

A NEW SPECIES OF *SPHAEROMOPSIS* (ISOPODA: SPHAEROMATIDAE) FROM THE ARABIAN SEA

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Abstract. A new species, *Sphaeromopsis petita*, collected from sand of the intertidal zone of Pacha, Karachi is described and figured. The relationship of the genus *Sphaeromopsis* Holdich and Jones, 1973 with *Gnorimosphaeroma* Menzies, 1954 is also discussed.

Key words: Taxonomy, *Sphaeromopsis petita* sp. nov., intertidal sandy habitat, Pakistan.

INTRODUCTION

Genus *Sphaeromopsis* Holdich and Jones, 1973 has recently been documented from Pakistan waters by Javed and Yousuf (1995) who described a new species and a new record of the genus. The new species described herein is the seventh species of the genus and third from the coast of Pakistan (northern Arabian Sea).

MATERIALS AND METHODS

Sphaeromopsis is commonly found in association with intertidal sand and stones. Being of small size, i.e. they are not obvious in the field because of small size. Samples of the substratum were taken from the shore and examined under low power binocular microscope after fragmenting in 3% formalin to agitate the infauna. For preservation, specimens were washed under tap water, left in 3% formalin for three days and then transferred to 70% alcohol.

Whole specimens and unmounted dissections were examined using a Zeiss binocular microscope with the magnification 10x2; 10x4 and 10x8. Illustrations were made in the same microscope using a graticule eyepiece. For detailed examination, mouth parts and appendages were mounted in glycerine. Details of mouth parts and other structures were examined and illustrated using monocular microscope.

The type material has been deposited at the Zoological Museum, University of Copenhagen, Denmark.

Systematics

Suborder Flabellifera

Family Sphaeromatidae Latreille, 1825

Subfamily Dynameninae Bowman, 1981

Sphaeromopsis petita, new species

(Figs. 1-3)

Material examined

Holotype male, 3.0 mm; allotype, ovigerous female, 3.0 mm; paratypes, 2 adult males, 2.4-3.0 mm; 10 ovigerous females, 1.5-3.0 mm; 4 non-ovigerous females, 1.5-2.0 mm; 7 February, 1994. All the material examined was collected from the sand of the intertidal zone of Pacha near Karachi, Pakistan.

Type locality

Pacha, Intertidal Zone, Karachi, Pakistan.

Diagnosis

Adult male

Body (Fig. 1A) moderately flattened, dorsal surface smooth, lateral margins with membrana cingula. Cephalon without rostral point. Antero-lateral angles of pereonite 1 (Fig. 1A) extending anteriorly beyond eyes, coxae of pereonites 2 to 7 directed laterally, fused to tergites, sutures not visible. Pleotelson (Fig. 1A) shallowly domed dorsally. Epistome (Fig. 1A) visible in dorsal view. Pleopod 1 (Fig. 3A) endopod and exopod narrow both with medial margins convex, pleopod 2 (Fig. 3B) with appendix masculina arising above the mid-length of endopod.

Ovigerous female

Pleotelson (Fig. 2F) wider and shorter in length than that of male. Uropod exopod shorter than male. Brood pouch lacking oostegites, formed by anterior and posterior pockets.

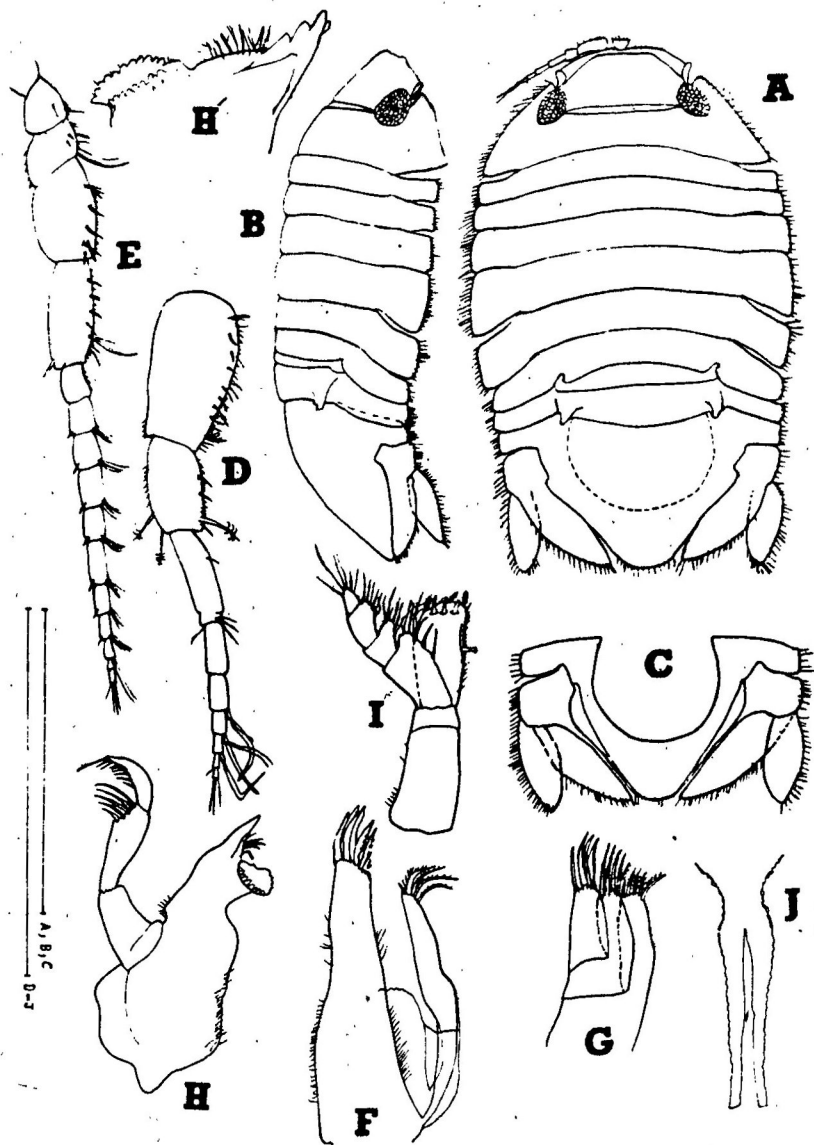


Fig. 1. *Sphaeromopsis petita*, new species, Holotype male, 3.0 mm; A, dorsal view; B, lateral view; C, ventral view of pleotelson; D, antenna 1; E, antenna 2; F, maxilla 1; G, maxilla 2; H, right mandible; H', incisor, lacinia mobilis and molar of right mandible; I, maxilliped; J, penes.

Scale lines = 0.5 mm.

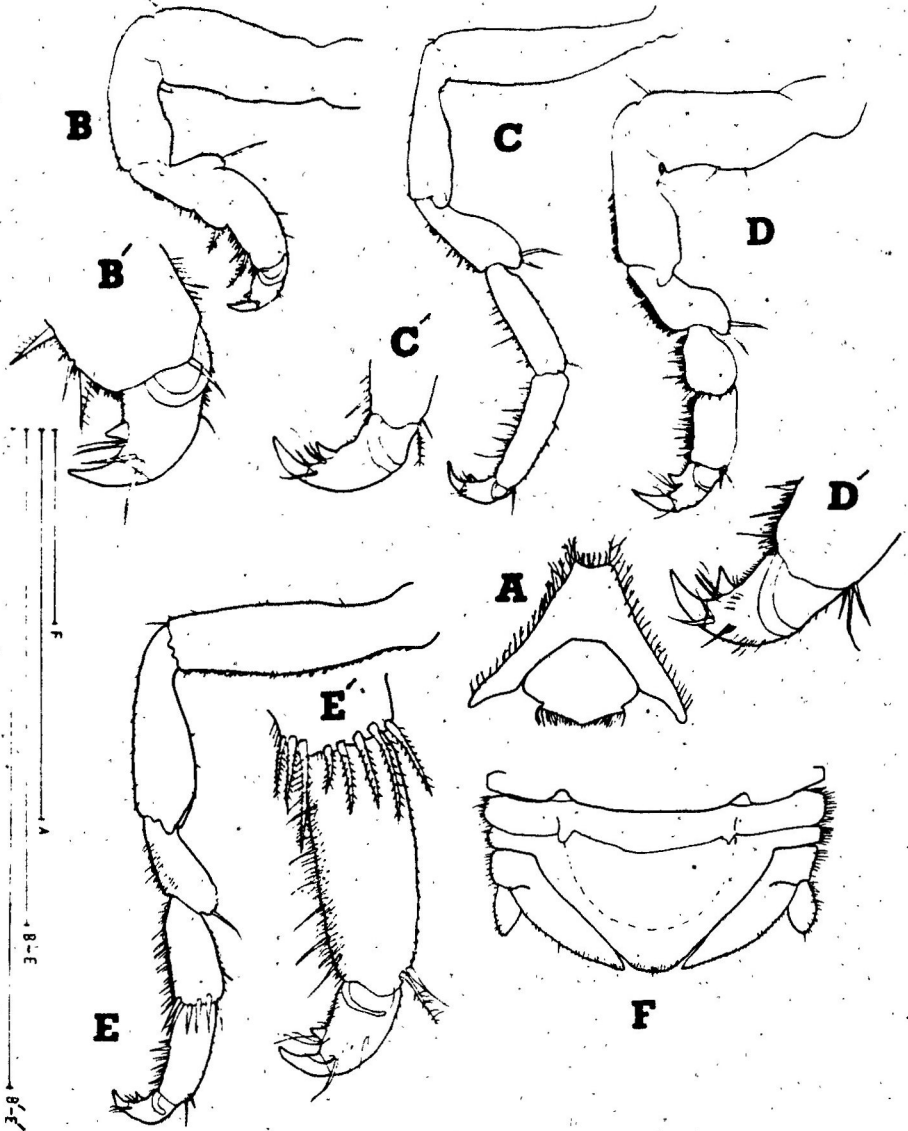


Fig. 2. *Sphaeromopsis petita*, new species, Holotype male, 3.0 mm; A, epistome; B, pereopod 1; B', pereopod 1, dactylus; C, pereopod 2; C', pereopod 2, dactylus; D, pereopod 4; D', pereopod 4, dactylus; E, pereopod 7; E', pereopod 7, distal part of carpus, propodus and dactylus. Paratype ovigerous female, 3.0 mm; F, dorsal view of pleotelson.

Scale line B'-E' = 0.5 mm.

Remaining scale lines = 1 mm.

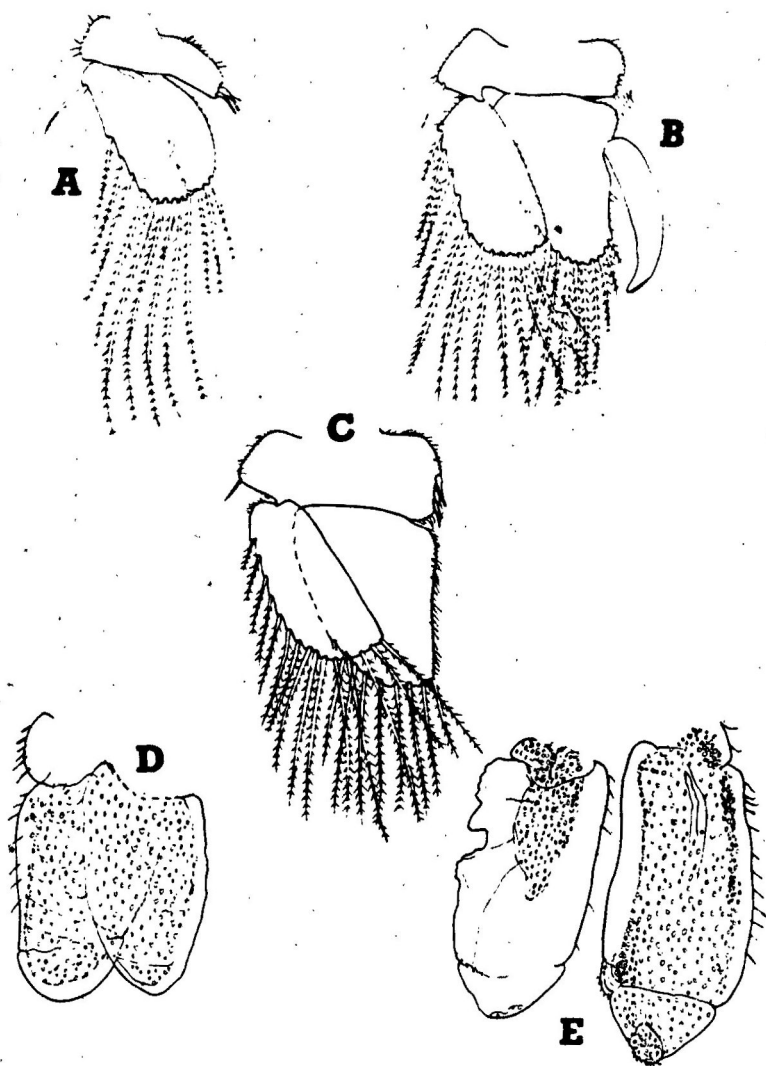


Fig. 3. *Sphaeromopsis petita*, new species, Holotype male, 3.0 mm; A, pleopod 1; B, pleopod 2; C, pleopod 3; D, pleopod 4; E, pleopod 5.
Scale line = 1 mm.

Description of adult male

Body (Fig. 1A) moderately flattened, dorsal surface smooth, lateral margins with membrana cingula and bearing compound fringing setae (not shown in figure). Cephalon wider than long, anterior margin carinated and sinuous, without rostral process, eyes large, set posteriorly into the antero-lateral margin of pereonite 1, facets distinct. Pereonites 1 and 5 longer than other pereonites, 6, 7, subequal in length, pereonites 2 to 5 progressively increasing in length, coxae of pereonites 2 to 7 (Fig. 1B) directed laterally, fused to tergites, sutures not visible. Pleonite 1 (Fig. 1A) present, dorsal surface of pleotelson shallowly domed, lateral margin reaching lateral body margin, apex of pleotelson smoothly rounded, entire, bearing setules. Ventral margin of pleotelson as illustrated in Figure 1C.

Epistome (Figs. 1A, 2A) visible in dorsal view, separating antenna 1 peduncle bases, apically concave, with postero-lateral margins elongated and laterally directed, apex and arms with marginal compound setae, posterior margin of labrum densely setose.

Antenna 1 (Figs. 1A, D) visible in dorsal view, peduncle article 2 and 3 subequal, flagellum shorter than peduncle, composed of 6 articles, articles 2 to 4 with lateral aesthetascs. Antenna 2 (Fig. 1E) stout, peduncle articles 2 and 3 subequal, article 4 stouter than others, article 5 longest, lateral margins of articles 2 to 5 furnished with setae, flagellum 11 articulated, subequal to peduncle. Right mandible (Figs. 1H, 1H') incisor with 4 teeth, lacinia mobilis reduced, consisting of a row of setae, molar subcircular with marginal row of spines. Maxilla 1 (Fig. 1F) lateral lobe with 7 distal spines, 3 pectinate, 4 simple, inner lobe with 4 fringed setae and a short lateral spine. Maxilla 2 (Fig. 1G) inner lobe with 6 plumose spines, middle lobe with 4 weakly pectinate spines and outer lobe with 4 simple spines. Maxilliped palp (Fig. 1I) articles 2 to 4 weakly lobed, endite distal margin subtruncate with 3 submarginal spines, inner margin with a coupling hook.

All pereopods biunguiculate (Figs. 2 B, 2B', C', D', D' E'), lateral margins of merus, carpus and propodus with mats of fine setae, interspersed with longer setae (Figs. 2B, C, D, E). Pereopods 1 and 4 (Figs. 2B, D) more stout than others. Pereopod 2 (Fig. 2C) long, slender, subequal to pereopod 7 (Fig. 2E). Disto-median angle of merus of each pereopod bearing 1 or 2 long setae. Distal margin of carpus of pereopod 7 (Figs. 2E, E') furnished with 8 spine like plumose setae.

Penes (Fig. 1J) fused at base, long subequal in length to pleopod 1, rami

broad proximally, tapering to truncate apices.

Pleopod 1 (Fig. 3A) peduncle extended medially as a lobe, endopod narrow, medial margin moderately convex, bearing short marginal setae, distal margin subtruncate, lateral margin concave, exopod with one stout proximo-lateral spine like seta. Pleopod 2 (Fig. 3B) endopod subtriangular, longer than exopod, exopod subrectangular, appendix masculina stout, arising slightly above the mid-length of endopod, extending beyond the apex of ramus, broad proximally, narrowing to a slightly pointed and curved apex. Pleopod 3 (Fig. 3C) endopod larger than exopod medial margin beset with setules, exopod without articulation. Disto-lateral margin of pleopods 2 and 3 peduncles (Figs. 3B, C) each with a long simple seta. Medial margins of peduncle of pleopods 1 to 3 with 3 long and overlapping coupling hooks. Pleopods 4 and 5 (Figs. 3D, E) with both rami lacking respiratory folds, blood lacunae present. Pleopod 5 (Fig. 3E) exopod larger than endopod with complete subterminal articulation and 2 scale patches, both rami with few marginal simple setae.

Uropods (Figs. 1A, C) lamellar, not extending beyond pleotelson apex, endopod longer than exopod, exopod ventro-laterally inserted.

Ovigerous female

Cephalon and pereon similar to male. Pleotelson (Fig. 2F) wider and shorter in length than that of male (Fig. 1A). Uropod exopod much shorter than male. Marsupium lacking oostegites, formed by anterior and posterior pockets, opening in the mid-line between the fourth pereopods.

Non-ovigerous female

Same as ovigerous female but without brood pouch.

Size

Adult males, 2.4-3.0 mm, ovigerous females, 1.5-3.0 mm, non-ovigerous females, 1.5-2.0 mm.

DISCUSSION

Present material shows affinity to the genus *Sphaeromopsis* Holdich and Jones as well as to *Gnorimosphaeroma* Menzies, 1954. But it is closer to *Sphaeromopsis* in having similar pereopods, penes, pleopod 1 and also having

TABLE I.—COMPARISON OF *SPHAEROMOPSIS PETITA* SP. NOV. WITH THE OTHER SPECIES OF THE GENUS (CHARACTERS OF ADULT MALES ARE CONSIDERED).

Features	<i>S. petita</i> , new species	<i>S. minutus</i> Javed and Yousof, 1995	<i>S. serriguberna</i> Holdich and Harrison, 1981	<i>S. amathitis</i> Holdich and Jones, 1973
Body lateral margins	With membrana cingula,	with simple short setae,	with simple short setae,	with simple short setae,
Antero-lateral angles of pereonite 1	Extending anteriorly beyond eyes,	not extending beyond eyes,	extending to mid-length of eyes,	not extending beyond eyes,
Coxal plates	Directed laterally, fused to tergites, sutures not visible,	directed ventrally, not fused to tergites,	directed ventrally, not fused to tergites,	directed ventrally, not fused to tergites,
Pleotelson	Domed dorsally, apex smoothly rounded, bearing setules,	without dorsal ornamentation, apex rounded,	circular raised portion mid-dorsally, apex narrow and sub-truncate,	without dorsal ornamentation, apex truncate in dorsal view,
Epistome	Visible dorsally, apically concave, apex and arms with long marginal setae,	not visible dorsally, apically subacute, without setae,	not visible dorsally, apex subtriangular without setae,	visible dorsally, apex triangular without setae,
Penes	Long, subequal in length to pleopod 1, rami broad proximally, with truncate apices,	rami curved, inwards proximally tapering to narrow and outwardly directed apices,	with thickened regions midway along external margins, rami tapering abruptly to acute apices,	rami tapering gradually to narrowly rounded apices,
Pleopod 1	Peduncle produced into large medial lobe, entire medial margin of endopod bearing short setae and moderately convex, distal margin sub-truncate, lateral margin concave, exopod with proximo-lateral seta,	peduncle produced into a large medial lobe, distal margin of endopod convex, bearing setae on convex portion, distal margin bluntly pointed, lateral margin slightly concave, exopod without proximo-lateral seta,	peduncle produced into large medial lobe, endopod sub-rectangular, lateral margin slightly concave, exopod distal margin truncate, without proximo-lateral seta,	peduncle produced into large medial lobe, endopod lateral margin straight, distal margin rounded, exopod without proximo-lateral seta,
Pleopod 2 appendix masculina	Arising above the mid-length of endopod, broad proximally, with a pointed and curved apex, extending beyond the endopod,	arising basally, extending to endopod apex,	arising basally, extending just beyond endopod, bearing setules proximally,	arising basally, with margins sub-parallel, extending to endopod apex, bearing setules on medial margin,

TABLE I. - (CONTINUED).

Features	<i>S. reticulata</i> (Stebbing, 1910)	<i>S. mourei</i> (Loyola e Silva, 1960)	<i>S. heardi</i> Kensley and Schotte, 1994
Body lateral margins	with simple short setae,	with simple short setae,	not visible in dorsal view.
Antero-lateral angles of pereonite 1	rounded, not extending beyond eyes,	not extending beyond eyes,	not extending beyond eyes.
Coxal plates	directed ventrally, not fused to tergites,	directed ventrally, not fused with tergites,	directed ventrally, fused to tergites as seen in dorsal view only.
Pleotelson	apex extended posteriorly, narrow and rounded in dorsal view,	apex extended and truncate in dorsal view,	sub-triangular, apex rounded with 2 raised sub-rectangular areas bearing scattered, tubercles.
Epistome	visible dorsally, apex rounded setose without setae,	visible dorsally, apex triangular, anterior surface, narrow at base, widening then tapering to styliform apices.	visible dorsally, contiguous with rostrum, apex truncate.
Pencs	broad at base, rami with sub-parallel external margins and narrowly rounded apices, arch bearing terminal seta,		broad proximally rami tapering to narrow apices.
Pleopod 1	peduncle produced into medial lobe, endopod longer than exopod, both rami with convex medial margins, lateral margin of endopod deeply concave and that of exopod straight, exopod without proximo-lateral seta,	peduncle not produced into medial lobe, rami subequal in length, lateral margin of endopod concave, exopod subrectangular, with proximo-lateral seta,	peduncle short not forming a medial lobe, exopod sub-triangular, exopod roughly rectangular, with proximo-lateral seta.
Pleopod 2 appendix masculina	arising basally, broad, sub-crescentic, extending much beyond the endopod apex,	arising basally, wide proximally, slender in distal half, with rounded apex, not reaching to endopod apex,	arising basally, wide in proximal half, abruptly tapering to narrow apex, just reaching to distal margin of endopod.

the similar details of brood pouch formation. It differs from *Sphaeromopsis* in having slightly stout antennae and in the insertion of appendix masculina to the endopod.

This material resembles *Gnorimosphaeroma* Menzies, 1954 in the absence of respiratory folds of pleopods 4 and 5, and presence of membrana cingula but differs distinctly in having short penes rami, separated at the base and by different shape of pleonal segments and position of pleonal sutures.

A complete comparison of the present new species (including differences and similarities) with the other six species included in the genus *Sphaeromopsis* is given in Table I).

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