

initial concentrations of insecticide applied to each briquette in milligrams of actual insecticide per briquette.

DISCUSSION. Data obtained during these laboratory tests indicate the briquette formulations tested, with the exception of malathion-concrete, may be particularly useful to control mosquito larvae in intermittent pools, e.g., roadside ditches, irrigated pastures, woodland pools, and artificial containers. However, higher insecticidal concentrations within such briquettes may be required for field application. Laboratory tests to determine maximum longevity of insecticidal briquettes are continuing and field evaluations using briquette formulations are underway.

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NEMATODE PARASITES OF CULICIDAE AND CHAOBORIDAE IN LOUISIANA¹

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The following 16 species of mosquitoes in North America were reported as hosts of nematodes: *Aedes canadensis*, *A. cinereus*, *A. communis*, *A. decticus*, *A. excrucians*, *A. flavescens*, *A. impiger*, *A. nigripes*, *A. pionips*, *A. pullatus*, *A. punctator*, *A. sollicitans*, *A. sticticus*, *A. vexans*, *Culex pipiens*, and *C. salinarius* (Jenkins, 1964). Additionally, two species of Chaoboridae, *Mochlonyx* sp. and *Chaoborus* sp., were reported as hosts in Canada (Welch, 1960).

However, most host records of mosquitoes are from Canada northward, and only 4 of the 14 species of *Aedes* (*A. cinereus*, *A. sollicitans*, *A. sticticus*, and *A.*

vexans) are multivoltine. Also, in many localities, *A. cinereus* and *A. sticticus* behave as univoltine species because of climatological or ecological factors.

Our laboratory has surveyed many larval and adult mosquito populations in southwestern Louisiana for pathogens and parasites. Larval populations of chaoborids were also collected periodically and examined for parasites and pathogens since most chaoborid larvae, even those of *Corethrella*, are very efficient predators of mosquito larvae. As shown in Table 1, nematodes were present in eight species of mosquitoes and one species of a chaoborid collected from 1964-1967. All were multivoltine species.

Aedes sollicitans. The life cycle of *Agamomermis culicis* in *Aedes sollicitans*

¹ In cooperation with McNeese State College, Lake Charles, Louisiana.

TABLE 1.—Summary of field collections of species of Culicidae and Chaoboridae infected with nematodes in Louisiana, 1964-1967.

Host species	Infected stage	Parasite	Months infected specimens collected	Number infected specimens	Highest infection rates noted (%)
<i>Uranotaenia sapphirina</i>	larval	mermithid juvenile	March-July, Oct.	182	31, 35
<i>lowii</i>	larval	mermithid juvenile	April	1	...
<i>Aedes sollicitans</i>	larval, pupal, adult	<i>Agamomermis culicis</i>	March, April, Aug.-Dec.	565	88, 91
<i>Anopheles crucians</i>	larval	mermithid juvenile	Jan.-May, Oct.	125	46, 52
<i>punctipennis</i>	larval	mermithid juvenile	Jan., Feb.	3	33
<i>quadrimaculatus</i>	larval	mermithid juvenile	March	3	...
<i>Culex erraticus</i>	larval	mermithid juvenile	June	6	20
<i>Psorophora confinnis</i>	larval	mermithid juvenile	March	1	...
<i>Corethrella brakeleyi</i>	larval	mermithid adult	Jan., Feb., March, May, Sept., Oct.	260	47

has been studied in our laboratory (Petersen *et al.*, 1967). (Adults are being studied to determine the correct taxonomic position.) Infections are acquired by the larval mosquito, and the parasitic juveniles are passed through the pupae to the mosquito adult from which they eventually emerge as postparasitic juvenile nematodes. High numbers of nematodes may cause death of the infected larva or adult. Also, the presence of the nematodes in the adult female inhibits egg development. Infections of this nematode appear to be widespread in populations of *A. sollicitans* in southwestern Louisiana, but elsewhere has only been recorded in *A. sollicitans* from New Jersey.

Anopheles crucians, *A. punctipennis*, and *A. quadrimaculatus*. Larval specimens of *Anopheles crucians*, *A. punctipennis*, and *A. quadrimaculatus* infected with juvenile mermithids were collected

from only three pools. The parasites usually ranged in number between one and seven and were generally coiled lengthwise in the larval abdomen though they also occurred in the thorax when they were numerous. Normally, a visual examination of the dorsal surface of infected larvae, even under a microscope, did not show their presence. For positive diagnosis, the parasitized larvae must be examined ventrally or dissected. All infected larvae died as late fourth instars at the time the mermithid juveniles escaped. Nematodes have previously been recorded only once in North America in this genus (Jenkins, 1964); all three species are new host records for nematodes.

Culex erraticus. Infected specimens of *Culex erraticus* were collected only once from the same piney woods pond that produced the infections in *Uranotaenia sapphirina*. Each infected larva contained

one juvenile mermithid coiled across the thorax. The emergence of the nematode was always fatal to the larva. This represents a new host record for a nematode.

Psorophora confinnis. One fourth instar larva of *Psorophora confinnis* collected in a pond that was producing heavy infections of nematodes in *Anopheles crucians* possessed a juvenile mermithid. This is a new host record for both the genus and species.

Uranotaenia sapphirina. Infected specimens of *Uranotaenia sapphirina* were collected a number of times from just one piney woods pond. Usually a single juvenile mermithid was coiled across and just beneath the integument in the thorax of infected specimens and was visible to the naked eye. Host larvae always succumbed when the parasite emerged, usually just before pupation. This is a new genus and species host record for a nematode. (Figure 1).

Corethrella brakeleyi. Infected larvae of *Corethrella brakeleyi* were collected from only one pond though this chaoborid species is dipped in many areas. The host-parasite relationship is unique since the nematodes mature within the larva of the chaoborid. Infected late instar larvae (about 2.9 mm) contain at least one male and female nematode and may possess a total of six or more nematodes. The nematodes evidently mate shortly before the chaoborid larva is ready to pupate since the emerging nematode female is usually replete with eggs. Escape of the adult female nematode is always fatal to the larva; male nematodes almost always remain within the cadaver. Infected larvae are difficult to detect except by examination of their ventral surface. *Corethrella brakeleyi* has not previously been reported harboring nematodes; this is also the first record of this genus serving as a host of nematodes.

Uranotaenia lowii. A single larval specimen of *Uranotaenia lowii* parasitized

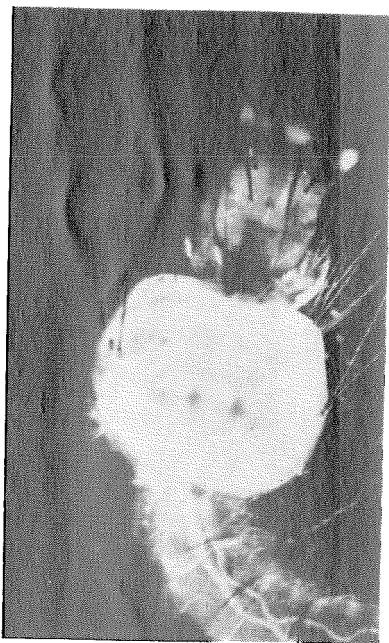


FIG. 1.—Fourth instar larvae of *U. sapphirina* with a juvenile mermithid nematode encircling its thorax.

by a juvenile mermithid was collected from the same pond that produced the nematode infections in *U. sapphirina* and *Culex erraticus*.

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