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Results of Fruit Fly (Insecta: Diptera: Tephritidae) Trapping in the Northern Mariana Islands, Micronesia

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Abstract Fruit fly traps (plastic Steiner traps) baited with cue-lure and methyl eugenol were set on nine of the northern Mariana Islands. The endemic fruit fly, *Bactrocera ochrosiae*, was caught on six islands located the southern part of the northern Marianas. Neither the melon fruit fly, *Zeugodacus curcubitae*, nor the oriental fruit fly, *Bactrocera dorsalis*, was caught on any of the islands.

Key words: Bait trap, *Bactrocera dorsalis*, *B. ochrosiae*, fruit fly, northern Mariana Islands, Steiner trap, *Zeugodacus curcubitae*.

Some fruit flies are known to be serious agricultural pests (Ohtake, 1988). Two fruit fly species, *Bactrocera ochrosiae* and *Zeugodacus curcubitae*, occur on Saipan, Tinian, Aguiguan, Rota, and Guam, the southern Mariana Islands (Hardy and Adachi, 1956; Moore, pers. comm.). *B. ochrosiae* is endemic to the Mariana Islands, whereas *Z. curcubitae* is an introduced species which is known as the melon fruit fly. According to Moore (1992), the melon fruit fly and the oriental fruit fly, *Bactrocera dorsalis*, were accidentally introduced to the Mariana Islands before 1940. However, the oriental fruit fly was eradicated from all of the Mariana Islands by 1965. The melon fruit fly was also eradicated from all the islands except Guam in 1963. However, the melon fruit fly re-infested Saipan in 1986 and now it causes serious damage to melons there. There is no current information about the distribution of the three fruit fly species in the northern Mariana Islands. Based on the results of fruit fly trapping, I report which of the three fruit fly species occurs in the northern Mariana Islands.

Materials and Methods

One to three plastic Steiner traps bearing a chemical attractant (45% cue-lure and 45% methyl euginol) and an insectide (10% Dibrom 8E) (Fig. 1) were set on stems, twigs or rocks at a height of about 1.5 m on nine of the northern Mariana Islands: Anatahan, Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asuncion, Maug (composed of the East, North and West Islets), and Uracas. The attractant used is known to be effective for attracting males of the three fruit fly species, *B. ochrosiae*, *Z. curcubitae* and *B. dorsalis* (Ohtake, 1988; Moore, pers. comm.). After various intervals (ranging from 1 h 34 min to 504 h 27 min), I revisited the traps and collected the flies caught in them for later identification and counting of the number of flies. At the time of leaving each island, the traps were left for future researchers in case some interesting fly species were found in them.

Results

The results of fruit fly trapping are summarized in Table 1. *B. ochrosiae* was caught on six of the nine islands, whereas neither *Z. curcubitae* nor *B. dorsalis* was caught on any of the islands examined. The fact that a great number

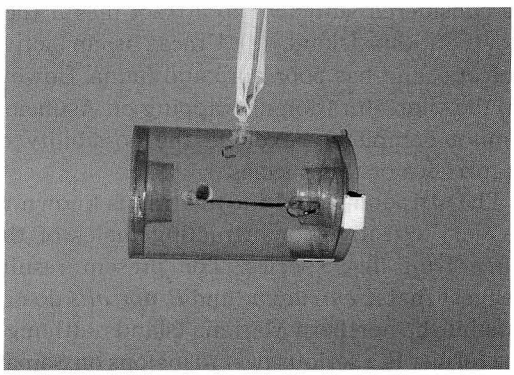

Fig. 1. Plastic Steiner trap.

Table 1. Results of fruit fly trapping on nine islands of the northern Mariana Islands.

No.	Island	Setting time	Collecting time	Duration	*B. ochrosiae*	*Z. curcubitae*	*B. dorsalis*
1	Anatahan	11-May 7:00	11-May 16:40	9:40	0	0	0
	Anatahan	12-May 8:12	12-May 15:41	7:29	1 (3.21)*	0	0
2	Sarigan	14-May 18:45	16-May 9:15	38:30	4 (2.49)	0	0
	Sarigan	15-May 7:20	16-May 8:09	24:49	0	0	0
3	Guguan	16-May 16:50	17-May 16:00	23:09	0	0	0
	Guguan	17-May 10:00	17-May 15:30	5:30	1 (4.36)	0	0
4	Alamagan	18-May 18:40	19-May 15:36	20:56	5 (5.73)	0	0
	Alamagan	18-May 18:30	19-May 15:50	21:20	35 (39.37)	0	0
	Alamagan	19-May 15:36	9-Jun. 16:03	504:27	734 (34.92)	0	0
	Alamagan	19-May 15:50	9-Jun. 16:10	504:19	135 (6.42)	0	0
5	Pagan	24-May 8:00	25-May 16:30	32:29	3 (2.22)	0	0
6	Agrihan	28-May 8:00	28-May 15:30	7:30	4 (12.80)	0	0
	Agrihan	29-May 7:30	29-May 16:20	8:50	10 (27.16)	0	0
7	Asuncion	7-Jun. 10:40	7-Jun. 15:30	4:49	0	0	0
	Asuncion	7-Jun. 11:20	7-Jun. 15:20	4:00	0	0	0
8	Maug, East	2-Jun. 7:48	2-Jun. 16:20	8:32	0	0	0
	Maug, East	2-Jun. 7:48	5-Jun. 16:30	80:42	0	0	0
	Maug, North	3-Jun. 8:25	3-Jun. 10:00	1:34	0	0	0
	Maug, West	5-Jun. 7:20	5-Jun. 10:15	2:54	0	0	0
9	Uracas	6-Jun. 9:35	6-Jun. 14:00	4:25	0	0	0
	Uracas	6-Jun. 10:00	6-Jun. 14:00	4:00	0	0	0

* Figures in parentheses are the numbers of flies calculated per day.

of flies were caught in two traps set longer than 21 days on Alamagan, but did not include either of the latter two species, provides some evidence that they are not present on the island, although this is not conclusive.

Discussion

B. ochrosiae was caught on all of the islands except for the three northernmost ones, *i.e.* Asuncion, Maug and Uracas. It is probable that *B. ochrosiae* does not inhabit these three islands, because (1) the major host plant of this fly, *Ochrosia marianensis*, was not distributed there (Ohba, 1994), (2) a trapping period longer than three days on the East Islet of Maug can be considered sufficient to attract flies if they exist on this island, (3) Uracas is an active volcano, and has poor flora and fauna. However, the short duration of trapping on Asuncion cannot completely exclude the possibility of occurrence of this species.

The attractant used for the trap is known to be very effective for attracting males of the three fruit flies species. The present results suggest that *Z. curcubitae* and *B. dorsalis* do not inhabit the northern Mariana Islands, although the former is a serious pest to melons on Saipan (Moore, 1992). The latter species has not been caught in the Marianas since 1965 (Moore, 1992).

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