larvae to the third and fourth instars, lessens the time required for daily *Toxorhynchites* feeding and enables the accumulation and storage of food for immediate use when required.

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FIELD EVIDENCE AGAINST TRANSOVARIAL TRANSMISSION OF FLANDERS VIRUS IN CONNECTICUT[1]

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Following the discovery of congenital passage of La Crosse virus in *Aedes triseriatus* (Say) (Watts et al. 1973) and Keystone virus in *Ae. atlanticus* Dyar and Knab (Le Duc et al. 1975), there has been a proliferation of field and laboratory studies designed to test the hypothesis of transovarial transmission of other mosquito-borne viruses. To date, workers in several laboratories have been successful in demonstrating this phenomenon in mosquitoes infected with members of 2 families of arboviruses: Bunyaviridae (bunyaviruses) (Watts et al. 1973, Le Duc et al. 1975, Christensen et al. 1978) and Togaviridae (flaviviruses) (Coz et al. 1976, Rosen et al. 1978, Aitken et al. 1979). It is the purpose of this note to present circumstantial evidence against the likelihood of transovarial transmission of Flanders virus (Rhabdoviridae) in *Culex restuans* Theobald and *Culiseta melanura* (Coquillett) based on field isolation attempts in Connecticut.

Earlier studies (Main et al. 1979a) suggested that these 2 ornithophilic species, plus *Cx. pipiens* Linnaeus, were involved in enzootic cycles of Flanders virus in Connecticut, based on minimum field infection rates of 1:306, 1:465, and 1:435, respectively, over a 10-year period

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A REPORT OF MERMITHID PARASITES IN LARVAE OF *AEDES HEXODONTUS* DYAR IN NORWAY

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Mermithid nematodes have been reported from at least 63 species of mosquitoes from Africa, Alaska, Australia, Canada, England, France, India, Mexico, Russia, Sumatra and the United States. To our knowledge, these are the first records of a mermithid parasite occurring in mosquitoes in Scandinavia and naturally occurring in *Aedes hexodontus* (Dyar) (Poinar 1975).

On June 17, 1978, a collection of *Ae. hexodontus* larvae was taken along Highway E76, about 6 km west of Vagslid, Norway, and 1 km north of the lake, Kjelavatnet. The area is in southern Norway, about 59° 49′ north latitude. The larvae, all in the fourth instar, were collected from a grassy, tundra pool at an elevation of 1,000 m. The site at this latitude is well above timberline. Upon examination most of the larvae were found to be infected with mermithid nematodes.

Intensive collecting at the site produced a total of about 100 living larvae and numerous bodies of dead larvae, some of which were floating on the surface. No pupae or pupal skins were collected and there were no adults in the vicinity of the pool. There were many other snow pools within 1 km of the infected site. Several of these contained fourth instar larvae. *Aedes hexodontus* was the only species present and no infected larvae were found in any of these other pools.

The collected material was brought to the Department of Systematics entomology labo-

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ratory at Lunds University, Sweden. Upon examination only 2 larvae from the infected site were found to be free of parasites. These were reared to adults and produced one male and one female of *Ae. hexodontus*. Ten larvae which were dissected had multiple infections, 2–5 worms occurred in each. All of the remaining larvae died upon emergence of the worms.

As the worms emerged they were transferred to jars containing clean, damp, baltic sand. Some of the worms which emerged quickly became covered with a fungus mycelium; an estimated 20% of the worms died from these infections. The *Ae. hexodontus* larvae were kept at 20–25°C until all worms had emerged. The baltic sand containing the mermithid worms was then transferred to a cold room and stored at 8–10° C. On July 25, 1978, in preparation of the senior author's return to the United States, the majority of living nematodes remaining in the baltic sand were heat killed in water and fixed in F.A. 4:1 (Seinhorst 1962).

The preserved nematodes and baltic sand were examined at R.U.V.P. in October 1978. The nematodes were processed (Baker 1953) and mounted in glycerine for identification. Unfortunately, no adult nematodes were found among the preserved specimens; 25% of those fixed had just started to molt to the adult stage. Only 4% of those fixed were immature females, the rest were immature males. This predominance of males is commonly observed when multiple infections occur in the larval stage of mosquitoes. There was evidence of fungal infections on the cuticles of 31% of the nematodes fixed. This may have been partially responsible for the failure of maturation of any worms remaining in the baltic sand, examination of which for additional worms or eggs proved negative.

As complete identification of mermithid nematodes is only feasible when adult specimens are available, it was not possible to accurately identify the specimens. However, all possessed a rounded tail and a long, sharply pointed, conic tail appendage similar to that found in species of the genus *Gastromermis*.

It is hoped that additional collections can be made from this Norwegian locality and a complete description will be published when the adult nematodes are obtained. Not only is there a strong likelihood that it may be a mermithid new to science, but its establishment in an austere arctic-type tundra environment merits its study as a potential biological control agent against the hordes of *Aedes* mosquitoes which inhabit the arctic regions in areas where man has settled.

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COLONIZATION OF *CULICOIDES WISCONSINENSIS* JONES (DIPTERA: CERATOPOGONIDAE)

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Culicoides wisconsinensis was described by Jones (1956), who collected immatures from a peat-muck substrate in Wisconsin. Jamnback (1965) recovered larvae from soft mud in a brackish marsh and a freshwater lagoon in New York State. Rowley (1967) and Wirth (personal communication) have reared this species from the margins of saline and alkaline lakes in Washington State and the Midwest, respectively. Very little else is known of its biology.

On 5 May 1980, *Culicoides* pupae were collected from a cattail bog polluted with milk-center effluent on Hutchinson Farm, St. Lawrence Co., NY. Reared females held without access to blood oviposited on wet filter paper, and the species was subsequently colonized. Specimens were held at 22°C at a 14:10 (L:D) photoperiod to gather life history data. The colony is currently in the 7th generation.

Follicle maturation in females dissected within 30 min. of eclosion was at late stage III. The pre-oviposition period was 2–3 days, during which time the females mated on contact with males in 237 ml screened holding containers or in the confines of an aspirator