

**SOLENOCERA WALTAIRENSIS, A NEW SPECIES OF PRAWN
(DECAPODA : PENAEIDAE) FROM INDIAN WATERS**

By M. J. GEORGE* & M. S. MUTHU†
Central Marine Fisheries Research Institute

WHILE examining a collection of prawns from the Andhra coast, fourteen specimens of *Solenocera* Lucas which differed from all the known species of the genus were obtained. It is considered that these forms belong to a new species and described in detail below. The species has been named after the locality from which it was first collected.

***Solenocera waltirensis* sp. n.**

(Figs. 1-4)

Material : Waltair, east coast of India, Lat. 17° 43'N and Long. 83° 23'E, 20 m., 9 September 1966 ; 1 male, 38 mm., carapace 9.5 mm. ; 1 female, 42 mm., carapace 11 mm.

Kakinada, east coast of India, Lat. 16° 57'N and Long. 82° 25'E, 30-40 m., 12 June 1968 ; 5 males, 33-42 mm., carapace 9.8-11.5 mm. ; 7 females, 35-61 mm., carapace 10.2-17 mm.

Holotype : Female 42 mm., carapace 11 mm., collected off Waltair, 9 September 1966.

Allotype : Male 41.5 mm., carapace 11 mm., collected off Kakinada, 12 June 1968.

The type specimens are deposited in the reference collections of the Central Marine Fisheries Research Institute, Mandapam Camp [Ref. CMFRI. No. 111 (Holotype) and CMFRI. No. 112 (Allotype)].

Description : The carapace and abdomen glabrous, the area of the rostrum dorsal to the lateral ridge and a small area anterior to the lower half of the hepatic carina only covered with small setae.

The upper margin of the rostrum more or less straight, bearing, in addition to the epigastric, 7-9 teeth. Ventral profile slightly convex, devoid of teeth but beset with long setae on the lower margin (Fig. 1). A ridge, one on either side, runs in the middle of the lateral side of the rostrum extending upto the tip. The rostrum reaches only anterior 1/3 of the cornea.

Postrostral carina does not extend beyond the indentation caused by the cervical groove in smaller specimens, but a blunt carina is visible in larger ones. Hepatic, antennal and postorbital spines present; epigastric and postorbital spines subequal in size; branchiostegal or pterygostomial spines absent, supraorbital angle blunt. Cervical and hepatic grooves sharply defined. The well marked cervical carina stops short of the mid-dorsal line of carapace, but the cervical groove extends right up to the mid-dorsal line and indents the dorsal profile at anterior $4/6$ of carapace. The sharply defined hepatic carina runs obliquely downwards and ends abruptly a little above the bluntly rounded anterolateral angle of the carapace; the anterior half of the hepatic carina is raised from the surface of the carapace and is slightly undercut by the hepatic groove; there is a shallow depression in front of it just above the lower margin of the carapace. Horizontal portion of the hepatic groove and the branchiocardiac sulcus well defined. There is a shallow but clear depression above the postorbital spine; the shallow vertical groove from hepatic fossa, although present, does not extend up to the base of the postorbital spine.

The longer axis of cornea is 0.24 length of carapace; attains a little behind distal end of basal segment of antennular peduncle.

Antennular flagella nearly twice as long as carapace, becoming tapered in the distal five segments. Prosartema extends up to middle of cornea. The stylocerite reaches about halfway along the cornea. Antennal scales slightly exceed tip of antennular peduncle. Carpocerite reaches base of 2nd antennular segment.

Incisor process of mandible with two blunt teeth. Inner aspect of basal segment of mandibular palp excavated; distal segment longer than basal.

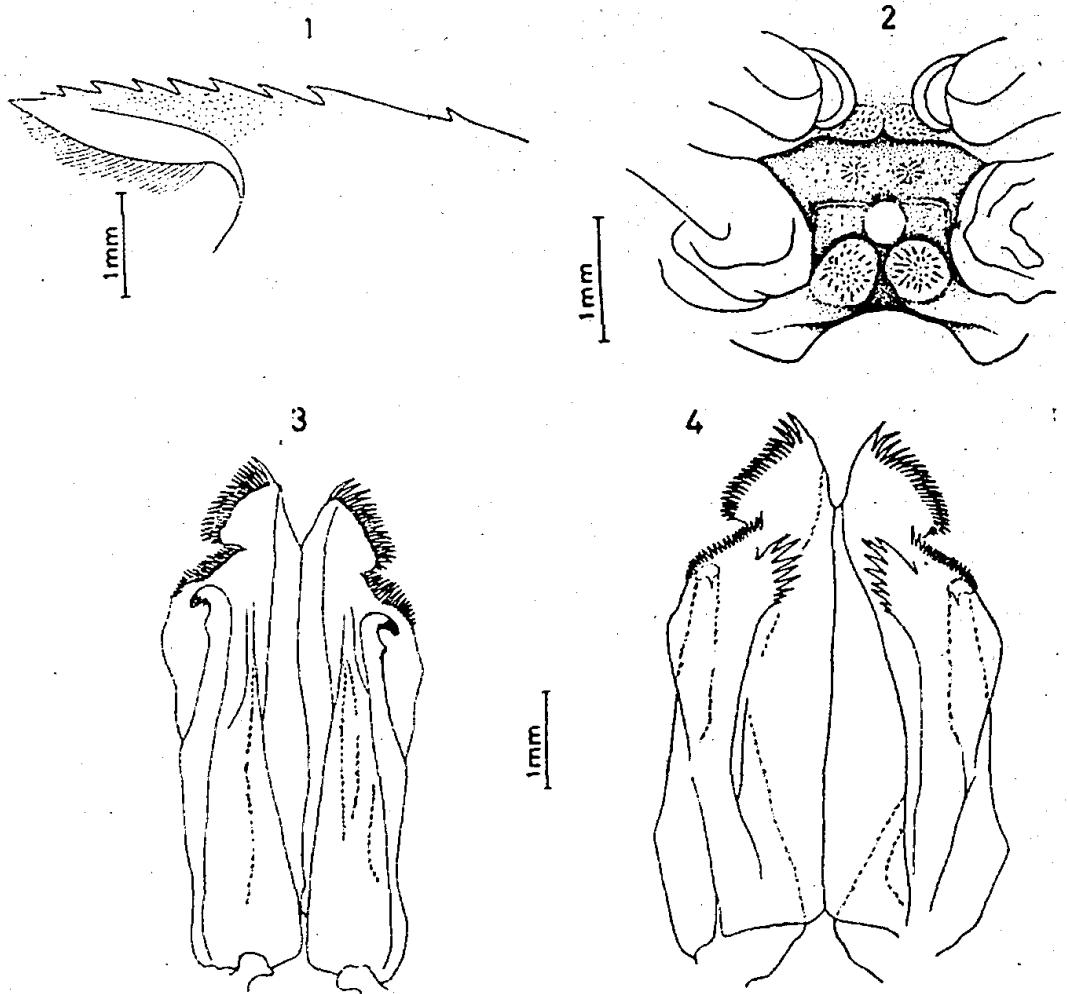
Third maxillipeds exceed scaphocerite by $1/2$ dactylus and overreach the carpocerite by entire propodus and dactylus. The 1st pereopods exceed carpocerite by $1/2$ finger and reach up to a little less than $1/2$ length of scaphocerite. The 2nd pereopods exceed scaphocerite by $1/2$ finger. The 3rd legs exceed scaphocerite by entire chela and $1/2$ carpus. The 4th legs exceed carpocerite by entire propodus and dactylus and project beyond scaphocerite by $3/4$ dactylus. The 5th legs overreach carpocerite by entire dactylus, propodus and $2/5$ carpus; exceed scaphocerite by entire propodus. The coxa of the 5th leg in female has a minute spine on the inner median aspect. Prominent basal and ischial spines present on 1st pereopods; basal spine absent on 2nd and succeeding pereopods.

Well marked dorsal carinae present on 4th, 5th and 6th abdominal segments. A blunt carina on posterior $2/3$ of the 3rd segment; inconspicuous, short carina present in the posterior half of the 2nd segment in larger specimens. The posterior margins of 3rd, 4th and 5th segments incised mid-dorsally and the 6th ending in a spine. The 3rd segment is not swollen. Telson longer than 6th abdominal segment and falls a little short of the endopod of the uropod; prominent fixed lateral spines found at about $1/3$ distance from the tip of the telson. Outer lobes of uropod without spine on the posterolateral angle.

Appendix masculina with basal piece possessing short, blunt and finger-like projection which lacks long wavy hair near the base. The triangular, folded outer scale of distal piece longer than the flat, rectangular inner scale.

The petasma (Figs. 3 & 4) resembles that of *S. pectinata*, but the spines on the lateral margins are smaller; the median and lateral lobes have about 20-23 and 18-20

spines respectively on the distolateral margin. Process 'a' curves distally and ends in a single, lateral, hook-like spine on the median, inner side. Process 'b' is conspicuous with 8-9 teeth, the 2nd tooth from anterior end being the longest.



Solenocera waltirensis sp.n. 1. Rostrum; 2. Thelycum; 3. Petasma ventral view; 4. Petasma dorsal view.

The thelycum is shown in Fig. 2. A pair of vertical sternal plates covered with spines and touching each other are found in between the bases of the 4th pereopods. Between the base of the 5th pair of legs a prominent pair of spine-covered prominences are seen. In the space between the bases of the 4th and 5th pair of legs is a quadrangular area defined by low ridges on the lateral sides and the anterolateral angles; the spine-covered prominences between the 5th legs form the posterior boundary. Inside this quadrangular area is a median bald prominence with a few setae at the base on the anterior side. This median prominence is much below the level of the spine-covered prominences between the 5th pair of legs. Two small papillae covered with minute spines are present in the region between the anterior border of the quadrangular area and the vertical plates at the base of the 4th pereopods.

DISCUSSION

The species is closely related to *S. bedokensis* Hall, *S. spinajugo* Hall and *S. pectinata* (Bate) which are the only species so far described without basal spine on the 2nd pereopod. From *S. spinajugo* (Hall 1961), male of which is not known, it could be easily distinguished by the absence of a spine on the extreme anterior margin of the hepatic carina, by the shorter thoracic legs and by the structure of the thelycum (Table 1).

In the structure of the hepatic carina the present species closely resembles *S. bedokensis*. But in *S. bedokensis* the anterior half of the hepatic carina is slightly elevated from the carapace and 'terminates abruptly in a slight thickening of the anterior margin of the carapace' (Hall 1962, p. 13), while in the present species it is raised from the carapace and is undercut by the hepatic groove in the anterior half and does not terminate in a thickening; there is also a shallow depression in front of the terminal half of the hepatic carina. Further the 3rd maxillipeds and the first three pereopods are distinctly longer in *S. bedokensis*. The rostrum figured by Hall (*op. cit.*) is narrower without any ventral convexity, and possesses only 6+1 teeth. The thelycum figured by him is similar to that of *S. waltirensis* in general pattern. But, although the vertical sternal plates at the base of the 4th pereopods and the paired spine-covered prominences between the 5th pereopods are clear, no other structures are present in the area in between. The presence of the quadrangular area with a bald prominence in the middle and two other spiny papillae in the thelycum of the present species clearly distinguishes it from *S. bedokensis*. Unfortunately, the description of petasma of that species is not available, although De Bruin (1965) has collected males from Ceylon.

The petasma of the present species has similarities with that of *S. pectinata* in general structure, but differs in details (vide Table 1). In addition, the two species can be clearly distinguished by the features of the thelycum and other characters as set out in the Table where the four closely related species are compared.

TABLE 1
Comparison of the features of 4 species of Solenocera

Item	<i>S. waltirensis</i>	<i>S. bedokensis</i>	<i>S. pectinata</i>	<i>S. spinajugo</i>
Rostral teeth	7-9+1	8+1	6-9+1	6+1
Postrostral carina	Present in posterior half	Absent in posterior half	Absent in posterior half	Present in posterior half
Cervical groove	Indents the carapace mid-dorsally	Indents the carapace mid-dorsally	Does not indent the carapace mid-dorsally	Indents the carapace mid-dorsally
Anterior end of hepatic carina	Straight, ends abruptly a short distance above antero-lateral angle; no spine on anterior margin; elevated from the carapace, undercut by hepatic groove	Straight, ends abruptly a short distance above antero-lateral angle in a thickening; no spine on anterior margin; elevated from the carapace, not undercut by hepatic groove	Recurved posteriorly without spine on anterior margin; elevated considerably from the carapace, undercut by hepatic groove	Recurved posteriorly and bear a spine on anterior margin; elevated considerably from the carapace, not undercut by hepatic groove

Item	<i>S. waltirensis</i>	<i>S. bedokensis</i>	<i>S. pectinata</i>	<i>S. spinajugo</i>
Branchiocardiac sulcus	Clearly defined	Absent	Present	Present
Longer diameter of cornea	0.24 length of carapace	0.2 length of carapace	0.2 length of carapace	0.29 length of carapace
Antennular flagella	1.9 length of carapace	Not known	As long as carapace	1.9 length of carapace
Third maxilliped	Exceeds scaphocerite by 1/2 dactylus	Exceeds scaphocerite by entire dactylus	Exceeds scaphocerite by 1/2 propodus	Exceeds scaphocerite by 1/2 propodus
First pereopod	Exceeds carapocerite by 1/2 finger	Exceeds carapocerite by entire chela	Exceeds carapocerite by finger	Exceeds carapocerite by finger
2nd pereopod	Exceeds scaphocerite by 1/2 finger	Exceeds scaphocerite by entire chela	Exceeds scaphocerite by 1/2 finger	Exceeds scaphocerite by entire chela
3rd pereopod	Extends beyond eye by 3/4 carpus	Extends beyond eye by entire carpus	Extends beyond eye by 3/4 carpus	Not known
4th pereopod	Over-reaches scaphocerite by 3/4 dactylus	Over-reaches scaphocerite by 3/4 dactylus	Over-reaches scaphocerite by entire dactylus	Over-reaches scaphocerite by dactylus and 1/3 propodus
5th pereopod	Exceeds carapocerite by entire dactylus, propodus and 2/5 carpus	Exceeds carapocerite by entire dactylus, propodus and a small portion of carpus	Exceeds carapocerite by entire dactylus, propodus and 2/5 carpus	Exceeds scaphocerite by entire dactylus, propodus and a small portion of carpus
Appendix masculina	Long wavy hair absent on the finger-like short projection of the proximal piece	Not known	Long wavy hair present on long spur-like projection of the proximal piece	Not known
Petasma	Process 'a' with a single laterally placed tooth on the curved distal end and process 'b' with 8-9 teeth, 2nd being the longest; distolateral margin of lateral lobe beset with 18-20 short spines	Not known	Process 'a' with a centrally placed tooth and process 'b' with 12 teeth, 3rd or 4th being the longest; distolateral margin of lateral lobe beset with 30-32 longer spines	Not known
Thelycum	Quadrangular area with a median bald prominence in front of the two spine-covered prominences between the 5th legs; 2 small spiny papillae present in front of the quadrangular area.	No quadrangular area or papilla in front of the two spine-covered prominences between the 5th legs.	No quadrangular area or papilla in front of the two spine-covered prominences between the 5th legs.	No quadrangular area in front of the two spine-covered prominences between the 5th legs; a median setose papilla present.

The *Solenocera* sp. described as closely similar to *S. pectinata* De Man 1911, p. 48, and considered synonymous with *S. bedokensis* by Hall (1962) has a hepatic carina resembling the present species. But in De Man's species the antennular flagella are much longer than twice the length of the carapace. Since his description is brief it is not possible to compare the present species with De Man's species.

We are thankful to Mr. K. H. Mohamed for a critical reading of the manuscript.

REFERENCES

- DE BRUIN, G. H. P. 1965. Penaeid prawns of Ceylon (Crustacea, Decapoda : Penaeidae). *Zool. Meded.*, **41** (4) : 73-104.
- DE MAN, J. G. 1911. The Decapoda of the Siboga Expedition, Part I. Family Penaeidae. *Siboga Exped. Monogr.*, **39a** : 1-131.
- HALL, D. N. F. 1961. The Malayan Penaeidae (Crustacea, Decapoda) Part II. Further taxonomic notes on the Malayan species. *Bull. Raffles Mus.*, **26** : 76-119.
- 1962. Observations on the taxonomy and biology of some Indo-West Pacific Penaeidae (Crustacea, Decapoda). *Fish. Publ. Colonial Office, London*, **17** : 1-229.
- KUBO, I. 1949. Studies on the penaeids of Japanese and its adjacent waters. *J. Tokyo Coll. Fish.*, **36** (1) : 1-467.