SOME OBSERVATIONS ON THE LARVAL HABITAT OF *PSOROPHORA VARIPES* (COQ) *(DIPTERA: CULICIDAE)*

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Psorophora varipes (Coq.) is at certain times and places a very abundant and annoying biter. King, Bradley and McNeel (1) record it as being exceedingly annoying in the woods around Mound, La. Horsfall (2) and Carpenter (3) report the species as occurring in large numbers after the spring floods in Arkansas. In the writer's experience, *Psorophora varipes* was very numerous in the spring during the years 1943, 1944, and 1945 around Alexandria, La.

In spite of this adult abundance, the larvae are seldom seen and are rare in collections. They are usually thought to breed in temporary rain pools as does the common related species, *Psorophora ferox*. That the larval environment may be somewhat different, however, is indicated by some observations made by the writer at Alexandria.

First of all, it was noticed that *Psorophora varipes,* while present in many wooded areas, was abundant only in the dense, swampy lowlands, particularly those that were flooded by overflowing streams and rivers. Favored haunts seemed to be the Bayou Ricolette woodlands, about 2 miles northwest of Alexandria; the Little River swamplands, approximately 20 miles northeast of Alexandria; and the Bayou Beouf swamplands, about 5 miles south of Alexandria. All of these flooded extensively each spring:

During 1944, small collections up to 15 *Psorophora varipes* were found accidentally in the Bayou Ricolette and Little River flood waters. They were found among floating debris (dead twigs, leaves, etc.) together with the larvae of *Anopheles crucians,* or where the larvae of *A. crucians* and *A. quadrimaculatus* soon after appeared.

The Bayou Beouf swamplands were selected for special observations in 1945. This region not only contained extensive overflow areas but also large tracts of flatwoods containing innumerable temporary rain pools. These pools had been searched carefully for several years, without finding any *P. varipes* larvae, although the larvae of *Psorophora ferox, Aedes canadensis, A. grossbecki, A. vexans, A. atlanticus, A. tormentor, A. infirmatus, Culex apicalis,* and others were at times numerous or abundant.

In 1945, the pools and flooded areas were first surveyed in February. No larvae of any species were found in the flooded areas although the rain pool areas contained *Aedes canadensis* and *A. grossbecki* larvae. The development of these larvae continued slowly through February with pupation and emergence occurring in early March. By the middle of March, the flood waters had receded and most of the ground pools had dried because of a temporary cessation of the spring rains.

On the evening of March 18, 1945, a heavy rain once more flooded the overflow areas and filled the rain pools. The next day two first instar *Psorophora* larvae were found in floating debris in the overflow areas. On March 20, the area was flooded somewhat more extensively by another rain. On March 22, adult *P. varipes* were numerous (on all previous occasions they had been absent) and third and fourth instar larval *P. varipes* were abundant, averaging three or four to the dip. The larvae were found in the floating mats of debris, especially in those places which had been flooded by the rain of March 20. A few pupae also were present. On March 25, adults were present in hordes but larvae and pupae were absent.

During this same period, the larvae of *Psorophora ferox* became abundant in the temporary rain pool areas but no *P. varipes* could be found. . In April, however, a single specimen of *P. varipes* was collected by Mr. J. A. Fontenot from a temporary rain pool near Alexandria, La.

During April, other woodlands began to show the presence of adult *P. varipes*. These adults, in the writer's opinion, migrated from the floodwater breeding areas. The temporary pool breeding around Alexandria appears to be too rare to account for their numbers. *P. varipes* may have a much longer flight range than previously suspected, infiltrating many wooded places where it does not breed at all.

Characteristics of Psorophora Varipes *Larvae*

The larval chaetotaxy of *Psorophora varipes* has been adequately treated by other writers; however, there are several characters and habits which may show adaptation to their environment which have not been previously noted.

1. Shape of the airtube: In *P. varipes* the airtube is quite slender; little wider at the middle than at the base or apex, and without the inflated appearance common to *Psorophora* larvae.

2. Coloration: The head is entirely black and the airtube is black on the basal two-thirds, turning pale towards the apex. The dorsum of the body is pale, but the venter has definite black markings. This color pattern may be described as follows: On venter of thorax, an indistinct central mass traversed by three very dark curved bars. On the anterior abdominal segments; wide bands of solid color covering nearly all of the segment; the anterior edges of the bands are convex in the middle, concave towards the sides (bow-shaped); the posterior edges are concave. On the more posterior segments the anterior edges of the bands become more bowed. The posterior edges develop a median projecting angle and usually there are one or two clear spots medially in the band. On the 8th segment the banding is reduced to a small chevron-like band with the center missing.

3. Movement: The larvae even when captured are relatively inactive except for the rapid and constant action of the mouth bristles which draws the larvae about through the water.

4. Growth rate: The aquatic stages of *P. varipes* apparently are passed with extreme rapidity, the whole cycle from hatching to adult occurring in 4 to 6 days.

These characters appear to be adaptive to their peculiar environment, their lack of movement and ventral dark coloration enabling them to be invisible to fish while lying under the mats of debris, the slender airtube being better fitted for piercing the covering mat than the typical bulky airtube usually found in *Psorophora*. The very rapid growth is necessary for completion of development in the transitory flood waters.

Summary

1. Near Alexandria, La., *Psorophora varipes* were found to be breeding abundantly in woodland flood waters and to be nearly absent in the temporary rain pools. This may explain the relatively few larval collections of *P. varipes*.

2. *Psorophora varipes* larvae show certain adaptative characters and habits which fit them for breeding in mats of floating debris in woodland flood waters: (A) Dark ventral protective coloration; (B) Minimum of movement; (C) Slender airtube; (D) Rapid growth rate.

References

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