

The development of the male second antenna in *Polyartemiella hazeni* (Murdoch, 1884) with a morphological definition of the Chirocephalidae (Crustacea: Anostraca)

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Abstract

The second antenna of male anostracans in the genera *Polyartemia* and *Polyartemiella* are described as polyramous, unsegmented structures. This is in sharp contrast to males of all other anostracan genera, which bear variously ornamented, uniramal second antenna that are secondarily two-segmented. By following the development of the second antenna of male *P. hazeni* through various instars, I found that the posterior ramus is the actual second antenna, unsegmented, and that the remaining rami represent a rigid antennal appendage, a structure common to the majority of genera within the Chirocephalidae. In addition, the family Chirocephalidae is redefined, the genus *Galaziella* is synonymized with *Chirocephalus*, and a key to genera and a checklist of described species is provided.

Key words: Antennal development, Chirocephalidae, *Polyartemiella hazeni*, Galaziellidae, *Galaziella*

Introduction

The second antennae of male anostracans are modified as claspers to amplex the female prior to mating. The male second antenna may be variously ornamented and may bear appendages that aid in mate recognition (Rogers, 2002a). The typical anostracan male second antenna is a secondarily segmented, uniramous structure that may bear an accessory appendage either basally or distally on the proximal segment (Linder, 1941, 1945; McLaughlin, 1980; Belk, 1982; Schram, 1986; Schrehardt, 1987).

Polyartemiella hazeni was described by Murdoch in 1885. Murdoch's description originally characterized the male's second antenna as triramous. Ekman (1902), Daday (1910), Pearse (1918), Johansen (1922), and Belk (1975) all described the male second antenna of *P. hazeni* as quadriramous. Johansen (1922) specifically referred to the posteri-