrupulosa*, is greatly reduced by their marked preference for particular *Lantana* varieties. These feeding preferences plus the less favourable climatic conditions encountered are probably responsible for the comparatively minor effect of insects on *Lantana* in New South Wales. However, establishment of *L. decora* may result in an improved situation in that State.

Experience in Australia and observations on the effects of *O. scabripennis*, *U. girardi*, and *P. spinipennis* in Hawaii indicate that, although these insects will be most valuable additions to the insect complex attacking the plant in Australia, additional control agents will be required before *Lantana* is reduced to non-pest status. During the last decade and a half there have been major advances towards biological control of *Lantana* in Australia. However, we still require additional species in order to approach the satisfactory position that now holds in Hawaii. The situation is very promising and, if during the next 5-10 years a truly concerted effort is mounted, there are prospects of reducing this important weed to non-pest status.