Coquillettidia perturbans accounted for 24.4%, 5.7% and 4.2% respectively. Seven of the remaining 17 species were represented by a single specimen (Table 1).

Denbow (1971 unpublished data) reported collecting 6 additional species of mosquitoes including, *Ae. aurifer* (Coquillett) *Ae. cinereus* Meigen, *Ae. dorsalis* (Meigen), *Culiseta inornata,* (Williston), *Psorophora ferox,* (Humboldt), and *Ps. varipes,* (Coquillett). Mitchell (1975, unpublished data) also reported finding larvae and pupae of *Anopheles barberi,* Coquillett. Although these mosquitoes were collected in small number and are considered rare, they bring the reported number of mosquito species in Wood County, Ohio to twenty-eight.

ACKNOWLEDGMENTS. Appreciation is expressed to the Environmental Studies Center of Bowling Green State University and the Wood County Health Department for their aid in this study.

References Cited

Denbow, T. 1971. (Unpublished Data). Mosquito survey of the Bowling Green, Ohio Area. Environmental Studies Center, B.G.S.U. Bowling Green, Ohio.

Magoon, E. H. 1935. A portable stable trap for capturing mosquitoes. Bull. Entomol. Res. 26:363–373.

Mitchell, L. 1975 (Unpublished Data). A mosquito survey for the city of Bowling Green, Ohio. Env. Studies Ctr. B.G.S.U.

Newhouse, V. F., R. W. Chamberlain, J. G. Johnston, Jr. and W. D. Sudia 1966. Use of dry ice to increase mosquito catches of the CDC miniature light trap. Mosq. News 26: 30–35.

Parsons, M. A., R. L. Berry, J. Mazhar and R. A. Masterson. 1972. A revised list of the mosquitoes of Ohio with some new distribution and species records. Mosquito News 32: 223–226.

Sudia, W. D. and R. W. Chamberlain. 1962. Battery-operated light trap, an improved model. Mosquito News 22: 126–129.

Vernard, E. C. and F. W. Mead. 1953. An annotated list of Ohio mosquitoes. Ohio J. Sci. 53: 327–333.

A BRIEF SURVEY OF MOSQUITO VECTORS OF BANCROFTIAN FILARIASIS IN BICOL REGION, THE PHILIPPINES

TAKESHI KURIHARA, TAKAYA IKEMOTO AND YUUKI ESHITA

Department of Parasitology, Teikyo University School of Medicine, Kaga, Itabashi, Tokyo 173, Japan

A high incidence of bancroftian filariasis is known to exist in Bicol Region, southern Luzon of the Philippines, and *Aedes (Finlaya) poicilius* (Theobald) was incriminated as the principal vector in the area by Cabrera and Tubangui (1951). Larvae of this species, like other species in *Finlaya* group-A, breed in water contained in leaf axils of such plants as abaca, *Musa textiles,* and banana, *M. sapientum.* Since abaca is one of the main agricultural products in the area (Camacho 1969), the close association between the prevalence of the disease and abaca plantations is expected.

In the past, several attempts were made to incriminate *Culex quinquefasciatus* Say (=*fatigans* Wiedemann) as a vector of filariasis in the endemic area in the Philippines. Baisas (1957) found specimens of this species naturally infected with the larval stages of *Wuchereria bancrofti.* However, more study is needed to understand how *Cx. quinquefasciatus* (=*fatigans*) can play an important role in natural transmission (Cabrera and Arambulo 1973). Meanwhile, a preliminary larval collection was made by the senior author in 1975 showing only a few occurrences of *Ae. poicilius* in abaca axils in the region but many of *Ae. (F) ananae* Knight and Laffoon. In this connection, the present survey was carried out to study the mosquito fauna in the plant axils and the infection rate of various mosquitoes in the area during January 5–14, 1977, with the cooperation of Filariasis Control Services, Sorsogon (Chief: Dr. Francisco Valeza).

For the general survey of axil breeders, the

Table 1. *Aedes* mosquitoes found by the general survey of plant axils in Bicol Region.

Villages	*Ae. poicilius*	*Ae. ananae*	*Ae. flavipennis*	*Ae. meronephada*
Irosin	0	110	1	56
Irosin*	31	2	5	0
Sorsogon	9	12	0	10
Guinlajon	3	62	0	7
Putiao*	41	0	0	3
PanPayaan	32	2	1	24
Rangas	0	16	0	1
Tabaco	4	41	0	1
Gunobaton	2	61	0	0

* Collected from banana axils, and the others from abaca axils.

plant axils, located 1-2 m above the ground and easily accessible, were examined at various villages. The entire content of each axil was collected by means of a long pipette with a rubber bulb and transferred to a vial. The mosquito larvae and pupae were reared individually and identified by examining the larval and pupal skins and adult specimens. The mosquito species and number collected are summarized in Table 1 for each village and host plant. The dominant species collected from abaca axils was *Ae. ananae,* followed by *Ae. (Stegomyia) meronephada.* Unexpectedly, *Ae. poicilius* was uncommon in the large abaca field. On the contrary, the axils of banana trees, which were planted around houses, were occupied by *Ae. poicilius.* Such a tendency was reported by Baisas et al. (1960); nevertheless the present result is noteworthy. Only one collection from abaca at PanPayaan showed dominance of *Ae. poicilius.* The sampling location was very close to the houses along a road, and the abaca were uncultivated, unlike the other places surveyed. It is possible that the oviposition of *Ae. poicilius* occurs in particular strains of abaca or depends on a circumstantial condition of the plant.

Experimental collections were made at an abaca plantation covering about 700 ha, in Irosin where only *Ae. ananae* and *Ae. meronephada* had been collected during the general survey. Abaca axils were examined at 3 selected spots of the plantation, i.e., a fringe area of the field, 50-m and 100-m inside the field, and at different heights of the axils, i.e., 2 to 3.5 m or more than 3.6 m. *Ae. ananae* predominated in the collection, and *Ae. poicilius* was not found (Table 1). Density of the 4th instar larvae of *Ae. ananae* and mean volume of water in an axil were measured (Table 2). There was a definite tendency for more larvae and water to be found in axils near the fringe of the field and at greater heights.

Adult mosquitoes resting in dwellings in early morning were collected at villages in Putiao on January 12, 1977 and in Irosin on January 8 and 11. All the mosquitoes collected were kept in cages under laboratory conditions at 25°C and the filarial worms harbored were examined when the female mosquitoes died or at the 15th day after the collection (Table 3). One *Cx. quinquefasciatus* collected at Putiao harbored a 3rd stage *bancrofti* larva at the 13th day after catch, and another, also from Putiao, had 1 sausage stage on the 10th day. In addition, 1 *Cx. quinquefasciatus* caught at Irosin was infected with 3 *Setaria*-like worms. Only 2 *Ae. poicilius* and 2 *Ae.*

Table 2. Numbers of *Ae. ananae* found at an abaca plantation, Irosin.

Location of trees from fringe	Height of axils examined	No. axils examined	No. larvae & pupae	No. 4th-instar larvae	Average quantity of water in an axil
0 m	1–2 m	30	20	2	8.0 ml
50	1–2	30	28	7	7.1
100	1–2	30	37	11	9.0
0	2–3.5	35	276	107	25.9
0	3.6–4.5	33	310	90	32.4

Table 3. Numbers of female mosquitoes collected in dwellings at Irosin and Putiao and infected with the *Wuchereria bancrofti* filaria.

	Irosin		Putiao	
	No. collected & examined	No. infected	No. collected & examined	No. infected
C. quinquefasciatus	56	0	115	2*
Ae. poicilius	2	0	0	–
Ae. ananae	2	0	0	–
Ae. albopictus	2	0	3	0
Armigeres baisasi	3	0	3	0
Mansonia uniformis	1	0	0	–
Anopheles sp.	2	0	0	–

* See the text.

ananae were collected through the dwelling survey, although *Cx. quinquefasciatus* was predominant in collections at both places. Out of 171 *Cx. quinquefasciatus* collected, 82 were dead up to the 15th day. Larvae of *Cx. quinquefasciatus* were easily found at both places. The main breeding places were drains, cesspools and ground pools. These breeding places of this species will increase year by year in the area.

Considering total population contact with man, *Cx. quinquefasciatus* would appear to be responsible for transmission (Baisas 1957) and thus the epidemiological value of this species in Bicol Region should be clarified. It would also be interesting to study the behavior of the abundant *Ae. ananae,* regarding the human blood index and susceptibility to filarial worms.

We wish to thank Dr. Francisco Valeza, Chief, Filariasis Division Bureau of Disease Control, Department of Health, and Prof. B. D. Cabrera, Dean, Institute of Public Health, University of the Philippines, for their assistance and cooperation in undertaking the survey.

This study was supported by an overseas research grant of the Ministry of Education, Science and Culture of Japan, and the Sasakawa Memorial Health Foundation.

Literature cited

Baisas, F. B. 1957. Notes on Philippine mosquitoes, 19. The mosquito problem in the control of filariasis in Sorsogon Province. Phil. J. Sci. 86: 71–120.

Baisas, F. B., L. F. L. Banez & N. Leuenberger. 1960. Notes on Philippine mosquitoes, 22. The axil-breeding species. Phil. J. Sci. 89: 183–199.

Cabrera, B. D. & M. Tubangui. 1951. Studies on filariasis in the Philippines. 3. *Aedes (Finlaya) poicilius* (Theobald), the mosquito intermediate host of *Wuchereria bancrofti* in the Bicol Region. Acta Med. Phil. 7: 221–229.

Cabrera, B. D. & P. V. Arambulo III. 1973. Human filariasis in the Philippines. Acta Med. Phil. 9: 160–173.

Camacho, V. M. 1969. Control of filariasis in the province of Sorsogon imperative to economic growth. Phil. J. Pub. Health. 8: 19–44.

CULISETA MELANURA LARVAE IN TIRES—A RECURRING PHENOMENON?

HENRY R. RUPP

Somerset County Mosquito Extermination Commission, Somerville, NJ 08876

While making a larval survey on 9 July 1977 in Bridgewater Township, New Jersey, of an area littered with discarded automobile tires, I collected several specimens of *Culiseta melanura* (Coquillett) from water in the tires. Although Wallis and Whitman (1967) reported the occurrence of *Cs. melanura* larvae in both shaded and unshaded areas, these specimens were found in