

ARGULIDAE FROM THE SHUBENACADIE RIVER, NOVA SCOTIA.

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A survey of the Shubenacadie river, which empties into the Basin of Minas, Nova Scotia, was recently made by Mr. A. H. Leim in connection with the Canadian shad fisheries. During this survey many specimens of both young and adult argulids were obtained at Shubenacadie with the tow-net in tidal water which seemed to be fresh rather than salt.

These specimens were sent to the present author for identification, and they proved to contain an abundance of both sexes of two species of *Argulus*, one of which had previously been found in many localities on the Atlantic coast farther south, while the other was new to science. The following record of these two species is herewith submitted.

ARGULUS ALOSÆ Gould.

Argulus alosæ Gould, Invertebrata of Massachusetts, 1841, p. 340, text figure: S. I. Smith, Report U. S. Com. Fish and Fisheries, 1872, p. 575 (281): R. Rathbun, Proc. U. S. National Museum, vol. 7, 1884, p. 485: J. F. Whiteaves, Cat. Marine Invertebrata of Eastern Canada, 1901, p. 216: C. B. Wilson, Proc. U. S. National Museum, vol. 25, 1902, p. 707, pl. 12; pl. 26, fig. 80.

Record of specimens. Ten specimens, including both sexes, were obtained August 1, 1919, at 8.45 p.m.: two males were obtained on the same date at 9.10 p.m.: a single male was obtained July 21, at 6.15 p.m.

Remarks. This species was doubtfully recorded by Mr. J. F. Whiteaves in the reference given above as attached to *Gasterosteus biculeatus* Shaw, and other small fishes taken off Pictou island in the Gulf of St. Lawrence. All the other recorded localities are much farther south. The present record substantiates that of Whiteaves and fully establishes the species in Canadian waters. Again it has hitherto been found only upon fish hosts in salt water; the present specimens were captured in a tow-net in fresh water. Their presence in the tow makes it certain that they infest fish in the immediate vicinity, and it may be that they will be found some day upon the shad whose name they bear.

ARGULUS PIPERATUS, new species.

Record of specimens. Twenty-two specimens, of which six were females and the rest males, were obtained August 1, 1919, at 8.45 p.m. in company

with the first lot of *Argulus alosæ*. Another lot of ten specimens, including both sexes, were caught in the second towing, August 1 at 9.15 p.m. Five males were obtained July 31 at 9.50 p.m., and two males on the same date at 10.10 p.m. The majority of all these specimens were of small size although sexually mature. But a few of them were large enough to be regarded as fully developed adults, and from these the following description has been taken.

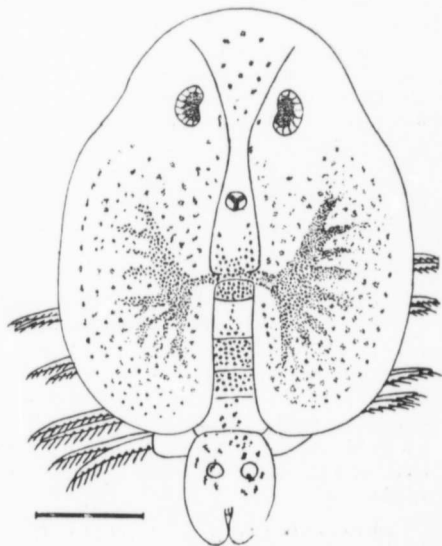


Fig. 1. Dorsal view of *Argulus piperatus*, female. The line represents a length of 1 mm.

Specific characters of female. General shape of the carapace elliptical, one-fourth longer than wide, with shallow lateral sinuses and broad, well rounded posterior lobes. Posterior sinus, one-third the length of the carapace, with parallel sides; posterior lobes just reaching the base of the abdomen. Eyes far forward and well separated.

Abdomen elliptical, one-fourth the length of the carapace, the longitudinal and transverse diameters in the proportion of 11 to 9; its posterior lobes well rounded and inclined inward so that their inner margins are in contact. Anal sinus 27.50% of the abdomen length; anal laminae basal, minute and unarmed; sperm receptacles small, circular and rather widely separated.