

# Mysidae (Crustacea: Mysidacea) collected from the western Arabian Gulf

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**Abstract:** Six species belonging to five genera of Mysidae from the western Arabian Gulf are reported. These are *Siriella brevicaudata* Paulson, 1875, *S. hanseni* W. M. Tattersall, 1922, *Gastrosaccus kempfi* W. M. Tattersall, 1922, *Haplostylus parerythraeus* (Nouvel, 1944), *Indomysis annandalei* W. M. Tattersall, 1914, and *Heteromysis proxima* W. M. Tattersall, 1922. All the species are first records for the Arabian Gulf region. *Indomysis annandalei* and *H. proxima* are only the second records for the species. Both were previously described from India.

**Key words:** Mysidae, Crustacea, taxonomy, zoogeography, Arabian Gulf

## Introduction

The mysid fauna of the Arabian Gulf region is little known to date. Recent surveys in Tarut Bay (Fig. 1) on the western side of the gulf by the King Fahd University of Petroleum and Minerals collected specimens representing six mysid species by a diver operated scoop. This paper provides information on species represented in the samples.

### *Siriella brevicaudata* Paulson, 1875 (Fig. 2A)

*Siriella brevicaudata* Paulson, 1875a, p. 123–124; 1875b, p. 30.—W. M. Tattersall, 1922, p. 450–453; 1927, p. 187–188.—Coifmann, 1937, p. 19–20.—Pillai, 1965, p. 1691.—Băcescu, 1973, p. 645.—Almeida Prado-Por, 1980, p. 189.  
*Siriellerythropros gibbosa* Ledoyer, 1970, p. 223–235.

### Material

Stn 2, 1 adult female (posterior half) and 1 immature female (ca. 4 mm), among seagrass, 11 June 1984; Stn 2, 2 adult females (both separated into two parts) and 1 immature female (3.5 mm), among seagrass, 22 Aug. 1984; Stn 3, 1 immature female (4.5 mm), among seagrass, 6 May 1985; Stn 4, 2 adult females (4.9, 5.4 mm), 1 immature female (3.5 mm), 1 adult male (ca. 5 mm) and 1 male (head), among seagrass, 6 May 1985; Stn 6, 1 immature female (ca. 3 mm), among seagrass, 2 June 1984; Stn 6, 2 adult males (one ca. 4 mm, the other separated into two parts), 21 Aug. 1984.

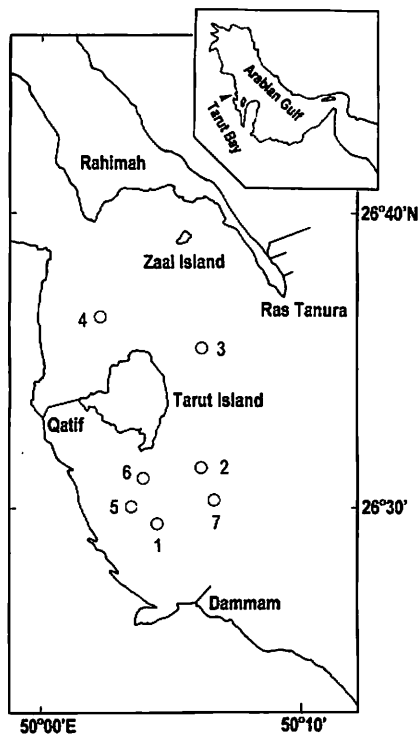


Fig. 1. Sampling stations in Tarut Bay, Saudi Arabia.

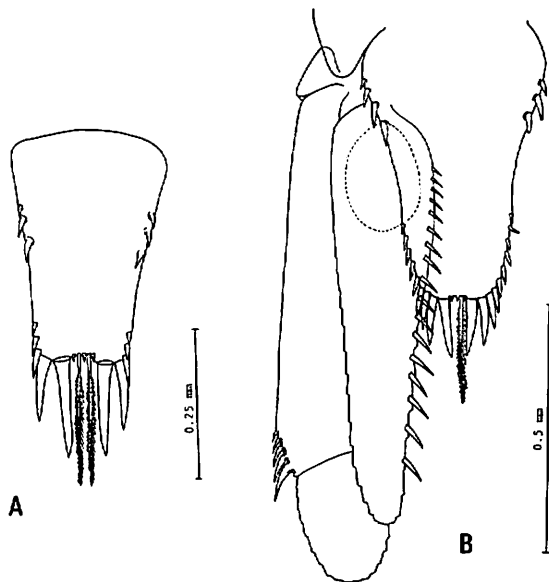


Fig. 2. A. *Siriella brevicaudata* Paulson, telson. B. *Siriella hanseni* W. M. Tattersall, uropod and telson.

#### Remarks

*Siriella brevicaudata* is easily distinguished by the shape and armature of the telson which is unique within this large genus (Fig. 2A).

#### Occurrence

This species has hitherto been recorded from the Red Sea (Paulson 1875a, b; W. M. Tattersall 1927; Băcescu 1973), the Gulf of Aqaba (Almeida Prado-Por 1980), the Suez Canal (W. M. Tattersall 1927), the Gulf of Mannar, India (W. M. Tattersall 1922) and Madagascar (as *Siriellerythropros gibbosa*, Ledoyer 1970).

#### ***Siriella hanseni* W. M. Tattersall, 1922 (Fig. 2B)**

*Siriella hanseni* W. M. Tattersall, 1922, p. 448–450.—O. S. Tattersall, 1960, p. 167.—Ii, 1964, p. 577–578.—Pillai, 1965, p. 1689–1691.

#### Material

Stn 3, 1 adult male (damaged), among seagrass, 6 May 1985.

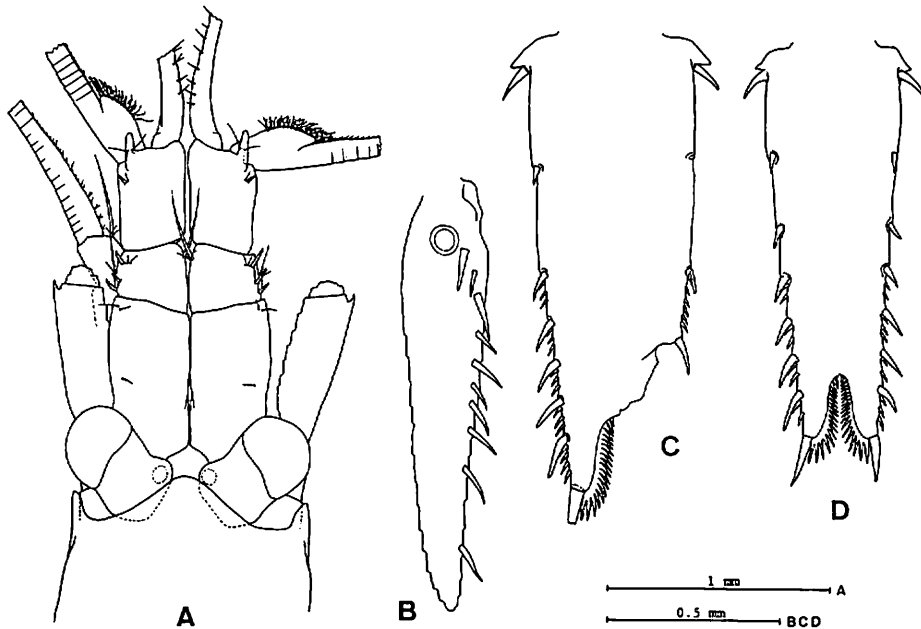


Fig. 3. *Gastrosaccus kempii* W. M. Tattersall. A. Anterior end of adult female. B. Endopod of uropod. C. Telson of the largest female. D. Telson of the second largest female.

#### Remarks

Only one male specimen was collected in the present survey. It is badly damaged but the telson and uropod are in relatively good condition. These resemble those in the illustration drawn by W. M. Tattersall (1922, text-fig. 2), but there are some minor differences, probably based on geographical variability, as follows: (1) the apical margin of the telson in the present specimen is more broadly rounded than in type specimens; (2) the longest spine on the apical margin of the telson is nearly 0.2 as long as the telson in the present specimen compared to about 0.13 in type specimens; (3) in the present specimen the lateral margin of the telson has a longer intermediate naked part and is armed with a distal series of spines confined to the distal third, while in the type specimens the naked part is shorter and the distal series of spines is approximately confined to the distal half; (4) the endopod of the uropod is armed with about 17 spines in the present specimen compared to 10 in type specimens; (5) the proximal segment of the exopod of the uropod in the present specimen is 3 times longer than the distal segment and armed with 5 spines, while it is twice as long and armed with 3 spines in type specimens.

#### Occurrence

The present occurrence from the Arabian Gulf is the third record for the species, preceded only by records from the Gulf of Mannar (W. M. Tattersall 1922) and the Singapore Strait (O. S. Tattersall 1960). The geographical range of the species is extended considerably westwards.

***Gastrosaccus kemp* W. M. Tattersall, 1922 (Fig. 3)**

*Gastrosaccus kemp* W. M. Tattersall, 1922, p. 460–461.—Pillai, 1957, p. 8–9; 1961, p. 22–23; 1965, p. 1698.—Shyamasundari, 1973, p. 395–396.  
*Gastrosaccus gordonae* O. S. Tattersall, 1952, p. 166–170.

**Material**

Stn 3, 1 immature female (6.6 mm) and 1 immature male (4.5 mm), above sandy/muddy bottom, 19 Nov. 1984; Stn 4, 1 juvenile female (3.1 mm) and 1 juvenile male (3.6 mm), above sandy/muddy bottom, 6 May 1985; Stn 7, 1 gravid female (9.3 mm) and 1 adult female (8.2 mm), 8 Apr. 1985; Stn 7, 1 male (head), among seagrass, 12 May 1985.

**Remarks**

No adult males were collected in the present surveys, so that the identification was based primarily on the characters of the telson.

The telson (Fig. 3C) of the largest specimen (9.3 mm) is armed with small spines lying between large spines in the distal half of the lateral margin. This kind of telson has been reported in five *Gastrosaccus* species, *G. bispinosa* Wooldridge, 1978, *G. brevifissura* O. S. Tattersall, 1952, *G. kemp* W. M. Tattersall, 1922, *G. longifissura* Wooldridge, 1978 and *G. msangi* Băcescu, 1975, all from the coastal waters of the Indian Ocean. The telson of this specimen most closely resembles that of *G. kemp* in that the small spines occur in five areas between the third and eighth (terminal) lateral spines, and because of the absence of a pair of strong spines on the dorsal surface on both sides of the apical cleft. However, there are slight differences from the original description by W. M. Tattersall (1922) with respect to the telson and uropod as follows: (1) the third lateral spine of the telson is situated at about the middle of the margin in the largest specimen collected, while it is situated slightly before the middle of the margin in the type specimens; (2) the number of small lateral spines are fewer in the present specimen; (3) the endopod of the uropod is armed with 10 spines in the present specimen (Fig. 3B) compared to 14 in the type specimens.

The second largest specimen (8.2 mm) examined here differs somewhat from the largest one in the shape and armature of the telson (Fig. 3D), i.e. the telson is more slender and the smaller spines occur in the four areas between the distal five large lateral spines. These smaller spines are also fewer in number. The telson as drawn by Pillai (1961) and Shyamasundari (1973) differs from that of the type specimens and also from the largest specimen examined here, but allied to that of the second largest specimen because of the presence of small spines in the distal four spaces. There may be variations in the shape and armature of the telson in this species.

Pillai (1961) suggested that *Gastrosaccus gordonae* O. S. Tattersall, 1952, may be a synonym of *G. kemp* and this supposition was supported by Băcescu (1975).

**Occurrence**

*Gastrosaccus kemp* has been recorded from Orissa, India (W. M. Tattersall 1922; Pillai 1957; Shyamasundari 1973), Kerala, India (Pillai 1961) and South Africa (as *G. gordonae*, O. S. Tattersall 1952). The present occurrence in the Arabian Gulf is a new record.

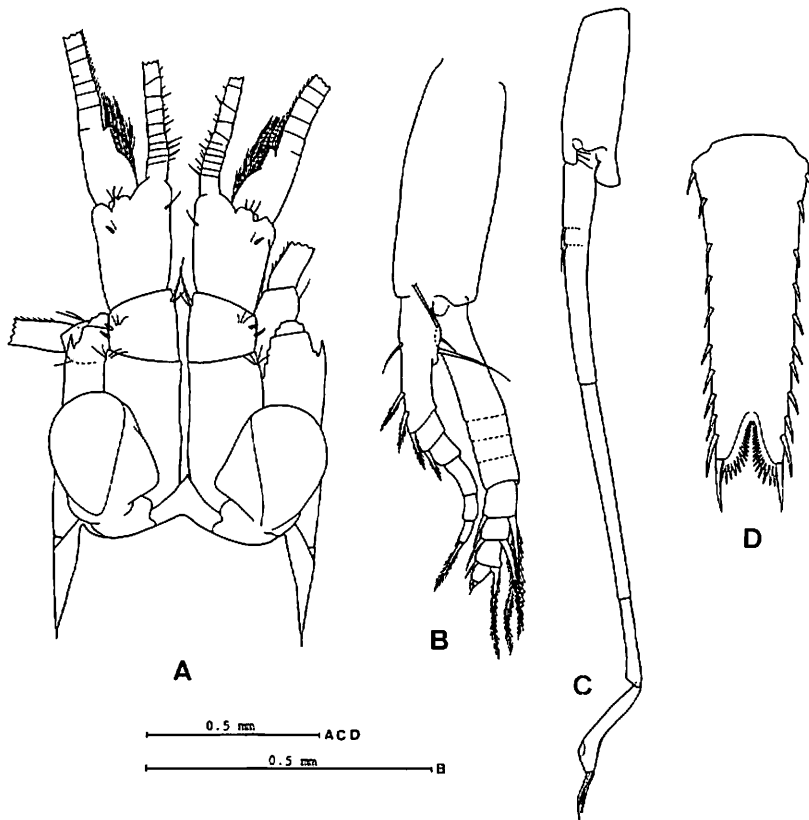


Fig. 4. *Haplostylus parerythraeus* Nouvel. A. Anterior end of adult male. B. Second pleopod of male. C. Third pleopod of male. D. Telson.

***Haplostylus parerythraeus* (Nouvel, 1944) (Fig. 4)**

*Gastrosaccus parerythraeus* Nouvel, 1944, p. 268–269; 1959, p. 229–233.

*Haplostylus parerythraeus*, Băcescu, 1975, p. 44–45.

**Material**

Stn 2, 1 adult male (7.2 mm), above sandy/muddy bottom, 18 Nov. 1984; Stn 3, 1 adult male (6.4 mm), among seagrass, 19 Nov. 1984; Stn 3, 1 immature female (4.6 mm), among seagrass, 17 Nov. 1985; Stn 5, 1 adult female (7.3 mm), 21 Apr. 1984; Stn 6, 1 adult female (5.8 mm), among seagrass, 2 June 1984; Stn 6, 1 adult female (separated into two parts), among seagrass, 12 May 1985.

**Remarks**

The present specimens conform to the description of *H. parerythraeus* with respect to: the lack of reflected lobes on the posterior margin of the carapace, the number and position of spinules on the second segment of the antennular peduncle (Fig. 4A), the endopod of the second male pleopod is shorter than the exopod (Fig. 4B), the exopod of the third male pleopod has a bent distal segment terminating in 2 setae being subequal in length (Fig. 4C), and the 2

distal spines on the lateral margin of the telson are almost equal in length (Fig. 4D).

Some variations, however, are found between the present specimens and the description and figures given by Nouvel (1944, 1959): (1) the anterior margin of the carapace leaves the eyestalks completely exposed in the present specimens (Fig. 4A), whereas it covers the basal part of the eyestalks in Nouvel's specimens; (2) the exopod of the second male pleopod is 8-segmented (the proximal 4 are incompletely segmented) and armed with a seta and a spine on each of the fifth to seventh segments in the present specimens (Fig. 4B), while it is 9-segmented and the seta and spine are present on the sixth to eighth segments in Nouvel's specimens; (3) the endopod of the second male pleopod is armed with 3, 1 and 1 strong setae on the first, second and third segments, respectively, and not armed with a spine on the penultimate segment (Fig. 4B), while it is armed with 1, 1, and 1 strong setae and 1 small spine on corresponding segments in Nouvel's specimens; (4) the number of lateral spines on the telson is 10 in the present specimens (Fig. 4D) as compared to 8 in Nouvel's specimens. These differences seem to fall within the realm of intraspecific variations based on geographic differences.

#### Occurrence

This species is known from the Bay of Aqaba and Tadjoura, Djibouti (Nouvel 1944, 1959), and the Tanzanian coast (Băcescu 1975). This is the first record for the species from the Arabian Gulf.

### ***Indomysis annandalei* W. M. Tattersall, 1914 (Fig. 5)**

*Indomysis annandalei* W. M. Tattersall, 1914, p. 78–80.—Pillai, 1965, p. 1720.

#### Material

Stn 2, 2 juveniles (2.2, 2.1 mm), above sandy/muddy bottom, 10 Nov. 1986; Stn 3, 1 adult male (5.2 mm), 8 Jan. 1986.

#### Remarks

The present specimens correspond to *Indomysis annandalei* W. M. Tattersall, 1914, previously recorded from a brackish water creek near Bombay, with respect to: the frontal margin of the carapace not having any rostral projection (Fig. 5A), the shapes of the thoracic endopods (Fig. 5B–D) and male pleopods (Fig. 5F, G), and the general form of the telson (Fig. 5H). The present adult male, however, is somewhat different from the Indian specimens regarding several points, although these seem to be within the ambit of geographic variations: (1) the cornea of the eye is larger in the present adult specimen (Fig. 5A); (2) the antennal scale has a distal suture in the present specimen (Fig. 5A) that is not present in the Indian specimens; (3) the endopod of the uropod is armed with one spine on the inner margin near the statocyst in the present specimen (Fig. 5H), whereas it is unarmed in the Indian specimens; (4) in the present specimen the posterior margin of the telson is narrower and armed with a more irregular arrangement of larger and smaller spines (Fig. 5H); (5) the lateral margin of the telson is armed with somewhat fewer and more slender spines in the present specimen (Fig. 5H); (6) W. M. Tattersall (1914) recognized an articulation at the proximal fourth point of the exopod of the fourth male pleopod; in the present specimen the articulation is not

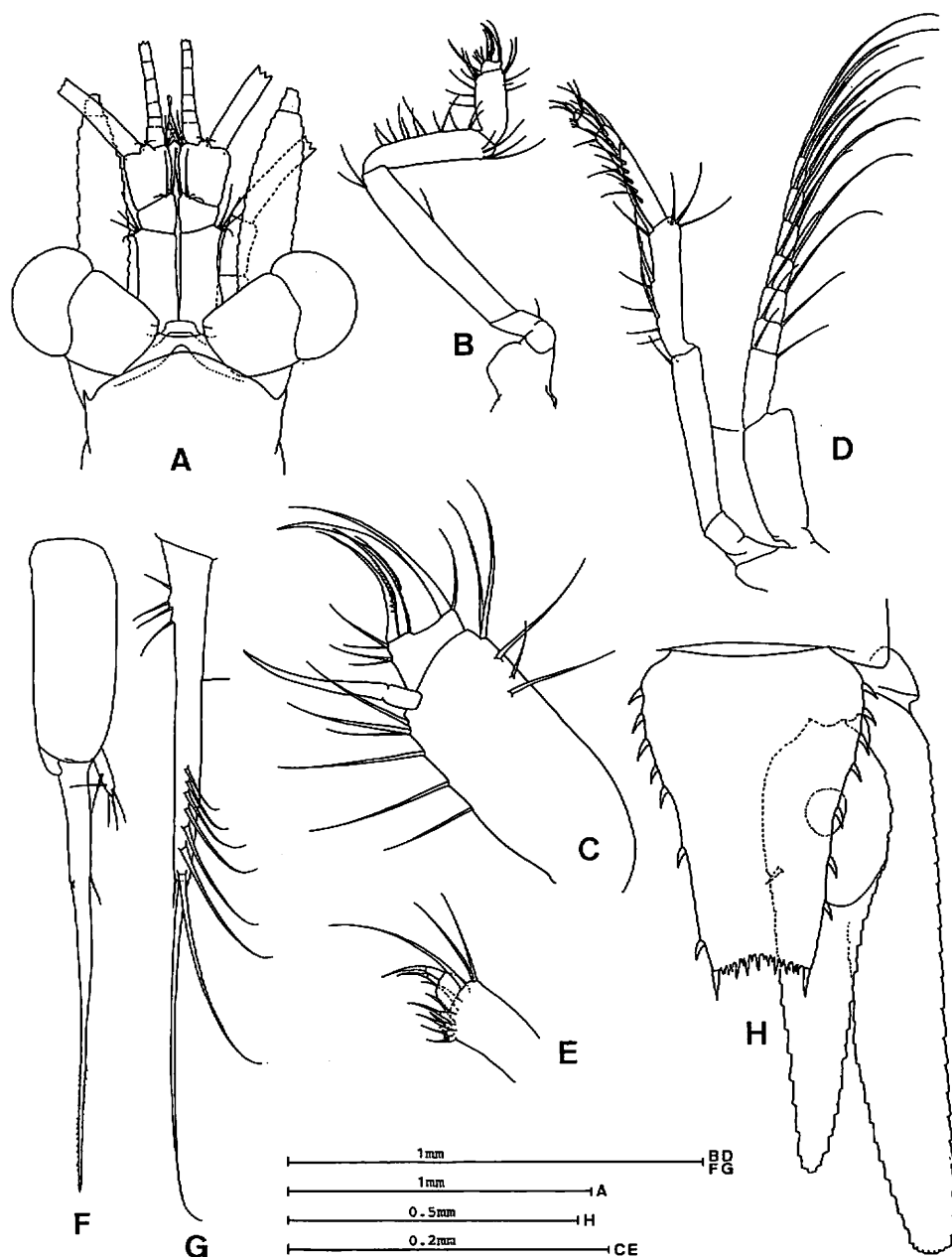


Fig. 5. *Indomysis annandalei* W. M. Tattersall. A. Anterior end of adult male. B. Seventh thoracic endopod. C. Extremity of seventh thoracic endopod. D. Eighth thoracic endopod. E. Extremity of eighth thoracic endopod. F. Fourth pleopod of male. G. Fifth pleopod of male. H. Uropod and telson.

observed at the corresponding position; however, there is a short seta and a small spine at this location in the present specimen (Fig. 5F); (7) the number of setae on the distal part of the fifth male pleopod is 9 in the present specimen (Fig. 5G) compared to 6 in the Indian specimens.

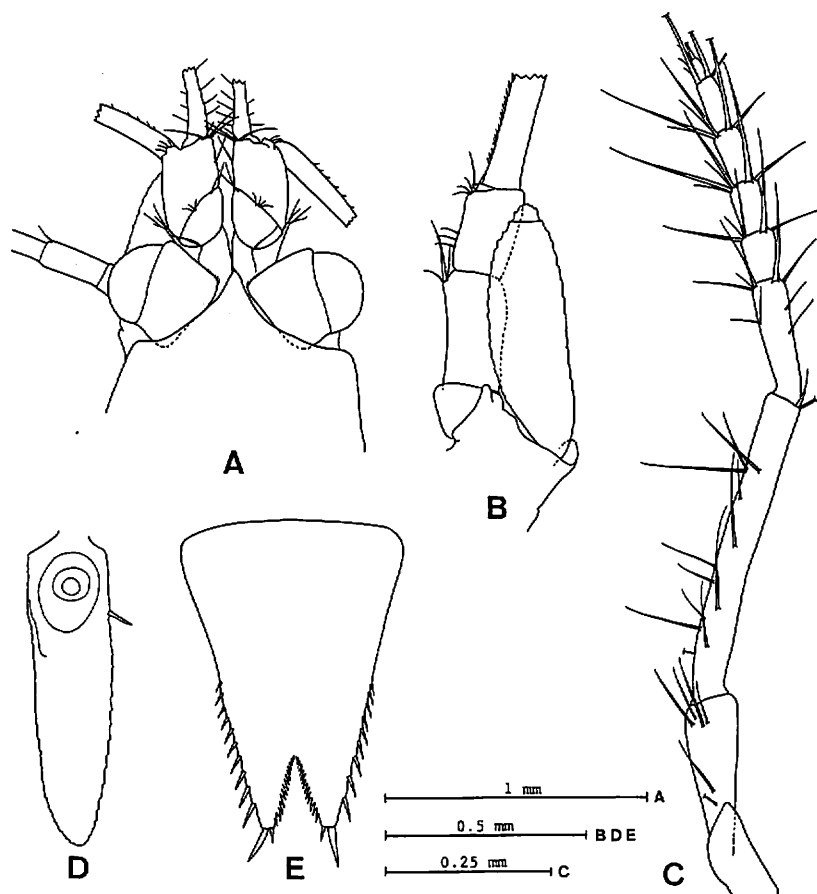


Fig. 6. *Heteromysis proxima* W. M. Tattersall. A. Anterior end of adult female. B. Antenna. C. Endopod of one of posterior thoracic limbs. D. Uropod. E. Telson.

#### Occurrence

The occurrence of *I. annandalei* in the Arabian Gulf is the second record since W. M. Tattersall (1914) established the species, and extends the distribution range considerably westward.

#### ***Heteromysis proxima* W. M. Tattersall, 1922 (Fig. 6)**

*Heteromysis proxima* W. M. Tattersall, 1922, p. 496–499.—Pillai, 1965, p. 1726.

#### Material

Stn 1, 1 adult female (5.5 mm), among seagrass, 5 Feb. 1985; Stn 6, 2 females (one only head, the other separated into two parts) and 1 immature male (4.3 mm), 21 Aug. 1984.



## Remarks

The present specimens correspond to descriptions of *Heteromysis proxima* with respect to the following: (1) the endopods of the posterior 4 thoracic limbs have a 5-segmented carpopropodus (Fig. 6C); (2) the eyestalk is wider than the cornea and its anterior distal edge is rounded (Fig. 6A); (3) the antennal scale is almost as long as the antennal peduncle (Fig. 6B); (4) the endopod of the uropod is furnished with a single spine in the region of the statocyst (Fig. 6D); (5) the telson is 1.5 times as long as broad at the base and is furnished with spines on the distal half of the lateral margin (Fig. 6E); (6) the telson sinus is 1/4 as long as the telson and armed with spines along its entire margin (Fig. 6E).

The present specimens also resemble the description of *H. digitata* W. M. Tattersall, 1927, recorded from the Suez Canal with respect to the telson, antenna and rostrum, but differ from the latter species having the following characters: the eyestalk has the anterior distal edge forming a prominent rim overhanging the cornea, the carpopropodus of the endopods of the posterior 5 thoracic limbs is 6-subsegmented, and the endopod of the uropod is not armed with spines.

## Occurrence

This record of *H. proxima* is only the second since the species was first recorded by W. M. Tattersall (1922) from the Gulf of Mannar, India.

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## Literature Cited

- Almeida Prado-Por, M. S. 1980. Mysidacea from the Gulf of Elat (Gulf of Aqaba). *Israel J. Zool.* **29**: 188–191.
- Băcescu, M. 1973. Contribution à la connaissance des Mysidés benthiques de la mer Rouge. *Rapp. Comm. int. Mer Médit.* **21**: 643–646.
- Băcescu, M. 1975. Contributions to the knowledge of the mysid (Crustacea) from the Tanzanian waters. *University Science Journal (Dar. Univ.)* **1**: 39–61.
- Coifmann, I. 1937. I misidacei del Mar Rosso: Studio del materiale raccolto dal Prof. L. Sanzo durante la campagna idrografica della R. Nave Ammiraglio Magnaghi (1923–24). *R. Comitato Talassografico Ital., Mem.* **233**: 1–52, Tav. 1–25.
- Ii, N. 1964. *Fauna Japonica, Mysidae (Crustacea)*. Biogeographical Society of Japan, Tokyo, 610 pp.
- Ledoyer, M. 1970. Mysidacés des Herbiers de Phanérogames marines de Tulear (Madagascar) étude systématique et écologique. *Rec. Trav. Sta. Mar. Endoume, fasc. hors série suppl.* **10**: 223–227.
- Nouvel, H. 1944. Diagnoses de Mysidacés nouveaux de la mer Rouge et du Golfe d'Aden. *Bull. Soc. Hist. Nat. Toulouse* **79**: 255–269.
- Nouvel, H. 1959. Mysidacea. *Mission Robert Ph. Dollfus en Égypte (décembre 1927–mars 1929) S. S. «Al Sayed».* *Résultats scientifiques* 3<sup>e</sup> partie (23–34). *Memoire* **29**: 195–240.
- Paulson, O. 1875a. *Crustacea Mari Rubri, Pars I*. Kiev, 123–137. (Not seen.)
- Paulson, O. 1875b. Carcinological notes. *Zap. Obsch. Estestv. Kieff* **4**: 27–32. (Not seen.)
- Pillai, N. K. 1957. Pelagic Crustacea of Travancore. II. Schizopoda. *Bull. Centr. Res. Inst. Univ. Travancore* **5**: 1–28.

- Pillai, N. K. 1961. Additions to the Mysidacea of Kerala. *Bull. Centr. Res. Inst. Univ. Kerala* **8**: 15–35.
- Pillai, N. K. 1965. A review of the work on the shallow water Mysidacea of the Indian waters. *Proc. Symposium Crust.* **5**: 1681–1728.
- Shyamasundari, K. 1973. Mysidacea of Waltair coast. *Rivista Biol., Univ. Perugia* **66**: 389–406.
- Tattersall, O. S. 1952. Report on a small collection of Mysidacea from estuarine waters of South Africa. *Trans. R. Soc. S. Afr.* **33**: 153–187.
- Tattersall, O. S. 1960. Report on a small collection of Mysidacea from Singapore waters. *Proc. R. Soc. London* **135**: 165–181.
- Tattersall, W. M. 1914. Further records of Indian brackish water Mysidae with descriptions of a new genus and species. *Rec. Indian Mus.* **10**: 75–80, 2 pls.
- Tattersall, W. M. 1922. Indian Mysidacea. *Rec. Indian Mus.* **24**: 445–504.
- Tattersall, W. M. 1927. XI. Report on the Crustacea Mysidacea. In: Zoological results of the Cambridge Expedition to the Suez Canal, 1924. *Trans. Zool. Soc. London* **22**: 185–199.
- Wooldridge, T. 1978. Two new species of *Gastrosaccus* (Crustacea, Mysidacea) from sandy beaches in Transkei. *Ann. S. Afr. Mus.* **76**: 309–327.