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Glenn L. Hoffman
University of North Dakota

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Notes on the Life Cycle of *Bunodera eucaliae* Miller (Trematoda, Allocreadiidae) of the Stickleback, *Eucalia inconstans*

By GLENN L. HOFFMAN

Bunodera eucaliae was described by Miller (1936, Canad. J. Res. D, 14: 11-14) in Quebec. It has since been reported from Wisconsin by Bangham (1944, Trans. Wis. Acad. Sci., Arts, and Letts. 36: 291-325) and Fischthal (1945, Trans. Wis. Acad. Sci., Arts, and Letts. 37: 157-220). In 1948 near Lamont, Iowa, the writer discovered a small spring pool which was two miles distant from the Maquoketa River. Since there was only the one species of fish present it furnished an excellent opportunity for making observations on the probable life cycle of this fish's only digenetic trematode, *B. eucaliae*.

The writer was unable to demonstrate the life cycle experimentally but the following observations were made: The ova when deposited usually contained fully formed and active miracidia. The ova averaged 78 by 49 microns. The unhatched miracidia averaged 65 by 28 microns. Twelve ova were under observation for 4 days but none hatched although eleven were alive at the end of that time. Small bivalves, *Pisidium noveboracense*, were found infected and produced cercariae that were very similar to those of *Crepidostomum* spp. (Hopkins 1934, Ill. Biol. Monogr. 13(2): 1-80.; Ameel 1937, J. Parasitol. 23 (2): 213-220.; Crawford 1943, J. Parasitol. 29(6): 379-384). No second intermediate host was found although *Chironomus* larvae, adult *Chironomus*, caddis fly nymphs, Odonata nymphs, crane fly larvae, mayfly nymphs, beetle larvae, *Anopheles* larvae, Diptera larvae, water boatman, Belostomatidae, water striders, Gyrinidae adults, and small crayfish were examined. Attempts to infect caddis fly nymphs, mayfly nymphs, Odonata nymphs, caddis fly nymphs, Gammarus, and isopods failed. Fifty *Pisidium* from the spring pool were placed in the same aquarium with uninfected sticklebacks but no fish were infected at the end of 25 days' observation. The only zooplankton observed in the tank during this time were ostracods. The smallest immature *B. eucaliae* taken from naturally infected fish did not appear to be much further developed than cercariae which had lost their tails. Therefore, there may be no second intermediate host

1955]

BUNODERA ON STICKLEBACK

639

or very little development in the metacercarial stage. From these observations it is probable that the life cycle of *B. eucaliae* differs from that of its closely related papillose allocreadids only in the nature of its second intermediate host or lack of one.

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BACTERIOLOGY DEPARTMENT
UNIVERSITY OF NORTH DAKOTA
GRAND FORKS, N. D.