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New genus *Arxellia* with new species of Solariellidae (Gastropoda: Trochoidea) from New Caledonia, Papua New Guinea, Philippines, Western Australia, Vanuatu and Tonga

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Abstract

A new genus, *Arxellia*, is described in the family Solariellidae. Nine species are referred to this taxon, eight of which are new and are described in this paper (*Arxellia trochos* n. sp., *Arxellia boucheti* n. sp., *Arxellia herosae* n. sp., *Arxellia helicoidea* n. sp., *Arxellia tracheia* n. sp., *Arxellia thaumasta* n. sp., *Arxellia maestratii* n. sp. and *Arxellia erythrea* n. sp.). The previously described species *Bathymophila tenorioi* Poppe, Tagaro & Dekker, 2006 is reassigned to *Arxellia*.

Key words: Gastropoda, Trochoidea, Solariellidae, central Indo-West Pacific, new genus, new species

Introduction

Trochoidean gastropods currently referred to the Solariellidae remained poorly known until the latter part of the nineteenth century when a number of contributions were published discussing the solariellid fauna of several different parts of the world, as well as the morphology and biology of the group as a whole (Quinn 1979, 1991; Herbert 1987; Hickman & McLean, 1990; Warén, 1993; Marshall 1999). At this time solariellids were treated as a subfamily of the Trochidae, but these studies revealed that the group constituted a well-defined assemblage of genera exhibiting perhaps the highest number of apomorphic character states within the Trochoidea (Hickman 1996). Subsequently, Bouchet & Rocroi (2005) treated the group as a family in its own right and speculated that it might belong within the Seguenzioidea rather than the Trochoidea. However, broad-scale molecular work on the Trochoidea has since demonstrated the trochoidean affinities of solariellids and has confirmed that they cluster as a well-supported monophyletic entity warranting recognition as a distinct family (Williams *et al.* 2008; Williams 2012; see also WoRMS).

In recent years, large-scale, deep-sea expeditions undertaken by the Muséum national d'Histoire naturelle, Paris have provided new material for both molecular and taxonomic studies (Bouchet *et al.* 2008). The first molecular phylogeny for Solariellidae was recently published (Williams *et al.* 2013), in which several new clades were identified, each thought to represent an undescribed genus-level taxon. In this study we present shell, radula and anatomical data for one of these clades (Clade A), which we here describe as the new genus *Arxellia* (Figs 1–9). We also describe eight new species. Other new solariellid genera and species from these samples are described elsewhere (e.g. Vilvens 2009; Vilvens & Williams 2014). Collectively, these studies comprise an important contribution toward the documentation of solariellid diversity—a diversity that is considerably higher than previously recognised.

As a group we are working towards better understanding of solariellid diversity and several projects are currently underway. Studies in preparation include a generic level monograph of the family (the authors and A.

TABLE 8. *Arxellia erythrea* n. sp.: shell dimensions for type specimens.

	TW	H	W	HA	H/W	H/HA	H/TW
holotype MNHN IM-2000-27391	5.2	5.5	5.4	1.4	1.02	3.93	1.06
paratype MNHN IM-2000-27393	5.1	5.4	4.9	1.5	1.10	3.60	1.06
paratype MNHN IM-2000-27392	4.9	5.7	5.4	1.6	1.06	3.56	1.16
paratype MNHN IM-2000-27392	4.9	5.4	5.2	1.4	1.04	3.86	1.10
paratype MNHN IM-2000-27392	4.9	5.0	4.1	1.4	1.22	3.57	1.02
paratype NHMUK 20140012	5.1	5.2	5.1	1.4	1.02	3.71	1.02
paratype NHMUK 20140012	5.0	5.1	4.9	1.3	1.04	3.92	1.02
paratype CV2014-DW1586	4.7	4.2	4.2	1.1	1.00	3.82	0.89

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