



Morphology and ecology of a new sexually dimorphic species of *Polydora* (Polychaeta: Spionidae) associated with hermit crabs from Jamaica, West Indies

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Abstract

A new commensal species of *Polydora* was found associated with hermit crabs from shallow subtidal coral reefs in Jamaica, West Indies, in 2005 and 2006. *Polydora nanomon* sp. nov. is the third known obligate commensal polydorid of hermit crabs. The species is found in approximately 20% of the gastropod shells, most commonly *Leucozonia nassa leucozonalis* (Lamarck, 1822), inhabited by *Calcinus tibicen* (Herbst, 1791) and other hermit crab hosts. *P. nanomon* sp. nov. produces a hole in the apex of the shell, enters the lumen of the uppermost whorl, and connects to the columella with a tube of mucus and detritus. One large female (up to 70 setigers) is found in the apex with up to four smaller males (generally <30 setigers). Females are distinguished from other species of *Polydora* by the morphology of the major spines of setiger 5. In addition to a horizontal row of major spines with two lateral teeth, companion setae, and ventral capillaries, setiger 5 contains a group of superior accessory spines, including one large falcate spine with a channel extending down the shaft, one spine with a low rounded tooth, and one companion seta. *P. nanomon* sp. nov. exhibits sexual dimorphism with the males being much smaller than females, having a reduced first segment, and lacking accessory spines on setiger 4 (= setiger 5 on females). The occurrence of sexual dimorphism within the family Spionidae is reviewed.

Key words: polychaete, spionid, taxonomy, commensalism, sexual dimorphism

Introduction

The Spionidae is a large family of approximately 450 species of polychaetes, members of which occupy a multitude of marine habitats from the intertidal to the deep sea. Many spionids produce tubes in soft bottom sediments whereas others bore into calcareous substrates. The spionid genus *Polydora* includes species that build tubes in sediment or bore into calcareous substrates such as coral, algae, or mollusc shells (Blake 1996). *Polydora* species are characterized by a modified fifth setiger. Eight additional spionid genera possess a modified fifth setiger with major spines and collectively these genera are termed polydorids.

Over 373 species of polychaetes have been documented as symbionts of other invertebrates (Martin & Britayev 1998). Within the family Spionidae, 43 symbionts are known, all of which are polydorids. These species are associated with various hosts including bivalves, gastropods, sponges, and decapods. In particular, 26 species of polydorids are known to be associated with hermit crabs, boring into the empty gastropod shells occupied by the hosts (Williams & McDermott 2004). Most of these polydorids are facultative symbionts of hermit crabs; only two described were previously known to be obligate symbionts, *Dipolydora commensalis* (Andrews, 1891) and *Polydora robi* Williams, 2000. In addition, Ishikawa & Kase (2007) examined bore