

Paraimene tuberculata, a new genus and species of Isopoda (Sphaeromatidae) from Karachi, Pakistan

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Abstract

A new genus, *Paraimene* is established for a new Isopod species from the intertidal zone of Karachi Coast (Pakistan). *Paraimene tuberculata* sp. nov. is described and illustrated together with notes on the habitat of the species.

Introduction

Recently several eubranchiate sphaeromatids were collected from a rocky shore at Karachi (Cape Monze). Upon detailed examination, the specimens showed important differences from all known eubranchiate genera of the family Sphaeromatidae. They are, therefore, considered to belong to a new genus which is described below.

The type specimens have been deposited at the British Museum (Natural History) Cromwell Road, London. Accession numbers: Holotype 1987: 484; Paratype 1987: 485.

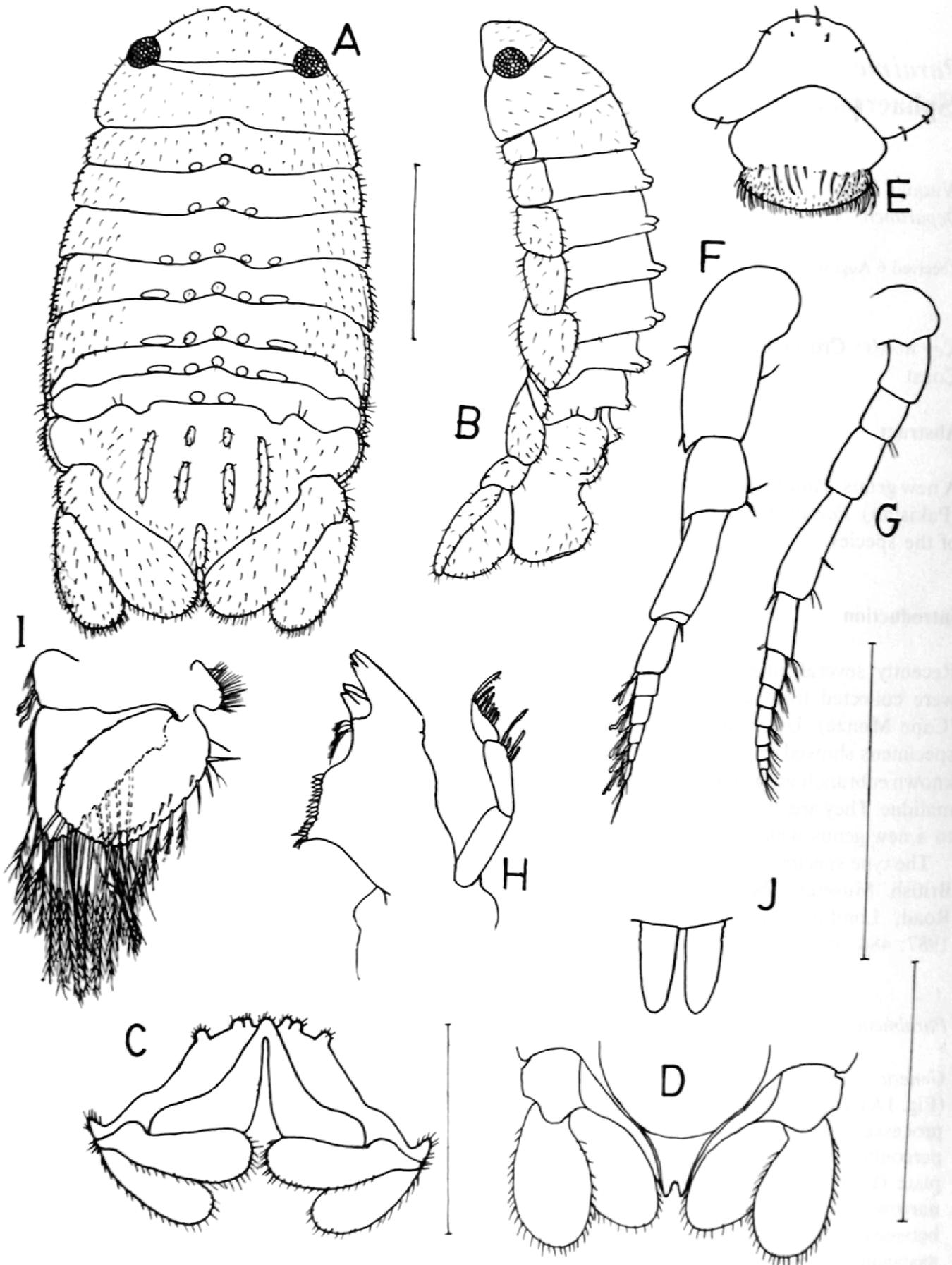
Paraimene gen. nov.

Generic diagnosis: *Paraimene* sphaeromatid (Fig. 1A) with pereon and pleon lacking dorsal processes, pereonite 1 longer than pereonite 2, pereonite 7 narrow laterally, lacking distinct coxal plate (Figs. 1B, 2I), represented only by a very narrow and dorsally curved tubular structure between coxal plate 6 and lateral margin of pleon, associated more closely with dorsally raised

lateral margins of pleon and pleotelson (Fig. 2I). Coxal plate 6 (Fig. 1B) large, triangular, not overlapping lateral margin of pereonite 7. Posterior margin of pleon with 2 short sutures on each side. Pleotelson triangular, domed with dorsally raised apex. Distal part of pleotelson (Fig. 1C) forming raised triangular structure with ventral groove and elongated aperture posteriorly.

Antennae (Figs. 1F, G) subequal mandible (fig. 1H) bulky with relatively shorter palp, maxillipedal palp articles 2 to 4 (Fig. 2A) with pronounced setigerous lobes. Pereopods dactyls (Figs. 2B - H) with accessory unguis often markedly bifid. Penes (Fig. 1J) separate to base with rounded apices. Appendix masculina (Fig. 3A) arising from internoproximal angle of endopod of pleopod 2, exopod of pleopod 3 (Fig. 3B) with articulation. Uropod rami lamellar with endopod longer than exopod.

Sexual dimorphism not pronounced, mouth parts of ovigerous female unmetamorphosed, brood pouch lacking oostegites, brood pouch formed by two opposing ventral pockets opening in front of pereopod 4.



Type species: Paraimene tuberculata sp. nov.

Ethymology: Paraimene is a combination of Greek Para + imene meaning besides + contraction of *Ischyromene*. (feminine).

Remarks. The present genus resembles the genus *Ischyromene* Racovita, 1908 in having the penes separate to base and with rounded apices, in being pereopod dacyls bifid and the internal half of the endopod of pleopod 1 (Fig. 1I) indurated. It can be differentiated immediately from the latter by the absence of a distinct coxal plate 7 (Figs. 1B, 2I), the dorsally raised apex of the pleotelson (Figs. 1B, C), with an elongated posterior aperture, subequal and stout antennae, well developed lobes on articles 2 to 4 (Fig. 2A) of maxillipedal palp, the articulated exopod of pleopod 3 (Fig. 3B) and finally by the form of the brood pouch in the ovigerous female. A complete comparison of the present genus (including differences and similarities) with the related eubranchiata genera is summarised in Table - 1.

Paraimene tuberculata sp. nov. (Figs. 1 - 3)

Material examined: 2 ♂♂ (3-3.6 mm), 4 ovigerous ♀♀ (2.8-3.0 mm), Cape Monze, Intertidal Zone, 23 March, 1986.

Types: Holotype male, 3.6 mm. (registration No.1987.484) Paratype ovigerous female, 3 mm. (registration No. 1987.485).

Type Locality: Cape Monze, Karachi, Pakistan, 24° 49' N, 66° 40' E.

Etymology: The specific name *tuberculata* is derived from the Latin word tuberculum meaning a swelling. This refers to the presence of tubercles on the pereon and pleotelson.

Description of holotype male (3.6 mm):

Cephalon (Fig. 1A) with rostral process, eyes dorsolateral, black, body surface mostly pubescent, pereonite 1 longest, pereonites 2-7 subequal in length, posterior margin of pereonites 2-3 with 3 and those of 4-7 with 5 tubercles, coxal plates (Fig. 1B) 2-6 prominent with margins visible dorsally, becoming large posteriorly, 2-5 subrectangular, 6 triangular in shape, coxa 7 not forming a plate (Figs. 1B, 2I) represented only by a very narrow tubular structure between coxal plate 6 and lateral margin of pleon. Posterior margin of pleon (Fig. 1A) with 2 submedian tubercles and two short sutures on each side, lateral margins dorsally curved. Pleotelson dome bearing 2 pairs of longitudinal tubercles, each member of median pair with 2 tubercles and that of lateral pair with a single elongated tubercle, apex with a longitudinal tubercle. Distal part of pleotelson (Fig. 1C) raised dorsally, posteriorly forming a triangular structure with a ventral groove and an elongated aperture. Lateral margin of pleotelson curved dorsally. Mediolateral margin of pleotelson (Fig. 1D) curving ventromedially and distolateral margins (Figs. 1C, D) ventrally.

Epistome (Fig. 1E) broad with rounded apex, concave lateral margins and laterally directed arms. Posterior surface and margin of labrum densely setose.

Antennae (Figs. 1F, G) subequal and relatively

Fig. 1. *Paraimene tuberculata* gen. nov., sp. nov. Adult male holotype, 3.6 mm.

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|----|-------------------------------|----|------------|
| A. | Dorsal view; | F. | Antenna 1; |
| B. | Lateral view; | G. | Antenna 2; |
| C. | Posterior view of pleotelson; | H. | Mandible; |
| D. | Ventral view of pleotelson; | I. | Pleopod 1; |
| E. | Clypeal region; | J. | Penes. |

Scale lines = 1 mm.

Table 1. Comparison of *Paraimene* gen. nov. with related eubranchiata genera (characters of adult males are considered)

Features	<i>Paraimene</i> gen. nov.	<i>Ischyromene</i> Racovitza, 1908	<i>Pistorius</i> Harrison & Holdich, 1982	<i>Dynamenopsis</i> Baker, 1908
Pereonite 7	✓ Narrower than pereonite 6, lateral portion markedly narrow. ✗	longer than pereonite 6, posterior margin markedly bilobed.	pereonite 6 & 7 subequal.	longer than pereonite 6, posterior margin markedly bilobed.
Coxal plate 6 & 7	✗ 6 long, triangular, coxa 7 not plate like but forming a dorsally curved, narrow tubular structure (fig. 21).	both prominent and plate like.	both prominent and plate like.	both prominent and plate like, 6 overlapping 7.
Apex of pleotelson.	✓ Raised forming a triangular structure with elongated posterior aperture (fig. 1c).	not forming a raised triangular structure, with either a ventral groove or an enclosed dorsally directed foramen.	raised but with dorsally directed foramen.	with posterodorsally directed foramen or groove.
Ventral margin of pleotelson.	Mediolateral margin curved venteromedially, distolateral margins curved only ventrally.	entire ventral margin curved venteromedially but not meeting in posterior midline.	entire ventral margin curved venteromedially.	ventral margin curved venteromedially to meet or almost meet in midline.
Mixillipedal palp.	✓ Articles 2-4 with highly developed setigerous lobes.	articles 2 & 3 with developed and 4 with low setigerous lobes.	articles 2-4 with low setigerous lobes.	not seen.
Pereopod dactyls	✓ Accessory unguis often bifid.	accessory unguis often markedly bifid.	accessory unguis simple.	accessory unguis short, simple.
Penes	✓ separate to base with rounded apices.	short, separate to base with rounded apices.	long, tapering fused at base.	short, stout, separate to base.
Endopod of pleopod 1	Internal half indurated.	internal half indurated.	internal half not indurated.	not seen.
Expopod of pleopod 3	✓ with articulation	without articulation.	without articulation.	with articulation.
Endopod of uropod	✓ Lamellar, larger than expopod.	Lamellar, subequal to expopod.	strongly reduced.	lamellar, subequal to expopod.

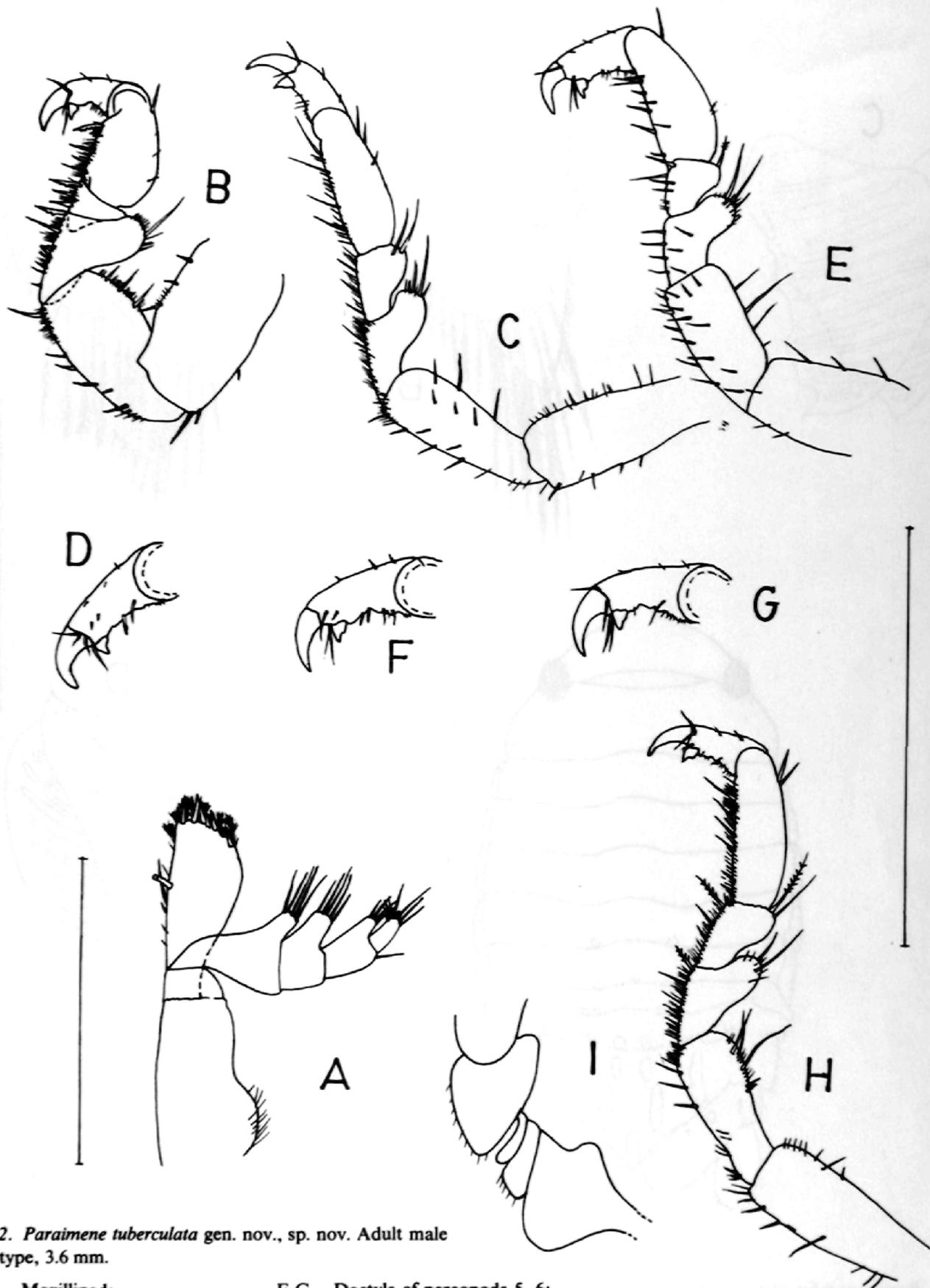


Fig. 2. *Paraimene tuberculata* gen. nov., sp. nov. Adult male holotype, 3.6 mm.

A. Maxilliped;

B-C. Pereopods 1, 2;

D. Dactyl of pereopod 3;

E. Pereopod 4;

F-G. Dactyls of pereopods 5, 6;

H. Pereopod 7;

I. Lateral view, showing tubular, narrow coxa 7 between coxal plate 6 & pleon.

Scale lines = 1 mm.

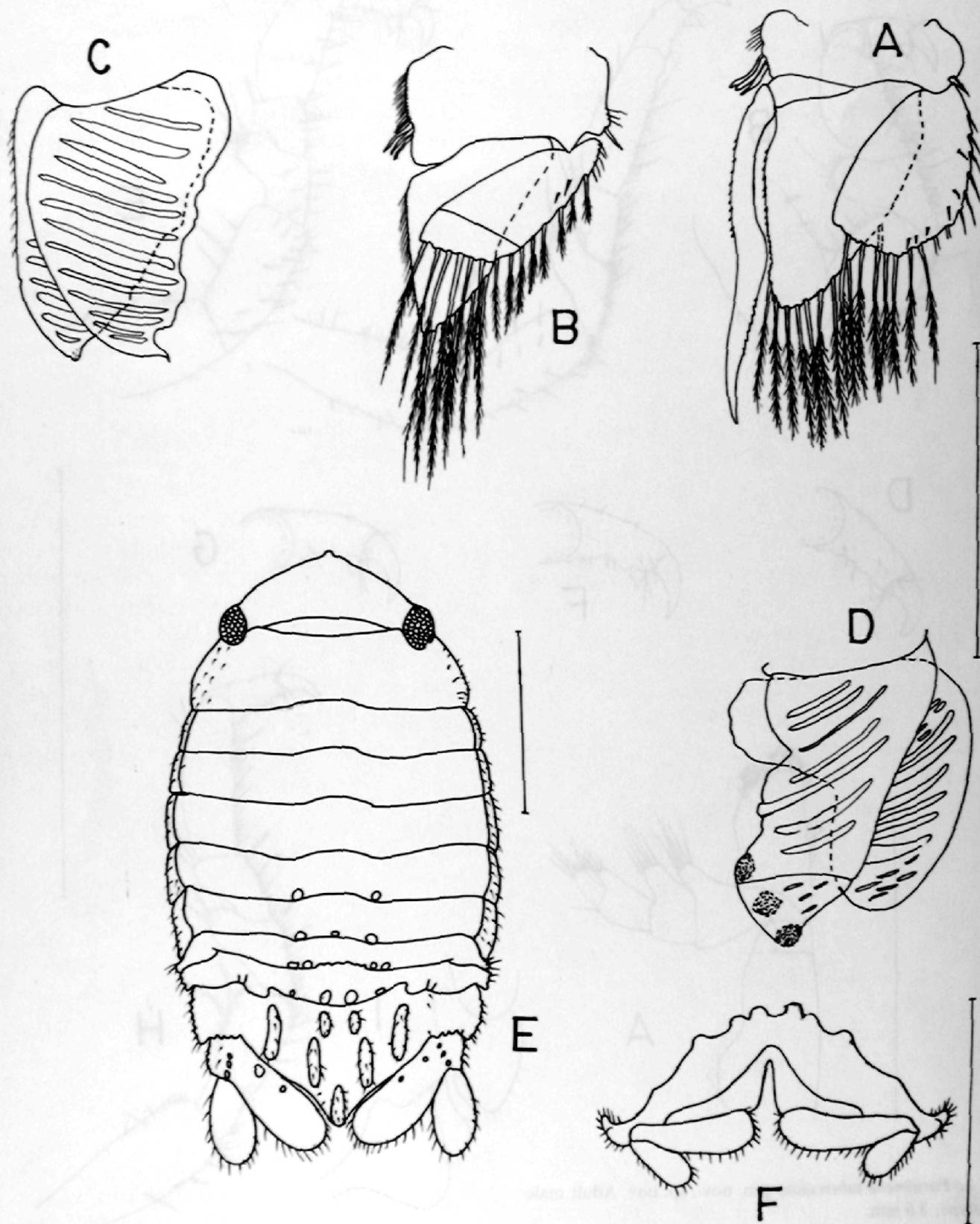


Fig. 3. *Paraimene tuberculata* gen. nov., sp. nov. Adult male holotype, 3.6 mm.

A-D. Pleopods 2-5.
Ovigerous female paratype, 3 mm.

E. Dorsal view;
F. Posterior view of pleotelson.

Scale lines = 1 mm.

stout. Antenna 1 with triangular peduncle, peduncular article 1 stout, subequal to articles 2 and 3 together, article 2 shortest, articles 1-3 bearing few setae, flagellum 7 articulated, each article with 2 aesthetasces and 1 seta. Antenna 2 with penta-articulate peduncle, article 1 well developed, attached to body laterally, articles 2 and 4 subequal, article 3 shortest, article 5 longest, 8 articulated flagellum extending to middle of pereonite 2. Mouth parts of usual sphaeromatid type but mandible (Fig. 1H) rather stout with relatively short palp and well developed molar with a continuous row of spines, palp article 1 longest and naked, articles 2-3 with pectinate spines. Maxillipedal palp articles 2-4 (Fig. 2A) with well developed, setose lobes, endite with 1 coupling hook and 6 terminal spines among plumose setae.

All pereopods (Figs. 2B-H) ambulatory with accessory unguis more or less bifid, those of pereopods 2 & 6 (Figs. 2C, G) only slightly bifid. Posterior (inferior) margins of propodus, carpus and merus of all pereopods except pereopod 4 (Fig. 2E) with dense pads of setae. Pleopod 1 (Fig. 1I) with subequal rami, exopod triangular, broad and internal half indurated, exopod sub-rectangular bearing minute marginal spines medially and submarginal spines laterally; lateral margin of peduncle lobed and thickly setose, pleopod 2 (Fig. 3A) with wavy and stout appendix masculina, bearing rows of spinules on proximo-median and distolateral margins, endopod large, triangular, exopod short and subovate. Pleopod 3 (Fig. 3B) with large preduncle and relatively shorter rami, endopod triangular with pointed apex, exopod with articulation. Peduncles of pleopods 1-3 each bearing 3 coupling spines. Pleopods 4 and 5 as illustrated in figs. 3C & D respectively. Uropod rami (Fig. 1A) lamellar, concave dorsally and with rows of short marginal setae, endopod longer than exopod, extending beyond apex of pleotelson, rami broader than those of females.

Penes (Fig. 1J) separate to base with rounded apices.

Ovigerous female paratype (3 mm):

Body (Fig. 3E) oval, surface punctate. Mouth parts not metamorphosed. Pereonites 2-4 lacking tubercles, pereonites 5-7 weakly tuberculated. Apex of pleotelson slightly extended, ventral margin of pleotelson thick, ventrally curved. Uropods narrower than those of adult male, not extending beyond apex of pleotelson.

Brood pouch formed by two opposing pockets covering entire ventral pereon, opening in midline, between pereopods 4 and 3, with margin of posterior pocket overlapping well margin of anterior pocket.

Colour of specimens in alcohol: Pale cream, lacking chromatophores.

Ecological note: All the present specimens of *Paraimene tuberculata* were found associated with algae growing on the borders of intertidal pools.

Different types of algae among which the specimens were found are as follows:

Green algae - *Codium latum* Sur. and *Ulva indica* Anand.

Red algae - *Sarconema furcatum* BØrgs.

Brown algae - *Cystoseira indica* (Thiny et Joshi) Mairh.

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