

Table 1. Percentage parasitism of *Cx. pipiens* after exposure to the infective stage of *R. culicivoxax* from three age groups.<sup>1</sup>

Test	Age of cultures		
	10 wk	20 wk	30 wk
1	37	26	21
2	100	46	46
3	89	25	42
4	99	100	34
5	76	69	65
X	80 a <sup>2</sup>	53 b	42 b

<sup>1</sup> Hosts exposed at 1:10 ratios in the laboratory.

<sup>2</sup> Values followed by the same letter do not differ significantly ( $p < 0.05$ ) according to Duncan's multiple range test.

tion, it can be an important factor in laboratory experimentation, mass production, or field releases with *R. culicivoxax* and perhaps other mermithid nematodes. Though the age of a

culture is by no means the sole factor responsible for fluctuations in levels of parasitism during mass production, it is undoubtedly an important contributing factor. Therefore, it is recommended that normal exposure rates be increased about 30 and 50%, when preparates are obtained from cultures more than 18 and 25 wk old, respectively.

#### Literature Cited

- Brown, B. J. and E. G. Platzer. 1977. The effects of temperature on the infectivity of *Romanomermis culicivoxax*. *J. Nematol.* 9: 166-172.
- Kurihara, T. 1976. Population behavior of *Reesimermis nielsenii*, a parasite of mosquitoes, with notes on the attraction of infective stage nematodes by mosquito larvae, *Culex pipiens molestus*. *Jpn. J. Parasitol.* 25:8-16.
- Petersen, J. J. 1978. Observations on the mass production of *Romanomermis culicivoxax*, a nematode parasite of mosquitoes. *Mosq. News* 38:83-86.

## RESULTS OF SYSTEMATIC TRAPPING OF THE MOSQUITO POPULATIONS IN SARATOGA COUNTY, N.Y.

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During the summer of 1979 a systematic trapping technique was used to survey and examine by municipality, the relative diversity, abundance and distribution of adult mosquito species found in Saratoga County, N.Y.

In order to capture representative samples of the native mosquito population, regular trap sites were chosen. Selection of trap sites was based primarily on former trapping success and arboviral isolate areas (high risk areas). Other, secondary determining factors involved in site selection were known locations of adult resting spots, predetermined high density larval sites, complaint calls and accessibility. Lastly, each site was chosen for its significance as a comparative factor in assessing total mosquito populations for each municipality (community) trapped.

Trapping procedures were performed on a nightly basis utilizing CDC light traps, (Sudia and Chamberlain 1962) supplemented with dry ice (Newhouse, et al. 1966) and were conducted on each of the first 3 consecutive nights of a normal work week. Each week, one of 4 sites in each of 9 municipalities was trapped for a total of 4 sites per month/municipality.

A total of 16,557 mosquitoes representing 5 genera and 12 species were collected from Saratoga County in 1979.

The number of mosquito species trapped is compared by month in Table 1 and seasonally by community in Table 2. As expected, because of favorable spring conditions, i.e., above normal precipitation and humidity, an early adult mosquito population emerged and was most apparent during the months of May and June,

Table 1. Comparison of the total mosquito populations as represented by each species trapped, for each month of the 1979 season in Saratoga County.

	May	% of Total Population	June	% of Total Population	July	% of Total Population	August	% of Total Population	% of Total Population for 1979
<i>Aedes communis</i>	3,273	61.26	1,652	26.38	164	4.32	16	1.38	30.83
<i>Aedes stimulans</i>	1,078	20.18	2,001	31.95	990	26.09	47	4.06	24.86
<i>Aedes canadensis</i>	933	17.46	1,497	23.90	925	24.38	9	.78	20.32
<i>Aedes trivittatus</i>	6	.11	10	.16	69	1.82	6	.52	.55
<i>Aedes triseriatus</i>	15	.28	86	1.37	118	3.11	60	5.19	1.69
<i>Aedes vexans</i>	6	.11	725	11.58	794	20.93	692	59.81	13.39
<i>Anopheles</i>									
<i>quadrimaculatus</i>	8	.15	60	.96	119	3.14	103	8.90	1.75
<i>Anopheles walkeri</i>	—	—	1	.02	—	—	—	—	.006
<i>Anopheles punctipennis</i>	9	.16	36	.57	115	3.03	91	7.86	1.52
<i>Culiseta melanura</i>	10	.19	46	.73	147	3.88	102	8.82	1.84
<i>Culex pipiens</i>	3	.06	30	.48	22	.58	3	.26	.35
<i>Coquillettia perturbans</i>	2	.04	119	1.90	331	8.72	28	2.42	2.89
Totals	5,343	32.27	6,263	37.83	3,794	22.91	1,157	6.99	

Table 2. Comparison of communities as a seasonal total of all mosquitoes captured.

Communities	Number	% Yearly Total
Greenfield	2257	13.63
Moreau	3741	22.59
Wilton	2295	13.86
Saratoga Springs	2433	14.69
Milton	1272	7.68
Saratoga Town	947	5.72
Malta	1395	8.43
Ballston Spa	1529	9.23
Clifton Park	668	4.16

5343 and 6263 mosquitoes respectively. These collections represented 32.27% (May) and 37.83% (June) of the 1979 populations.

*Aedes communis* (DeGeer) the predominant species in the May population (61.26%, Table 1), was also the greatest contributor to the 1979 total mosquito population (30.83%) and was recovered largely from the Greenfield and Wilton areas (Table 2). However, later in the month of June (Table 1), *Ae. communis* was replaced by *Ae. stimulans* (Walker) as the major contributor to the total mosquito population (31.95%) and remained so through the first 2 weeks of August. Most of the latter specimens were collected from the Moreau area (Table 2). By the end of August, trap collections were yielding primarily *Ae. vexans* (Meigen) specimens (59.81%, Table 1), the majority obtained from the Ballston Spa, Saratoga Springs areas (Table 2).

These observations clearly indicate the seasonal distribution of adult mosquito species by municipality in Saratoga County. Although, there is no way of determining the actual numbers of individual species in a given area, an attempt was made to systematically determine the mosquito population in 1979.

It is apparent that the data provided by this survey will be useful as a long range index of the mosquito population fluctuations in Saratoga County. However, several seasons using the above approach will be necessary before generalizations and predictions pertaining to the pattern development of native mosquito populations and subsequent control efforts can be clearly stated.

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#### Literature Cited

- Newhouse, V. F., R. W. Chamberlain, J. G. Johnston, Jr. and W. D. Sudia. 1966. Use of dry ice to increase mosquito catches of the CDC miniature light trap. *Mosquito News* 26:30-35.
- Sudia, W. D. and R. W. Chamberlain. 1962. Battery-operated light trap, an improved model. *Mosquito News* 22:126-129.

#### OBSERVATIONS ON THE DEVELOPMENT OF THE NEMATODE PARASITE *ROMANOMERIS CULICIVORAX* IN PUPAL AND ADULT *CULEX PIPIENS MOLESTUS* MOSQUITOES

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*Romanomeris culicivox* Ross and Smith parasitizes mosquito larvae, killing the host on emergence. Cultures are maintained by exposing early-instar mosquito larvae to preparasites (Petersen and Willis 1972). Parasitism of 4th-instar larvae is also known, more especially in the younger ones, but pupae and will rarely exhibit this worm (Petersen and Willis 1970). Observations on the fate of *R. culicivox* persisting beyond the 4th instar, are now reported.

#### MATERIALS AND METHODS

Cultures of *R. culicivox* used in this study were initially supplied by Dr. J. J. Petersen, Gulf Coast Mosquito Research Laboratory, Science and Education Administration, USDA, Lake Charles, Louisiana, USA, and are maintained in our laboratory. *Culex pipiens molestus* Forskål (autogenous) from a colony maintained in our laboratory served as the host. All the experiments were carried out at 25°C.

EXPERIMENT 1. Fourth instar mosquito larvae were placed in 3 ml of water in a 2 cm diameter plastic cell 1 cm deep, containing 10