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Research Notes: Notes on The Life Cycle of *Fibricola cratera* (Trematoda: Strigeida)

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NOTES ON THE LIFE CYCLE OF *FIBRICOLA CRATERA* (TREMATODA: STRIGEIDA)

The life cycle of *Fibricola cratera* (Barker and Noll, 1915) Dubois, 1932 was reported in 1940 (Cuckler, A. C., J. Parasitol. **26** (6-Suppl.): 32–33). The writer repeated the life cycle at the University of Iowa in 1948–49 and wishes to add a few observations. Apparently the life cycle of *Fibricola texensis* Chandler, 1942 (Chandler, A. C. 1942, Tr. Am. Micr. Soc. **61**: 156–167) is very nearly identical to that of *F. cratera*. The genus has been reviewed by C. P. Read (Tr. Am. Micr. Soc. **67**: 165–168, 1948).

Ova were obtained from the feces of three raccoons, *Procyon lotor*, infected with *F. cratera*. Nine ova ranged from 99 to 125 microns by 70 to 76 microns, mean 108 by 73 microns. Four lots of ova were incubated at room temperature (21 to 24° C) and miracidia first appeared respectively in 9, 10, 14, and 14 days. It was possible to store unembryonated ova at 4 to 6°C safely for 49 days and to store embryonated ova safely for 44 days. Hatching occurred in the dark as well as in the light.

The miracidium was very similar to that of *F. texensis*. A maximum longevity of 7 hours was observed. Miracidia of *F. cratera* were killed in 1: 512,000 copper sulfate in 1 hour or less.

Fifteen laboratory reared *Physa gyrina* were exposed to miracidia; all but three of the snails died and only one of the three became infected. Cercariae were first seen at 30 days. Cercariae were also obtained from naturally infected *Physa gyrina* and *P. sayii*, from Lake Macbride, Iowa City, Iowa, and Carrol Lake, Woodruff, Wisconsin, respectively. Without refrigeration, infected snails could be kept alive for only 7 to 14 days, but by refrigerating during the time when cercariae were not needed, they could be kept alive and producing cercariae as long as 45 days.

The maximum longevity of the cercariae was 52 hours and they were infective for tadpoles at least 21 hours (probably longer) after emerging. Cercariae emerged in the dark as well as in the light. Cercariae would not penetrate frog embryos prior to hatching, but readily penetrated tadpoles one day old and older. Tadpoles of *Rana pipiens, Pseudacris nigrita tricerata,* and *R. clamitans* were infected; those of the latter species were approximately 1 year old. Adult *R. pipiens, Acris crepitans,* and *Bufo a. americanus* did not become infected after exposure to the cercariae. It was not possible to infect any of six species of fish with the cercariae. The metacercariae were free in the body cavity of the tadpoles from 12.5 hours or less until shortly after metamorphosis of the tadpoles, when the metacercariae migrated into the hind legs and became encapsulated. This was reported by Cuckler for *F. cratera,* but Chandler found that the metacercariae of *F. texensis* did not leave the body cavity. It was not possible to infect fish by feeding them metacercariae or by injecting metacercariae into the body cavity.

Since metacercariae could be recovered easily from frog legs by the pepsin digest method (3,550 were recovered from one *Rana pipiens*), the time at which the ability to withstand pepsin-HCl solution became evident was determined. Up to and including 8 days of age the metacercariae perished in less than 1 hour in the pepsin solution at 37°C. At 10 days a very small percentage survived 8 hours, but many fully mature metacercariae from frog legs survived as long as 24 hours.

It was possible to infect laboratory rats with 35 day old metacercariae, but not with those 15, 18, or 22 days old. One young Syrian hamster, *Cricetus auratus,* was experimentally infected and yielded two adult worms when autopsied 60 days later. One domestic pigeon was fed 60 infective-age metacercariae but did not become infected.

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