

***Chaetogaster limnaei* (Oligochaeta: Naididae) Infesting
Unionid Mollusks (Pelecypoda: Unionidae) and *Corbicula fluminea*
(Pelecypoda: Corbiculidae) in Pool 19, Mississippi River**

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ABSTRACT

A population of the Asiatic clam, *Corbicula fluminea*, and eight species of cohabiting unionid mollusks were examined for the presence of the oligochaete, *Chaetogaster limnaei*. The mollusks were collected in navigation Pool 19, upper Mississippi River. Infestation of *C. limnaei* in the Asiatic clam was significantly greater than in unionids. A decline in occurrence and abundance of *C. limnaei* infesting the Asiatic clam was found in the winter when the Asiatic clam population also declined. Of the unionid mollusks, *Leptodea fragilis* had the highest rate of infestation and the highest number of *C. fluminea* per individual.

limnaei

INTRODUCTION

Chaetogaster limnaei has been generally regarded as a commensal of freshwater pulmonate snails (Brinkhurst and Jamieson 1971, Buse 1974). However, Gale (1973) and Barbour (1977) reported *C. limnaei* infesting several species of the fingernail clam *Sphaerium* and there is one report of five species of unionid mollusks harboring the oligochaete (Kelly 1902). The Asiatic clam, *Corbicula fluminea*, introduced to the United States in 1938 (Burch 1944) also harbors *C. limnaei* (Eng 1976, Sickel and Lyles 1983). This study examined monthly prevalence and relative densities of *C. limnaei* in nine mollusk species, including *Corbicula fluminea*, in the Mississippi River.

METHODS

Ten benthic samples were collected monthly from November, 1983 through April, 1984 in Pool 19, Mississippi River. Because the collection site (River Mile 378.5) was influenced by a thermal effluent, high densities of *Corbicula fluminea* occurred. A ponar grab, 0.053 m², was used to collect all samples. Each sample was washed through a number 30 U.S. standard sieve and preserved with 10% buffered formalin in the field. Asiatic clams and unionid mollusks were hand picked from each sample. Each month, November through January, 25 randomly selected *Corbicula* (>5.0 mm) and all unionid mollusks were examined to determine *Chaetogaster limnaei* presence. A population reaction of *Corbicula* occurred between January and February; consequently, all clams and unionid mollusks were individually examined for *C. limnaei* after January.

Data were analyzed using observed frequencies in a contingency table with chi-square analysis. Significance is reported at the 5% level.

RESULTS

The peak Corbicula density was 5618/m² in January. During periods of high densities, November through January, 100% of the examined Asiatic clams contained C. limnaei (Table 1). The greatest number of C. limnaei in a clam occurred in November with 85 oligochaetes found in one Corbicula. Occurrence of oligochaetes ranged from 3 to 85 in asiatic clams. Chaetogaster abundance in the Asiatic clam declined as clam density decreased beginning in February (Table 1).

Table 1. Corbicula fluminea and unionid mollusk densities and degree of infestation by the oligochaete, Chaetogaster limnaei.

Date	No. of Mollusks per m ²	No. of Mollusks Infested	Mean No. of Oligochaetes per Mollusk (Range)
<u>Corbicula fluminea</u>			
Nov.	3556	3556	45 (8-85)
Dec.	1814	1814	25 (6-54)
Jan.	5618	5618	21 (3-54)
Feb.	26	26	9 (0-23)
Mar.	17	17	0.6 (0-1)
Apr.	0	--	--
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<u>Unionid Mollusks</u>			
Nov.	17	11	19 (0-124)
Dec.	4	4	18 (2-34)
Jan.	15	4	6 (0-31)
Feb.	13	2	0.2 (0-1)
Mar.	8	2	0.3 (0-1)
Apr.	2	0	--

Monthly occurrence of oligochaetes in Corbicula was significantly higher than the occurrence in unionid mollusks. Thirty-one unionid mollusks representing eight species were collected during the sample period (Table 2). C. limnaei was found inhabiting the mantle cavity of five species. Occurrence of Chaetogaster was highest in Leptodea fragilis in which 124 oligochaetes were found infesting one mussel (Table 2). When present in the other unionid species, C. limnaei was at low densities. As with Corbicula, there was apparent a spring decline in oligochaete infestation. Fifty-three per cent of the unionid mollusks collected from November through January contained the oligochaete, while only 16% were found with C. limnaei from February through April.