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UNDER WATER OBSERVATIONS—ON A COLLECTION OF SHRIMPS FROM THE GULF OF MANNAR OFF TUTICORIN

By

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(With 1 Text-figure)

INTRODUCTION

While Scuba diving (by K. N. N. and S. M.) in connection with the under water survey of the pearl oyster and chank fishery in the Gulf of Mannar region off Tuticorin on the south east coast of India a few shrimps were collected. On detailed examination most of them were found to be new records from this region and opportunity is taken to report them here.

Material.—1 male 14 mm and 1 female 15 mm total length, collected from 15 m depth.

SYSTEMATIC ACCOUNT

Section CARIDEA

Subfamily *PONTONIINAE*

Periclimenes (Periclimenes) rex Kemp

1922. *Periclimenes (Periclimenes) rex* Kemp, *Rec. Indian Mus.*, **27**: 158.

1952. *Periclimenes (Periclimenes) rex*: Holthuis, *Siboga Expeditie*, **39a**: 9.

Material.—1 male 14 mm and 1 female 15 mm total length, collected from 15 m depth.

Distribution.—This species was originally described by Kemp (1922) from a single male specimen obtained from Port Blair, Andaman Islands. This is the first report of the species outside the type locality, extending its distribution considerably in the Bay of Bengal. One female specimen also being present

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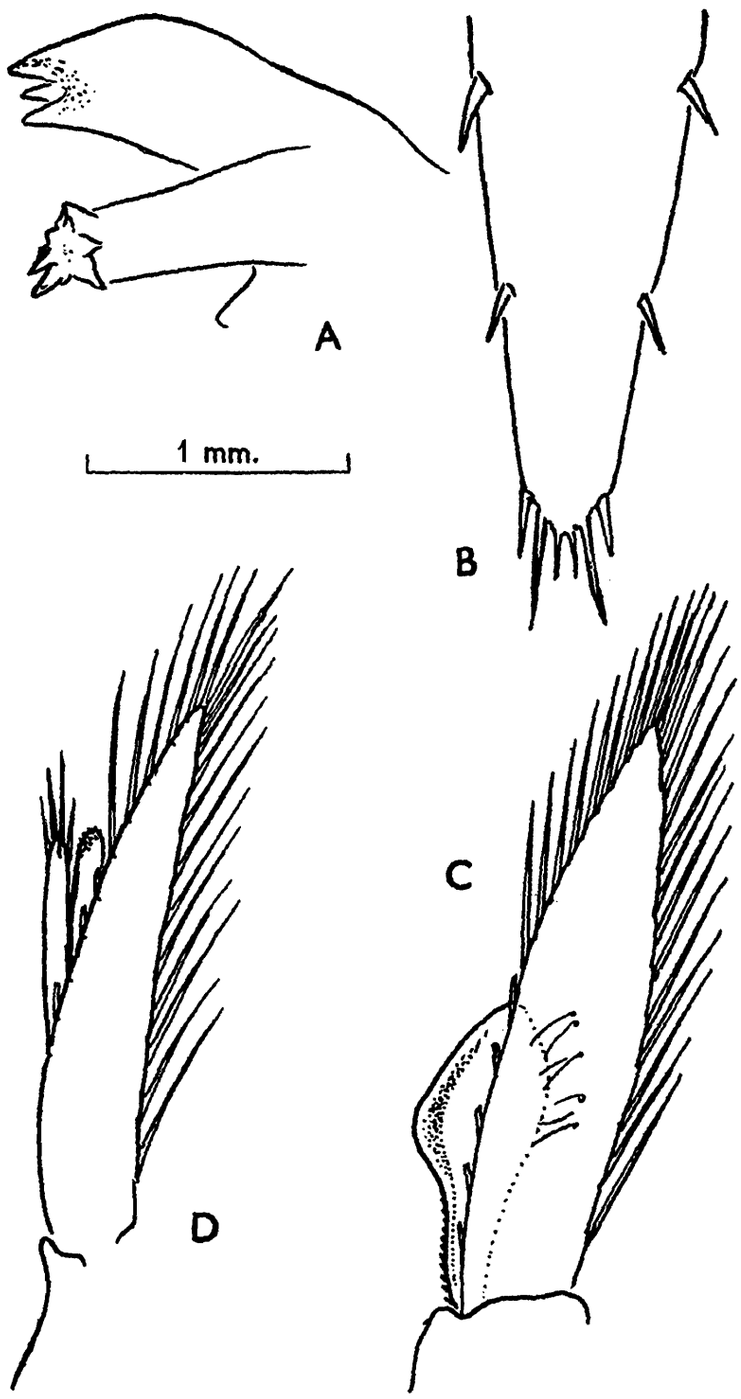
in the present collection, the female of the species is reported for the first time.

Description.—In most respects the specimens agree with the description given by Kemp (1922), but the female being newly reported a description of some of the important features may be given here.

The rostrum is typically deep in lateral view and the convex upper border only is dentate, bearing 24 small equi-



Text-fig. 1. *Periclimenes (Periclimenes) rex* Kemp ♀. A—mandible, B—telson, ♂ C—1st pleopod and D—2nd pleopod.

distant teeth like that of a saw. There is no tooth behind on the carapace separated from the rest of the rostral teeth. The strongly convex lower border is edentate. Supraorbital spine absent. Hepatic spine strong and placed on a slightly lower level than the antennal spine which is small.

The basal segment of the antennular peduncle broad and long. The 2nd and 3rd segments equal in size. The lobes at the distal external margins of the 1st and 2nd peduncular segments appear just as in the figure given by Kemp (1922). The mandible (fig. 1a) has no palp and the incissor process ends in 3 teeth. The third maxilliped and first pereopods are similar to that of the male. But the 2nd pereopods in the female are equal in length, both reaching beyond the antennal scale by half the length of the carpus and chela, instead of markedly unequal in male. The merus is about 2 times the length of the carpus which is conical and slightly longer than its greatest breadth. The chela is 1.25 times the length of the carapace and only 2 times the length of the merus. The palm is 2 times the length of the fingers. The teeth on the fingers similar to that of the male. In the 3rd to 5th pereopods the accessary dactylar spines are greatly reduced. The telson is typical with 3 pairs of spines at the tip (fig. 1b).

The 1st and 2nd pleopods of the male are shown in fig. 1c and d. The endopod of the 1st pleopod differs from that of *Periclimenes impar* and *P. indicus* in the absence of the distally directed tooth shown by Holthuis (1952). In the place of this tooth this species has a blunt protuberance which is quite regular unlike in *P. parvus*. The 2nd pleopod resembles that of *P. impar,* but the appendix masculina and interna are more or less of the same length.

The purple colour on the chelae of the anterior pereopods and the entire posterior pereopods (Kemp, 1922) is quite visible even after preservation for a long period. The bright red patches on the body fades to light brown on preservation.

Based on the occurrence of fragments of red sponge with white tips in the same haul as the shrimp was collected, Kemp suggested an association between the sponge and the shrimp. The present specimens were collected from a small, shallow rock pit, the edges of which were covered with seaweeds.

Subfamily *PALAEMONINAE*

Leander urocaridella Holth.

1915. *Urocaridella gracilis*: Borradaile, *Ann. Mag. nat. His.*, (8)**15**: 210.
1922. *Urocaridella gracilis:* Kemp., *Rec. Indian Mus.*, **8**: 122.
1950. *Leander urocaridella* Holthuis, *Siboga Expeditie*, **39a**: 28.
1955. *Leander urocaridella* Holthuis, *Zool. Verhand.*, No. 26: 45.

Material.—1 ovigerous female 32 mm, 2 females 34 mm and 28 mm and 4 males 27 mm, 28 mm, 30 mm and 31 mm in total lengths. Depth 13-21 m.

Distribution.—Borradaile (1915, 1917) originally described the species as *Urocaridella gracilis* in the family Pontoniinae from the Maldive Archipelago. Kemp (1922) followed him by reporting it from the Orissa coast and Andaman Islands. Holthuis (1950), obtaining a few specimens from Java Sea and nearby areas, included it in the Palaemoninae under the genus *Leander* giving the nom. nov. *Leander urocaridella*. The present report for the first time from the Gulf of Mannar region extends the distribution of the species down south on the east coast of India.

Remarks.—Although the specimens to hand mostly agree with the descriptions of Borradaile (1917) and Holthuis (1950) slight variations are noticed in certain features. Dorsally the rostrum bears only 6 teeth as against 8 teeth recorded by Holthuis (1950), 2 at the proximal region, 2 in the middle and 2 distally. The ventral margin of the rostrum has 8-9 teeth. The branchiostegal spine, which is shown as the hepatic spine by Borradaile, is strong and placed some distance behind the anterior margin of the carapace, but the tip does not reach beyond that margin. The third maxilliped reaches to the end of the 2nd segment of the antennular peduncle instead of that of the basal segment. Minor variations in the length of the pereopods also exist.

Light reddish speckling on the dorsal hump of the 3rd abdominal segment is conspicuous even after preservation. Browish red patches in the middle and tip of the rostrum, tips and base of the uropods and tip of telson are also seen.

Family RHYNCHOCINETIDAE

Rhynchocinetes durbanensis Gordon

1917. *Rhynchocinetes typus* Stebbing, *Ann. S. Afr. Mus.* **17**: 27 (non *R. typus* M. Edw.).

1936. *Rhynchocinetes durbanensis* Gordon, *Proc. Zool. Soc., London*: 83.

1950. *Rhynchocinetes durbanensis*: Barnard, *Ann. S. Afr. Mus.*, 38: 763.

Material.—2 ovigerous females 43 mm and 45 mm, 2 females 39 mm and 53 mm and 1 male 47 mm in total lengths. Depth 12-20 m.

Distribution.—The species is so far recorded only from Durban. This is the first record from outside the type locality and from Indian waters.

Remarks.—This speciees was first reported from Durban as *Rhynchocinetes typus* by Stebbing (1917). But later Gordon (1936) examined one of the specimens described by Stebbing present in the British Museum collection and found several differences from the type species. Based on these differences she suggested a nom. nov., *Rhynchocinetes durbanensis* for the species. By recording it again from Durban, Barnard (1950) confirmed this view.

The only species of the genus recorded from Indian waters is *Rhynchocinetes hendersoni* by Kemp (1925) from the Gulf of Mannar. The specimens recorded earlier as *Rhynchocinetes rugulosus* from Tuticorin by Henderson (1893) was later referred to *R. hendersoni* by Kemp. The 7 species of the genus so far recorded, including *Rhynchocinetes hiatti* described recently by Holthuis and Hayashi (1967) fall into two well-defined groups, one with 3 and the other with 2 teeth on the dorsal margin of the carapace behind the rostral articulation as pointed out by Kemp (1925), Gordon (1936) and Holthuis and Hayashi (1967). While *R. hendersoni* falls in the former group, *R. durbanensis* is included in the latter. Thus the present species can easily be distinguished from *R. hendersoni.*

The specimens on hand agree well with the descriptions of Gordon (1936) and Barnard (1950). Carapace possesses 2 post-rostral teeth, supraorbital, antennal and pterygostomian spines. Rostrum with 3 spaced teeth proximally and 7 distally on the upper margin and 15 teeth ventrally. Stylocerite not reaching to distal end of penultimate antennular segment, slightly shorter than the distal spine on the basal segment. Although Gordon (1936) recorded the first pereopods very unequal in a male specimen of 77 mm length, Barnard (1950) observed the first pair of legs equal in a male specimen of 75 mm length. In the present male specimen also the first

pereopods are equal and the thumb and finger agree well with Barnard's description. Abdomen strongly humped at third segment. First pleoped with appendix interna possessing coupling hooks. Second pleopod with appendix interna longer than appendix masculina. Colour bands converging on the hump of the third abdominal segment and on the lateral aspects of the carapace quite conspicuous.

Habit and habitats.—On the rocky sea bottom off Tuticorin this species is commonly seen in the crevices of calcrete rocky hollows and pits in depth range 12 to 25 metres. It is a very active free living form and inhabits the top portion of the deep crevices and moves deeper down and hide for safety in times of emergency. Several of them are found living in one pit, rarely less than 4. These tiny shrimps seem to live in perfect harmony in the company of Serranids, Balistids, *Scolopsia* sp., *Gaterin* sp. and eels which inhabit the same surroundings. They feed on the encrustations on the rocky surface and on the epifauna of crinoids, molluscan shells and polychaete tubes found in the same habitat. Animal remains which settle down or such of those small animals which stray inside the crevices from the seaweeds fringing the pits are also preyed upon by the animals. They appear always busy and restless, scrapping the rocky surface or shuffling across here and there within its domain. Collections were made with the help of a hand net designed for easy manipulation inside the narrow crevices.

Family ALPHEIDAE

Synalpheus stimpsoni (de Man)

1888. *Alpheus stimpsoni* de Man, *Arch. Naturgesh,* **53**(1): 513.

1909. *Synalpheus consobrinus*: de Man, *V. Ned. Dierk. Ver.,* **11**(2): 111.

1911. *Synalpheus consobrinus*: de Man, *Siboga Expeditie,* **39a** (2): 204.

1966. *Synalpheus stimpsoni* Banner, A. H. & Banner, D. M., *The Siam Society Monograph Series,* No. 3: 46.

Material.—1 male 24 mm total length collected from 15 m depth.

Distribution.—de Man's original specimen was collected from Amboina. Later the species was recorded from Torres Strait, Marshall and Gilbert Islands and from Singapore. This

is the first record of the species from Indian waters and extends the distribution considerably to the west of the type locality.

Remarks.—According to Banner, A. M. & Banner, D. M. (1966) the species show variations in some characteristics and they considered *S. consobrinus* as a synonym of *S. stimpsoni*. In the specimens to hand also some variations are noticed from the description given by Banner & Banner (*op. cit*). The tip of the rostrum extends to the end of the second segment of the antennular peduncle instead of that of the basal segment. The carina of the rostrum extends slightly posterior to the eye. The first pair of legs are missing in the specimen. The second leg has the 2nd carpal segment somewhat longer than that recorded by Banner & Banner (*op. cit.*) so that the ratio of the segments would be 10 : 2.2 : 2 : 2 : 3. Propodus of 3rd leg bears on inferior surface 2 pairs and 9 single spinules.

Section STENOPODIDEA

Family STENOPODIDAE

Stenopus hispidus (Olivier)

1811. *Palaemon hispidus* Olivier, *Encycl. meth. Hist. nat.*, **8**: 666.
1947. *Stenopus hispidus*: Holthuis, *Siboga Expeditie*, **39a**: 12 (with synonymy).
1950. *Stenopus hispidus*: Barnard, *Ann. S. Afr. Mus.*, **38**: 578.
1955. *Stenopus hispidus*: Holthuis, *Zool. Verhand.*, No. 26: 144.

Material.—3 males 29 mm, 31 mm and 32 mm and 1 ovigerous female 35 mm total length. Depth 13-21 m.

Distribution.—It is a very widely distributed species in the Indo-Pacific and recorded from some areas in the Atlantic also. Although recorded from western Indian Ocean (Borradaile, 1910) and from Trincomalee on the east coast of Ceylon (Müller, 1880) there are no records of the species from the coastal areas of India. This is the first report from Indian coast.

Remarks.—In the number of medio dorsal spines on the rostrum the present material agrees with the specimens described by Barnard (1950), there being 6-7 strong spines, the distal of which reaches beyond the apex. In most characters the specimens agree with the description of Holthuis (1947).

The 2 spines at the distal end of the telson are not very conspicuous.

The anterior portion of the carapace in front of the cervical groove including the rostrum is reddish in colour. A reddish band across the posterior region of the 2nd and entire 3rd abdominal segments and another band covering the posterior half of the 6th abdominal segment and base of the telson and uropods present. The region of the cephalothorax at the base of the pereopods is coloured with a beautiful mixture of blue, violet and red. The 3rd pereopod is banded red at the distal half of the merus, middle region of the carpus, basal part of the propodus and the middle of the propodus including the base of the dactylus.

Habit and habitats.—These shrimps also inhabit the shallow rocky pits, the margins of which are lined with growth of seaweeds, mainly Phaeophyceae (*Sargassum* spp.). They occupy these pits in company with fishes like pomacentrids, serranids and eels, and crinoids and ophiuroids. Characteristically all the specimens were found beyond 13 m depth. Usually a single pair (male and female) inhabits one pit. The presence of these shrimps is detected by the antennae probing out of the hide-aut. The male is smaller of the two and less brightly coloured. In one or two instances these shrimps were noticed in the same pits along with *Rhynchocinetes durbanensis* specimens. The shrimp moves quickly by walking, using the elongate slender pair of hind legs and very rarely attempt swimming. The anterior two pairs of slender chelate legs are used in grabbing food material and pushing them into the mouth. The clawed legs are also used to cleanse the antennae and body frequently.

SUMMARY

Five species of shrimps collected during Scuba diving operations in the Gulf of Mannar off Tuticorin on the south east coast of India are recorded. The female of *Periclimenes (Periclimenes) rex* Kemp is described for the first time. All the species are new records to the region.

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