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GLOSSOBIUS IMPRESSUS (SAY, 1818) (ISOPODA, CYMOTHOIDAE),
A BUCCAL-ATTACHING FISH PARASITE NEW TO INDIA

BY

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Glossobius Schiøedte & Meinert, 1883 is currently one of the most species-poor and yet most variable isopod genera parasitizing marine fishes. The genus was recently redefined and revised by Bruce & Bowman (1989) and more recently by Martin et al. (2015), and now contains eight species (WoRMS, 2018). To date, two species of the genus have been reported from Indian waters, namely, *Glossobius auritus* Bovallius, 1885 and *Glossobius hemiramphi* Williams & Williams, 1985 (cf. Aneesh et al., 2017). Recently, a cymothoid isopod identifiable as *Glossobius impressus* (Say, 1818), was collected in Indian waters. This collection constitutes the first Indian record of *G. impressus*, also from a new host, the Coromandel flyingfish *Hirundichthys coromandelensis* (Hornell, 1923) (Pisces: Exocoetidae), which is the third species of this isopod genus known from the country. In this note, the specimen is briefly described, and the known hosts and geographical records of the species are reviewed. A key to the three species of *Glossobius* from India is also given.

The scientific and common names of fishes follow that of FishBase (Froese & Pauly, 2018).

***Glossobius impressus* (Say, 1818) (fig. 1)**

Restricted synonymy.—

Cymothoa impressa Say, 1818: 397.

Glossobius impressus — Bruce & Bowman, 1989: 22-26, figs. 15-17; Martin et al., 2015: 339-344, figs. 1-3.

Material examined.— Oviparous females (21.97-27.6 mm) and males (7.96-11.18 mm) of *G. impressus* were collected from the buccal cavity of several Coromandel flyingfish, *H. coromandelensis*

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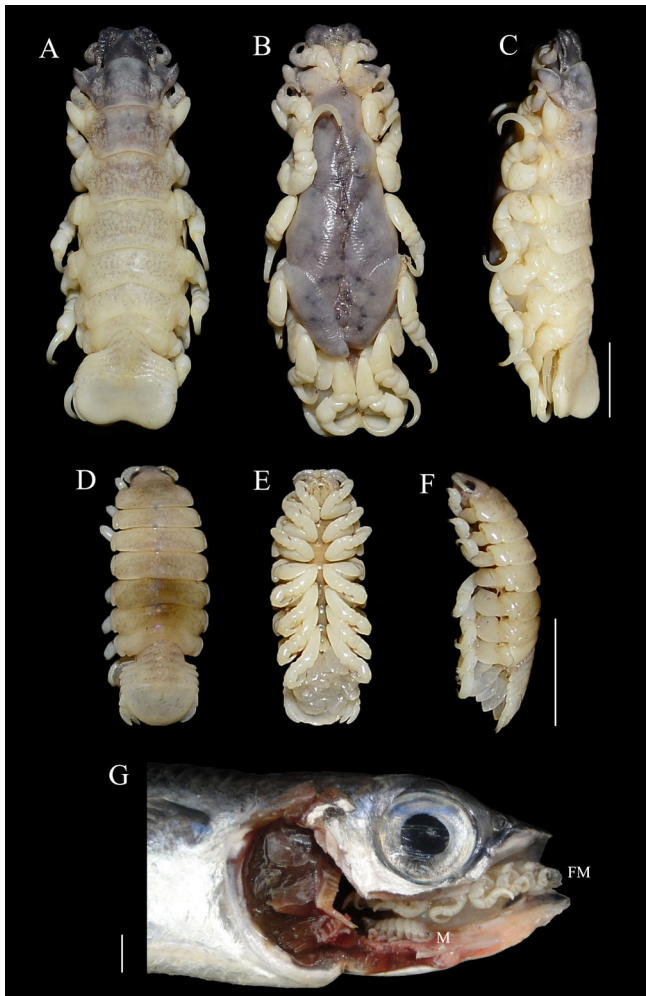


Fig. 1. *Glossobius impressus* (Say, 1818), A-C, ovigerous female (26.7 mm) (ZSI/MBRC D1-554): A, dorsal view; B, ventral view; C, lateral view. D-F, male (11.16 mm) (CAS/MBRM C-261): D, dorsal view; E, ventral view; F, lateral view; G, host fish *Hirundichthys coromandelensis* (Hornell, 1923) showing site of attachment (FM, ovigerous female; M, male). Scale bars: 5 mm in A-G.

(fig. 1G) from Parangipettai, Tamilnadu, southeastern coast of India ($11^{\circ}29'N$ $70^{\circ}64'E$) on 25 February 2018. Specimens were fixed and preserved in 75% ethanol. Voucher specimens were deposited in the Marine Biological Regional Centre, Zoological Survey of India, Chennai, India (1 ovig. ♀ 27.6 mm, ZSI/MBRC D₁-554) and the Marine Biological Reference Museum, CAS in Marine Biology, Annamalai University, India (13 ovig. ♀♀ 23.8-25.46 mm, CAS/MBRM C-239 to C-252; 8 ♂♂ 7.96-11.18 mm CAS/MBRM C-253 to C-261).

The morphological characters of the Indian specimens of *G. impressus* agree with those mentioned by Bruce & Bowman (1989) and Martin et al. (2015):

Body of ovigerous female 3.5 times as long as wide, lateral margins subparallel, body widest at pereonites 1-4, narrowest at pereonite 7 (fig. 1A-C). Pereonite 1 not encompassing cephalon, pereonites 1 and 2 with prominent lateral lobes, pereonite 2 with similar flanged lobes formed from coxae. Posterior margins of pereonites 3-5 without median point. Coxae 2-7 anteroventral margins similar in size to posteroventral margins. Pleon wider than pereonite 7, posterior margin of pleotelson sinuate.

Male very much smaller than female, body 2.7-3.2 times as long as wide, rectangular in shape, lacking distinctive pereonal morphology of female. Pereonite 1 longest, with antero-lateral corners slightly produced. Pereonite 7 shortest, 2, 3 and 6 subequal in length, 4 slightly longer than 5. Pereonites 4-5 widest and subequal in width. All coxae visible dorsally, 2-4 more or less equal to pereonite, 5-7 shorter than corresponding pereonites (fig. 1D-F). Coxae of pereonite 7 with distinctly concave dorsal surface and lateral margins elevated into a ridge.

Remarks.— *Glossobius impressus*, first described by Say (1818) as *Cymothoa impressa*, was transferred to *Glossobius* by Bruce & Bowman (1989), who, however, expressed reservation about its generic position. *Glossobius impressus* is readily distinguished from the other Indian *Glossobius* species. *Glossobius auritus* differs from *G. impressus* in having a subparallel body, pereonites 1 and 2 without bulbous lateral lobes; pereopod 3 dactylus not longer or larger than the other dactyli. *Glossobius hemiramphi* most closely resembles *G. impressus* with the pleon wider than pereonite 7, and the posterior margin of the pleotelson sinuate. *Glossobius hemiramphi* differs from *G. impressus* by having an anteriorly pointed cephalon; pereonites 4 and 5 of approximately the same length instead of pereonite 4 being twice as long as pereonite 5; posteroventral angle of pereonite 7 not overlapping any other pleonites instead of overlapping pleonites 1 and 2.

Martin et al. (2015) observed the variation between the holotype and Australian specimens of *G. impressus* and noted that Australian specimens have a more slender subparallel body; less prominent lateral lobes on pereonites 1 and 2; a non-overlapping posterior margin of pereonite 7 on the pleon; pleotelson length, width and size similar to pleonites 2-5; when compared to the holotype specimen. The present Indian material is very similar to the description of the holotype as mentioned by Say (1818) and Bruce & Bowman (1989).

Glossobius impressus is a parasite of fish of the family Exocoetidae (Bruce & Bowman, 1989; Martin et al., 2015). The known hosts include six species of Exocoetidae, namely, the spotfin flyingfish *Cheilopogon furcatus* (Mitchill, 1815) (cf. Avdeev, 1982), the bandwing flying fish *Cheilopogon exsiliens* (Linnaeus, 1771), *Cypselurus* sp. (Avdeev, 1982), *Exocoetus* sp. (Avdeev, 1982; Luque et al., 2013), the mirrorwing flyingfish *Hirundichthys speculiger* (Valenciennes, 1847) (Avdeev, 1982; Bruce & Bowman, 1989; Kensley & Schotte, 1989), the

fourwing flyingfish *Hirundichthys affinis* (Gunther, 1866) (Bruce & Bowman, 1989; Williams & Williams, 2000). The present Indian material originates from the Coromandel flyingfish *Hirundichthys coromandelensis* (Hornell, 1923).

Coincidentally, the species *G. impressus* was collected from (i.e., from the stomachs of?) the swordfish *Xiphias gladius* (Linnaeus, 1758) (cf. Trilles, 1972), the yellowfin tuna *Thunnus albacares* (Bonnatere, 1788) (cf. Bruce & Bowman, 1989), *Coryphaena* sp. (Avdeev, 1982) and *Sphyræna* sp. (Avdeev, 1982), which are all known to have exocoetid fishes as a part of their diet, according to Bruce & Bowman (1989).

Bruce & Bowman (1989) and Williams & Williams (2000) stated that the species *G. impressus* has been known to occur in tropical oceans: Brazil (Schiodte & Meinert, 1883; Kensley & Schotte, 1989; Luque et al., 2013); Cape Verde (Cunningham, 1871); Makassar Strait (Nierstrasz, 1915), New Caledonia (Trilles, 1972); the Caribbean (Kensley & Schotte, 1989; Williams & Williams, 2000); Senegal (Kensley & Schotte, 1989); and also subtropical waters: Cape May, New Jersey (Say, 1818); the Gulf Stream, Florida (Dana, 1853, Schiodte & Meinert, 1883). Later, Martin et al. (2015) reported specimens from New South Wales and southern Africa, indicating that the species can occur in warm-temperate waters. The current material was collected from the southeastern coast of India, which is situated in the tropics.

A key to the species of *Glossobius* reported from India is given below, based on Bruce & Bowman (1989) and Martin et al. (2015).

KEY TO THE SPECIES OF *GLOSSOBIUS* KNOWN FROM INDIA

1. Coxae 2-3 posteroventral angles with weakly produced points; pereonite 1 with large bulbous lateral lobe; occurring on Exocoetidae 2
 - Coxae 2-3 posteroventral angles not produced; pereonite 1 without bulbous lobe; occurring on Hemiramphidae *G. hemiramphi*
2. Body subparallel; pereonites 1 and 2 with large bulbous lateral lobe; pereopod 3 dactylus larger and longer than other dactyli *G. impressus*
 - Body sub-rhomboid; pereonites 1 and 2 without bulbous lateral lobe; pereopod 3 dactylus not longer or larger than other dactyli *G. auritus*

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