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Morphological variation in males of *Dendrocephalus orientalis* (Anostraca: Thamnocephalidae): Implications for species identification

GUSTAVO LUIS HIROSE[1,2], SAMARA DE PAIVA BARROS-ALVES[1,2], DOUGLAS FERNANDES RODRIGUES ALVES[1,2,3], IZABEL REGINA SOARES DA SILVA[1] & MARIA ANGÉLICA DE OLIVEIRA BEZERRA[1]

[1]*Departamento de Biologia, Universidade Federal de Sergipe, UFS, Av. Marechal Rondon, s/n, Rosa Elze, São Cristóvão, Sergipe, 49100-000, SE, Brazil*
[2]*NEBECC, Group of Studies on Crustacean Biology, Ecology and Culture*
[3]*Corresponding author. E-mail: douglas_biologo@yahoo.com.br*

Abstract

The genus *Dendrocephalus* Daday, 1908 consists of 17 described species. The morphology of the frontal appendage and the first pairs of thoracopods of males are the main characteristics used for species identification. The objectives of this study were to increase knowledge of the morphology of *Dendrocephalus orientalis* and to propose a new identification key for the species occurring in Brazil. Specimens were collected in temporary ponds within the conservation unit Monument Natural Grota do Angico (MNGA), which straddles the borders of the municipalities of Poço Redondo and Canindé de São Francisco, State of Sergipe, Brazil. During the study period, 560 male individuals of *D. orientalis* were sampled. The specimens showed variations in the number of spines on the eyes and the proximal surface of the male frontal appendage. On the eye, the number of spines ranged from 0 to 2; morphotypes with 1 and 2 spines predominated in the samples, with 50.5% and 46.2%, respectively. The number of spines on each eye was the same within each individual. On the proximal surface of the males frontal appendage the following numbers of spines on each arm were recorded: 1 and 1 (57.86%); 2 and 1 (30.89%); 2 and 2 (9.46%); 1 and 0 (1.25%); 3 and 2 (0.36%); 2 and 0 (0.18%). Based on these variations, we conclude that the number of spines on the eyes and the frontal appendage arms cannot be used as a diagnostic character for species identification. On the other hand, the first pairs of thoracopods and sub-branches 1V and 2A of the frontal appendage should be included in keys, since these structures did not show significant intraspecific morphological variation.

Key words: Fairy shrimp, diagnostic characters, morphotypes, identification key

Introduction

Members of the fairy shrimp genus *Dendrocephalus* established by Daday (1908) are typically restricted to temporary pools, where they represent a significant part of the biodiversity (Chaves *et al.* 2011). Seventeen species are currently recognized, in two subgenera (Rogers 2006; Rogers 2013). However, Chaves *et al*. (2011) reported yet another undescribed *Dendrocephalus* from Minas Gerais State, Brazil. The subgenus *Dendrocephalinus* Rogers, 2006 comprises three species in North America (Rogers *et al.* 2012). The subgenus *Dendrocephalus* includes 14 valid species that occur in tropical or subtropical warm-climate regions of Central and South America from Costa Rica to Argentina, as well as the Galapagos and Caribbean islands (Rabet & Thiéry 1996; Rabet 2006; Rogers 2006; Rogers *et al.* 2012). Five species are described from Brazil: *Dendrocephalus brasiliensis* Pesta, 1921; *Dendrocephalus carajaensis* Rogers, Corrêa & Vieira, 2012; *Dendrocephalus goaisensis* Rabet & Thiéry, 1996; *Dendrocephalus orientalis* Rabet & Thiéry, 1996; and *Dendrocephalus thieryi* Rabet, 2006 (Chaves *et al.* 2011; Rogers *et al.* 2012).

Typically, anostracan species are differentiated by the form and ornamentation of the male second antennae, which are modified into large claspers to amplex the female during copulation (Rogers 2002). *Dendrocephalus* males have a particularly long and complex cephalic extension, called the frontal appendage (Chaves *et al.* 2011).

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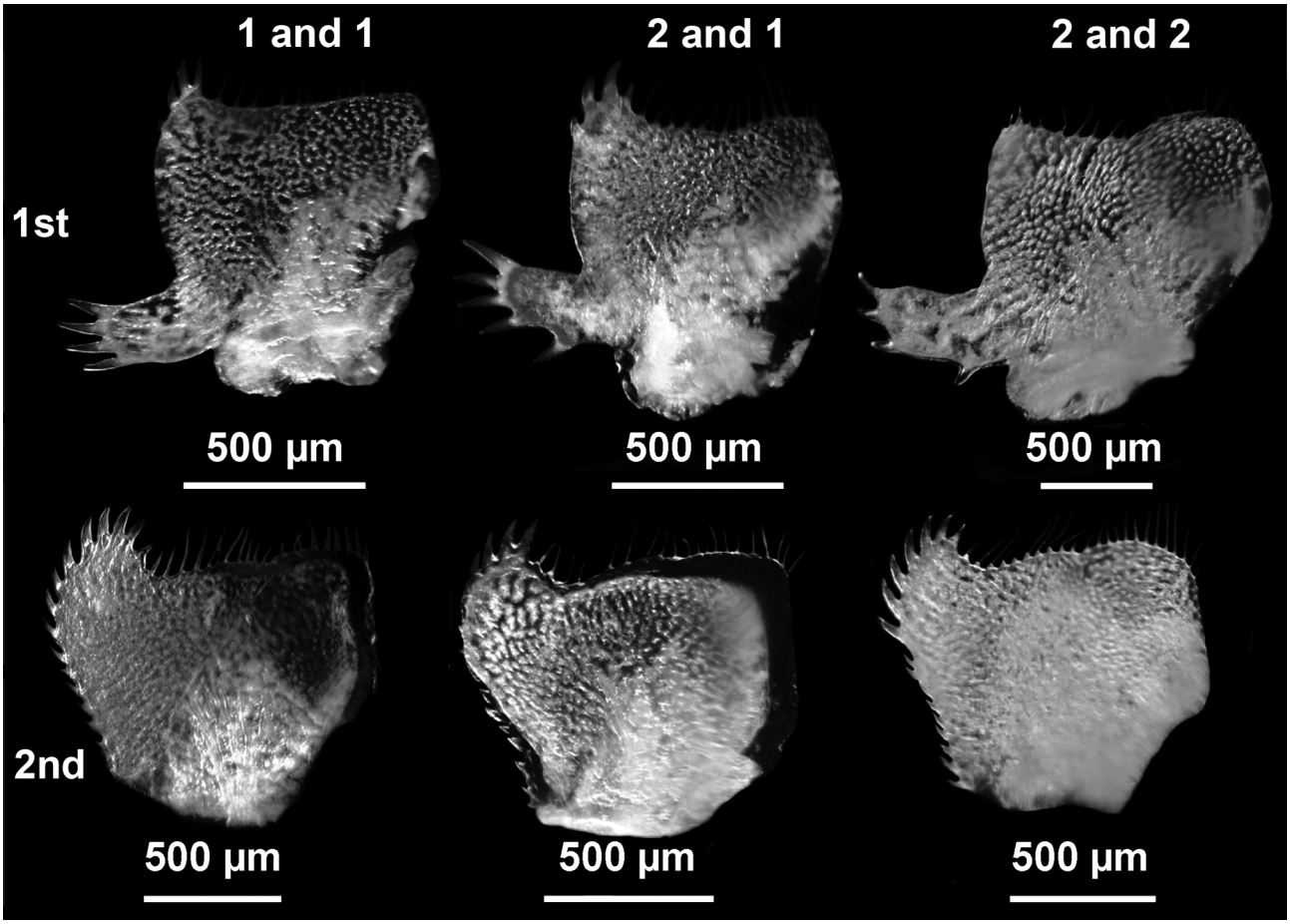

FIGURE 6. Morphology of endopodite of 1st and 2nd thoracopods in individuals with different combinations of the number of spines on frontal appendage arms of *Dendrocephalus orientalis*.

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