

A NOTE ON THE BIOLOGY OF THE MOSQUITO, *PSOROPHORA DISCOLOR* (COQUILLET), IN MISSISSIPPI

(DIPTERA: CULICIDAE)

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Psorophora discolor (Coquillett) is found from Mexico northward to New Jersey and westward to Oklahoma. It reaches peak populations in the rice growing areas of Mississippi, Arkansas, and Louisiana, where it is an important and serious pest of men and livestock. Mathis *et al.* (1955), in a previous study in Bolivar County, Mississippi, found that *Psorophora discolor* made up from 14 to 44 percent of the total specimens taken in light traps. Outside of the rice growing areas of these states and over most of its range it is considered an uncommon species.

During the summer of 1955, observations on the biology of *Psorophora discolor* were started near Cleveland, Mississippi, and continued during the summer of 1956 near Greenwood, Mississippi. These studies were made to determine the important breeding sites of this species, and to learn something of its larval associations, seasonal distribution, and habits.

In the Mississippi Delta area *Psorophora discolor* passes the winter in the egg stage. Eggs are deposited on moist soil in the fall and hatch when ground pools are flooded from the dry state in the spring. The larvae appear first in ground pools formed by precipitation, and later in rice fields and other breeding sites resulting from irrigation. Normally the mosquito populations would drop as the surface pools formed by precipitation dried up. However, the irrigation of crops starts in Mississippi at just about the time the first brood of *Psorophora discolor* completes its development. This makes available large areas of water highly suitable for additional mosquito breeding, and results in continued high populations.

In the vicinity of Cleveland, Mississippi, the principal breeding sites of *Psorophora discolor* were found to be shallow grassy ditches, irrigated rice fields, and surface pools in pastures. Small numbers of larvae were also found developing in irrigated cotton fields, sloughs, and roadside borrow pits. In 1956 in the vicinity of Greenwood, Mississippi, very similar conditions were noted. The typical breeding sites support dense stands of grass and are largely devoid of canopy shade.

The larval populations of *Psorophora discolor* reached a seasonal peak in 1955, during the week ending June 18. The highest populations occurred following considerable rainfall and at the beginning of the irrigation season. A second but less important peak occurred during the week ending July 9, and resulted almost entirely from breeding in irrigated rice fields and pastures.

Psorophora discolor was found most often in association with *Psorophora confinnis*, and *Anopheles quadrimaculatus* Say. It was collected occasionally with *Aedes vexans* Meigen, *Psorophora ciliata* (Fabricus), *Culex salinarius* Coquillett, *Culex erraticus* (Dyar and Knab), *Culex restuans* Theobald, and *Culex pipiens* Linn. In ditches and pastures *Psorophora discolor* was second to *Psorophora confinnis* in numbers, and was more abundant than *Anopheles quadrimaculatus*. In rice fields it was third in abundance, ranking behind *Psorophora confinnis* and *Anopheles quadrimaculatus*.

If disturbed, the larvae of *Psorophora discolor* immediately submerge to the bottoms of the pools or ditches and lie with their ventral sides up, each supported

on its air tube and stiff thoracic hairs. The length of time that a larva can remain submerged was timed with a stop watch. This time period ranged from 3 to 88 minutes, with an average of 44 minutes. In routine mosquito sampling this species is often missed because of its ability to remain submerged for long periods. To get an accurate sample it is necessary to scrape the dipper through the bottom debris, and then carefully examine the contents.

In practically every habitat studied a mixture of species was encountered. *Psorophora* larvae appeared shortly after flooding and no further hatching occurred unless there was another rise in water level. *Psorophora confinnis* was able to complete development to the pupal stage in approximately 6 days and the adults emerged in 8 days. The larvae of *Psorophora discolor* developed more slowly, requiring 10 or more days to reach the pupal stage. The broods of *Psorophora* were thus clearly defined, with most of the *Psorophora confinnis* adults having emerged before the *Psorophora discolor* larvae reached the pupal stage.

Irrigation is increasing yearly in the Mississippi Delta area, and with it the mosquito problem is becoming more acute. Emphasis should be given to elimination of habitats resulting from over-irrigation and poor drainage. Proper land preparation and leveling is now being done by many of the farmers and this practice should be encouraged. Measures to prevent the flooding of ditches should be utilized where needed, and drains should be provided for the removal of surplus water.

LITERATURE CITED

- Mathis, W., C. Elmore, and H. F. Schoof.** 1955. Further studies on the chemical control of rice field mosquitoes in Mississippi. *Mosq. News* 15(3): 148-153.
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