A new genus and species of Heteromysini (Crustacea-Mysidacea) from the backwater of Kochi (Kerala, India)

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(Accepted 3 May 2007)

Abstract

*Kochimysis pillaii*, a new genus and species of Heteromysini collected from the backwater of Kochi, is described. The new genus is closely related to the genus *Deltamysis* but is distinguishable from the latter by the following characters: antennules of male have a small setiferous lobe; antennal scale is without distal suture; second segment of mandibular palp broad; endopodite segments of maxilla subequal in length; in male carpus and propodus of second thoracic endopod with notches on outer margin; outer pair of apical spines on telson longer than the inner pair.

Keywords: Kochi backwater, Kochimysis, Mysida, new genus, taxonomy

Introduction

The Kochi backwater is part of a long chain of lakes and canals, parallel to the coast, extending between 9°40′12″ and 10°10′46″N and 76°09′52″ and 76°23′57″E. The total area of the backwater is about 157 km² with depth ranging from 2 to 8 m. A large number of rivers discharge into it and it opens into the Arabian Sea through one major and several minor inlets. The water is saline (5–32 psu) during the dry season and almost fresh water during the monsoon (May to October). The salinity gradient in the Kochi backwater supports diverse species of flora and fauna depending on their capacity to tolerate oligohaline, mesohaline, or marine conditions. The material examined was collected as part of the studies on “Ecosystem modelling of Cochin backwaters” during 2003–2004. Although there has been continuous sampling for zooplankton in the estuary, *Kochimysis* was collected in March and April 2003 and March 2004 only. The material was collected with a W.P. net (Working Party net; mesh size 200 μm, mouth area 0.6 m²) from the surface and occurred at one station only (Figure 1). The salinity and temperature ranged from 25.02 to 32.47 psu and 30.0 to 32.5°C, respectively. Type specimens are deposited in the reference collection of the Indian Ocean Biological Center (IOBC), National Institute of Oceanography, Regional Center, Kochi.
Genus Kochimysis gen. nov.

Diagnosis
General form small and slender. Carapace broadly triangular in front. Eyes normal. Male lobe of antennule reduced to small setiferous lobe; antennal scale oval with rounded apex, setose all round, distal articulation absent. Second segment of mandibular palp broad; lacinia mobilis and molar processes well developed. Labrum rounded in front without any spines. Maxilla with segments of endopod subequal in length, second segment oval. Second thoracic limb with carpus and propodus segments in female simple, in male with notches on outer margin; third thoracic endopod not stouter; remaining endopods with carpus and propodus fused and divided into number of subsegments; pleopods rudimentary in both sexes; telson entire, apex with two pairs of spines, outer pair longer than inner. Uropods without spines. Females with marsupium formed of two pairs of lamellae.
Type species. *Kochimysis pillaii*.

**Etymology**

The genus is named after the locality, Kochi.

**Remarks**

According to the emended diagnosis of the tribe Heteromysini by Bowman and Orsi (1992), the diagnostic characters of the tribe are as follows: the male lobe of antennules usually reduced, antennal scale setose all round, carpus and propodus of thoracic limbs 4–8 fused and divided into subsegments, all pleopods rudimentary in both sexes, telson with or without apical cleft, and third thoracic endopod sometimes enlarged and robust. The new genus *Kochimysis* clearly belongs to the tribe Heteromysini based on these characters. The tribe at present contains 10 genera. In all the genera except *Deltamysis* Bowman and Orsi 1992, some species of *Pseudomysidetes* Tattersall, 1936, and *Heteromysoides* Bacescu, 1968, the telson has an apical cleft. The new genus shows similarities to *Deltamysis* in the form and armature of the telson. However, the two genera are distinguished as follows: (1) in the new genus a small rounded setiferous male lobe is present on the third segment of the antennule, whereas in *Deltamysis* the lobe is not developed and the brush of setae are inserted directly on the ventral surface; (2) in the new genus the antennal scale does not have a distal articulation, whereas in *Deltamysis* the antennal scale has a transverse suture; (3) in the new genus both the mandibles have a *lacinia mobilis* and the second segment of the mandibular palp is broad. In *Deltamysis* the right mandible has no *lacinia mobilis* and the second segment of the mandibular palp is narrow; (4) in the new genus the endopodite segments of the maxilla are subequal in length and the distal segment is ovate. In *Deltamysis* the proximal segment is less than one-quarter of the distal segment and the latter is elongate and quadrangular.

*Kochimysis pillaii* sp. nov.

(Figures 2–5)

**Material**

Holotype: IOBC-0507-10-50-2006, adult male, 3.5 mm. Allotype: IOBC-0507 A-10-50-2006, female with embryos, 3.3 mm.

*Other material.* Two adult males, one adult female, two immature males, two immature females, and two juveniles.

**Description**

Body short and smooth. Anterior margin of carapace broadly triangular, rostrum inconspicuous, antero-lateral corners rounded, posterior margin emarginate leaving last three thoracic somites dorsally exposed (Figure 2A). In female frontal border of carapace scarcely produced (Figure 2B). Eyes well developed, closely set together, globular; eyestalks short and thick, cornea narrower than stalk. Antennular peduncle short and stout, first segment longer than distal segment, outer distal corner with finger-like lobe bearing two
Figure 2. *Kochimysis pillai* sp. nov. (male, unless otherwise specified). (A) Anterior end of adult; (B) anterior end of adult female; (C) antennule; (D) antennule, ventral view; (E) antennule of female; (F) antenna; (G) antenna of female.
Figure 3. Kochimysis pillai sp. nov. (male). (A) Mandibular palp; (B) mandibles; (C) labrum; (D) maxillule; (E) maxilla; (F) first thoracic endopod; (G) second thoracic endopod; (H) second thoracic endopod.
Figure 4. Kochimysis pillai sp. nov. (male). (A) Third thoracic endopod; (B) fourth thoracic limb; (C) fifth thoracic endopod; (D) eighth thoracic limb.
Figure 5. *Kochimysis pillai* sp. nov. (male, unless otherwise specified). (A) First pleopod; (B) third pleopod; (C) fifth pleopod; (D) second pleopod of female; (E) fifth pleopod of female; (F) posterior end; (G) uropod; (H) telson; (I) distal part of telson.
setae, second segment short with one stout plumose seta on inner distal corner; third segment with three setae on inner distal angle and one seta on inner margin, male lobe small, rounded and hirsute (Figure 2C, D). Antennule of female as in male except for absence of male lobe (Figure 2E).

Antennal scale oval, 3.5 times as long as broad, setose all round, shorter than antennular peduncle, distal suture absent; antennal peduncle longer than scale, three-segmented, second and third segments long and subequal in length; antennal sympod with finger-like process between peduncle and scale (Figure 2F, G).

Labrum with rounded anterior margin, posterior border bilobed (Figure 3C). Mandibles with well-developed *lacinia mobilis*, incisor, and molar processes; spine row of left with four strong spines and right with three spines (Figure 3B); palp three-segmented, first segment short, second segment broad and elongate bearing two setae on outer distal corner, third segment half length of second with oblique distal margin armed with row of pectinate setae and one long terminal seta (Figure 3A). Inner lobe of maxillule with three long and six short plumose setae, outer lobe distally armed with 10 spines and three subterminal setae (Figure 3D). Maxilla with large basal lobe, distal lobe deeply bifid, second segment of endopod oval, segments subequal in length; exopod with three setae at apex (Figure 3E).

First thoracic appendage with exopod and epipod; basis of endopod with prominent gnathobasic lobe, ischium and merus moderately produced inwards, all segments with setae on inner margin, dactylus with nail and group of pectinate setae (Figure 3F). Second thoracic endopod with carpus and propodus with notched outer margin (Figure 3G); in female carpus and propodus simple (Figure 3H); basis produced inwards; dactylus with group of pectinate setae, nail absent. Third and fourth thoracic endopods (Figure 4A, B) with carpopropodus divided into three subsegments; remaining endopods (Figure 4C, D) becoming longer posteriorly, carpopropodus divided into four subsegments; dactylus ending in two small setae. Basal segment of exopod rounded, flagelliform part nine segmented. In male eighth thoracic limb with small tubular genital organ (Figure 4D).

Pleopods in both sexes uniramous, reduced to unsegmented setose plates, becoming longer posteriorly (Figure 5A–E).

Uropods broad, longer than telson (Figure 5F), both rami oval, setose all round and without spines (Figure 5G), exopod longer than endopod.

Telson entire, longer than last abdominal segment, slightly longer than broad at base, lateral margins nearly straight, distal third armed with six progressively longer spines, apex broadly rounded with two pairs of spines, outer pair almost three times as long as inner pair (Figure 5H, I).

**Etymology**

This species is named after Dr N. Krishna Pillai in recognition of his valuable contributions to knowledge of Mysidacea of the Indian waters.

**Remarks**

This species resembles *Deltamysis holmquistae*, Bowman and Orsi, 1992, the monotype of the genus, in the form and armature of the telson, and the morphological differences are as stated in the remarks of the genus. Other differences observed are: (1) in *K. pillaii* the cornea of the eye is narrower than the eyestalks, whereas in *D. holmquistae* the cornea is as wide as the stalk; (2) in *K. pillaii* the antennal peduncle is much longer than the antennal
scale and the distal two segments of the peduncle are subequal in length. In *D. holmquistae* the antennal peduncle is only as long as the scale and the third segment is longer than the second segment; (3) in *K. pillaii* the spine row of the mandible consists of three to four spines as against eight in *D. holmquistae*; (4) in *K. pillaii* the outer pair of apical spines of the telson are nearly three times as long as the inner pair, whereas in *D. holmquistae* the outer spines are only less than twice as long as the inner pair. The male of this species can be easily distinguished by the presence of notches on the second thoracic endopod.

**Acknowledgements**

The authors are grateful to the Director, NIO, Goa and SIC, RC, Kochi for providing necessary facilities and encouragement. We are also grateful to the Director, ICMAM-PD, Chennai for the financial support. This is NIO contribution no. 4252.

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