



A comparative analysis of the spatangoid echinoid genera *Brissopsis* and *Metalia*: a new genus and species of spatangoid (Echinodermata: Echinoidea: Brissopsidae) from the Philippines and the reassignment of *Brissopsis persica* to *Metalia*

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Abstract

Brissalius vannoordenburgi gen. nov., sp. nov. occurs at depths of 200 meters off Siquijor Island in the Philippines and is typical of the family Brissopsidae in having specialised aboral tube feet in ambulacra III within the peripetalous fasciole used for funnel building. It is distinct from species of *Brissopsis* and *Metalia* in having a shield-shaped subanal fasciole in conjunction with confluent posterior petals. This species has a particularly diverse array of highly localised pedicellariae, with three distinct forms of globiferous pedicellaria (simple fistulate, fanged fistulate and fanged open-bladed), three forms of straight bladed tridentate (narrow-valved, spatulate and terminal-toothed) as well as typical spatangoid rostrate, ophicephalous and triphyllous pedicellariae. *Brissopsis persica* is the only species in the genus that has a shield-shaped subanal fasciole. However, this species has divergent posterior petals, simple (non-lobed) anterior aboral tube feet, enlarged tubercles along the anterior ambulacrum, no anal fasciole, and lacks both globiferous and ophicephalous pedicellariae. These findings demonstrate that this *Brissopsis persica* does not belong in *Brissopsis* but should be placed in *Metalia*.

Key words: Echinoid, Brissopsidae, *Brissalius vannoordenburgi* gen. nov., sp. nov., *Brissopsis*, *Metalia*, Philippines, taxonomy

Introduction

Brissopsis Agassiz, 1840 is a genus of irregular spatangoid echinoid historically placed in the family Brissidae Gray, 1855. Members of this family first appeared in the Eocene with Recent species having a worldwide distribution. They are united by the presence of both a peripetalous and subanal fasciole, and live buried in the substratum. Mortensen (1951a) listed a large number of Recent genera in this family but stated that he was unsure of many of their affiliations. *Brissopsis* is closest to *Brissus* and *Metalia*, the total absence of a frontal depression distinguishing *Brissus* from *Brissopsis*, the character of the subanal fasciole (shield-shaped with radiating furrows) distinguishing *Metalia* from *Brissopsis* (typically bilobed without radiating furrows). Smith *et al.* (2005) place *Brissopsis* in the family Brissopsidae Lambert, 1905 restricting its members to micrasterinid spatangoids that have a sunken anterior ambulacrum, with enlarged pore-pairs in ambulacra III of the peripetalous fasciole and corresponding specialised anterior aboral tube feet used for funnel building. They subdivide the genus based on the position of the petals. Species with anterior petals that flex outwards and posterior petals that are almost parallel, with an inner series of pore-pairs reduced adapically are placed in *Brissopsis* (*Kleinia*) (type species *Kleinia luzonica* Gray, 1851, by original designation), while those that have anterior petals more or less straight and posterior petals diverging with inner series of pore-pairs reduced only close to the apex are placed in *Brissopsis* (*Brissopsis*) (type species *Brissus lyrifera* Forbes, 1841, by subsequent designation of Desor, 1858). Mortensen (1951a) treated *Kleinia* as a synonym of *Brissopsis* stating that