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ON A NEW SPECIES OF *OXINASPHAERA* (ISOPODA, SPHAEROMATIDAE)  
FROM SOMALI AND YEMENI COASTS, WESTERN INDIAN OCEAN

BY

DEBORAH BENVENUTI<sup>1</sup>), GIUSEPPE MESSANA<sup>1</sup>) and MARILYN SCHOTTE<sup>2</sup>)

<sup>1</sup>) Centro di Studio per la Faunistica ed Ecologia Tropicali del C.N.R., Via Romana 17,  
I-50125 Florence, Italy

<sup>2</sup>) Invertebrate Zoology, National Museum of Natural History, NHB Stop 163,  
Smithsonian Institution, Washington, D.C. 20560, U.S.A.

ABSTRACT

The genus *Oxinasphaera* Bruce, 1997, distributed throughout the Indo-West Pacific region, is composed of twenty-four named and a few unnamed species. *Oxinasphaera penteumbonata* n. sp. is here described from specimens from the Yemeni coast of the Arabian peninsula and from the Indian Ocean coast of Somalia. The species is characterized by five distinct, acute spikes on the epistome. A comparison is made with other species of the genus present in the Indian Ocean. The key to the world's species of the genus is modified to host the new species.

RIASSUNTO

Il genere *Oxinasphaera* Bruce, 1997, con distribuzione Indopacifica, annovera attualmente ventiquattro specie più alcune non ancora descritte. La specie *Oxinasphaera penteumbonata* n. sp. viene descritta esaminando campioni provenienti dalle coste della Somalia e dello Yemen. Questa nuova specie risulta caratterizzata dalla morfologia dell'epistoma che presenta cinque acuti "spikes". È stata effettuata una comparazione morfologica con le altre specie del genere e modificata la chiave dicotomica proposta da Bruce (1997) per accogliere anche questa nuova specie.

INTRODUCTION

The recently established genus *Oxinasphaera* Bruce, 1997, is well characterized by the particular morphology of the antennular peduncle and of the anterior margin of the epistome, in adult males. It is currently composed of twenty-three named species, all distributed in the Indo-West Pacific. As research in the Indian Ocean proceeded, species from at least twenty-six sphaeromatid genera were described (Nobili, 1906; Stebbing, 1910; Barnard, 1914, 1955; Roman, 1970, 1974; Monod, 1971a, b, 1975; Holdich & Jones, 1973; Kensley, 1978, 1984; Javed & Ahmed, 1987, 1988a, b; Messana, 1988, 1990; Javed, 1990; Kussakin et al.,

1990; Müller, 1990, 1995; Javed & Yousuf, 1995, 1996). Little, however, is known about Sphaeromatidae from the northwestern region. Bruce, in his 1997 paper, refers also to three additional undescribed species of *Oxinasphaera* present in the northwestern part of the Indian Ocean. The terminology used follows that of Bruce (1997).

Abbreviations: MZUF = Museo Zoologico "La Specola". Sezione del Museo di Storia Naturale dell'Università degli Studi di Firenze. USNM = National Museum of Natural History, Smithsonian Institution, Washington, D.C.

#### TAXONOMY

##### SPHAEROMATIDAE Latreille, 1825

##### Sphaeromatinae Latreille, 1825

##### *Oxinasphaera* Bruce, 1997

##### ***Oxinasphaera penteumbonata* n. sp. (figs. 1-3)**

Material examined. — Holotype ♂ (length 4.4 mm) USNM 280357, International Indian Ocean Expedition sta. 456, off Somalia, 11°14'N 51°08'E, 27-31 m, 17.xii.1964. Paratypes 5 ♂♂, 4 immature ♂♂, 1 ovigerous ♀ (length 3.7 mm) USNM 280358, same data as holotype; 1 ♂ (length 4 mm) MZUF 2330, Aden (4/17), Yemen, 13.iv.1985, leg. W. Wranik.

Description of male. — Cephalon smooth with a low median tubercle, supra-antennal margin with a row of small nodules and a very well developed, bifid median rostral spike. Pereonite I smooth or with a very weak submarginal, transverse row of small tubercles. Pereonites II-VII each with two transverse rows of acute spikes, progressively larger from II to VII and a transverse row of nodules between these. Pleon granulate with two submedial, prominent conical processes extending posteriorly over the proximal third of the pleotelson; postero-lateral margins each with small, acute process. Pleotelson conspicuously granulate, with two prominent acute and bifid spikes in the anterior part, anterior spikes larger and higher than posterior ones, opposing the processes of pleon on each side; lateral flange weakly developed; posterior margin rounded, median tooth with a small acute spike on apex. Penes extending to distal part of pleopod I, slender, with tiny spinules on distal 1/3 and acute apex.

Epistome granulate, with 5 distinct, acute spikes placed in form of horseshoe. Antenna I, peduncle article I with 6-7 acute, regular anterior spikes, a long, acute posteroproximal spike, and a short, acute posterodistal spike; flagellum with 7 articles with setae and long aesthetascs. Antenna II, flagellum with 8-11 articles bearing glabrous and plumose setae on medial distal margin.

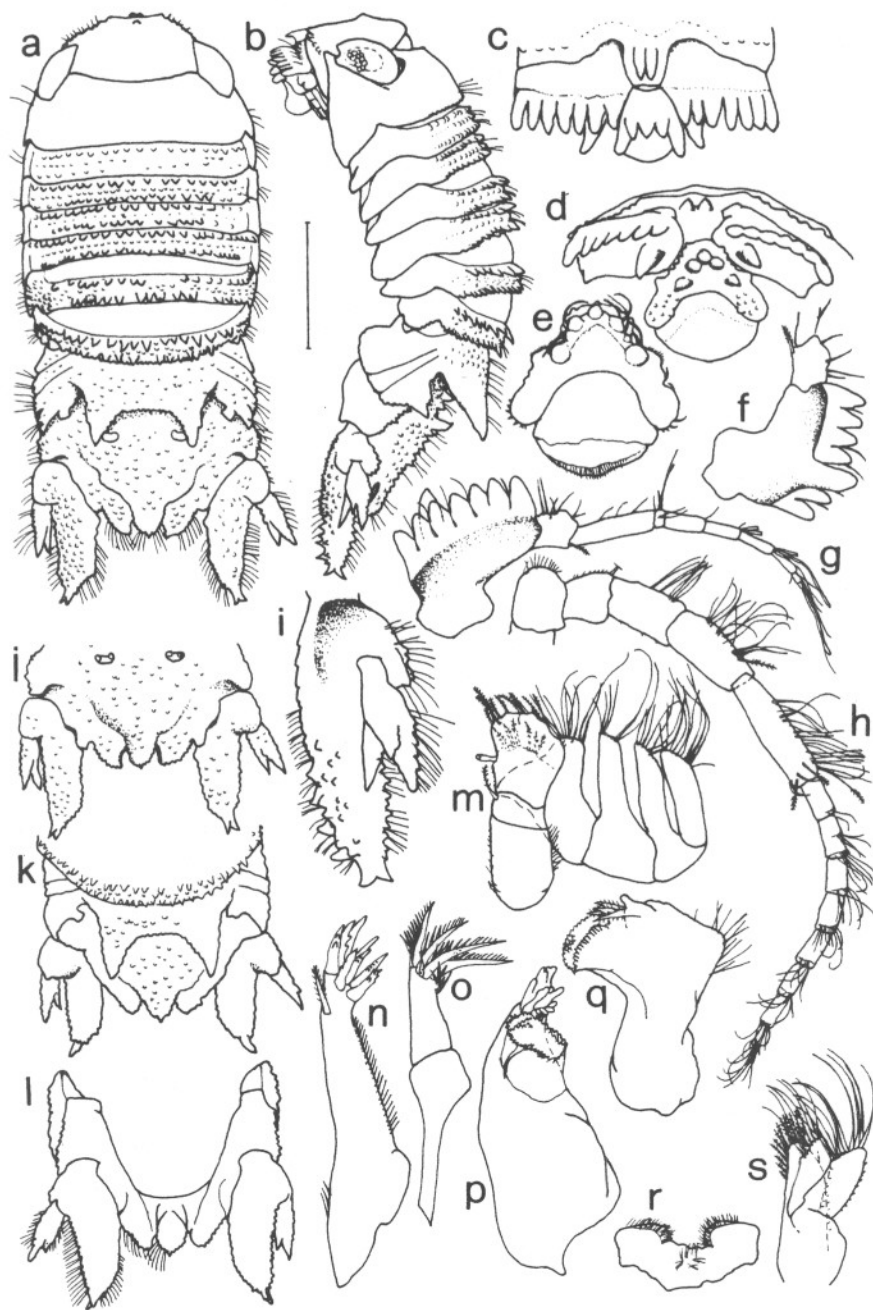


Fig. 1. *Oxinasphaera penteumbonata* n. sp., adult male from Yemen. a, b, body, dorsal and lateral view, respectively; c, antenna I, frontal view; d, cephalon, ventral view; e, epistome and labrum; f, first article of antenna I peduncle; g, antenna I; h, antenna II; i, uropod; j, pleotelson, dorsal view without pleon; k, l, pleotelson, dorsal and ventral view; m, maxilliped; n, o, maxilla I, endite and exite, respectively; p, left mandible; q, right mandible; r, paragnath; s, maxilla II. Scale bar = 1 mm.

Left mandible with both the robust incisor process and the lacinia mobilis tricuspidate, a spine row of 5 spines and a prominent dentate molar process with a robust lateral seta. Right mandible with pointed incisor process weaker than on left mandible and with a spine row of 4 setose spines. Maxilla I, endite with 4 distal, plumose spines, 2 short simple spines and some setae on distal medial corner; exite with 8 robust, distal, dentate spines and a long, plumose seta on lateral margin. Maxilla II, endite with 13 robust, distal plumose spines; exite with medial and lateral rami with 10 long, distal plumose setae. Maxilliped, endite with 9 distal plumose spines, with one coupling hook on medial margin, and a transverse line of 6 plumose spines on the ventral surface; palp with first article bearing a long, medial plumose seta, articles 2-4-lobed and apically bearing long setae.

Pereopod I stocky, slightly shorter than others. Basis with a long, thin plumose spine on lateral margin and a long medio-distal spine. Ischium long, about three-fourths length of the basis, lateral margin with a proximal spine and a median plumose spine, medial margin pubescent. Merus about half-length of ischium with 2 distal spines on distal lateral margin, medial margin bearing 2 distally dentate, proximally expanded spines and one very long distal seta. Carpus shorter than half-length of merus with 2 distally dentate, proximally expanded spines on medial margin. Propodus about four times length of carpus with medial margin bearing two rows of 4 distally dentate spines, proximally expanded, and a distal spine on the lateral margin. Dactylus shorter than half-length of propodus with an apically acute and very long unguis (about half-length of dactylus) and a short, accessory unguis with acute apex. Pereopods II-V about equal in size. Pereopods V-VII with large, distally three-pointed spines on carpus.

Symphodites of the pleopods I-III with 3-3-2 retinacula, respectively. Pleopod I with subtriangular endopodite with about 18 distal, long, plumose setae, medial margin with a proximal fold; exopodite with lateral and distal margin with about 30 long, plumose setae and a robust proximo-lateral spine, surface of ramus bearing setae and squamosetae. Pleopod II with endopodite with about 13 distal, long, plumose setae; exopodite with lateral and distal margin with about 30 long, plumose setae; appendix masculina extending with the distal fifth over the endopodite distal margin, distally tapered. Pleopod III with sub-trapezoid endopodite with 10 plumose setae on distal margin; exopodite with transverse suture on distal fourth, lateral and distal margin with about 32 long, plumose setae. Pleopod IV exopodite with transverse suture on distal fourth and with spines on lateral and distal margin; endopodite with transverse folds, medio-distal lobe with an apical, hooked plumose spine. Pleopod V exopodite with transverse suture on distal sixth, spines on lateral margin and distal region of medial margin with 4 finely toothed bosses; endopodite with transverse folds and pubescent margins. Uropod granulate and pubescent; endopodite stocky, with apically 2 prominent,

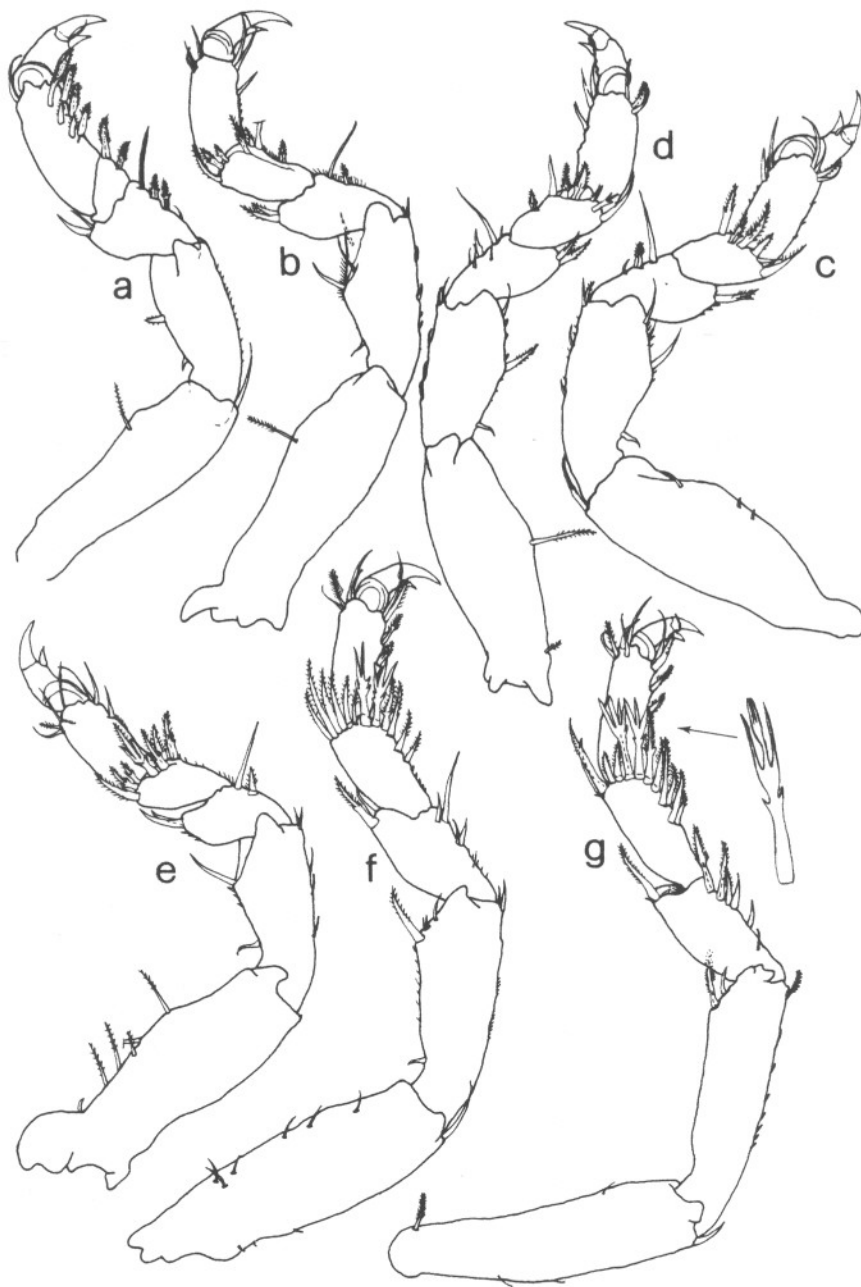


Fig. 2. *Oxinasphaera penteumbonata* n. sp., adult male from Yemen. a-g, pereopods I-VII, respectively.

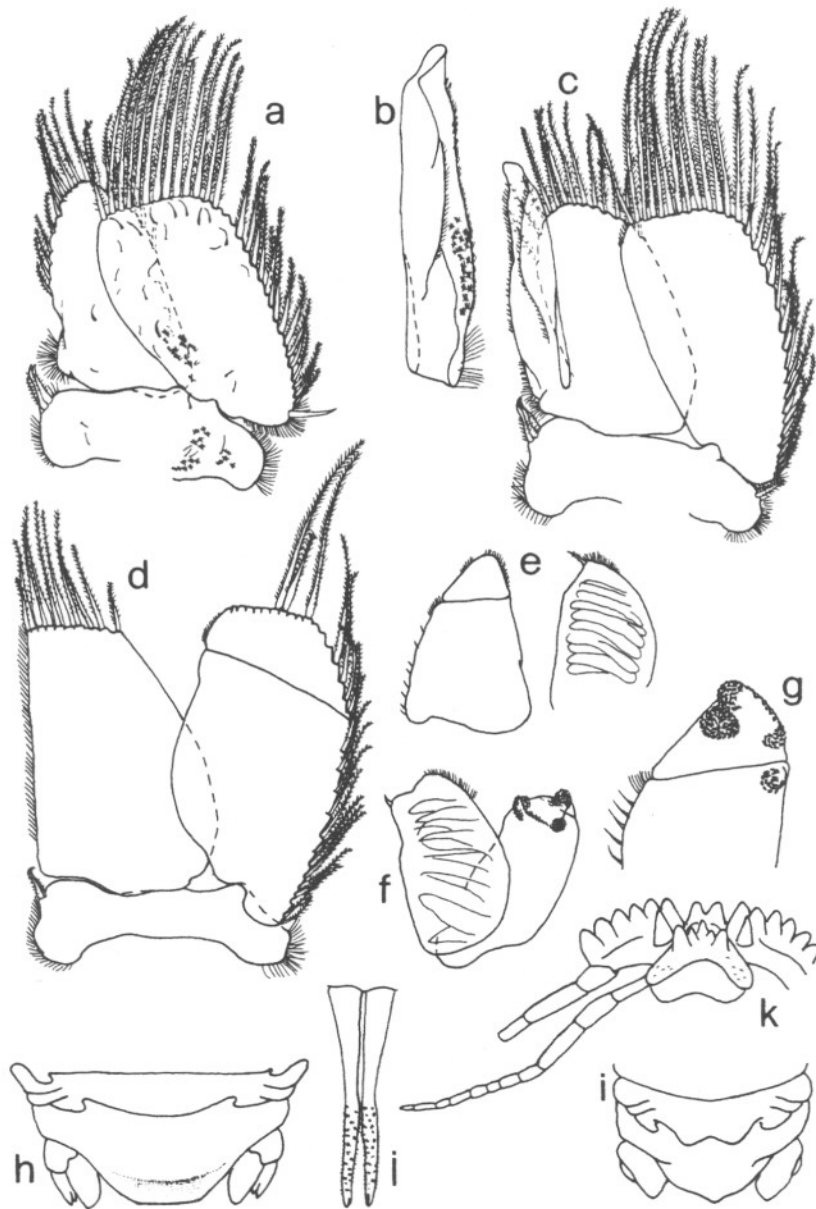


Fig. 3. *Oxinasphaera penteumbonata* n. sp. a-g, adult male from Yemen. a, pleopod I; b, appendix masculina; c-f, pleopods II-V, respectively; g, distal part of exopod of pleopod V. h, Ovigerous female from Somalia, pleon. i, Immature specimen from Somalia, pleon. j, k, Somali adult male. j, penes; k, frontal lamina and antennular bases, ventral view.

acute spikes and with 4 distinct, acute spikes on distal-ventral surface; exopodite about half the length of the endopodite, and with apex deeply bifid and with a prominent lateral spike.

Description of female. — Unornamented; pleotelsonic apex entire, noticeably truncate; otherwise indistinguishable from other females in genus.

Colour. — In the Somali specimens, very sparse, small brown chromatophores are scattered on dorsal surface of male, absent in females.

Derivatio nominis. — The specific name *penteumbonata*, refers to the five distinct, acute spikes on the epistome and derives from the Greek words πέντε = five and the root ὀμφαλός (in Latin umbo) = central or marginal bosses on shield. The epitheton is an adjective, agreeing in gender with the (feminine) generic name.

#### REMARKS

Character state and distribution of the 31 characters used in the cladistic analysis (Bruce, 1997: 155-156) for *O. penteumbonata* n. sp., place the species in the *O. bispinosa-tripartita-kensleyi* clade. In particular, the new species presents the same apomorphic state of character nine (pleon posterior margin with posteriorly directed processes), thus confirming the observation by Bruce (1997) that all the known Indian Ocean species bear prominent pleonal processes, including the three unnamed species. Within the clade, the new species clusters with *Oxinasphaera tripartita* (Richardson, 1910) and *Oxinasphaera kensleyi* Bruce, 1997 by a posterior margin of the pleotelson with a well-developed dorsal lobe overriding the median excision.

The specimens examined are most similar to *O. kensleyi*, the only named species of the genus from the western Indian Ocean, for its prominent pereonal tubercles and the shape of the appendix masculina. Nevertheless, the morphology of the frontal region has several significant differences: the first article of the antennular peduncle has 6-7 anterior spikes and a long, acute postero-proximal spike, and does not present the five irregular anterior spikes and the distally truncate postero-medial blade. Furthermore, *O. penteumbonata* lacks the prominent proximal spike on the ventral surface of the pleonal submedial processes.

*O. tripartita*, a species known from Papua New Guinea and the Philippines, is characterized by the presence of 5-7 anterior spikes on the basal segment of the antenna I peduncle and by the absence of the ventral tubercle on the ventral side of the pleonal processes. It is also similar to *O. penteumbonata* but can be distinguished by having pereonites II and III weakly ornamented, pereonal spikes of all pereonites being less strongly developed than those of *O. penteumbonata*, by having weaker antennular spikes, and the penes and appendix masculina being straight rather than sinuate.



## GENERAL COMMENTS

To host the new species, the key to the world's species of the genus *Oxinasphaera* (Bruce, 1997: 157-159) should be modified as follows:

2. Pleotelson posterior margin median lobe not extending beyond posterior margin, flanked by deep grooves; antennule article 1 without posterior blade or spikes; penes short ..... 3
  - Pleotelson posterior margin median lobe extending beyond posterior margin, not flanked by deep grooves; penes elongate ..... 2a
- 2a. Antennule with irregular anterior spikes and posterior blade ..... 7
  - Antennule with 6-7 regular anterior spikes and a long postero-proximal acute spike ..... *O. penteumbonata* n. sp.

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