

Introduction and Establishment of *Pareuchaetes pseudoinsulata* Rego Barros (Arctiidae) against *Chromolaena odorata* in the Western Caroline Islands

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Chromolaena odorata (L.) R.M. King and H. Robinson is a herbaceous perennial belonging to the family Asteraceae (Compositae). It occurs naturally over a wide area of the tropical and subtropical Americas, from Southern Florida to the northern border of Argentina, and has become a serious problem in the humid tropical regions of Africa, Asia, and the Mariana Islands (Muniappan *et al.*, 1988). It is a vigorous weed and forms scrambling thickets which rapidly invade plantation crops, undergrazed pastures, roadsides, vacant lands and disturbed forests. It creates problems of impeded access, fire risk from old stalks, competition with crops and reduced yields (Cock, 1984). It is also reportedly poisonous to live stock (Sajise *et al.*, 1974).

C. odorata has been a target weed for biological control since 1966 when the Nigerian Institute for Oilpalm Research funded the Commonwealth Institute of Biological Control for survey, identification and screening of its natural enemies in Trinidad (Cock and Holloway, 1982). The moth *Pareuchaetes pseudoinsulata* Rego Barros (Arctiidae) was subsequently identified as one of the more promising natural enemies of *C. odorata* and has since been introduced (with varying rates of success) into India, Sri Lanka, Nigeria, Ghana, Malaysia, Guam, Rota, Tinian, Aguijan and Saipan. It has established in the Asian countries, after repeated introductions in some cases, but not in Africa. This paper presents data on the distribution of *C. odorata* in Yap and Palau and the status of its biological control.

Distribution of *C. Odorata* in Yap and Palau

The establishment of *C. odorata* in Yap and Palau were observed in September 1987 and October 1988, respectively. Geographically both these island groups constitute the Western Caroline Islands. In Yap, *C. odorata* was primarily restricted to the

southern districts namely, Gilman, Kanifay, Rull, Dalipebinaw, Weloy, Fanif and Colonia. In the Republic of Palau, it was observed near the airport in the Babelthaup island and again near the sea port on Malakal island. Infestation was fairly localized, however, only on the southern island of Peleliu was it found to be widespread.

Introduction of *P. pseudoinsulata*

To date no steps have been taken to control *C. odorata* in Palau. In Yap, however, a project for the introduction and establishment of *P. pseudoinsulata*, to suppress and to prevent the spread of *C. odorata* to the northern end of the island was initiated in early 1988 with the financial support from the South Pacific Commission. This organism was selected because it is already being used to curtail the spread of *C. odorata* in the nearby Mariana Islands.

Three shipments of larvae and eggs of *P. pseudoinsulata* were sent to Yap. Of these, some were field released upon receipt and a few were kept in the laboratory for rearing with periodic field releases of larvae and adults on an ongoing basis. The date, number of larvae, and place of release are given in Table 1. In October 1988, field establishment of a small colony in about 10 m diameter area was observed at Talaguw. *P. pseudoinsulata* has established only at one release site even though releases were made at 14 different sites. Many repeated and frequent releases at one locality are needed for the successful establishment of *P. pseudoinsulata*. The successful establishment of *P. pseudoinsulata* at Talaguw may be due in part to the fact that both larvae and adults were released here. The low success rate in Yap may reflect the presence of local predators and/or parasites of *P. pseudoinsulata*. In addition, the apparent failure of this species to establish during the dry season (January-May) may possibly be attributed

Table 1. Release of *Pareuchaetes pseudoinsulata* in Yap during 1988

Date	Place	Number of Larvae
January, 26	Tooway	246
	Machoy	157
March, 16	Tooway	80
17	Kanif	30
	Maa	20
	Okaw	6
	Gargey	53
	Maloway	15
18	Ngariy	18
21	Machoy	20
April, 11	Magalmor	30
	Magalmor	46
	Machoy	61
	Okaw	30
	Kaday	100
	Kanif	92
14	Tooway	240
	Coast Guard Station	50
	Gargey	150
20	Kanif	40
	Kaday	40
	Machoy	30
	Magalmor	30
August, 5	Talaguw	170
11	Tooway	70
	Talaguw	50
September, 8	Ngolog	100
10	Talaguw	100
14	Talaguw	44 (Adults)
16	Talaguw	60 (Adults)
26	Kanif	525
October 3	Tooway	144

to the generally harsher climatic conditions. Further field releases of *P. pseudoinsulata* and monitoring the spread of this established colony are being continued.

Of interest was the occurrence of the eriophyid mite, *Acalytus adoratus* Keifer on *C. odorata* from both Yap and Palau. There are no records of this mite's introduction to these islands despite it being recommended as a biological control agent for *C. odorata* by Cruttwell (1977) and Cock (1984). It was found to be widespread on *C. odorata* in Palau. However, although a severe infestation of it was found in the Machoy area of Yap, only light to no

infestation was observed in other areas indicating that it was a recent accidental introduction to Yap, possibly from Palau. It is also pertinent to note that no mites were observed in Yap during a survey of *C. odorata* conducted in May, 1988. The occurrence of *A. adoratus* in Yap and Palau is an example of fortuitous biological control. Observations are continuing on both islands to monitor the effectiveness of *A. adoratus* as a controlling agent of *C. odorata* in these parts of the world.

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KEY WORDS: *Pareuchaetus pseudoinsulata*, *Chromolaena odorata*, *Acalytus adoratus*

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