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Family, generic and species synonymies of recently published taxa of ghost shrimps (Decapoda, Axiidea, Eucalliacidae and Ctenochelidae): cautionary tales

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Abstract

Re-examination of the holotype of *Calliaxiopsis madagassa* Sakai & Türkay, 2014 has led to the conclusion that the genus is a synonym of *Calliaxina* Ngoc-Ho, 2003 and the species is a senior synonym (by 6 months) of *Calliaxina thomassini* Ngoc-Ho, 2014, now *Calliaxina madagassa* (Sakai & Türkay, 2014). Both are from Madagascar. Comparison of the holotype of *Tosacallianassa hatasagaensis* Sakai, 2016 with several published figures of *Ctenocheles balssi* Kishinouye, 1926 has similarly found their genera and species synonymous. Further, the family Tosacallianassidae is synonymous with Ctenochelidae Mannning & Felder, 1991. Both species are from the same limited area in Japan. The nephropid species *Thaumastochelopsis plantei* Burukovsky, 2005 is transferred to *Ctenocheles*.

Key words: *Calliaxiopsis*, *Calliaxina*, *Tosacallianassa*, *Ctenocheles*, Ctenochelidae, taxonomy

Introduction

Two new species described recently by the Japanese carcinologist, Katsushi Sakai, one with the late Michael Türkay, in the journal *Crustaceana*, led them to erect new genera and in one case a new family. Both are in our opinion synonymous with existing species, genera and families. A new species of astacidean lobster published by R.N. Burukovsky a little over a decade ago proved to be an axiidean in one of these genera. These publications appear to have bypassed expected editorial and refereeing protocols. This is not the first time that the first pair of authors have done so (Felder & Dworschak 2015, Komai 2017 and citations therein).

Material and methods

The holotype of the species in question were obtained on loan from Museum für Naturkunde Berlin (ZMB) and the Forschungsinstitut Senckenberg in Frankfurt a. M. (SMF), and examined by incident and transmitted light under a dissection light microscope. Digital photographs were taken with a Nikon 995 camera mounted on a stereomicroscope. Stacks of several frames of different focal planes were fused using CombineZ5 (Haug *et al.* 2011).

Sizes (in mm) are given as total length (TL) and carapace length (CL). Abbreviations Plp1 and Plp2 refer to first and second pleopods. For the first type specimen the original text of the labels is cited in quotation marks; \ is used to indicate a line break. Each species is discussed in turn and synonymies are appended.

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Systematics

Family Eucalliacidae Manning & Felder, 1991

Eucalliinae Manning & Felder, 1991: 781 [misspelling].
Eucalliacinae.—Sakai 1999b: 108.—Ngoc-Ho 2003: 487.—Ngoc-Ho 2014: 546.—Sakai 2005: 195.—Sakai & Türkay 2014: 190.
Eucalliacidae Sakai, 2011: 491.

Genus *Calliaxina* Ngoc-Ho, 2003

Calliaxina Ngoc-Ho, 2003: 493.—Sakai 2011: 497.—Sakai & Türkay 2014: 191.—Ngoc-Ho 2014: 549 (type species, *Calliax punica* de Saint Laurent & Manning, 1982, by original designation).
Calliamina Sakai & Türkay, 2014: 190 (misspelling)
Calliax.—Sakai 2005: 196 (partim, not *Calliax* de Saint Laurent, 1973).
Calliaxiopsis Sakai & Türkay, 2014: 192 (type species, *Calliaxiopsis madagassa* Sakai & Türkay, 2014 by original designation and monotypy) **Syn. nov.**

Calliaxina madagassa (Sakai & Türkay, 2014)

(Fig. 1)

Calliaxiopsis madagassa Sakai & Türkay, 2014: 134 (list), 193, fig. 13.
Calliaxinopsis madagassa Sakai & Türkay, 2014: 196 (misspelling)
Calliaxina thomassini Ngoc-Ho, 2014: 549, fig. 2. **Syn. nov.**

Material examined. Holotype: labelled "ZMB 17115 \ Calliaxina madagasa [sic] K. Sakai \ Madagaskar \ det. K. Sakai", male TL 22.0 CL 5.3.

Remarks. Sakai & Türkay (2014) erected a new genus for the newly described *Calliaxiopsis madagassa* from Madagascar. Careful examination of the holotype led to the conclusion that the reported unusual characters are artefacts and that the genus *Calliaxiopsis* Sakai & Türkay, 2014 is synonymous with *Calliaxina* Ngoc-Ho, 2003. The type species, *Calliaxiopsis madagassa* is identical to *Calliaxina thomassini* Ngoc-Ho, 2014, the latter a junior synonym of the former.

According to Sakai & Türkay (2014: 192–193): "The present new genus *Calliaxiopsis* gen. nov. is similar to *Calliaxina* in bearing no dorsal oval, but differs, because in *Calliaxiopsis* gen. nov. (1) the male Plp2 exopod bears a distal flap (vs. no distal flap in *Calliaxina*); and (2) the telson bears a median convexity posteriorly (vs. no median convexity posteriorly in *Calliaxina*)."

The holotype is a shriveled specimen, the major first pereopod (cheliped) is detached and the minor cheliped and pereopods 3 and 4 are missing (Fig. 1A). The cornea lies distally on the eyestalk (Fig. 1B), not "medially" as stated in the description. Plp1 is uniramous, consists of two articles, and is much longer than figured by Sakai & Türkay (2014: fig. 13G) (Fig. 1C, D). The "flap" on the Plp2 exopod is nothing but an artefact of folds, present only on the left side (Fig. 1E, F). In the right Plp2, the exopod is unfolded (Fig. 1G) and straight as in other species of Eucalliacidae. The situation of the appendix masculina and appendix interna is impossible to judge in situ, both endopods are folded longitudinally and everything glued together (obviously once dried). The convexity on the telson is apparently also an artefact due to a fold at the left posterior edge (Fig. 1H).

There is no justification for the genus *Calliaxiopsis.* It shows the same characters as *Calliaxina* [sensu Ngoc-Ho (2003) and Sakai (2011)]. The type species, *Calliaxiopsis madagassa* shows the same characters as another species described in detail, also from Madagascar, *Calliaxina thomassini* Ngoc-Ho, 2014. Sakai & Türkay (2014) has priority (19 March) over Ngoc-Ho (26 September 2014) and the latter becomes a subjective junior synonym of the former.

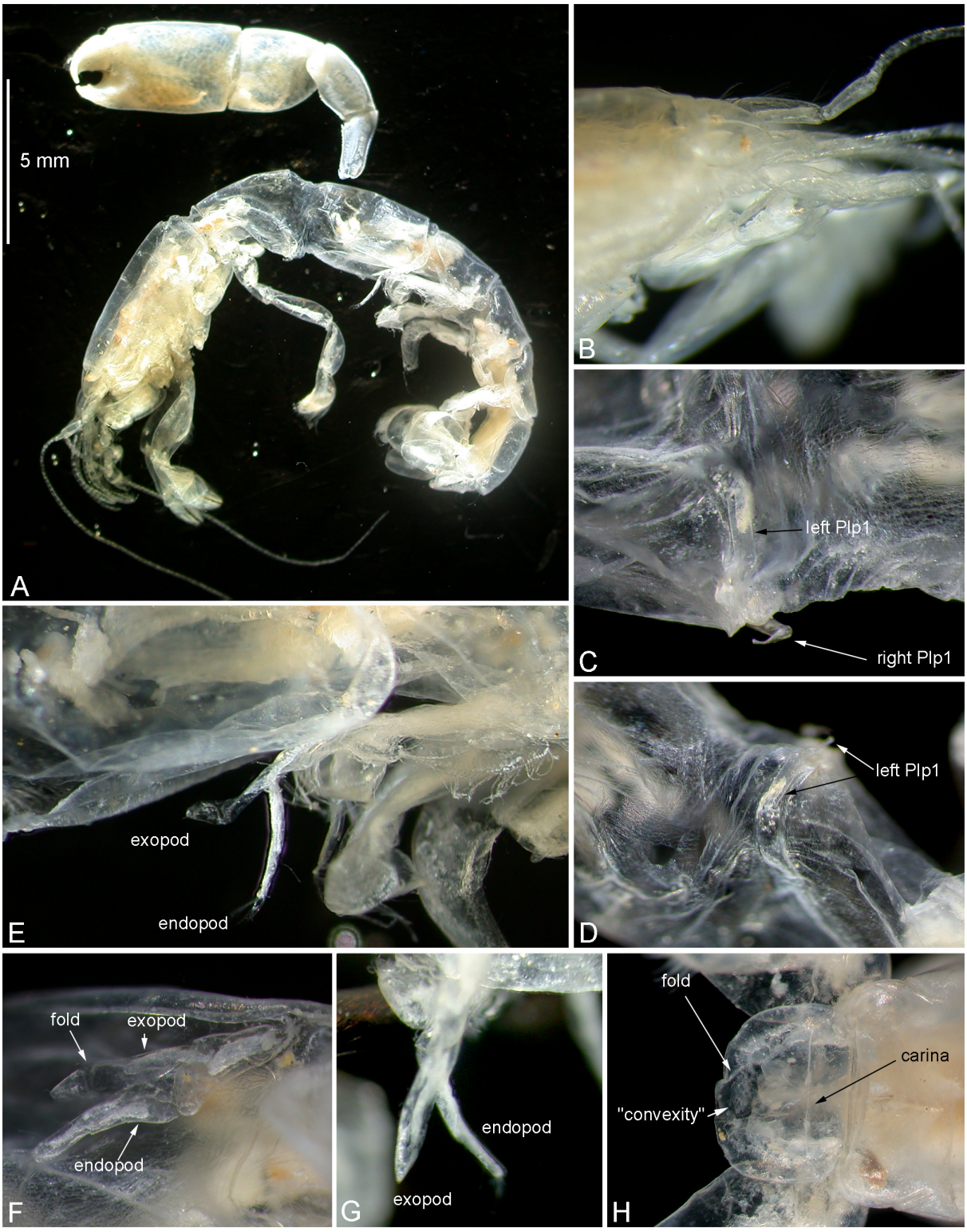

FIGURE 1. *Calliaxina madagassa* (Sakai & Türkay, 2014). Holotype of *Calliaxiopsis madagassa* Sakai & Türkay, 2014: A, habitus, lateral view; B, front, dorsolateral view; C, left and right pleopods 1, ventrolateral view; D, left pleopod 1, lateral view; E, left pleopod 2, lateral view; F, left pleopod 2, posterior view; G, right pleopod 2, lateral view; H, telson, dorsal view. Scale applies to A only.

Family Ctenochelidae Manning & Felder, 1991

Ctenochelidae Manning & Felder, 1991: 784.—Poore 1994: 103.—Davie 2002: 463.—Sakai 2011: 485–486.
Ctenochelinae.—Sakai 2005: 235–237.
Tosacallianassidae Sakai, 2016: 813. **Syn. nov.**

Genus *Ctenocheles* Kishinouye, 1926

Ctenocheles Kishinouye, 1926: 63.—Holthuis 1967: 377.—de Saint Laurent 1973: 514.—Poore & Griffin 1979: 277.—de Saint Laurent & Le Loeuff 1979: 81.—Manning & Felder 1991: 784.—Sakai 1999a: 88.—Davie 2002: 464.—Sakai 2005: 237–238.—Sakai 2011: 486 (type species, *Ctenocheles balssi* Kishinouye, 1926 by monotypy).
Tosacallianassa Sakai, 2016: 813 (type species, *Tosacallianassa hatasagaensis* Sakai, 2016, by original designation and monotypy).

Ctenocheles balssi Kishinouye, 1926

(Fig. 2)

? *Pentacheles* nov. sp.?—Balss 1914: 75, fig. 43.
Ctenocheles balssi Kishinouye, 1926: 63–66, fig. 1.—Makarov 1938: 75–77, fig. 29.—Holthuis 1967: 377.—Suzuki 1979: 296, pl. 18 fig. 234.—Noguchi & Akamine 1992: 25, fig. 1. —Matsuzawa & Hayashi 1997: 39–44, figs 1–3.—Sakai 1999a: 88–94, figs 1–3.—Sakai 2005: 240–241.—Sakai & Sawada 2006: 1358, figs 13, 14.—Sakai 2011: 487.
Tosacallianassa hatasagaensis Sakai, 2016: 814–817, figs 1–3. **Syn. nov.**

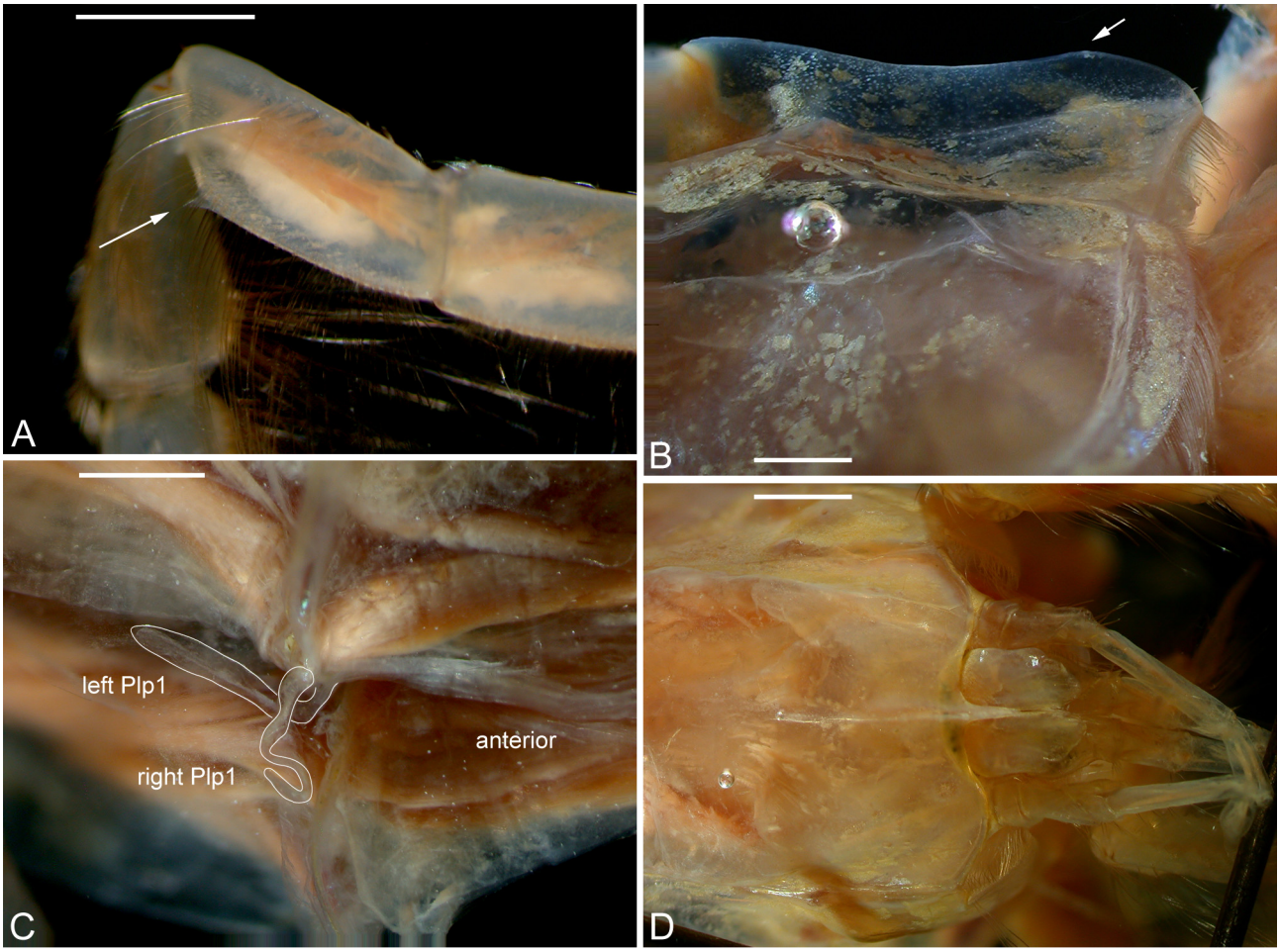

FIGURE 2. *Ctenocheles balssi* Kishinouye, 1926. Holotype of *Tosacallianassa hatasagaensis* Sakai, 2016: A, left maxilliped 3 (part, meral spine arrowed); B, left posterior carapace (cardiac prominence arrowed); C, pleopods 1 in situ (outlined with white lines); D, anterior carapace, eyestalks, antennules, antennae. Scale bar = 1 mm.

Material examined. Holotype, SMF 49248, female (TL/CL 49.0/12.0 mm, lacking larger cheliped on left side), Tosa-Saga, Hata-gun, Kochi Prefecture, leg. K. Sakai, 10.iii.1988, c. 100 m deep, by fishery trawl.

Remarks. Our examination of the holotype of *Tosacallianassa hatasagaensis* Sakai, 2016 shows that the species belongs to the family Ctenochelidae Manning & Felder, 1991. More careful comparison of the figures with those of *Ctenocheles balssi* Kishinouye, 1926 leads to the conclusion that the two species are synonymous. *Ctenocheles balssi* was described in moderate detail with an illustration of the habitus of the 100-mm-long female holotype. The type locality is deep water at Ohsu, near Kashiwasaki, Niigata-ken, in the Sea of Japan. The species has been redescribed and reillustrated in more detail twice, both times based on the same new material from off Shikoku Island on the south side of Japan, in the northwestern Pacific Ocean. The first was by Matsuzawa & Hayashi (1997) who had 40 detached chelipeds, a male (TL 70 mm), a female (TL 61 mm) and a female abdomen from off None, Toyocho, east coast of Muroto Peninsula, at depths of 30–150 m. Sakai (1999a) also described and illustrated the same two specimens (remeasured at TL 77 and 69 mm). *Tosacallianassa hatasagaensis* was described from a damaged female (TL 49 mm) from Tosa-Saga, Hata-gun, Kochi Prefecture, Japan, at 100 m depth (Sakai 2016), a locality not far from Muroto Peninsula. Of these specimens, only the type of *Tosacallianassa hatasagaensis* lacks the unique pectinate major cheliped that above all characterises *Ctenocheles*. Besides this feature, the genus differs from other callianassoids in the combination of possession of a crested pointed rostrum, a pediform maxilliped 3, a uropodal exopod with a distal notch separating the anterior and posterior margins, a minor cheliped with linear ischium and merus, barrel-shaped propodal palm with thin fingers a little longer than the palm, the pereopod 3 propodus without a lower-proximal heel, and a female pleopod 2 with oval rami bearing an elongate appendix interna on the endopod. *Tosacallianassa hatasagaensis* shares all these features.

Ctenocheles Kishinouye, 1926 includes six described extant species, plus 22 fossil species (Hyžný & Poore 2016) differing primarily in the rostral dentition, possession or not of a maxillipedal 3 exopod, spination of the ischium and merus of the cheliped, shape of the uropodal rami, dentition of the major cheliped, and shape of the telson. Matsuzawa & Hayashi (1997) provided a key to distinguish the extant species. To these can be added *C. plantei* (Burukovsky, 2005) (see below). The serrated rostrum and absence of a maxilliped 3 exopod are unique to *C. balssi.*

The figures of *Tosacallianassa hatasagaensis*, confirmed by our examination of the holotype, show that the minor cheliped, pereopod 3, peduncles of the antenna and antennule, and telson are virtually identical to the figures of *C. balssi* (Matsuzawa & Hayashi 1997, Sakai 1999a). The earlier papers figured the merus of maxilliped 3 with a small distal tooth, not apparent on Sakai's (2016) figure, and a cardiac prominence, said by Sakai (2016) to be lacking in his new family. Both the meral tooth (Fig. 2A) and the cardiac prominence (Fig. 2B) are present on the holotype of *T. hatasagaensis*. Sakai (2016; fig. 3A) misinterpreted pleopod 1 (Fig. 2C) and his figure 1D shows the cornea to be asymmetrical which they are not (Fig. 2D).

Ctenocheles balssi has been reported from the northern coast of Honshu, in the Sea of Japan (Kishinouye 1926, Noguchi & Akamine 1992, Suzuki 1979), and from the southeastern coast in Sagami Bay (Balss 1914) and off None, east coast of Muroto Peninsula, Shikoku Island (Matsuzawa & Hayashi 1997, Sakai 1999, Tsang *et al.* 2008). The same species was identified by GP from photographs of an individual from Laman Bay, the Philippines (AURORA stn CP2720: 14°26'N, 121°47'E, 300 m). It is no surprise the species has been rediscovered in Tosa Bay about 100 km west of the earlier record off Shikoku Island.

Sakai (2016) erected not only a new species for the specimen but also a new genus and a new family, Tosacallianassidae. He compared these taxa with Anacalliacidae Manning & Felder, 1991, Callianassidae Dana, 1852 and Callianopsidae Manning & Felder, 1991 but not with Ctenochelidae or with Gourretiidae Sakai, 1999 which the species also somewhat resembles. The conclusion here, that his species is in fact *Ctenocheles balssi*, makes his comparisons and purported differences irrelevant.

Ctenocheles plantei (Burukovsky, 2005) comb. nov.

Thaumastochelopsis plantei Burukovsky, 2005: 501–513, fig. 1.—Chan 2010: 156.

Remarks. Doflein (1906) recorded *Thaumastocheles japonicus* Calman, 1913 (as *T. zaleucus* (Thomson, 1873)), from Japan. Species of *Thaumastocheles* Wood-Mason, 1874 and *Thaumastochelopsis* Bruce, 1988, astacidean lobster genera of the family Nephropidae (Chan 2010) carry a major cheliped with elongate pectinate fingers highly convergent with that of species of *Ctenocheles*. A free cheliped associated with Doflein's material was

recognised as not belonging to *Thaumastocheles* by Balss (1914) who thought it possibly a species of the polychelid lobster genus *Pentacheles* Spence Bate, 1878. Kishinouye (1926) included Balss's taxon in the synonymy of *C. balssi.* Burukovsky (2005) seems to have fallen into the same trap. His figures of the rostrum, carapace, telson, uropods and pereopods of *Thaumastochelopsis plantei* are clearly those of a species of *Ctenocheles*, not of a nephropid (Chan 2010). The species is transferred. It is the first record of the genus from the Indian Ocean.

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