

Recent Introductions for Biological Control in Hawaii - XV

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INTRODUCTION

For many years the Entomology Branch of the Hawaii Department of Agriculture has maintained a continuous program of beneficial organism introductions. This paper, therefore, includes a list of new introductions and additional releases for biological control in Hawaii (Table 1) made since the last listing (Davis and Chong 1969) and gives a few notes on the status of pests and their purposely introduced natural enemies.

SNAIL PEST CONTROL

Achatina fulica Bowdich (giant African snail)

Seventy-eight live African snails were found and destroyed near the wharf at Nawiliwili, Kauai, on 24 June 1969. The area was thoroughly baited with metaldehyde pellets and constant surveillance maintained. No live snails were found up to the end of the year.

This is the third incipient African snail infestation found on Kauai, the other two occurring at Poipu and Wahiawa.

There were no significant developments with respect to the purposely introduced carnivorous snails, *Gonaxis quadrilateralis* (Preston), *G. kibweziensis* (Smith) and *Euglandina rosea* (Ferussac).

Lymnaea ollula Gould (Liverfluke snail)

The aquatic snail, *L. ollula*, is the intermediate host of the liverfluke, **Fasciola gigantica**. It is ubiquitous in streams and other aquatic habitats and consequently cattle that have access to these areas often become infected with liverfluke.

The most recent purposely introduced liverfluke snail predator, *Sepedon sauteri* Hendel from Japan is well established on Kauai, Oahu and Maui and was recovered for the first time at Kulani, Hawaii in November 1969.

WEED PEST CONTROL

Lantana camara var **aculeata** (L.) Moldenke (lantana)

Lantana was generally static throughout the state, with a few instances of extreme defoliation by purposely introduced insects.

A significant development, however, was the discovery of *Plagiohammus*

spinipennis Thomson and *Octotoma scabripennis* Guerin-Meneville at 914 m elevation at Kahauloa and Puu Lehua parcels of land, Kona, on 11 February 1969. This represents a considerable natural spread from the original release point at lower Kahauloa, 274 m, a linear distance of approximately six to ten miles. Moderate to heavy branch and butt damage by girdling *Plagiohammus* larvae was noted. However, on Puu Lehua land, the infestation appeared to be barely underway as oviposition scars were recent and no exit holes were observed.

Melastoma malabathricum L. (Indian rhododendron)

This aggressive weed occupies approximately 38,500 acres in the State, of which 8,000 occur on Kauai.

Foliar and twig damage by the arctiid *Selca brunella* Hamson continued during 1969 and limited randomized fruit collections indicate that up to 50 percent of the fruits were destroyed by *Selca* caterpillars.

Rubus spp. (blackberry)

Wild blackberry is an aggressive weed pest of pasture and forest reserves on Kauai, Maui, and Hawaii between 1,219–1,524 m elevation. It is also found on Mt. Kaala, Oahu at 1212 m elevation.

Of the four insects introduced and liberated for the control of wild blackberry, only two, a tortricid, *Apotoforma* sp. and a heliodinid, *Schreckenssteinia festaliella* Hubner are established on the aforementioned islands.

A chrysomelid, *Chlamisus gibbosa* (Fabricius) from Columbia, Missouri was approved for release and was liberated on Mt. Kaala, 1,219 m on 29 May 1969. The larvae and adults feed on blackberry foliage and stems.

Hypericum perforatum (Klamath weed)

The discovery of this noxious weed and its introduced enemies was reported by Davis and Krauss (Proc. Hawaiian Entomol. Soc. 19: 205). Prior to the liberation of the gall midge, *Zeuxidiplosis giardi* (Kieffer) and the Klamath week beetle, *Chrysolina quadrigemina* (Suffrian) near Poikahi, Mt. Hualalai there were thriving communities of *H. perforatum*.

By 1967 Klamath week was no longer abundant in the vicinity of experimental plot 8 (1,950 m), Poikahi, and surviving plants which were growing in *Styphelia* spp. (pukeawe) and *Dodonaea viscosa* (aalii) clumps were heavily infested with the introduced gall midge, *Zeuxidiplosis giardi* (Kieffer). Between 1967 and 1969 there has been a gradual buildup of the Klamath weed beetle, *C. quadrigemina* and recent observations suggest that this beetle is now active year round under Mt. Hualalai climatic conditions.

Clidemia hirta (Kosters curse)

There have been no reports of this noxious week pest from the neighbor islands to date and its present distribution on Oahu remains the same, namely, throughout the Koolau Mountain Range, Oahu. In November, 1969 a pyralid, *Blepharomastix ebulealis* Guenee was collected in Puerto Rico on a

closely allied melastomaceous plant, *Heterotrichum cymosum* and progeny are now in the first local generation on *C. hirta* under quarantine conditions.

INSECT PEST CONTROL

Rhabdoscelus obscurus (Boisduval) (New Guinea sugarcane weevil)

The New Guinea sugarcane weevil continues to be the most important insect pest of sugarcane in Hawaii and intensive research on this problem is in progress.

Culturing of the Garaina and Wau strains of the tachinid parasite, *Lixophaga sphenophori* Villeneuve continued and a total of 13,208 flies was liberated on Kauai during 1969.

Melanagromyza phaseoli (Tryon) (beanfly)

In November 1968 the destructive beanfly *M. phaseoli* was reported in Hilo, thus completing its spread to all islands in a little over four months.

A braconid parasite, *Opius melanagromyzae* Fischer was obtained through the cooperation of the Kawanda Research Station, Commonwealth Institute of Biological Control, East Africa on 17 April 1969. A state-wide distribution of this parasite was made during the year and the first recovery was made at Waipahu, Oahu on 26 June 1969. Since then it has become widely established on Oahu and parasitism up to 80 percent is being obtained.

Aspidiotus destructor Signoret (coconut scale)

The notorious coconut scale, *A. destructor* was found in Kailua, Oahu in September 1968 and has since become widespread on this island.

A coccinellid, *Cryptognatha nodiceps* Marshall was received from Hawaii Department of Agriculture personnel temporarily on duty in Fiji and Trinidad, West Indies on 24 January and 11 October 1969, respectively for the control of this pest.

Two established coccinellid predators, *Telsimia nitida* Chapin and *Lindorus lophanthae* (Boisduval) have been recorded locally feeding on the coconut scale.

Herpetogramma licarsisalis (Walker) (grass webworm)

Heavy pasture damage between sea level and 914 m elevation by the grass webworm occurred during the latter part of the year on Kauai, Maui and Hawaii. As a result of high webworm density, forage grasses such as kikuyu, *Pennisetum clandestinum* and other palatable grasses were killed which resulted in their replacement by undesirable grasses such as foxtail and vegetation of little or no palatability.

Although egg parasitism by *Trichogramma semifumatum* Perkins has contributed to substantial webworm control most of the year, studies indicate that larval and pupal parasitism averaged 15 percent and this is insufficient for effective control during population peaks.

TABLE I. *New Introductions and Additional Releases for Biological Control in Hawaii, 1969*
 (Unless otherwise indicated, all introductions by Entomology Branch,
 Hawaii Department of Agriculture)

<i>Pest</i>	<i>Organism Introduced</i>	<i>Source</i>	<i>Collector</i>	<i>Date Rel'd</i>	<i>Number **</i>	<i>Release Point</i>
Weed Pests						
<i>Rubus</i> spp. (blackberry)	<i>Chlamisus gibosa</i> (Fabricius) (Chrysomelidae)	Columbia, Missouri	S. Thewke	May 29	25	Mt. Kaala, Oahu
Insect Pests						
<i>Rhabdoscelus obscurus</i> (Boisduval) (New Guinea sugarcane weevil)	* <i>Plaesius javanus</i> (Erichson) (Histeridae)	Suva, Fiji	S. H. Au	Feb. 7	50	Field 251 Kilauea Plantation Kauai
<i>Aspidiotus destructor</i> (Signoret) (coconut scale)	<i>Cryptognatha nodiceps</i> (Marshall) (Coccinellidae)	Suva, Fiji	S. H. Au	Jan. 23	150	Honolulu International Airport, Oahu
		Mayaro Bay Trinidad, West Indies	C. J. Davis	Oct. 27	200	Hawaii Kai, Oahu
<i>Melanagromyza phaseoli</i> (Tryon) (Beanfly)	<i>Opius melanagromyzae</i> Fischer (Braconidae)	Kampala, East Africa	D. J. Greathead	May 16	25	Waipahu, Oahu

*Previously introduced.

**Applies to initial release only.

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