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Aracia sinaloae sp. n., a new brooding, simultaneous hermaphroditic fan worm from southern Gulf of California (Polychaeta: Sabellidae)

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Abstract

Currently, only two species are known in the sabellid genus *Aracia*: *A. riwo* (Rouse, 1996) and *A. heterobranchiata* (Nogueira, López & Rossi, 2004). The first was described from the surface of a *Teredo*-riddled log lying in 1 m of water among mangrove roots, in Papua (New Guinea), whilst the second was found on an organically enriched beach at São Sebastião (Brazil). In this contribution, a third species of *Aracia* is described from settling panels and red mangrove roots in an estuarine system located in southern Gulf of California (Mexico). The new species is a simultaneous hermaphrodite and brooder, unique in the presence of a rectangular ventral shield on the collar, shorter than those in posterior thoracic segments; and a high number of rows of teeth in thoracic and abdominal uncini, covering from one-half to three-quarters of the main fang length. Information about color patterns in live specimens, glandular patterns, and reproduction is provided.

Key words: *Kirkia*, cocoon, settling panel, parental care, Urías Estuary

Introduction

The Urías Estuary is a highly impacted ecosystem in the southern Gulf of California. The harbor and several industries, including a power plant for Comisión Federal de Electricidad (the federal electricity company), facilities of PEMEX (the Mexican state oil company), tuna and shrimp packing factories, shrimp culture facilities and a slaughterhouse, frequently discharge their waste into this body of water (Ferrando & Méndez 2011; Jaward *et al*. 2012). The Urías Estuary has therefore been receiving diverse pollutants for many years. Moreover, the presence of invasive species has been documented in the estuary as a result of aquaculture and marine traffic (Salgado-Barragán *et al*. 2004; Tovar-Hernández *et al*. 2009a–b; 2010; 2012). Despite high anthropogenic pressure on the ecosystem, the composition of the native biota is still poorly known.

During sampling conducted to study invasive species in the Urías Estuary, a small tube-worm was found associated with *Rhizophora mangle* (Linnaeus) roots and attached to settling panels for the invasive reef-building serpulid, *Ficopomatus miamiensis* (Treadwell). The fan worm belongs to *Aracia* Nogueira, Fitzhugh & Rossi, 2010, a genus of apomorphic sabellid polychaetes with the ability to brood embryos in cocoons attached to the branchial crown. Note that *Aracia* is a replacement name for *Kirkia* Nogueira, López & Rossi, 2004, a preoccupied name for a genus of Mollusca described by Pollonera (1909); there is also another homonym, a genus of Diptera described by Gedoelst (1914). In this contribution, the new species is described, and information about live coloration, glandular patterns, and reproduction is also provided.

Material and methods

Sampling was carried out for the non-native serpulid polychaete, *Ficopomatus miamiensis* on settling panels and on red mangrove roots in the Urías Estuary. Settling panels and roots were collected by hand and placed in

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Amphicorina spp. (Rouse 1992), *Amphiglena* spp. (Rouse 1993; Rouse & Gambi 1998a, b), *Perkinsiana antarctica* (Gambi & Patti 1999), *T. heterouncinata* (Fitzhugh & Rouse 1999; Simon & Rouse 2005), *Aracia riwo* (Rouse 1996) and *A. sinaloae* **sp. n.**

Egg size in sabellid genera varies from very small (82 µm in *Amphicorina brevicollaris* (Rouse) and *Jasmineira regularis* Hartman (Giangrande 1997), to 250 µm as in *Parasabella microphthalma* (Verrill), to the largest sizes of 500 µm in *Potamilla torelli* (Malmgren) (Rouse & Fitzhugh 1994) and 600 µm in *Amphiglena marita* (Chlebovitsch 1959). The diameter of oocytes in species of *Aracia* varies from 30–90 µm in *A. heterobranchiata* (Nogueira *et al.* 2004), up to a maximum of 200 µm in *A. riwo* (Rouse 1996), and 47–105 µm in *A. sinaloae* **sp. n.**

Finally, further study is needed to document the larval development and settling, as well as ecology in populations of *A. sinaloae* **sp. n.**, since it shares habitat with the invasive reef-building worm *F. miamiensis* in the Urías Estuary.

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