

SURVEY OF LOG POND MOSQUITOES IN DOUGLAS COUNTY, OREGON, DURING 1956

F. C. HARMSTON,¹ L. S. MILLER,² AND R. A. McHUGH¹

During 1956, a survey of log pond mosquitoes in Douglas County, Oregon, was conducted cooperatively by the Oregon State Board of Health, the Douglas County Health Department, and the Communicable Disease Center, U. S. Public Health Service. This paper presents the findings of this survey, which included log ponds and adjacent urban and suburban areas at Roseburg, Sutherlin, Myrtle Creek, Riddle, Drain, and Elkton.

LARVAL MOSQUITO DATA. Seven log ponds were selected in the spring of 1956 for an ecologic study of mosquito larvae. Seasonal trends in larval populations were determined by taking a minimum of 60 dips in each pond at biweekly intervals. The earliest spring samples (April 15 to 18) showed only a few larvae of *Culiseta incidens*, *Culex tarsalis*, and *Culex peus* in several ponds. By May 15, most of the ponds contained larvae of these three species in populations averaging less than one larva per dip. Larval populations of the three species remained at a low level until the latter part of June when a significant and steady increase in the numbers of *C. tarsalis* was noted (Figure 1). *C. tarsalis* was the predominant species until about the middle of July when the larval population leveled off and *C. tarsalis* was then exceeded by *C. peus*, which thereafter was the predominant species. Larval populations of *C. incidens* were low during May and June but showed a rapid increase after the middle of July and reached their peak about the middle of August. During the first part of August, a rapid decline was noted in the numbers of *C. tarsalis* in the

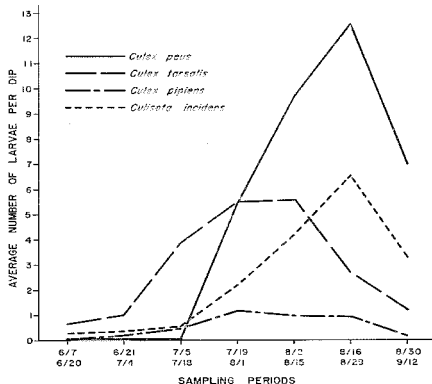


FIG. 1. Biweekly moving averages of numbers of mosquito larvae obtained by dipping in 7 log ponds in Douglas County, Oregon, 1956.

log ponds; in the case of *C. peus* and *C. incidens*, this decline (in larval populations) occurred during the latter part of August.

A few ponds were found to produce substantial numbers of *Culex pipiens*, but the over-all production of this species in log ponds was much lower than that of *C. tarsalis*, *C. peus*, and *C. incidens*. Production of *C. pipiens* was noted in situations other than log ponds. These situations included a sewage-polluted stream in the vicinity of Sutherlin, and small surface depressions that contained effluent from septic tanks.

In several ponds, large numbers of *Mansonia perturbans* larvae were collected by pulling up clumps of cattails and shaking out the roots in a pan of water or by dipping under floating mats of cattails. Scores of *Mansonia* larvae were found attached to roots in late May and early June, but larvae were much more difficult to obtain later in the season. Observations on the occurrence of *Mansonia* in Douglas County log

¹ Technology Branch, Communicable Disease Center, Public Health Service, U. S. Department of Health, Education, and Welfare, Greeley, Colorado.

² General Sanitation Section, Division of Sanitation and Engineering, Oregon State Board of Health, Portland, Oregon.

ponds have been reported previously (Miller and McHugh, 1959).

ADULT MOSQUITO DATA. Adult mosquito populations were sampled by means of light traps and biting collections. At each of the 7 log ponds, a light trap was operated 2 nights per week from June 15 through September 7, except in several instances where a trap operated only one night per week because of mechanical difficulty or power failure. A total of 3,550 female mosquitoes was collected in 85 trap-nights. In one daytime and 8 evening biting collections, 472 female mosquitoes were recovered.

Five species of mosquitoes including *C. tarsalis*, *C. peus*, *C. pipiens*, *C. incidens*, and *M. perturbans* comprised 99 percent of the total female specimens taken in the light traps. Six other species including *Aedes sierrensis*, *Anopheles freeborni*, *Anopheles punctipennis*, *Culex restuans*, *Culex territans*, and *Culiseta inornata* comprised the remaining one percent.

C. tarsalis ranked first among the light-trap specimens and comprised 33 percent of the total number taken (Figure 2).

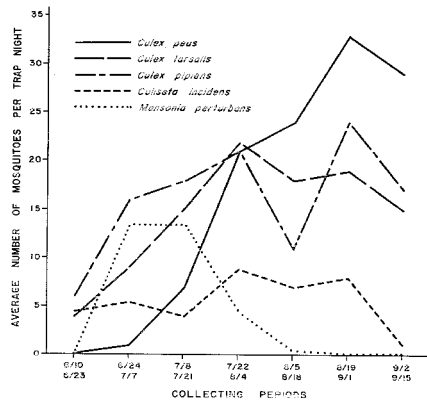


FIG. 2. Biweekly moving averages of adult mosquitoes collected in 8 light traps operated in the vicinity of log ponds in Douglas County, Oregon, during 1956.

The light-trap collections indicated a steady increase in the population of *C. tarsalis*

from early June until early August at which time the population density reached its peak. In addition to ranking first in the light-trap collections, *C. tarsalis* comprised 81 percent of the 472 female mosquitoes taken in the evening biting collections.

C. peus was second among the light-trap specimens and comprised 32 percent of the total females collected. This species was not taken in the light traps until the first week in July, despite the fact that small numbers of larvae were present in the log ponds throughout the month of June. Populations of *C. peus* increased very rapidly during the last half of July and reached their peak during mid-August. This was the predominant species in light-trap collections from early August through September 15, when light trap operations were discontinued. Attempts to take *C. peus* in biting collections met with failure, although tremendous numbers of this species were present in the immediate vicinity of the collection sites. It would appear that the production of *C. peus* in log ponds is of little significance from a mosquito control standpoint, since it appears that these mosquitoes rarely feed on man.

C. pipiens ranked third in the light-trap collections and comprised 19 percent of the total females taken. *C. pipiens* comprised a much higher proportion of the light-trap specimens than would be expected from the small numbers of larvae found in the log ponds. Production of this species in habitats other than log ponds, as noted earlier, probably accounted for the relatively large proportion of light-trap specimens. *C. pipiens* was not taken in any of the biting collections even though the light traps showed large numbers of this species to be present at sites where the biting studies were being made.

C. incidens was fourth among light-trap specimens and comprised 11 percent of the total females taken. The collections of *C. incidens* in light traps were consistently low from early June until September. This species comprised 11 percent of the mosquitoes taken in the biting collections.

M. perturbans ranked fifth in the light-

trap collections and comprised 4 percent of the females taken. On the basis of light-trap collections, the population density of *M. perturbans* was highest from the end of June until the middle of July, during which period 119 of the 130 specimens were taken. This species was highly pestiferous in evening biting collections in the vicinity of certain log ponds which contained dense growths of cattails favorable for the development of *Mansonia* larvae.

The treehole mosquito, *A. sierrensis*, was taken in biting collections during the period May 25 to July 12. The largest numbers were taken on May 25, in oak forest habitat near Ridgedale, about 3 miles northwest of Roseburg. In this area, *A. sierrensis* were numerous and highly annoying around sheds, garages, other out-buildings, and porches of several residences. This species was also encountered in considerable numbers in the Sutherlin area. On the basis of observations during 1956, it appears that much of the early-season annoyance attributed to log pond mosquitoes in Douglas County actually is caused by *A. sierrensis*.

DISCUSSION. With regard to the planning of control operations, mosquitoes in the log pond areas of Douglas County may be divided into the following groups: (1)

Biting species (*C. tarsalis* and *C. incidens*) for which special control measures may be required in log ponds and conventional control measures in other breeding places. (2) Biting species (*M. perturbans*), which breed in log ponds, but because of their peculiar habit of remaining attached to plant roots, are not subject to conventional control measures, and for which special measures must be developed. (3) Species that rarely bite man (*C. peus* and *C. pipiens*), which breed abundantly in log ponds, but for which control measures may not be necessary. (4) Biting species (*A. sierrensis*), which do not breed in log ponds and must be controlled by species sanitation measures directed at their tree-hole larval habitats.

SUMMARY. The principal species based on relative abundance of adults over the entire season near 7 log ponds in Douglas County, Oregon, were *Culex tarsalis*, *C. peus* and *C. pipiens*; the last species was, however, much less abundant in the larval collections. *Culiseta incidens* and *Mansonia perturbans* occurred in much lower numbers than the three species of *Culex*.

Reference Cited

MILLER, L. S., and McHUGH, R. A. 1959. A note on *Mansonia* breeding in Oregon log ponds. Mosquito News 19(3):198.

VIRGINIA MOSQUITO CONTROL ASSN.

5721 Sellger Drive, Norfolk 2, Virginia

George C. Lyon, Ocean Park, President

Jack E. Dent, Norfolk, First Vice President

Philip P. Davis, So. Norfolk, Second Vice President

C. E. Johnson, Hampton, Third Vice President

R. E. Dorer, Norfolk, Secretary-Treasurer