

REDESCRIPTION OF THE SOUTH AFRICAN SPHAEROMATID ISOPOD
GENERA *ARTOPOLES* BARNARD, 1920, *PARASPHAEROMA* STEBBING,
1902 AND *STATHMOS* BARNARD, 1940

BY

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ABSTRACT

The South African marine isopod genera *Artopoles* Barnard, 1920, *Parasphaeroma* Stebbing, 1902 and *Stathmos* Barnard, 1940 are re-diagnosed and figured from the type material and other material held in the collections of the South African Museum. All three genera are known only from the Cape region of South Africa.

RÉSUMÉ

De nouvelles diagnoses des genres d'Isopodes marins d'Afrique du Sud: *Artopoles* Barnard, 1920, *Parasphaeroma* Stebbing, 1902 et *Stathmos* Barnard, 1940 sont données, et ces genres figurés à partir du matériel-type ainsi que d'autres matériels conservés dans les collections du South African Museum. Ces trois genres sont seulement connus de la région du Cap en Afrique du Sud.

INTRODUCTION

Three poorly-known genera from South Africa are redescribed on the basis of material held at the South African Museum, Cape Town. The three genera are *Artopoles* Barnard, 1920, *Parasphaeroma* Stebbing, 1902 and *Stathmos* Barnard, 1940, all of which have in the past been considered to belong to the 'platybranch' sphaeromatids in the sense of the Cassidininae Hansen, 1905 (see Harrison & Ellis, 1991). Bruce (1994a) in revising the Australian Cassidininae, and in subsequent articles (e.g., Bruce, 1995, 1997) indicated that the principal character state used to define this group of genera, i.e., pleopods 4 and 5 without thickened ridges or folds, is probably both a plesiomorphy and a homoplasy. There are at present about

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94 accepted genera of Sphaeromatidae (cf. Kensley et al., 2001), a number that will continue to increase. Without a phylogenetic or other robust conceptual frame, it is not possible to make more than a minimal and subjective phylogenetic assessment of the genera redescribed here.

Abbreviations. — BMNH, The Natural History Museum, London; SAM, The South African Museum, Cape Town; CP, circumplumose; PMS, plumose marginal setae.

TAXONOMY

Isopoda

Suborder FLABELLIFERA

Family SPHAEROMATIDAE Latreille, 1825

Genus *Artopoles* Barnard, 1920

Artopoles Barnard, 1920: 376; 1940: 506 (key); 1955: 72. — Kensley, 1978: 115. — Harrison, 1984: 370. — Harrison & Ellis, 1991: 933.

Type species. — *Artopoles natalis* Barnard, 1920, by monotypy. Barnard (1920) cited the type material as being held at the South African Museum, however, it is now held at The Natural History Museum, London (BMNH 1937.11.10.44).

Description of male. — Body strongly dorsoventrally compressed; pereon, pleon and pleotelson unornamented. Cephalon deeply immersed in pereonite 1, without distinct rostral point; eyes large, facets distinct. Pereonites without raised ridges. Pereonite 7 not extending laterally to body margins. Coxae not distinctly demarcated, overlapping anterior over posterior. Pleon of 4 somites, somite 1 largely concealed by pereonite 7, somites 2-4 indicated by 2 distinct suture lines running to posterior margin of pleon. Pleotelson anteriorly domed, posterior margin flat, without distinct ventral exit channel or groove.

Antennule peduncle article 1 less than twice as long as 2, robust; article 3 slender; anterior distal margin of articles 1 and 2 flattened, produced; flagellum shorter than peduncle. Antenna peduncle article 1 short, articles 2 and 3 shorter than 4-5, which are longest; flagellum shorter than peduncle.

Epistome anteriorly produced, scarcely visible in dorsal view, narrowly rounded. Labrum unornamented. Mandible incisor with single irregular cusp; molar process prominent, crushing, provided with lateral scale teeth; left mandible with prominent lacinia mobilis; both mandibles with spine row of 5 serrate spines. Maxillule lateral lobe with about 12 robust setae on gnathal surface, medial 4 of which are prominently serrate, and 1 submarginal biserrate robust seta; medial lobe with 4

prominently serrate and plumose robust setae, and 2 short simple robust setae. Maxilla with all articles well-developed, with prominent setae on lateral and middle lobes, medial lobe with several stout CP robust setae and additional slender robust setae. Maxilliped palp articles 2-4 medial margins each with distinct setose lobe, article 5 extending beyond distal margin of article 4 lobe; maxilliped endite distal margin with elongate CP robust and slender setae.

Pereopods all ambulatory, pereopod 1 merus inferior margin expanded, blade-like, convex; pereopods 2 and 3 sub-similar, and more robust than 4-7; dactylus infe-

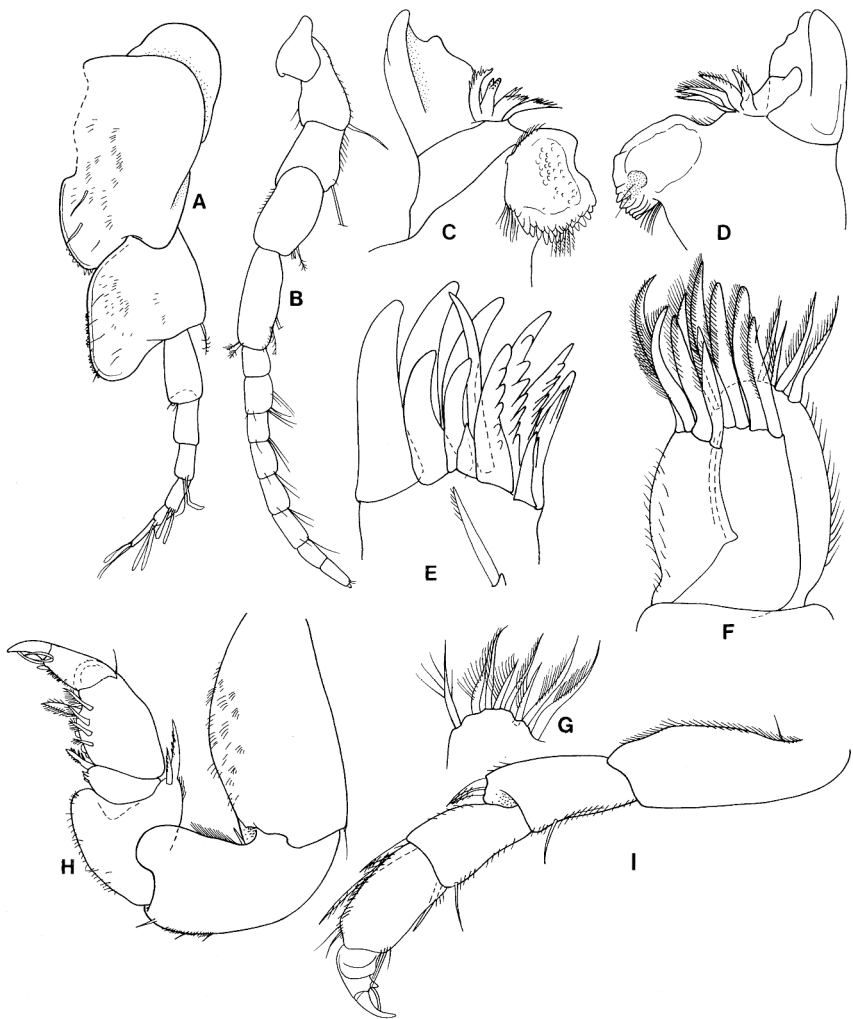


Fig. 1. *Artopoles natalis* Barnard, 1920. A, antennule; B, antenna; C, right mandible, distal part; D, left mandible, distal part; E, maxillule lateral lobe; F, maxilla; G, maxilla, medial lobe; H, pereopod 1; I, pereopod 7.

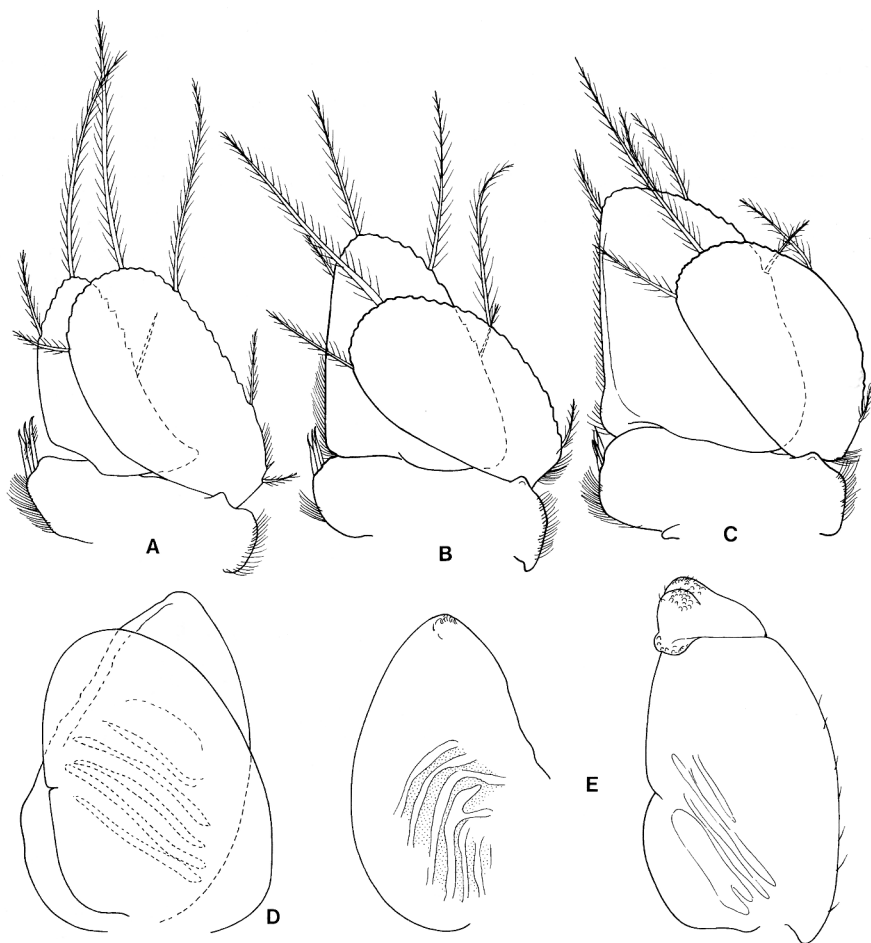


Fig. 2. *Artopoles natalis* Barnard, 1920. A-E, pleopods 1-5, respectively.

rior margin with cuticular scale row, with prominent simple secondary unguis and 2 flattened setae arising at lateral base of secondary unguis; lateral margin with 2 setae. Pereopod 6 and 7 inferior and distal margins of carpus with biserrate spines.

Penes paired, unfused, medially adjacent at posterior of sternite 7.

Pleopods 1-3 both rami with PMS. Pleopod 1 endopod shorter than exopod; exopod with 1 or 2 simple spines at proximolateral angle, axis perpendicular or weakly oblique to peduncle; peduncle with 3 coupling hooks on medial margin. Pleopod 2 with appendix masculina sub-basally attached, longer than endopod, extending beyond distal margin of ramus. Pleopods 3 and 4 exopods without transverse suture, pleopod 5 with transverse suture. Pleopods 4 and 5 exopods with weakly thickened ridges or folds; endopods with or without indistinct and weak

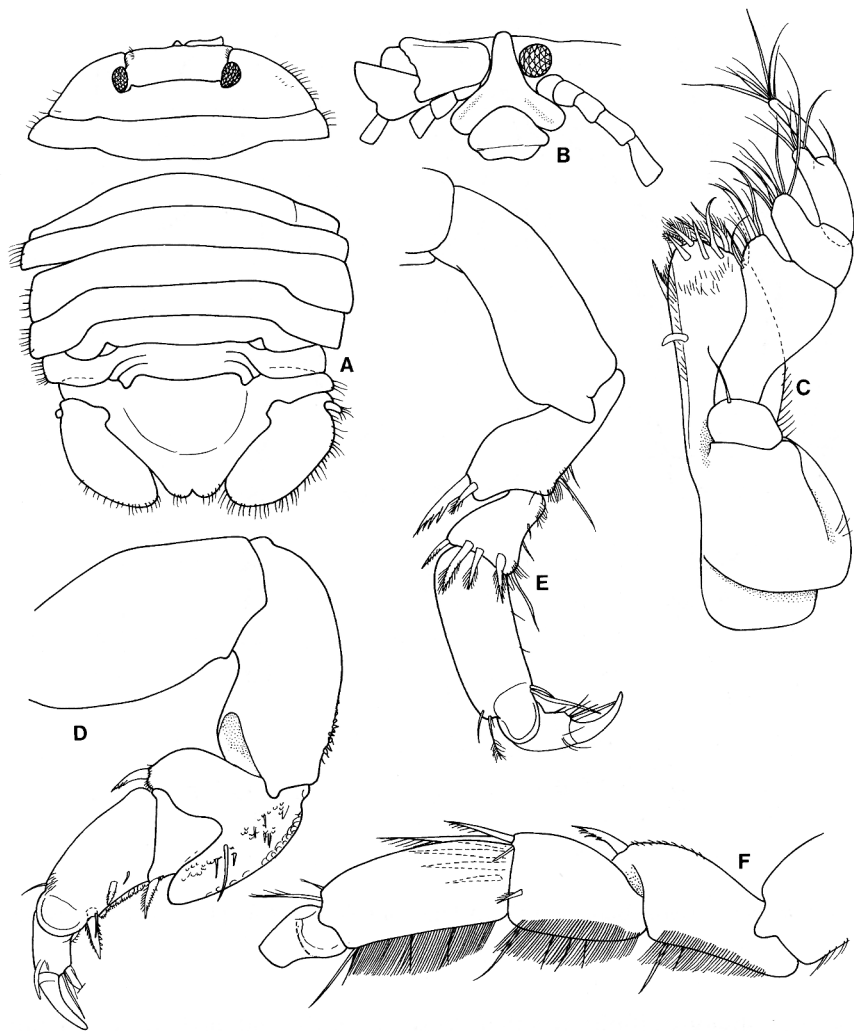


Fig. 3. *Artopoles capensis* Barnard, 1955. All figs. of holotype. A, dorsal view; B, frons; C, maxilliped; D, pereopod 1; E, pereopod 2; F, pereopod 7, distal articles.

thickened ridges or folds. Pleopod 5 exopod with 3 scale patches. Uropod attached anterolaterally on pleon; exopod minute, vestigial, peg-like, set into lateral margin of endopod posterior to anterolateral apex; endopod flat, extending slightly beyond posterior margin of pleotelson, rami not in contact.

Female. — Paired oostegites arising from pereonites 2, 3 and 4, with large posterior pocket (Harrison, 1984).

Remarks. — The genus has remained poorly known since its inception. Although dorsoventrally flattened, and having a greatly reduced uropodal exopod, it

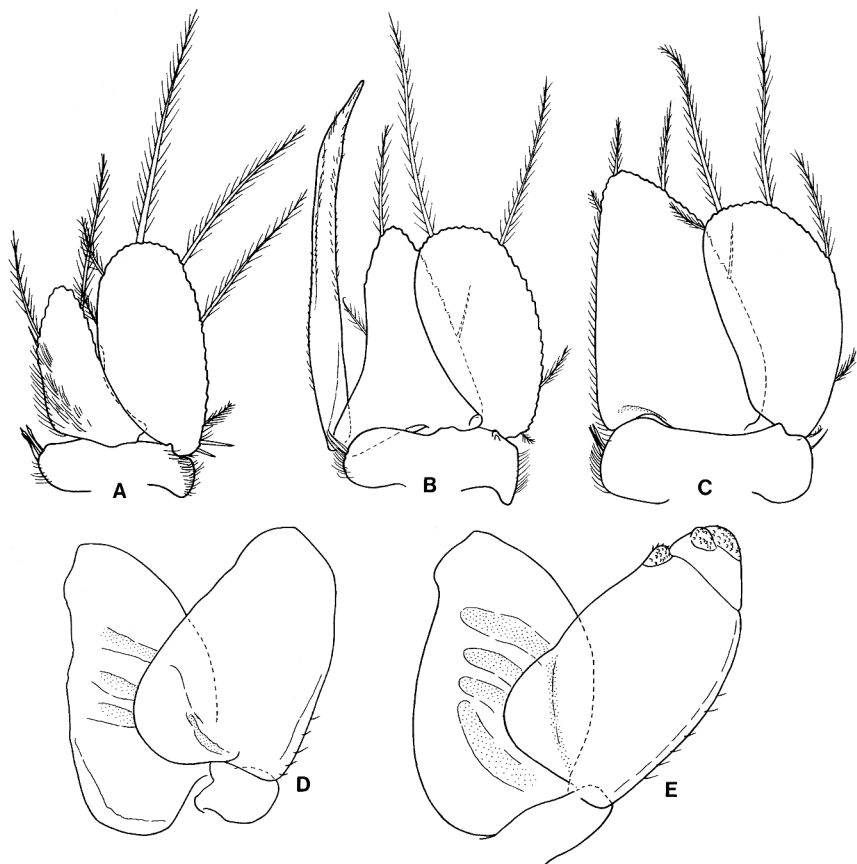


Fig. 4. *Artopoles capensis* Barnard, 1955. All figs. of holotype. A-E, pleopods 1-5, respectively.

shows little obvious affinity to other dorso-ventrally flattened sphaeromatid genera. A unique character, possibly autapomorphic for the genus, is the distinctive blade-like expansion of the inferior margin of the pereopod 1 merus.

***Artopoles natalis* Barnard, 1920 (figs. 1, 2)**

Artopoles natalis Barnard, 1920: 377; 1940: 425, fig. 17a-c. — Kensley, 1978: 115, fig. 49B.

Material examined. — ♀ (ovig., 5.3 mm), FAL 782, 34°12.9'S 18°49.1'E, 19 m, 16 Feb. 1965 (SAM A14860).

Types (not examined): "The sample originally comprised 1 ♀, 2 juveniles, from off the Natal Coast in 6 fms (11 m) of water, found in coral, coll. H. W. Bell-Marley in 1917" (Michelle G. van der Merwe, South African Museum, in litteris); The Natural History Museum, London (BMNH 1937.11.10.44).

Remarks. — Characters that readily distinguish the type species from *A. capensis*, the only congener, are the posterior margin of the pleotelson being subtruncate and entire, and the antennule peduncle with the anterodistal angles of peduncular articles 1 and 2 broadly rounded and only weakly produced. Males of this species remain unknown, and to what extent the species is sexually dimorphic is unassessed.

Distribution. — Known only from the Natal coast and the vicinity of Cape Town.

Artopoles capensis Barnard, 1955 (figs. 3, 4)

Artopoles capensis Barnard, 1955: 72, fig. 35. — Kensley, 1978: 115, fig. 49A.

Material examined. — Holotype, ♂ (6.2 mm), in 2 pieces, south of Kogel Bay, False Bay, 14-17 m, coll. University of Cape Town's Ecological Survey (SAM A10405).

Remarks. — Distinguished from the type species by the medial excision to the pleotelson posterior margin, and the more strongly produced and narrowly rounded anterodistal angles to antennular peduncle articles 1 and 2.

Distribution. — Known only from the vicinity of Cape Town.

Genus **Stathmos** Barnard, 1940

Stathmos Barnard, 1940: 425: 506 (key). — Harrison, 1984: 390. — Harrison & Ellis, 1991: 947.

Type species. — *Stathmos coronatus* Barnard, 1940, by monotypy; holotype held at the Natural History Museum, London (BMNH 1937.11.10.170).

Description of male. — Body strongly dorsoventrally compressed; pereon, pleon and pleotelson unornamented. Cephalon deeply immersed in pereonite 1, laterally overlapped by pereonite 1, with small distinct rostral point; eyes dorsal, large, facets distinct. Pereonite 7 extending laterally to body margins. Coxae distinctly demarcated. Pleon of 4 somites, somite 1 largely concealed by pereonite 7, somites 2-4 indicated by 2 distinct suture lines running to posterior margin of pleon; pleonal sternite absent. Pleotelson posterior margin flat, without distinct ventral exit channel or groove.

Antennule peduncle articles 1 and 2 flattened, expanded; article 1 less than twice as long as 2, robust; article 2 with anterolateral angle produced, article 3 slender; flagellum shorter than peduncle. Antenna peduncle article 1 short, articles 2 and 3 shorter than 4-5, which are longest; flagellum shorter than peduncle.

Epistome anteriorly produced, anteriorly subtruncate. Labrum unornamented. Mandible incisor tricuspidate; molar process prominent, crushing, provided with lateral scale teeth; left mandible with prominent lacinia mobilis; both mandibles

with spine row of 2 smooth and about 7 pectinate spines. Maxillule lateral lobe with about 12 robust setae on gnathal surface, medial 4 of which are prominently serrate, and 1 further biserrate robust seta; medial lobe with 4 prominently serrate and plumose robust setae, with further 2 short simple robust setae. Maxilla with all articles well-developed, with prominent setae on lateral and middle lobes, medial lobe with several CP robust setae and additional slender robust setae. Maxilliped palp articles 2-4 medial margins each with distinct medial lobe, article 5 extending beyond distal margin of article 4; maxilliped endite distal margin with elongate CP robust setae.

Pereopods all ambulatory. Pereopods 1-3 with elongate propodus, that of pereopod 1 about 3.7 times as long as wide; inferior margins of ischium, merus, carpus

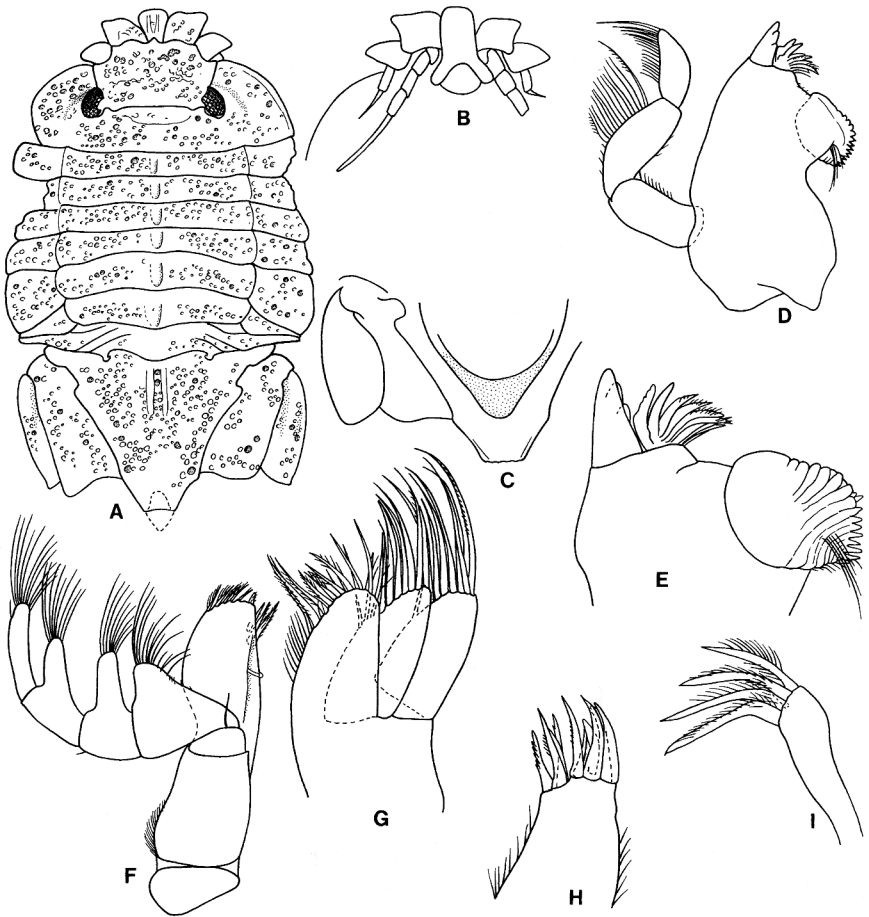


Fig. 5. *Stathmos coronatus* Barnard, 1940. A, dorsal view; B, frons; C, pleon posterior margin in ventral view; D, right mandible; E, right mandible, distal part; F, maxilliped; G, maxilla; H, maxillule, lateral lobe; I, maxillule, medial lobe.

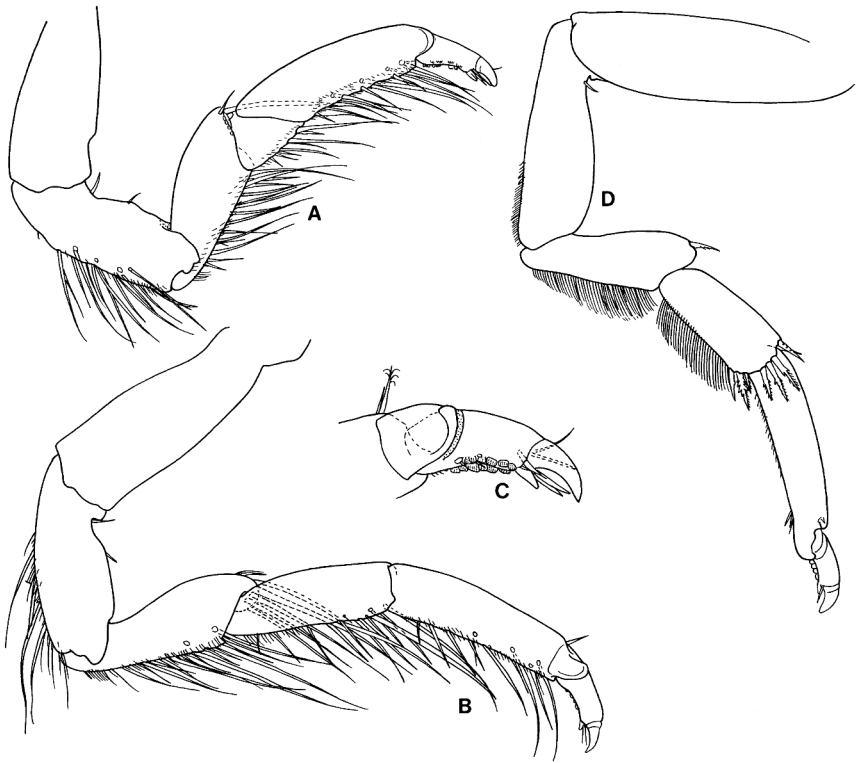


Fig. 6. *Stathmos coronatus* Barnard, 1940. A, pereopod 1; B, pereopod 2; C, pereopod 2, dactylus; D, pereopod 7.

and propodus with long simple setae; dactylus inferior margin with cuticular scale row, with prominent simple secondary unguis and 2 flattened setae arising at lateral base of secondary unguis; lateral margin with 2 setae. Pereopods 6 and 7 slender, inferior margins of merus and carpus with dense mass of setae; distolateral margins of carpus with biserrate spines.

Penes not observed.

Pleopods 1-3 both rami with PMS. Pleopod 1 endopod and exopod subequal in length; exopod with 1 simple robust seta at proximolateral angle, axis weakly oblique to peduncle; peduncle medial margin with 3 coupling hooks. Pleopod 2 with appendix masculina basally attached, longer than endopod, distal quarter reflexed. Pleopods 3-5 exopods with distinct transverse suture. Pleopods 4 and 5 rami without thickened ridges or folds. Pleopod 5 exopod with 3 scale patches, lateral margin distinctly thickened. Uropod attached anterolaterally on pleon; both rami lamellar; not extending to posterior margin of pleotelson.

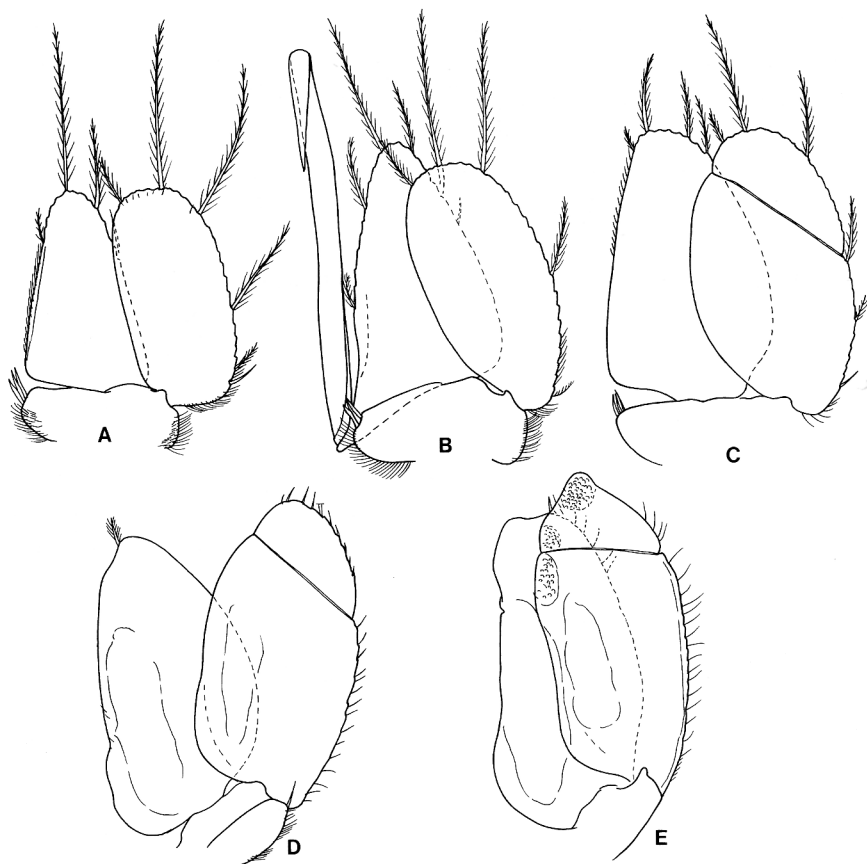


Fig. 7. *Stathmos coronatus* Barnard, 1940. A-E, pleopods 1-5, respectively.

Remarks. — *Stathmos* is dorso-ventrally compressed with coxae that are laterally expressed. The epistome is strongly anteriorly produced and is prominent in dorsal view; articles 1 and 2 of the antennule peduncle are flattened and expanded; pleopods 4 and 5 are without folds or thickened ridges. This combination of characters would tend to place the genus into the old concept of the 'cassidine' genera. As is the case with *Apemosphaera* Bruce, 1994 (cf. Bruce, 1994a), the morphology of the mandibles, maxilliped, pereopods and shape and setation of the pleopods, including the appendix masculina, are all indicative that the genus is in some ways similar to *Exosphaeroma* Stebbing, 1900 (see Brandt & Wägele, 1989).

Characters which serve to distinguish this genus include the flattened body shape, the uropod with both rami lamellar and falling short of the pleotelson, the maxilliped palp with well-developed lobes, and the presence of long setae on the

inferior margins of the ischium, merus, carpus and propodus of pereopods 1-3, together with a dense mass of setae on the inferior margin of the merus and carpus. The pereopodal setation is possibly unique to the genus.

***Stathmos coronatus* Barnard, 1940 (figs. 5-7)**

Stathmos coronatus Barnard, 1940: 426, fig. 17d-k. — Kensley, 1978: 116, fig. 49E.

Material examined. — ♂ (7.3 mm), 34°12.9'S 18°49.1'E, 16 Feb. 1965, stn FAL 783 (SAM A14958). 2 ♀♀ (5.0, 5.2 mm), 34°07.3'S 18°14.9'E, 16 Feb. 1965, stn FAL 840 (SAM A14957).

Holotype (not examined), Oudekraal, Cape Peninsula, 1934, coll. Prof. T. A. Stephenson; held at the Natural History Museum, London (BMNH 1937.11.10.170).

Remarks. — The sole species of the genus can be identified by the flattened body shape with a coarsely-pitted surface, the prominently produced and anteriorly truncate epistome, the lamellar uropods not extending to the posterior margin of the pleotelson and the endopod of which has a concave distal margin, and by the strongly produced posterior margin to the pleotelson.

Distribution. — Known only from the vicinity of Cape Town.

Genus *Parasphaeroma* Stebbing, 1902

Parasphaeroma Stebbing, 1902: 70; 1910: 429. — Hansen, 1905: 1, 91, 111. — Barnard, 1940: 506 (key). — Harrison, 1984: 387. — Harrison & Ellis, 1991: 943.

Description of male. — Body strongly vaulted; pereon, pleon and pleotelson smooth, posterior median portion of cephalon with indistinctly raised portion, pleonite 5 with posteriorly-directed median nodule, pleotelson with centrally positioned posteriorly-directed nodule. Cephalon not deeply immersed in pereonite 1, with distinct rostral point; eyes lateral, large, facets distinct. Pereonite 7 extending laterally to body margins; coxae distinctly demarcated. Pleon of 4 somites, somite 1 free of pereonite 7, somites 2-4 indicated by 2 distinct suture lines running to lateral margins of pleon. Pleonal sternite present. Pleotelson posterior margin narrowly rounded, without distinct ventral exit channel or groove.

Antennule peduncle article 1 approximately twice as long as 2; articles 1 and 2 robust; article 3 slender, about 6 times as long as wide, slightly shorter than combined lengths of articles 1 and 2; flagellum shorter than peduncle. Antenna peduncle article 1 short, articles 2 and 3 shorter than 4-5, which are longest.

Epistome strongly produced anteriorly, widely rounded, prominent in dorsal view. Labrum unornamented. Mandible incisor with 3 irregular cusps; molar process prominent, crushing, provided with lateral scale-teeth; both mandibles with spine row of approximately 8 spines; palp articles 2 and 3 with dense mass

of setae along medial margins. Maxillule lateral lobe with about 12 robust setae on gnathal surface, medial 2 of which are weakly serrate; medial lobe with 4 prominently serrate and CP robust setae, with further 2 short simple spines. Maxilla with all articles well-developed, with prominent setae on lateral and middle lobes, medial lobe with several robust CP spines and additional slender robust setae. Maxilliped palp article 2-4 medial margins each with distinct medial lobe, article 5 extending beyond distal margin of article 4; maxilliped endite distal margin with elongate CP robust setae.

Pereopods ambulatory, pereopod 1 carpus and propodus densely set with acute long robust setae; pereopod 2 propodus appearing inflated, inferior surface with row of 5 short blunt robust setae; pereopod 3 sub-similar, propodus not inflated; pereopods 4-7 slender, articles all elongate, inferior margins of merus, carpus and propodus with few short robust setae.

Penes paired, unfused, medially adjacent at posterior of sternite 7, short, not extending to pleopod 1 peduncle.

Pleopods 1-3 both rami with PMS. Pleopod 1 endopod shorter than exopod; exopod axis weakly oblique to peduncle; peduncle with 3 coupling hooks on medial margin. Pleopod 2 with appendix masculina sub-basally attached, longer than endopod, extending beyond distal margin of ramus. Pleopods 3 and 4 exopods with transverse suture, pleopod 5 without. Pleopods 4 and 5 exopods without thickened ridges or folds; endopods with or without indistinct and weakly thickened ridges or folds. Pleopod 5 exopod with 3 indistinct scale patches. Uropods attached anterolaterally, both rami lamellar, exopod acute and longer than endopod.

Remarks. — The morphology of pereopod 2 is unique within the Sphaeromatidae. Most sphaeromatids show a remarkably similar pereopod morphology, usually ambulatory, with pereopod 1 usually robust, and 2-7 often sub-similar, less frequently with pereopod 2 being very slender as in some *Dynamenella* Hansen, 1905 (see *D. nuevitas* Kensley, Ortiz & Schotte, 1997) and *Diclidocella* Bruce, 1995. However, there are genera that have pereopods other than pereopod 1 or pereopod 2 that are distinctly modified, these being in particular *Kranosphaera* Bruce, 1992 which has pereopod 5 swollen and enlarged, and *Ceratocephalus* Woodward, 1877 (see Bruce, 1994b), which has pereopod 7 flattened and almost paddle-like. *Paracassidina* Baker, 1911 (see Bruce, 1994a) has pereopod 1 highly modified, with the superior margin of the merus forming an elongate lobe that overrides the club-like propodus.

The lack of a pleotelsonic sinus, and both uropod rami being lamellar readily distinguishes *Parasphaeroma* from *Paracilicaea* and other related genera, though it is worth noting that the morphology of the mouthparts, pereopods and pleopods 1

and 2 of *Parasphaeroma* is remarkably similar to that of *Paracilicæa cordylina* Kensley, 1984, also from South Africa.

***Parasphaeroma prominens* Stebbing, 1902 (figs. 8-10)**

Parasphaeroma prominens Stebbing, 1902: 70, pl. 2. — Hansen, 1905: 78. — Kensley, 1978: 116, fig. 49D.

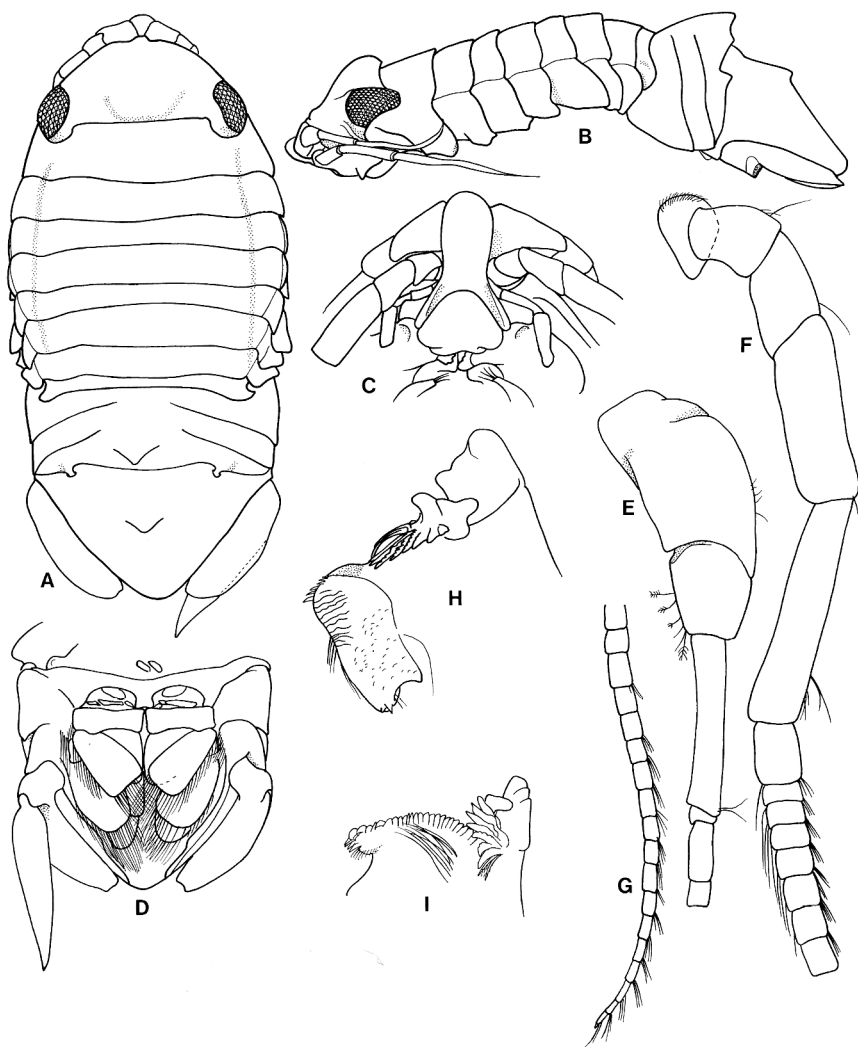


Fig. 8. *Parasphaeroma prominens* Stebbing, 1902. A, dorsal view; B, lateral view; C, frons; D, pleon, ventral view; E, antennule; F, antenna; G, antennal flagellum, continued; H, right mandible; I, left mandible.

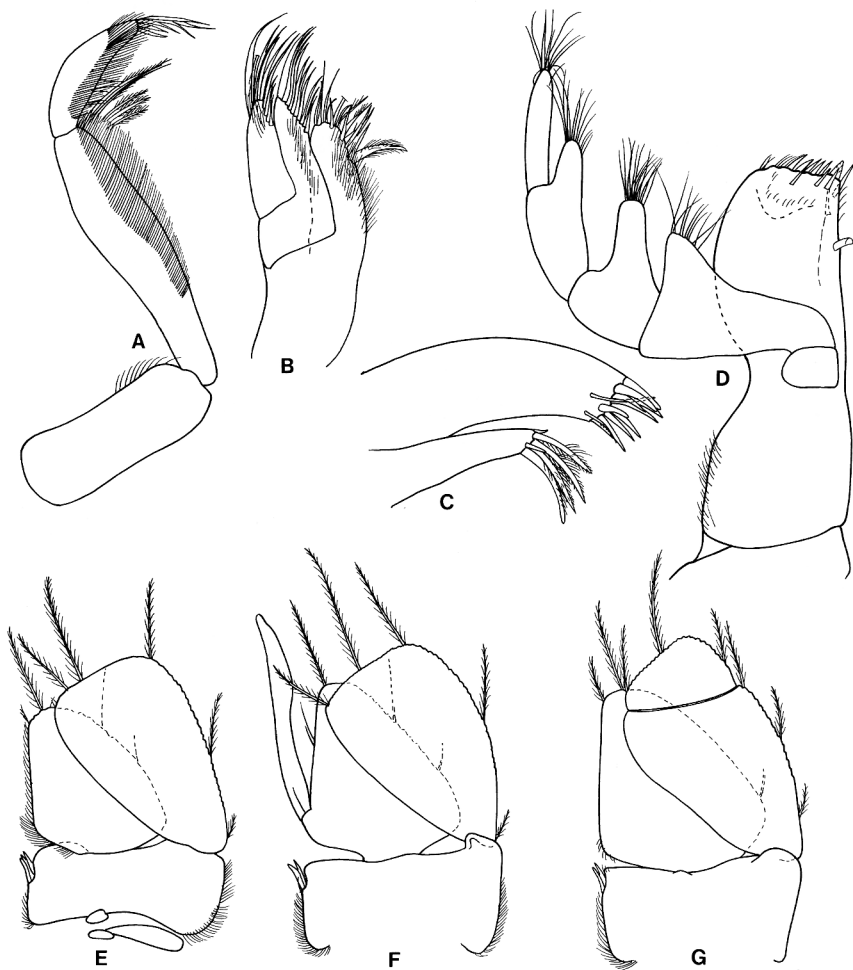


Fig. 9. *Parasphaeroma prominens* Stebbing, 1902. A, mandibular palp; B, maxilla; C, maxillule; D, maxilliped; E-G, pleopods 1-3, respectively.

Material examined. — Syntypes. 2 ♀♀ (non-ovig., 14.7, 17.5 mm), 1 immature spm. (9.8 mm), Vasco da Gama Peak, S75 degrees E, distant 13/2 miles, labelled "cotypes" (SAM A23). Probable syntypes, ♂ (19.6 mm), 2 ♀♀ (ovig., 14.0, 15.4 mm), Cape Point, N50E, 18/2 miles, 27 Feb. 1902 (SAM A24). 2 ♀♀ (ovig., broken, unmeasured; non-ovig., 13.7 mm), Vasco da Gama, N71E, 18/2 miles, PF 2836, 4 May 1900 (SAM A25). Other material. 3 ♂♂ (17.5 [with some pereopods missing], 18.2 [with head detached], 20.7 [intact] mm), (SAM A7377). 2 ♀♀ (non-ovig., 11.6, 14.3 mm), 36°40.0'S 21°26.0'E, 17 Jul. 1906, stn PF18933 (SAM A3897). ♂ (13.7 mm), 2 ♀♀ (non-ovig., 11.2, 12.6 mm), 34°33.0'S 18°20.0'E, 26 Sep. 1949, stn Afr.1589.R, University of Cape Town Ecological Survey (SAM A13666).

Remarks. — This smooth-bodied sphaeromatid can be readily identified by the lamellar uropods, with the exopod longer than the endopod and distally acute,

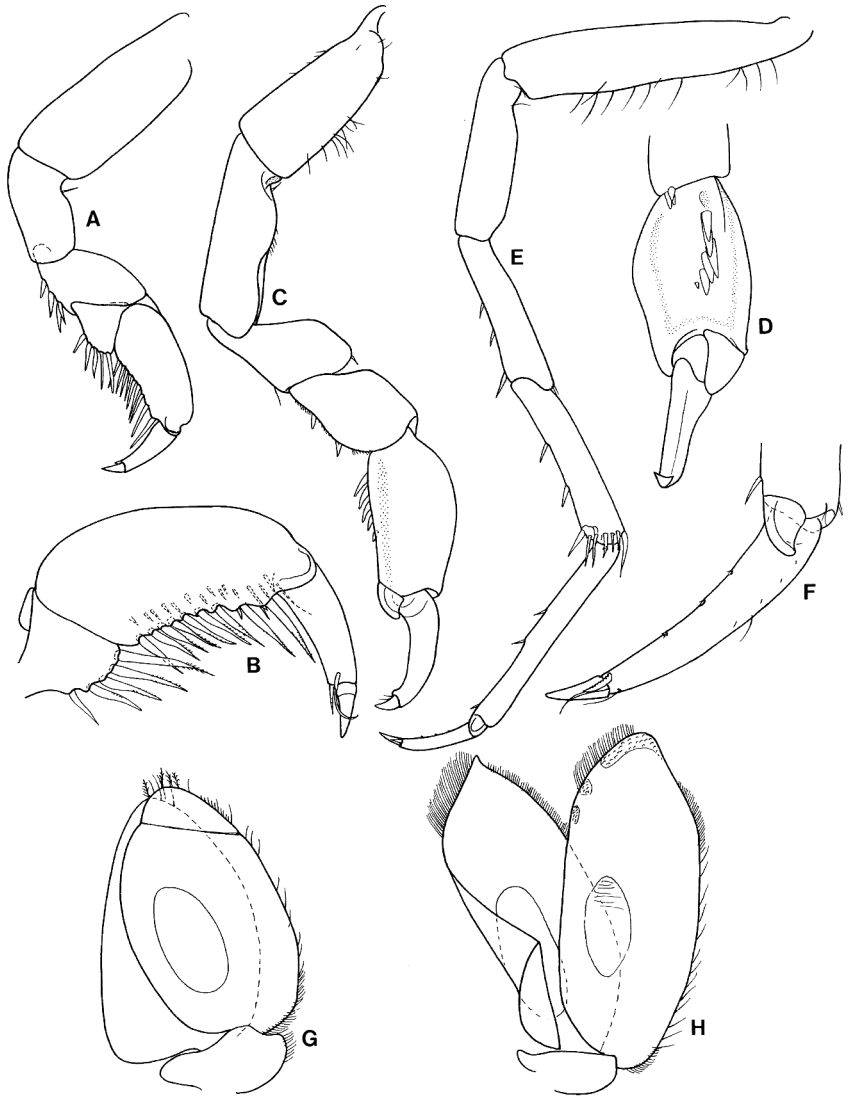


Fig. 10. *Parasphaeroma prominens* Stebbing, 1902. A, pereopod 1; B, pereopod 1, propodus; C, pereopod 2; D, inferior margin, en face of pereopod 2; E, pereopod 7; F, propodus, pereopod 7; G, pleopod 4; H, pleopod 5.

an entire posterior margin to the pleotelson, the head, pleon and pleotelson each with large but low posteriorly-directed processes, and a large anteriorly produced spatula-like epistome.

Distribution. — From off Still Bay to the vicinity of Cape Town.

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