

## Note

### Establishment of the Leaf Mining Fly, *Calycomyza lantanae* Frick, on the weed *Lantana camara* L. on Pohnpei

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**Abstract**—Despite a number of biological control agents released a few years ago to control *Lantana camara*, the weed persists in thickets, particularly along roadsides and open lands on Pohnpei. A leaf mining fly, *Calycomyza lantanae*, was introduced from Guam and established on three release sites on Pohnpei. Blotched mines on the leaves of *L. camara* become evident in the release sites. *C. lantanae* has spread throughout most of Pohnpei.

#### Introduction

Pohnpei is one of many western Pacific islands that has widespread growth of lantana, *Lantana camara* L., despite a number of biological control agents that have been released to control it. *L. camara* is an important weed pest along roadsides and on range land, pasture and vacant lands. *L. camara* poses a serious long-term threat to the vegetation on Pohnpei.

A number of biological control agents were introduced to Pohnpei to control *L. camara* in 1948, between 1955 to 1958, in 1963, and in 1991 (Table 1) (Esguerra et al. 1990, Schreiner 1989, Suta & Esguerra 1993).

Despite the release of a number of biological control agents, *L. camara* is still widespread throughout the island. A request was made to Dr. R. Muniappan, University of Guam College of Agriculture and Life Sciences to send us the leaf mining fly, *Calycomyza lantanae* Frick, to further suppress *L. camara* on Pohnpei.

This paper documents the degree of control that *C. lantanae* has exerted on *L. camara* populations.

#### Materials and Methods

On April 12 1995, 120 *C. lantanae* adults were received from Guam. Forty flies each were released on *L. camara* in Paies, Kitti; Sekere, Sokehs; and Dolon, Sokehs.

Table 1. Biological control agents introduced to control *Lantana camara*

Name of insect	Year	Source
<i>Epinotia lantanae</i> Busck (Tortricidae)	1948	Hawaii
* <i>Lantanophaga pusillidactyla</i> (Walker) (Pterophoridae)	1948	Hawaii
* <i>Teleonemia scrupulosa</i> (Stal) (Tingidae)	1948	Hawaii
* <i>Ophiomyia lantanae</i> (Froggatt) (Agromyzidae)	1948	Hawaii
	1991	Guam
<i>Diastema tigris</i> Guenee (Noctuidae)	1955	Hawaii
<i>Pseudopyrausta acutangulalis</i> (Snellen) (Pyralidae)	1955	Hawaii
<i>Neogalea esula</i> (Druce) (Noctuidae)	1955	Hawaii
<i>Hypena strigata</i> (F) (Noctuidae)	1958	Hawaii
* <i>Salbia haemorrhoidales</i> Guenee (Pyralidae)	1958	Hawaii
* <i>Uroplata girardi</i> Pic (Chrysomelidae)	1963	Hawaii

\*established but did not provide control

At each release site, a stem with green and undamaged leaves was selected and enclosed with a muslin cloth sleeve. After releasing the flies, both ends of the cloth were tied to the stem to prevent escape of adult flies. The flies could lay eggs in the epidermis of leaves and the chances of successful establishment of the flies were enhanced.

Monitoring of leaf miner infestation was done by randomly selecting 20 plants at each release site. The number of healthy leaves and leaves showing blotch mines were counted and recorded. Monthly monitoring of leaf infestations was started in January 1996 and continued for one year.

## Results and Discussion

Table 2 shows infestation levels of *C. lantanae* on *L. camara*. In Paies, a high percent infestation on leaves as evidenced by presence of blotched mines occurred during the months of January, March, August and November. Low infestation levels occurred in December and July.

In Sekere, high leaf infestation occurred in February, April, May, June and November while low infestation occurred in September. In Dolon, high leaf infestation occurred in November, December and January, while low infestation occurred in September.

*C. lantanae* was established on *L. camara* at the three release sites within a few months of the field releases. Leaf infestation ranged from 22 to 57%. Some plants, particularly in Paies, were almost completely defoliated due to continuous feeding by the leaf miner. The fly spread rapidly from release sites to neighboring areas. Blotched mines on *L. camara* leaves were observed even in areas more than 10 miles from the release sites in Madolenihmw and Nett Municipalities. Similarly, quick establishment of the leaf miner had previously been observed in Mangilao and Agana, Guam (Muniappan *et al*, 1992), and further suggests that *C.*

Table 2. Percentage of *Lantana camara* leaves infested by the leaf mining fly, *Calycomyza lantanae*.

Month	Sites		
	Paies, Kitti	Sekere, Sokehs	Dolon, Sokehs
January 1996	50	35.8	57.2
February 1996	41.9	46.4	40.5
March 1996	40.1	39.3	37.9
April 1996	36.4	44.9	41.0
May 1996	40.9	43.2	37.0
June 1996	32.7	47.1	36.9
July 1996	24.8	22.3	30.6
August 1996	45	38.8	38.9
September 1996	34.8	38.6	36.2
October 1996		no data taken	
November 1996	44.8	44.4	42.7
December 1996	28.2	37.3	48.7
January 1997	44.9	destroyed	41.6

*lantanae* is an effective biological control agent. The introduction of *C. lantanae* to Pohnpei complements the efforts of other natural enemies introduced and established previously. Its introduction should further prevent the spread of *L. camara* in areas where it has not yet established. There are plans to introduce *C. lantanae* to Chuuk and Yap States of the Federated States of Micronesia.

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