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Taxonomic review of four western Atlantic dendrochirotids (Holothuroidea) with the description of a new Brazilian cucumariid species and designation of neotypes

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Abstract

In this paper, we propose the reassignment of three western Atlantic species of the order Dendrochirotida to the family Sclerodactylidae (*Euthyonidiella occidentalis* comb. nov., *Euthyonidiella arenicola* comb. nov., and *Thandarum manoelina* comb. nov.) with a discussion on the classification of the dendrochirotids based on the morphology of the calcareous ring. We also propose the synonymization of *Euthyonidiella dentata* with *Euthyonidiella occidentalis* comb. nov., designate a neotype for this species and for *Thandarum manoelina*, and describe a new species of the genus *Cucumaria* from Brazil.

Key words: Echinodermata, Phyllophoridae, Sclerodactylidae, taxonomy, genus change, synonymy

Resumo

Neste artigo nós propomos a redesignação de três espécies do Atlântico Ocidental da ordem Dendrochirotida para a família Sclerodactilidae (*Euthyonidiella occidentalis* comb. nov., *Euthyonidiella arenicola* comb. nov., e *Thandarum manoelina* comb. nov.) e discutimos a classificação dos Dendrochirotida baseada na morfologia do anel calcário. Nós também propomos a sinonimização de *Euthyonidiella dentata* e *Euthyonidiella occidentalis* comb. nov., designamos um neótipo para esta espécie e para *Thandarum manoelina*, e descrevemos uma nova espécie brasileira do gênero *Cucumaria*.

Palavras-chave: Echinodermata, Phyllophoridae, Sclerodactylidae, taxonomia, mudança de gênero, sinonímia

Introduction

To date, 107 dendrochirotid genera distributed among seven families have been described; amongst these, Cucumariidae, Phyllophoridae and Sclerodactylidae probably carry the greatest taxonomic challenges within the order. These challenges were also reinforced by the few attempts to recover the phylogeny of the Dendrochirotida; for instance, Kerr & Kim (2001) proposed a phylogenetic hypothesis in which the relationship within these families was unresolved and Lacey *et al.* (2005) suggested that the Phyllophoridae is paraphyletic with the inclusion of the Sclerodactylidae.

Surprisingly, taxonomic studies of this order are abundant (e.g. Deichmann 1930, 1941; Madsen 1941; Panning 1949; Heding & Panning 1954). These reviews, however, present conflicting classifications that have not been resolved so far. Most of the taxonomic problems of the Dendrochirotida probably arise from ontogenetic changes and high degree of morphological plasticity within its species, which often puzzle the specimens'

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reduced knobbed edges) and these species have tentacles of the same size (vs. ventral-most two smaller in *C. solangeae* **sp. nov.**). The species *Cucumaria compressa* (Perrier 1898) from the northeastern Atlantic and *Cucumaria vicaria* Sluiter 1910 from the northwestern Atlantic have cups in the body wall and should not be classified within the subfamily Cucumariinae. According to the classification proposed by Smirnov (2012), these species should be Colochirinae.

Identification key to the Atlantic species of the genus *Cucumaria*

1. Body wall ossicles are plates. . . . 2
- Body wall ossicles are knobbed buttons . . . *C. solangeae* **sp. nov.**
2. Body wall plates are smooth . . . *C. arcuata*
- Body wall plates are knobbed . . . 3
3. Ten same-sized tentacles . . . *C. frondosa*
- Ten tentacles, ventral-most pair smaller . . . 4
4. Tube feet arranged in single rows . . . 5
- Tube feet arranged in double rows . . . *C. georgiana*
5. Tentacles with plates and rods . . . *C. parassimilis*
- Tentacles with rods only . . . *C. acuta*

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