Zootaxa 3616 (5): 401–436
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3616.5.1
http://zoobank.org/urn:lsid:zoobank.org:pub:D7C95348-727D-499C-8E67-23C6ADFCAFC4

New species of Australian *Pseudopallene* (Pycnogonida: Callipallenidae) based on live colouration, morphology and DNA

CLAUDIA P. ARANGO[1]* & GEORG BRENNEIS[2]

[1] *Queensland Museum, Natural Environments Program, PO Box 3300 South Brisbane, Queensland 4101 Australia.*
E-mail: claudia.arango@qm.qld.gov.au
[2] *Humboldt-Universität zu Berlin, Institut für Biologie/Vergleichende Zoologie, Philippstraße 13, 10115 Berlin, Germany.*
E-mail: georg.brenneis@gmx.de
**Corresponding author*

Abstract

Callipallenid sea spiders are commonly found in southern Australian waters. The genera *Pseudopallene* and *Stylopallene* are frequent epibionts of arborescent bryozoan colonies of *Orthoscuticella* spp. and *Amathia* spp. Based on external morphology, colouration patterns, and sequence divergence of nuclear and mitochondrial markers, we differentiate species of *Pseudopallene* and *Stylopallene* from southeast Tasmania, New South Wales and Victoria. In this paper we describe five species new to science: *P. tasmania*, *P. gracilis*, *P. constricta*, *P. flava* and *P. harrisi*, and propose the '*variabilis*'-complex, which is yet to be resolved based on additional material. Also, two species previously known from Southern Australia are reported as new records for Tasmania. The use of molecular data in resolving species identities of Australian Pycnogonida appears crucial, particularly in the understanding of the amazing, yet undiscovered diversity of brightly colourful callipallenid species. The genus *Pseudopallene* previously known from 20 species distributed in both southern and northern hemispheres now includes 14 Australian endemic species and at least one species complex yet to be resolved.

Introduction

One of the most diverse pycnogonid families in Australia is Callipallenidae, a cosmopolitan lineage of at least 15 genera and more than 1300 species worldwide (Bamber & El Nagar 2012). All its representatives are characterised by the presence of functional cheliphores and ovigers in both males and females and compound spines on the ovigers (Arnaud & Bamber 1987; Arango & Wheeler 2007), but are otherwise highly variable in form, size and colour.

Callipallenid development is notable for the large egg size and an extension of the embryonic developmental phase (Brenneis *et al.* 2011a). Owing to the latter, callipallenids do not hatch as protonymphon larvae with cheliphores and larval palpal and ovigeral limb pairs only, but instead as advanced 'walking leg-bearing larva' (Brenneis *et al.* 2011b). This hatching stage possesses already the anlagen of at least two walking leg pairs (Nakamura 1981; Brenneis *et al.* 2011a,b).

Given its extraordinary diversity of callipallenids, the Australasian region has been repeatedly suggested as centre of radiation and speciation of this family (Clark 1963; Child 1975; Arango 2003b). At least nine of the 20 described species of the genus *Pseudopallene* Wilson, 1878 are endemic to Australia, being found on East, South and western coasts (Arango 2009). In contrast to this, just a single species is known from each of South Africa and the Philippines, two species are found in the Antarctic and the rest are found in the North Atlantic or Arctic. The type species for the genus, *P. circularis* (Goodsir, 1842) was described from the North Sea. The genus *Pseudopallene* includes some of the most frequent pycnogonid forms in Australian temperate waters, being characterised by striking colourful body patterns, massive cheliphores and the ventralized position of a tapering proboscis, characters also found in related genera such as the Australian endemic *Stylopallene* Clark, 1963 and the predominantly Antarctic *Austropallene* Hodgson, 1915. However, the ventral position and the tapering of the proboscis are not found in the type species of *Pseudopallene* (Goodsir 1842), which also differs from its Australian

Accepted by R. Bamber: 4 Jan. 2012; published: 22 Feb. 2013