OBSERVATIONS OF A MERMITHID NEMATODE PARASITIC IN *ORTHOPODOMYIA SIGNIFERA* (COQUILLETT) (DIPTERA:CULICIDAE) [1]

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Larvae of *Orthopodomyia signifera* (Coquillett) containing parasitic mermithid nematodes (tentatively identified as belonging to the genus *Mesomermis,* by W. R. Nickle, Crops Research Division, A.R.S., U.S.D.A., Beltsville, Maryland) were collected from a tree hole in a sweetgum (*Liquidambar styraciflua* L.) at Anthony Ferry, 15 miles northwest of Lake Charles, Louisiana on August 6, 1968. The genus *Mesomermis* has been reported only from blackflies previously. This is a new host record for a mermithid nematode in mosquitoes and only the second observation of mermithid nematodes parasitizing mosquitoes breeding in treeholes (Muspratt, 1945). However, it is the sixteenth host recorded for mermithid nematodes from southwestern Louisiana (Chapman *et al.,* 1967; Petersen, *et al.,* 1968; Chapman *et al.,* 1969). Twenty-eight infected larvae were collected from the tree hole from August 6 to October 18, 1968 when the habitat was destroyed by a bulldozer clearing a right-of-way.

The infected mosquito larvae possessed from 1 to 3 nematodes. When the nematodes were small they were tightly coiled among the Malpighian tubules in the posterior of the host abdomen. Larger parasites occasionally extended into the thoracic region but were never observed coiled around the thorax in the characteristic manner of most mermithids maturing in larval mosquitoes. Development of the parasitic stage was slow, usually 2 to 3 weeks, but in a few larvae the parasites persisted for weeks without any noticeable growth. Most infected mosquitoes died while they still contained the parasites, which then also died. However, many other *O. signifera* from the tree hole contained small encapsulated and melanized nematodes. The resistance observed in *O. signifera* was similar to that occurring with *Romanomermis* sp. in *Aedes triseriatus* (Say) (Petersen *et al.,* 1969) and *Agamomermis culicis* Stiles in *Culex pipiens quinquefasciatus* Say (Petersen and Willis, 1969), and suggests that *O. signifera* may not be the primary host of the parasite.

The mermithid, unlike the others we have studied, matured and escaped from larval, pupal, and adult mosquitoes. All but five of the parasitized *O. signifera* reaching the pupal and adult stages died before the nematodes matured, but nematodes successfully escaped from three pupae and from two adult female mosquitoes. The parasites escaping from the adult mosquitoes did so without the host obtaining a blood meal, and one adult lived two weeks before the nematode escaped.

A few postparasitic nematodes were successfully reared to the adult stage and were tentatively identified as noted.

A few *Toxorhynchites rutilus septentrionalis* (Dyar and Knab) and *Corethrella appendiculata* Grabham collected from the same infected tree hole, did not contain the parasite.

Literature Cited

CHAPMAN, H. C., CLARK, T. B., PETERSEN, J. J., and WOODARD, D. B. 1969. A two year survey of pathogens and parasites of Culicidae, Chaoboridae, and Ceratopogonidae in Louisiana. New Jersey Mosq. Exterm. Assoc. (In press).

CHAPMAN, H. C., WOODARD, D. B., and PETERSEN, J. J. 1967. Nematode parasites of Culicidae and Chaoboridae in Louisiana. Mosq. News 27 (4):490–492.

MUSPRATT, J. 1945. Observations on the larvae of tree hole breeding Culicini (Diptera:Culicidae)

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and two of their parasites. J. Entomol. Soc. S. Africa 8:13–20.

PETERSEN, J. J., and WILLIS, O. R. 1969. Incidence of *Agamomermis culicis* Stiles (Nematoda: Mermithidae) in Louisiana during 1967. Mosq. News. 29(1):87–92.

PETERSEN, J. J., CHAPMAN, H. C., and WILLIS, O. R. 1969. Fifteen species of mosquitoes as potential hosts of a mermithid nematode *Romanomermis* sp. Mosq. News 29(2):198–201.

PETERSEN, J. J., CHAPMAN, H. C., and WOODARD, D. B. 1968. Bionomics of a mermithid nematode of larval mosquitoes in southwestern Louisiana. Mosq. News 28(3):346–352.

AUTOGENY IN *CULEX PEUS* SPEISER

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The close relationship of *Culex peus* Speiser to *Culex tarsalis* Coquillett has been noted by many workers in the Western U. S. Since autogeny appears to be widespread in natural populations of the latter species (Bellamy and Kardos, 1958; Moore, 1963), it has been speculated that *C. peus* was also autogenous. Chapman (1962) found autogeny in 10 of 17 species studied in Nevada, but not in *C. peus*. To determine whether autogeny could be found in this species by examining California populations, observations were made in Solano County, California during the early, middle and late summer of 1968. Since food may be a limiting factor in the expression of autogeny (Bellamy and Kardos, 1958; Kardos, 1959), larvae and pupae were collected from a breeding situation with considerable organic matter (oxidation pond). In the laboratory, emerging females from these collections were kept for a minimum of ten days with sugar as the only source of food. They were subsequently killed and ovaries dissected and examined. Females with ovaries in Christophers' stage I or II were considered immature, and those with ovaries in stages III–V were called mature and therefore were considered autogenous.

The results of examining *C. peus, C. tarsalis* and *Culiseta inornata* females from collections of IV stage larvae and pupae are summarized in Table 1. Autogeny was found in all three species. An additional 156 *C. peus* females reared in the laboratory and collected as early instar larvae were treated in the same manner. None of the females reared from early instar larvae developed mature eggs.

Autogeny can be reported for the first time in *Culex peus* as was speculated, but we have tentatively concluded that it exists at levels considerably lower than in *C. tarsalis* (Table 1 and Moore, 1963). This is generally consistent with Chapman's findings (1962) in which he found considerable variation in the level of autogeny from one species to another. Autogeny in *C. inornata* is reported for the first time in California and confirms earlier findings in Minnesota (Owens, 1942) and Nevada (Chapman, 1962).

Literature Cited

BELLAMY, R. E., and KARDOS, E. H. 1958. A strain of *Culex tarsalis* Coq. reproducing without blood meals. Mosq. News 18:132–134.

CHAPMAN, H. C. 1962. A survey for autogeny in some Nevada mosquitoes. Mosq. News 22:134–136.

KARDOS, E. H. 1959. The effect of larval nutritional level on development of autogeny in a colony of *Culex tarsalis* Coq. Proc. Papers Calif. Mosq. Control Assoc. 27:71–72.

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