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Occurrence of Naididae (Annelida: Oligochaeta) from three gastropod species in irrigation fields in southeastern Brazil

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Abstract: In the present study we report the occurrence of three Naididae species from three gastropod mollusk species. The species *Dero (Dero) righii* was found from mollusks of the genus *Biomphalaria*. *Nais communis* was found from *Biomphalaria* sp. and *Aplexa rivalis*. *Chaetogaster limnaei* was found from *Biomphalaria* sp., *Aplexa rivalis* and *Lymnaea columella*. In Brazil, previous studies have reported the occurrence of *Chaetogaster limnaei* from *Biomphalaria* solely, while *Nais communis* have been found from *Pomacea bridgesii* and *Dero (Dero) righii* in the sediment of aquatic habitats in Mato Grosso do Sul. Our results indicate that, due to their locomotion, naidids are capable of colonizing different substrates in aquatic environments.

Keywords: naidids, aquatic mollusks, Gastropoda.

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Resumo: No presente estudo, relatamos a ocorrência de *Dero (Dero) righii* associada a moluscos do gênero *Biomphalaria*. *Nais communis* foi encontrada associada a *Biomphalaria* sp. e *Aplexa rivalis*. A espécie *Chaetogaster limnaei* esteve associada à *Biomphalaria* sp., *Aplexa rivalis* e *Lymnaea columella*. No Brasil, estudos anteriores registraram *Chaetogaster limnaei* associada somente à *Biomphalaria*, *Nais communis* à *Pomacea bridgesii* e *Dero (Dero) righii* ao sedimento de ambientes aquáticos no Mato Grosso do Sul. Os resultados obtidos confirmam que, devido à capacidade de se deslocar na coluna d'água, os oligoquetos naidídeos apresentam habilidade de colonizar diferentes substratos presentes nos ambientes aquáticos.

Palavras-chave: naidídeos, moluscos aquáticos, Gastropoda.

Introduction

Species of Oligochaeta Naididae commonly inhabit sediments of rivers, streams and lakes (Alves & Lucca 2000, Collado & Schmelz 2001, Montanholi-Martins & Takeda 2001). Due to their great ability to swim, they are capable of exploring benthic habitats (Erséus & Gustavsson 2002) such as aquatic macrophytes (Jones et al. 2000), sponges (Corbi et al. 2005), Odonata larvae (Corbi et al. 2004) and mollusks (Buse 1972). It was the aim of this study to verify the presence of Naididae species associated with three species of gastropod mollusks.

Material and Methods

Gastropod mollusks were collected alongside irrigation channels in a horticultural garden in the northwest region of Juiz de Fora (MG), southeastern Brazil (21° 39' 6" S and 43° 25' 54" W), in May, June, July, August, November 2005 and January 2006. Using small nets, we collected 90 individuals of each of the following mollusk species: *Aplexa rivalis* Mastou & Rackett, 1898; *Biomphalaria* sp. and *Lymnaea columella* Say, 1827.

In the laboratory, mollusks were dissected under a stereoscopic microscope. The Naididae individuals found were first fixed in 8% formalin solution and then preserved in 70% alcohol solution. Taxonomic identification was carried out according to Righi (1984) and Brinkhurst & Marchese (1989).

Results and Discussion

A total of 270 mollusks were dissected and 126 of them contained oligochaete worms, making 56% prevalence (Table 1). This result is more than the 27.75% prevalence that has previously been found in *Pomacea bridgesii* (Reeve 1856) by Gorni & Alves (2006) and less than the 61.8% prevalence that has previously been found in *B. straminea* (Dunker 1848) by Andrade & Campos (1968). Three Naididae species were found: *Chaetogaster limnaei* (K. von Baer 1927), *Dero (Dero) righii* (Varela 1990) and *Nais communis* (Piguet 1906).

Chaetogaster limnaei was the most abundant species and it was found in all three species of mollusks. Besides, it represented 98.15% of all worms found in *Biomphalaria* sp. and it was the only naidid species found in *L. columella* (Table 1). According to Buse (1972), *C. limnaei* inhabits a wide variety of gastropod snails and, in Brazil, it has previously been found in association with *B. straminea* (Andrade & Campos 1968, Callisto et al. 2005).

This is the first report on the occurrence of *D. (D.) righii* in a living substratum, i.e., *Biomphalaria* sp. It has previously been found in association with sediments of Middle Rio Negro Region (Pantanal, MS,

Brazil) and Lagoa dos Patos (MS, Brazil), according to Takeda et al. (2000) and Montanholi-Martins & Takeda (2001), respectively. Gorni & Alves (2006) reported the occurrence of seven species of the genus *Dero* associated with *P. bridgesii* specimens sampled from fish farming tanks in the state of São Paulo (southeastern Brazil), although they have not found the species *D. (D.) righii*.

Nais communis was found associated to *Biomphalaria* sp. and *A. rivalis* species, but in rather low abundance. Gorni & Alves (2006) found a low abundance of *N. communis* from *P. bridgesii*. In Brazil, this species has previously been found in association with sediments of rivers (Alves et al. 2006), streams (Alves & Lucca 2000), macrophytes (Trivinho-Strixino et al. 2000), sponges (Corbi et al. 2005) and bryophytes (Gorni & Alves 2007).

Our results indicate that, due to their locomotion, naidids are capable of colonizing different substrates in aquatic environments. Moreover, because three Naididae species were found in association with gastropod mollusks in a single site, we consider that this type of association should be common in the nature.

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Table 1. Abundance of three naidid species in gastropod mollusks in irrigation channels in southeastern Brazil.

Tabela 1. Abundância de três espécies de Naididae em moluscos gastrópodes em canais de irrigação no sudeste do Brasil.

Naididae	Gastropod mollusks		
	<i>Biomphalaria</i> sp.	<i>Aplexa rivalis</i>	<i>Lymnaea columella</i>
<i>Chaetogaster limnaei</i>	319	2	9
<i>Dero (Dero) righii</i>	3	0	0
<i>Nais communis</i>	3	4	0
Total	325	6	9

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