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ENTOMOLOGY.—*A new species of* Culex *from the Marquesas Islands and the larva of* Culex atriceps *Edwards* (Diptera: Culicidae).

ALAN STONE, U. S. Bureau of Entomology and Plant Quarantine, and LEON ROSEN, National Microbiological Institute.

In the course of mosquito surveys conducted in connection with filariasis studies on the six inhabited Marquesas Islands, the junior author found an apparently undescribed indigenous species of *Culex*, which is herein described. Because of similarity of this species to *Culex atriceps* Edwards, which is known only from the Society Islands, a description of the heretofore undescribed larva of the latter species is also given. The drawings are by Sally Kaicher.

Culex marquesensis, n. sp.
Figs. 1, A–C; 2, A–B

Male.—Length of body 3.5 mm. Vertex with curved decumbent yellowish-white scales centrally, these broader and more abundant on sides; centrally with numerous erect, forked, dark-brown scales. Palpus dark brown, the last two segments and apical part of the third with long unmodified hairs. Proboscis extending to middle of fourth palpal segment, entirely dark brown except for the yellowish labellae. Torus yellow; antenna not as long as proboscis. Scales of anterior pronotal lobe, posterior pronotum, scutum, and scutellum pale yellowish to brown; integument of scutum brown with a pair of straight central and a pair of curved lateral stripes of paler color in the usual pattern. Postscutellum pale. Thoracic setae brown. Pleuron greenish yellow, sometimes faintly mottled with darker; a few scattered flat pale scales on pleuron. One or two lower mesepimeral setae. Scales of wing dark; knob of halter dark, with dark scales. Legs entirely dark scaled except for paler posterior surfaces of the femora. Dorsum of abdomen dark scaled, with basal bands of pale scales on tergites 2–6, that on 2 slightly separated from base by an unscaled area; venter likewise banded, the pale basal bands often broader. Terminalia: Basistyle nearly three times as long as broad, without scales, but with long hairs dorsally and laterally; subapical lobe slightly beyond middle, divided into two parts, the ventral portion a short lobe bearing three stout, parallel filaments, the two distal ones hooked at tips, the third shorter and straight; inner (more dorsal) portion a short cone with a single straight, tapering filament; between these a striated leaf and distad of this leaf a single slender hair on a tubercle. Dististyle broad and flattened, the end abruptly tapering with a short distal spine. Dorsal arms of mesosome straight, untoothed, slightly divergent; ventral arms a mass of curved teeth; tenth sternites distally with a mass of tapering spines; lateral arms broad, blunt, curved ventrally. Ninth tergite forming a broad V, weakly haired.

Female.—Coloration essentially as in male, but scales generally slightly darker and pale areas of posterior surfaces of femora usually restricted to basal halves on mid and hind femora; pale abdominal bands narrow, the hind margins straight. Palpus about one-sixth length of proboscis.

Larva.[1] Head: Length three-fourths of width; color yellow, usually with a dark band across frontal hair area. Antenna smooth, short, its length slightly more than one-third distance between bases of antennae, cylindrical, about six times as long as thick, not tapering; shaft hair usually triple, at middle of antenna and reaching about to apex. Clypeal spine moderately stout, curved; outer clypeal hair small, no postclypeal hair; inner frontal hairs single, widely separated, placed behind level of antennal bases; midfrontal hairs single, long, directly in front of inner frontals and in front of level of antennal bases; outer frontal hairs usually triple, directly above or slightly anterior to base of antenna. Mental plate subtriangular, the sides convex, with about eight teeth on each side.

Thorax: Integument smooth; prothoracic hair 0 very small, double; 1–3 on one tubercle, all single, 1 longest, 3 shortest; 4 single, halfway between shoulder hairs and hair 5; 5–7 close together, 5 and 6 single, 7 double; hair 8 small, single; hairs 9, 10, and 12 long, simple; 11 very small, double; 14 small, single.

Abdomen: Segments III–VI each with only one large lateral hair, 3- to 5-branched. Segment

[1] The nomenclature of the larval chaetotaxy used here is that of Belkin (1950).

VIII with pentad hair 1 3- to 9-branched; 2 single and very close to 1; 3 7- to 10-branched; 4 single; 5 2- to 4-branched. Comb scales 21 to 26 in a triangular patch, each scale broadened apically with an even fringe of hairs. Air tube three times as long as broad, only slightly tapering at distal third; acus well developed. Siphonal hairs 4 or 5 in each of two straight, widely separated rows, each hair about as long as width of siphon, multiple, the first at basal fifth to third, the last at about apical third. Pecten of 6 to 11 teeth, each with 5 slender, deep, serrations. Anal segment ringed by the saddle, the ventral half abruptly narrowed to about one-half the length of the dorsal half. Only very minute spines dorsally at apex. Lateral hair of saddle very small, 4- to 5-branched. Inner dorsal hair with about 5 long branches, outer dorsal hair long, single. Anal gills four, rather stout, the dorsal pair about twice as long as dorsal length of saddle, the ventral pair about three-fourths as long as dorsal pair. Ventral brush of about 12 tufts.

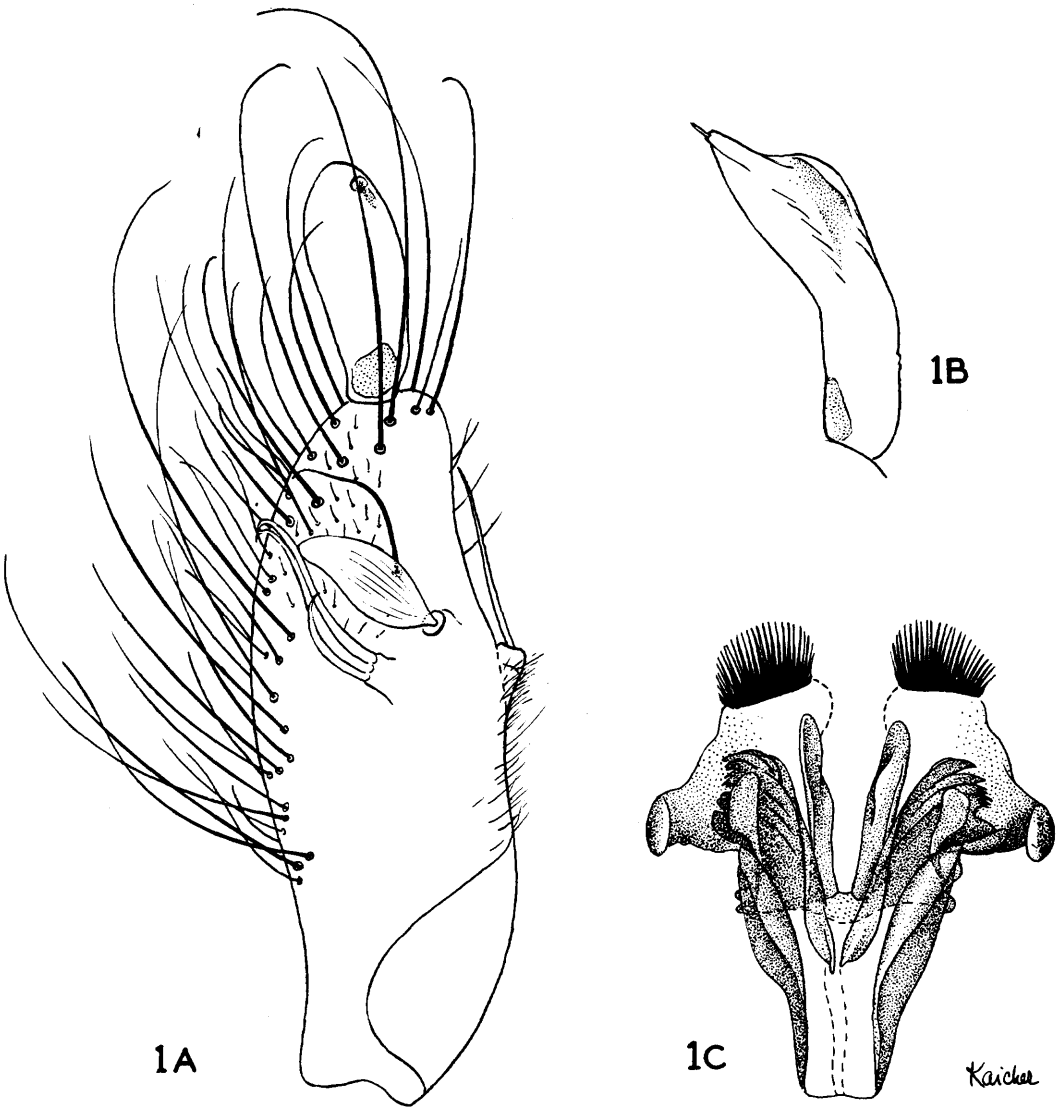

FIG. 1.—*Culex marquesensis*, n. sp.: A, Basistyle and dististyle of male, ventral view; B, dististyle, lateral view; C, mesosome and tenth sternites, dorsal view.

Holotype.—Male, ex barrel top, Atuona Bay, Hivaoa, Marquesas Islands, June 12, 1952 (Leon Rosen) with genitalia and larval and pupal exuviae on slide. Paratypes, same data, 182 males and females. Holotype and paratypes (U. S. National Museum no. 61839); paratypes, British Museum, Paris Museum, California Academy of Sciences, Bishop Museum, School of Hygiene and Public Health of the Johns Hopkins University, and South Pacific Commission, Noumea, New Caledonia. Additional specimens were collected on Nukuhiva (Taiohae and Tiapivai Bays), Uapou (Hakamaii Bay), Uahuka (Vaipae and Hokatu Bays), and Tahuata (Hapatoni Bay).

This species shows no close relationship to any described Pacific species other than *Culex atriceps* of the Society Islands. Both of these species appear to fall into Edwards' *decens* series, of the *pipiens* group of the typical subgenus *Culex*. This is an African group, in which the proboscis and tarsi are all dark, the abdominal tergites usually have only basal lateral pale spots, and the male palpi are usually without any white line on the lower surface of the last two segments. The terminalia of *marquesensis* are rather similar to those of several of the *decens* series. Edwards noted that the larvae of this series show great variation, a condition further developed if both *atriceps* and *marquesensis* are included.

Although *marquesensis* is not closely related to *C. quinquefasciatus*, the only other known *Culex* in the Marquesas, it could be confused with it by superficial examination. The best external characters to distinguish the adult of *marquesensis* are the yellow labellae, strongly contrasted with the dark proboscis, and the uniformly dark brown scaling of the mesoscutum. In *quinquefasciatus* the labellae may be somewhat paler but never as strongly contrasted, and the mesonotal scales are distinctly tinged with yellow or orange. The single inner and midfrontal hairs of the larva of *marquesensis* readily distinguishes this stage.

Biology.—The larvae of *marquesensis* have been found in the following types of breeding places: water drums, rock holes, coconut husks, and barrel tops. They have been found in association with both *Aedes polynesiensis* Marks and *Culex quinquefasciatus* Say. The adults of *marquesensis* were not found in nature.

Two other species of mosquitoes, *A. polynesiensis* (formerly known as *A. pseudoscutellaris*) and *C. quinquefasciatus*, have previously been reported from several of the Marquesas Islands. (Marks 1951) New distribution records from the recent surveys are as follows: *A. polynesiensis*—Uapou; *C. quinquefasciatus*—Uapou, Uahuka, and Nukuhiva. Both *A. polynesiensis* and *C. quinquefasciatus* have now been found on all six inhabited islands of the group and *C. marquesensis* has been found on five of these six islands.

Culex atriceps Edwards
Fig. 3, A–B

Bull. Ent. Res. **17:** 105, 1926. Type locality, Papeari, Tahiti.

Larva.—Head: Length about three-fourths width; yellowish, weakly darkened on the disk posteriorly and a darker spot behind but separated from eye. Antenna sparsely spiculate, short, its length about one-third distance between bases of antennae, cylindrical, about eight times as long as diameter, slightly narrowed beyond shaft hair, which is slightly beyond middle of antenna, multiple. Clypeal spines slender, curved; outer clypeal hair small; post clypeal hairs very small, double, about on line of midfrontal hairs; frontal hairs distinctly plumose; inner frontal hair 5- to 8-branched, well behind level of bases of antennae; midfrontal hair 4- to 6-branched, near inner frontal hair and on line between inner and outer frontals; outer frontal hair 7- to 11-branched near to, but slightly posterior to antennal bases. Mental plate subtriangular, with a very strong, prominent median tooth and 10 to 11 lateral teeth, the 7th and 8th from apex being largest.

Thorax: Integument smooth. Prothoracic hair 0 small, multiple; 1 to 3 on one tubercle, all single, subequal; 4 double; 5 and 6 rather close together, single; 7 more distant, double; 8 rather small, single; prothoracic pleural group with one long simple hair, two much shorter and finer, and a much smaller one 4-branched; 14 small, single or double.

Abdomen: Segments III to VI with one long lateral hair, 2- or 3-branched. Segment VIII with pentad hair 1 3- to 5-branched, 2 single and close to 1, 3 7- to 9-branched, 4 single, 5 usually 2-branched. Comb scales 30 to 40 in a triangular patch, each scale broadened apically with an even fringe of hairs. Air tube 3 to 3.5 times as

long as basal width, rather evenly tapered to apex; acus well developed. About six pairs of siphonal tufts rather irregularly arranged on the median three-fifths of the siphon ventrally, none of the hairs displaced to the side; tufts mostly longer than width of siphon at point of insertion, except for the small apical pair. Pecten of 10 to 20 teeth extending to or somewhat beyond middle of siphon; each tooth usually with 2, 3, or rarely 4, serrations. Anal segment ringed by the saddle, the ventral length about two-thirds dorsal length; lateral hair small, single, or rarely, double. A patch of rather large spines on the saddle at apex to each side of dorsal hairs. Inner dorsal hair 11- to 14-branched; outer dorsal hair long, usually single, rarely double. Anal gills 4, rather stout, subequal, from about length of anal segment to more than twice length of saddle. Ventral brush of 11 or 12 tufts.

This description is drawn from specimens collected by the junior author from a tree hole at Paoa, Tahiti, January 2, 1952, and from the exuviae of reared specimens from a coconut husk at Vairao, Tahiti, May 8, 1952.

The forward position of the multiple head hairs and the length of the pecten are characteristic of the larva of this species. A closely related larva was collected from *Pandanus* axils on Tahiti but no adults were reared. It does not seem advisable to describe this species until adults can be associated.

Biology.—The larvae of *C. atriceps* have been found on the islands of Tahiti and Moorea

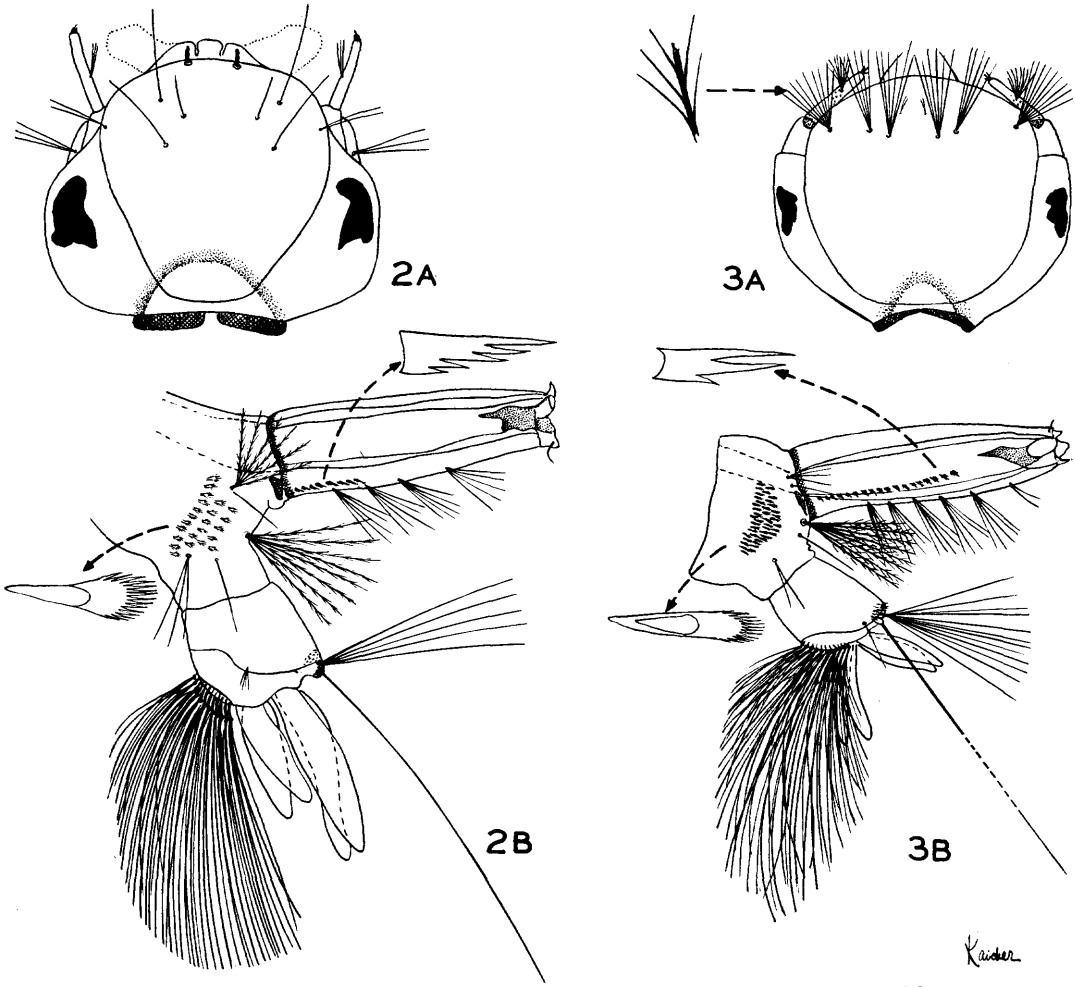

FIG. 2.—*Culex marquesensis*, n. sp.: A, Head of Larva; B, end of abdomen of larva.
FIG. 3.—*Culex atriceps* Edwards: A, Head of larva; B, end of abdomen of larva.

(Society Islands) in the following types of breeding places: tree holes, coconut husks, and various types of artificial containers. The larvae are frequently found in association with those of *A. polynesiensis*. The adults have been observed to attack man at night, but rarely in considerable numbers. They are sometimes seen resting in houses but are more commonly found in natural resting places such as tree buttresses.

The junior author has shown that occasional specimens of the species are capable of allowing complete development of Polynesian strains of *Wuchereria bancrofti*. *C. atriceps* would not seem to be an important vector of this parasite in nature because of its inefficiency as a host and the rarity with which it attacks man.

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