

MOSQUITO IDENTIFICATION STUDIES IN A TYPICAL COASTAL AREA IN NORTHERN SURINAM

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ABSTRACT. Entomologic studies were carried out from December 1972 till December 1973, in a typical coastal area near "Fernandesweg," to determine the composition of the culicid fauna. Thirty-five species of mosquitoes were identified in trap-

ping and/or biting collections of adults with 12 of these species collected also as larvae; an additional 4 species were represented by larvae only. Three species have not been found previously in Surinam.

INTRODUCTION

The purpose of this study was to make an inventory of the culicid fauna of a typical coastal area in Surinam. This paper presents the results of mosquito identification studies from the first week of December 1972, till the last week of November 1973.

MATERIALS AND METHODS

THE STUDY AREA. A study area, situated near the Atlantic Ocean, was selected near "Fernandesweg," some 10 km west of Paramaribo, at the edge of the 2nd sand ridge (the beach is considered the 1st sand ridge). The swamp between the sand ridges is characterized as a brackish *Typha angustifolia*-*Cyperus articulatus* swamp, but *T. angustifolia* L. is dominant. In the dry season only small, very shallow pools are left; in the greater portion of the swamp mesohalinous ground water stands a few cm. below the surface of the wet clay (Lindeman, 1953).

Here and there we noted a patch of

Eleocharis mutata R. et S., whereas the grasses *Paspalum vaginatum* Sw., *Sporobolus virginicus* (L.) Kunth and the fern *Acrostichum aureum* L. ("tabakatiki") were abundant. *Acnida cuspidata* Bert. ex Spreng ("zwampklaroen") and *Mikania micrantha* H.B.K. ("brokobaka") grew scattered. *Nymphaea ampla* (Salisb.) DC. ("pankoekoewiwiri"), *Salvinia auriculata* Aubl. and *Azolla caroliniana* Willd. covered the water surface. There were scattered groups of *Avicennia nitida* Jacq. ("parwa") trees. In contrast with the swamps, the sand ridges had good drainage, and they are quickly desalted. Therefore the vegetation on the ridges is different from that of the swamps. On the ridges we noted in the canopy stratum *Hibiscus tiliaceus* L. ("maho"), *Avicennia nitida* Jacq. ("parwa"), *Spondias mombin* L. ("mope"), *Inga ingoides* (Rich.) Willd. ("swit'bonki"), *Annona montana* Macfad ("boesi-soensaka") and *Coccoloba latifolia* Lam. ("bradilifi"), while the vine *Mucuna sloanei* Fawc. et Rendle ("kaw-ai") is abundant. The undergrowth is characterized by *Desmoncus horridus* Splitg. et

Mart. ("bambamaka"), *Astrocaryum vulgare* (Martius ("awara")), *Heliconia psittacorum* L.f. ("popokai-tongo"), *Cordia macrostachya* (Jacq.) Roemer et Scholtes ("blaka-oema"), *Wulffia baccata* (L.f.) Kuntze ("soekroetanta") and *Machaerium lunatum* (L.f.) Ducke ("branti-maka").

In the neighborhood of the catching station there is a culture plot. After the 2nd sand ridge the water becomes fresh, and the vegetation type changes to a *Cyperus giganteus*-*Typha-Scleria* swamp (Lindeman, 1953). Various communities are brought together in this type, covering vast areas of swamp with fresh or very slightly brackish water. The plants usually constitute 2 strata of tall and medium-sized plants. In the upper stratum *Typha angustifolia* L. ("langa-grasi") dominates over *Cyperus giganteus* Vahl ("pajagrasi"), and both species are alternating with each other in a mosaic. Locally important species are *Scleria eggersiana* Boeck ("baboen-nefi"), *Thalia geniculata* L., *Montrichardia arborescens* (L.) Schott ("mokokoko") and *Machaerium lunatum* Ducke ("branti-maka"). As the upper stratum is more or less open, the lower stratum is dense and consists of ferns, mainly *Blechnum indicum* Burn. f. and grasses. *Leersia hexandra* Sw. ("warapagrasi") is the commonest grass. *Cyperus articulatus* L. ("adroe") is found in loose groups. Where enough space and light are left on the water surface, small aquatics like *Salvinia auriculata* Aubl., *Azolla caroliniana* Willd., *Pistia stratiotes* L., *Nymphoides* spp., *Hydrocotyle* spp. ("waternavel") and *Ipomoea reptans* Poir ("dagoe-blad") occur.

IDENTIFICATION. The mosquitoes were identified using keys or descriptions referred to by Panday (1975).

TRAPPING METHODS. Females were caught on human bait, with the Trinidad No. 10 trap (Worth et al., 1962), baited with adult, white mice, and the CDC miniature light trap (Sudia and Chamberlain, 1962). These traps were operated two nights a week, from 1800 till 0600. Male mosquitoes were caught by means of

the CDC miniature light trap.

MOSQUITO LARVAE. Approximately twice a month larval surveys were carried out.

RESULTS AND DISCUSSION

Thirty-five species of mosquitoes were identified in collections of the adults, with 12 of these species collected also as larvae; an additional 4 species were represented by larvae only. Three species have not been found previously in Surinam. They are *Culex paracrybda*, *C. dunni* and *C. zeteki*. The results of this study are summarized in Table 1. Some species deserve special attention.

Anopheles aquasalis Curry. De Kruyf (1970, 1972) caught this mosquito on human bait and with the Trinidad trap. In the "Fernandesweg" area males and females were captured with the light trap, whereas females were also caught on human bait and with the Trinidad trap. Larvae were collected from a semipermanent pool on the beach, from the marshy side of the road, from a creek, covered with *Ipomoea reptans*, in association with larvae of *Uranotaenia lowii* and *Culex erraticus*. The larvae live in all kinds of habitats within a wide range of sodium chloride concentrations (Van der Kuyp, 1950).

Mansonia titillans (Walker). Females were caught on human bait, with the Trinidad trap and light trap. Larvae attached to the roots of *Pistia stratiotes* were collected from a creek, together with larvae of *Culex aitkeni*, *C. pipiens quinquefasciatus* and *C. dunni*.

Uranotaenia lowii Theobald. Females were caught on human bait and with the light trap. Larvae were collected several times from the marshy side of the road, in association with larvae of *Culex virgultus*, *C. nigripalpus*, *C. spissipes*, *C. eastor*, *C. pilosus* and *C. erraticus*. They were also collected from a creek covered with *Ipomoea reptans*, together with larvae of *Anopheles aquasalis* and *Culex erraticus*.

Aedeomyia squamipenna (Arribálzaga).

Table 1. Summary of the mosquito species caught in the "Fernandesweg" area by various catching methods.

No.	Species	Females			Males LT	Larvac	Reared males
		H	TT	LT			
	<i>Anophelini</i>						
1.	<i>Anopheles aquasalis</i> <i>Sabethini</i>	+	+	+	+	+	+
2.	<i>Trichoprosopon digitatum</i> <i>digitatum</i>	-	+	-	-	-	-
3.	<i>Wyeomyia confusa</i>	+	-	-	-	-	-
4.	<i>Wyeomyia melanocephala</i> <i>Culicini</i>	+	+	+	-	-	-
5.	<i>Coquillettidia venezuelensis</i>	+	+	+	+	-	-
6.	<i>Mansonia titillans</i>	+	+	+	-	+	+
7.	<i>Mansonia pseudotitillans</i> <i>Mansonia</i> spp.	-	-	+	+	-	-
8.	<i>Uranotaenia lowii</i>	+	-	+	-	+	+
9.	<i>Uranotaenia leucoptera</i>	-	-	+	+	-	-
10.	<i>Uranotaenia geometrica</i>	-	-	+	+	-	-
11.	<i>Uranotaenia pulcherrima</i>	-	-	+	+	-	-
12.	<i>Uranotaenia pallidoventer</i>	-	-	+	+	-	-
13.	<i>Aedeomyia squamipenna</i>	-	+	+	+	+	+
14.	<i>Psorophora albipes</i>	+	+	-	-	-	-
15.	<i>Psorophora ferox</i>	+	-	-	-	-	-
16.	<i>Aedes scapularis</i>	+	+	+	-	-	-
17.	<i>Aedes serratus</i>	+	+	+	+	+	+
18.	<i>Aedes taeniorhynchus</i>	+	+	+	-	+	+
19.	<i>Aedes aegypti</i> <i>Aedes</i> spp.	-	+	-	-	-	-
20.	<i>Culex virgultus</i>	+	+	+	+	+	+
21.	<i>Culex nigripalpus</i>	+	+	+	+	+	+
22.	<i>Culex brevispinosus</i>	-	+	+	-	-	-
23.	<i>Culex pipiens quinquefasciatus</i>	-	-	-	-	+	+
24.	<i>Culex amazonensis</i>	-	-	-	+	-	-
25.	<i>Culex accelerans</i>	-	-	-	+	-	-
26.	<i>Culex crybda</i>	-	-	-	+	-	-
27.	<i>Culex paracrybda*</i>	-	-	-	+	-	-
28.	<i>Culex taeniopus</i>	+	+	+	+	-	-
29.	<i>Culex spissipes</i>	+	+	+	-	+	+
30.	<i>Culex menytes</i>	-	-	-	+	-	-
31.	<i>Culex aitheni</i>	-	-	-	+	+	+
32.	<i>Culex albinensis</i>	-	-	-	+	-	-
33.	<i>Culex portesi</i>	+	+	+	+	-	-
34.	<i>Culex dunni*</i>	-	-	-	-	+	+
35.	<i>Culex zeteki*</i>	-	-	-	+	-	-
36.	<i>Culex pilosus</i>	-	-	-	-	+	+
37.	<i>Culex inhibitor</i>	-	-	-	+	-	-
38.	<i>Culex eastor</i>	+	+	+	+	+	+
39.	<i>Culex erraticus</i> <i>Culex</i> spp.	+	+	+	+	+	+

* The species marked with an asterisk are new for Surinam.

H = Catch on human bait.

TT = Catch with the Trinidad trap.

LT = Catch with the light trap.

Reared Males = The adult male has been reared from collected larvae.

Males and females were taken in the light trap, whereas females were also caught with the Trinidad trap. Larvae were collected several times from a creek covered with *Ipomoea reptans*, and from the marshy side of the road.

Aedes serratus (Theobald). Males and females were captured with the light trap, whereas females were also caught on human bait and with the Trinidad trap. Larvae were collected from the marshy side of the road, in association with larvae of *Aedes taeniorhynchus*.

Aedes taeniorhynchus (Wiedemann). Females were caught on human bait, with the Trinidad trap and light trap. Larvae were collected from the marshy side of the road together with larvae of *Aedes serratus*, and from a semipermanent pool on the beach.

Aedes aegypti Linnaeus. Van der Kuyp (1958, 1967) described the history of yellow fever and *Aedes aegypti* control in Surinam, whereas Tinker (1972) made a study of the various larval habitats of this species. This mosquito is still common in the houses in Paramaribo and elsewhere (Panday, 1974). Larvae were collected from a water barrel, although in general the objective of this study was to sample only from natural receptacles.

Culex virgultus Theobald. Males and females were caught with the light trap, whereas females were also captured on human bait and with the Trinidad trap. Larvae were collected several times from the marshy side of the road, in association with larvae of *Anopheles aquasalis*, *Uranotaenia lowii*, *Culex nigripalpus*, *C. spissipes*, *C. pilosus*, *C. eastor* and *C. erraticus*.

Culex nigripalpus Theobald. Males and females were taken in the light trap, whereas females were also caught on human bait and with the Trinidad trap. Larvae were collected from the marshy side of the road, together with larvae of *Uranotaenia lowii* and *Culex virgultus*.

Culex brevispinosus Bonne-Wepster and Bonne. Females were captured with the Trinidad trap and light trap. As the fe-

males of some *Culex* species look exactly alike and as we did not catch males or collect larvae of *Culex brevispinosus* in this area, the identification of this species is doubtful.

Culex pipiens quinquefasciatus Say. Larvae were collected from a creek along the road, in association with larvae of *Mansonia titillans*, *Culex aitkeni* and *C. dunni*.

Culex spissipes (Theobald). Females were caught on human bait, with the Trinidad trap and light trap. Larvae were collected from the marshy side of the road, in association with larvae of *Uranotaenia lowii*, *Culex virgultus* and *C. pilosus*.

Culex aitkeni (Aitken). Males were captured with the light trap and larvae were collected from a creek along the road, together with larvae of *Mansonia titillans*, *Culex pipiens quinquefasciatus* and *C. dunni*.

Culex dunni Dyar. Larvae were collected from a creek along the road, together with larvae of *Mansonia titillans*, *Culex pipiens quinquefasciatus* and *C. aitkeni*.

Culex pilosus Dyar and Knab. Larvae were collected from the marshy side of the road in association with larvae of *Uranotaenia lowii*, *Culex virgultus* and *C. spissipes*.

Culex eastor Dyar. Males and females were captured in the light trap, whereas females were also caught on human bait and with the Trinidad trap. Larvae were collected from the marshy side of the road, in association with larvae of *Uranotaenia lowii*, *Culex virgultus* and *C. erraticus*.

Culex erraticus (Dyar and Knab). Males and females were caught in the light trap, whereas females were also captured on human bait and with the Trinidad trap. Larvae were collected from temporary rainpools, from the marshy side of the road, in association with larvae of *Uranotaenia lowii*, *Culex virgultus* and *C. eastor*, from a creek covered with *Ipomoea reptans*, together with larvae of

Anopheles aquasalis and *Uranotaenia lowii*.

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