Even the brown trout appears experimentally to tolerate without harm exposure to the pyrethrum-oil larvicide in concentrations greater than should ever be encountered in practical control work; and, unlike mosquito control which may require repetition of the assay treatment at intervals throughout the active season, with only one economically significant brood of blackflies, at least in Northern New York, it appears that effective control of these insects may be accomplished by a single properly timed application of the larvicide.

Observations On The Over-Wintering Of Mosquitoes Near Fort DuPont, Delaware

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The literature of the over-wintering of Anopheles trimaculatus (and of other American anopheline mosquitoes as well) is very limited. The observations of Hinman (1934) occasioned considerable surprise and discussion regarding the "hibernation" of this species. Unusual numbers of over-wintering females had been noted previously. The idea had been prevalent that there is no prolonged period of inactivity, but rather that greatly-reduced, breeding activity occurs intermittently throughout the winter months.

Since this early work by Hinman, there have been subsequent accounts of enormous, or even large, numbers of over-wintering females of this mosquito. Ever, Hinman and Hurlbut (1940) reported other instances of small numbers of over-wintering females, published data on the depletion of the fat body during the dormant season.
Information obtained during the winter of 1941-1942 in the vicinity of Fort DuPont (Delaware City), Delaware, should further the acceptance of the ability of females of this species to undergo a prolonged period of winter cold and inactivity.

In this locality, over-wintering quarters, in one instance, had temperatures as low as 3°F and 4°F. Yet, a small number of females successfully passed the winter. Temperatures of favored places, such as cellars, normally were not below 30°F to 32°F., and minimal temperatures were generally 38°F to 43°F.

During the interval from late November to the middle of March, the rate of mortality was extremely high. It is only because of the excessively large numbers present in this area at the end of the breeding season that appreciable numbers survive the winter.

Females were caged to determine survival. About 2 percent lived until the middle of March, at which time dispersal and resumption of feeding was observed. Data on a total of about 1700 females were recorded. These had been placed in 12 cages, 18" x 18" x 18" in size. Some were fed glucose; others, sucrose; and still others, water only. None took blood, although one group was given that privilege. There seemed to be but little difference in the rates of mortality for these groups.

Observations on uncaged females in cellars, barn underground dungeons in an old fort (Fort Delaware), culverts, and other places revealed a survival not exceeding 7.3 percent of those present during late November and early December. In the four, most-satisfactory situations, only 2.6, 3.4, 4.1, and 7.3 percent, respectively, survived the winter. As expected, these results where freedom of movement was possible, are somewhat
or (but nevertheless comparable) to the records of material. There probably was some movement into more favorable situations during the progress of winter, so that these figures may be higher than true extent of survival.

As many as 10,000 females were recorded in a single far near the end of November, and approximately 4,000 in another cellar in middle late December.

"It is obvious, therefore, that huge numbers of A. trinaculatus enter "hibernation" quarters and remain nearly inactive until death, or until warming weather arrives. There is, however, no reason to assume that this species is well adapted to large-scale, successful hibernation over a period of four or more months of continued cold. Those that do survive such conditions are few in number.

It is of interest to note that, although Anopheles grillae was very abundant in barns in this area, during November, not a single specimen was seen after November 19, and very few in early December. In certain barns during early November, this species was seen as abundant as A. quadrimaculatus. There was, therefore, a very abrupt disappearance of the females of this species. Only one conclusion is possible — that this mosquito does not over-winter in the adult stage in this region. The ability of the eggs of this species to survive winter temperatures both under laboratory-controlled and field conditions will be investigated.

There is a strong possibility, also, that Culex pipiens does not over-winter here in the adult stage. This is the most abundant mosquito in this locality. Yet, all Culex that were certainly identified (several hundred) were C. pipiens, a species that
occurs in much fewer numbers than C. salinarius.

Literature Cited


Mosquito Virus Causes Death

The Morristown (N.J.) Daily Record of March 24, 1942 carried the following article:

"More than 3,000 cases of human sleeping sickness with upward of 300 deaths in 1941 are reported by the United States Public Health Service. The particular species of mosquito that has just been convicted of transmitting the virus to humans is widespread in states west of the Mississippi. So, just as the southeastern states are battling mosquitoes to curb malaria, the West must fight them to prevent the further spread of sleeping sickness (encephalitis). A few cases have been reported in this area. In the Yakima valley of Washington 27 humans and 50 horses had sleeping sickness last year. Sleeping sickness usually is associated, for some unknown reason, with sporadic cases of infantile paralysis. And sleeping sickness, itself, frequently leaves its marks for life on the minds and bodies of its victims. The only sure way to avoid the disease is to keep from being bitten by mosquitoes."