



A new genus and new species of fan worms (Polychaeta: Sabellidae) from Atlantic and Pacific Oceans—the formal treatment of taxon names as explanatory hypotheses

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Abstract

Members of *Parasabella minuta* Treadwell, 1941, subsequently moved to *Perkinsiana*, were collected during a survey of rocky intertidal polychaetes along the state of São Paulo, Brazil. Additional specimens, which are referred to two new species, were also found in similar habitats from the Bocas del Toro Archipelago, Caribbean Panama, and Oahu Island, Hawaii. A phylogenetic analysis of Sabellinae, including members of *P. minuta* and the two new species, provided justification for establishing a new generic hypothesis, *Sabellomma* **gen. nov.**, for these individuals. Formal definitions are also provided for *Sabellomma minuta* **gen. nov., comb. nov.**, *S. collinae* **gen. nov., spec. nov.**, and *S. harrisae* **gen. nov., spec. nov.**, along with descriptions of individuals to which these hypotheses apply. The generic name *Aracia* **nom. nov.**, is provided to replace *Kirkia* Nogueira, López and Rossi, 2004, pre-occupied by a mollusk.

Key words: *Sabellomma*, *Aracia*, Sabellinae, Sabellidae, Polychaeta, new genus, systematics, taxonomy

Resumo

Espécimes de *Parasabella minuta* Treadwell, 1941, subsequentemente transferida para *Perkinsiana*, foram coletados durante um levantamento dos poliquetas da zona entremarés de costões rochosos ao longo do Estado de São Paulo, Brasil. Espécimes semelhantes, atribuídos a duas espécies novas para a ciência, foram também encontrados em habitats similares no arquipélago de Bocas Del Toro, na costa atlântica do Panamá, e na Ilha de Oahu, Havaí. Uma análise filogenética de Sabellinae, incluindo membros de *P. minuta* e das duas espécies novas justificou estabelecer uma nova hipótese genérica, *Sabellomma* **gen. nov.**, para estes indivíduos. São também aqui fornecidas definições para *Sabellomma minuta* **gen. nov., comb. nov.**, *S. collinae* **gen. nov., sp. nov.**, e *S. harrisae* **gen. nov., sp. nov.**, bem como descrições dos indivíduos aos quais tais hipóteses se aplicam. O nome *Aracia* **nom. nov.** é fornecido em substituição a *Kirkia* Nogueira, López e Rossi, 2004, pré-ocupado por um molusco.

Introduction

Several recent surveys of the shallow-water polychaete faunas from Brazil, Panama, and the Hawaiian Islands, have revealed the presence of Sabellinae¹ polychaetes that exhibit an unusual combination of characters that do not allow for association with any of the current genera. For instance, the specimens have interramal eyespots typical of the clade containing *Sabella* Linnaeus, 1767, *Sabellastarte* Krøyer, 1856, *Bispira* Krøyer, 1856, *Branchiomma* Köllicker, 1859, *Pseudobranchiomma* Jones, 1962, and *Stylomma* Knight-Jones, 1997 (Fitzhugh 1989; Rouse and Fitzhugh 1994; Fitzhugh and Rouse 1999; Capa 2007), and also present among members of *Myxicola* Koch in Renier, 1847 (Fitzhugh pers. obs), as well as members of at least one species of *Demonax* Kinberg, 1867 (Capa pers. comm.) and *Megalomma* (Tovar-Hernandez and Salazar-Vallejo 2008; Capa and Murray 2009; see below). Yet the arrangements and types of thoracic noto- and abdominal neurochaetae are typical of what are seen outside the *Sabella et al.* clade. As well, radioles have unpaired, simple eyespots along lateral margins, reminiscent of those among members of *Notaulax* Tauber, 1879, *Hypsicomus* Grube, 1870, and *Anamobaea* Krøyer, 1856. As a consequence of these observations and the results of our phylogenetic analyses we present in this paper the definition of a new genus to accommodate these individuals. The Brazilian specimens are members of a previously named

1. In their phylogenetic analysis of the Sabellidae-Serpulidae clade, based only on nucleotide sequence data and a very limited representation from among members of taxa, Kupriyanova & Rouse (2008) inferred the following relationships: (Sabellinae (Fabriciinae, Serpulidae)). The authors concluded that since the Sabellidae s.l. is paraphyletic, the most efficacious solution is to raise the Fabriciinae to the level of family, i.e. Fabriciidae, thus limiting the Sabellidae s.s. to the equivalent Sabellinae. While Kupriyanova & Rouse do make reference to available morphological studies (cf. Fitzhugh 1989, 1998; Rouse & Fitzhugh 1994; Fitzhugh & Rouse 1999), those available data were not incorporated into their analysis. The inherent difficulty with data exclusion, extensively outlined by Fitzhugh (2006a, b), is that there is no epistemic basis for choosing between hypotheses derived from different, mutually relevant sets of data. Thus, we chose the more conservative route in the present paper of following hypotheses based on morphological data available for the considerably wider range of Sabellidae s.l. taxa, i.e. (Serpulidae (Sabellinae, Fabriciinae)), until such time as available nucleotide data are collated with morphological data for the purpose of inferring sabelliform phylogenetic hypotheses.