

Müller, 1991

Zool. Anz. 226 (1991) 5/6, S. 307—318
Gustav Fischer Verlag Jena

**Two New Species of *Cerceis* and *Dynoides*
from a Sabellid Reef at Sri Lanka
(Crustacea: Isopoda: Sphaeromatidae)**

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With 64 Figures

(Accepted: December 15, 1990)

Key words: Crustacea, Isopoda, Sphaeromatidae; new species; systematics; Sri Lanka

Abstract

Two new species of marine isopods of the family Sphaeromatidae, *Cerceis tuberculata* n. sp. and *Dynoides indicus* n. sp., collected on a sabellid reef in Sri Lanka are described and figured in detail. Their intraspecific affinities are discussed and notes upon their habits are given.

The present paper reports on two new species of the marine isopod genera *Cerceis* and *Dynoides*, family Sphaeromatidae, found by the author on a sabellid reef at the west-coast of Sri Lanka. The area studied is located about 1 km north of the mouth of the Bentota river, very close to the villages Moragalla and Beruwala. This coastal part is under some freshwater influence, particularly during the monsoon season.

Specimens have been collected over a period of two weeks in May 1989, in consideration of samples from the more strongly exposed outer reef flat and also of the sheltered inner reef edge.

The material is deposited in the Zoologisches Museum Berlin (ZMB) and in the author's private collection. My thanks are due to Mr. Peter Davie, curator of the crustacean section of the Queensland Museum in Brisbane, Australia, who gave in loan the ♂ holotype of *Cerceis pustulosa* HARRISON & HOLDRICH, 1982.

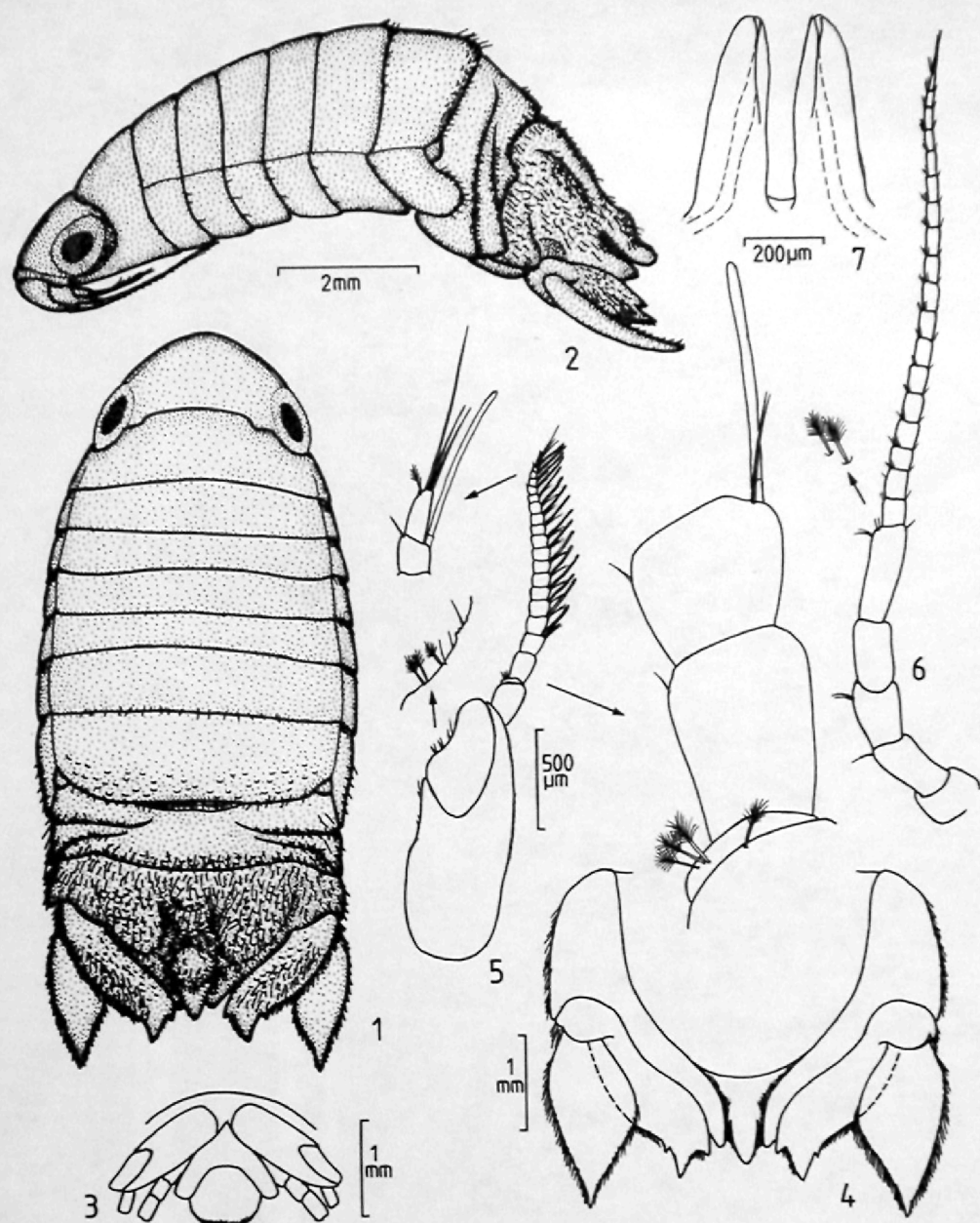
Cerceis MILNE EDWARDS, 1840

Cerceis tuberculata n. sp. (Figs. 1—31)

Holotype: ♂ (ZMB 26918 a); reef-flat; from brown algae, intertidal, and in shallow rockpools, 4—16 May 1989.

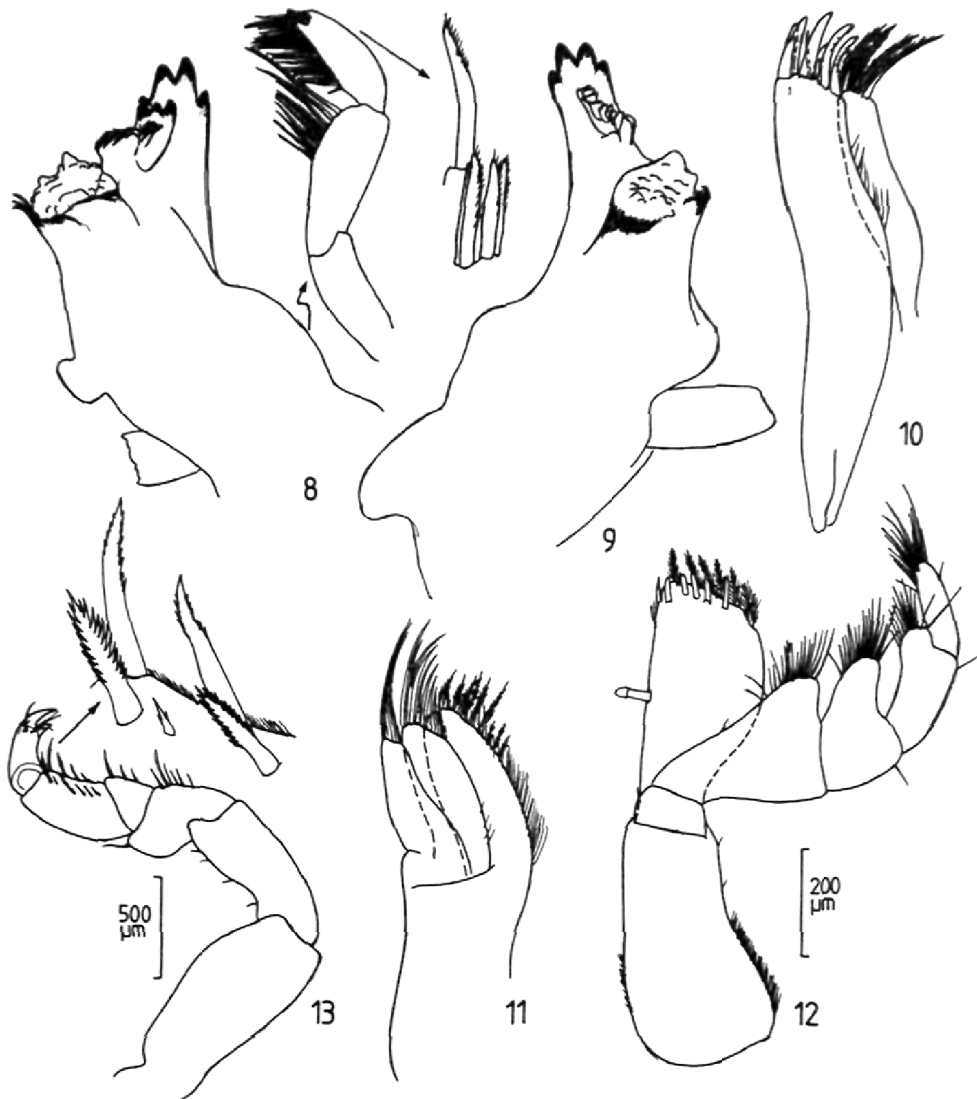
Paratypes: 1 ♂, 29 immature adults, 2 postmanicas, 1 manca (ZMB 26918 b), collected together with holotype. 3 ♂, 5 immature adults, 2 ovigerous ♀; deposited as follows: 1 ♂, 2 immature adults, 1 ovigerous ♀ (ZMB 26818 c); 2 ♂, 3 immature adults, 1 ovigerous ♀, Coll. MÜLLER; outer reef-flat, exposed location; associated with barnacles, intertidal, 7—16 May 1989.

Derivatio nominis: The specific name refers to the tuberculate pleotelson of the new species.



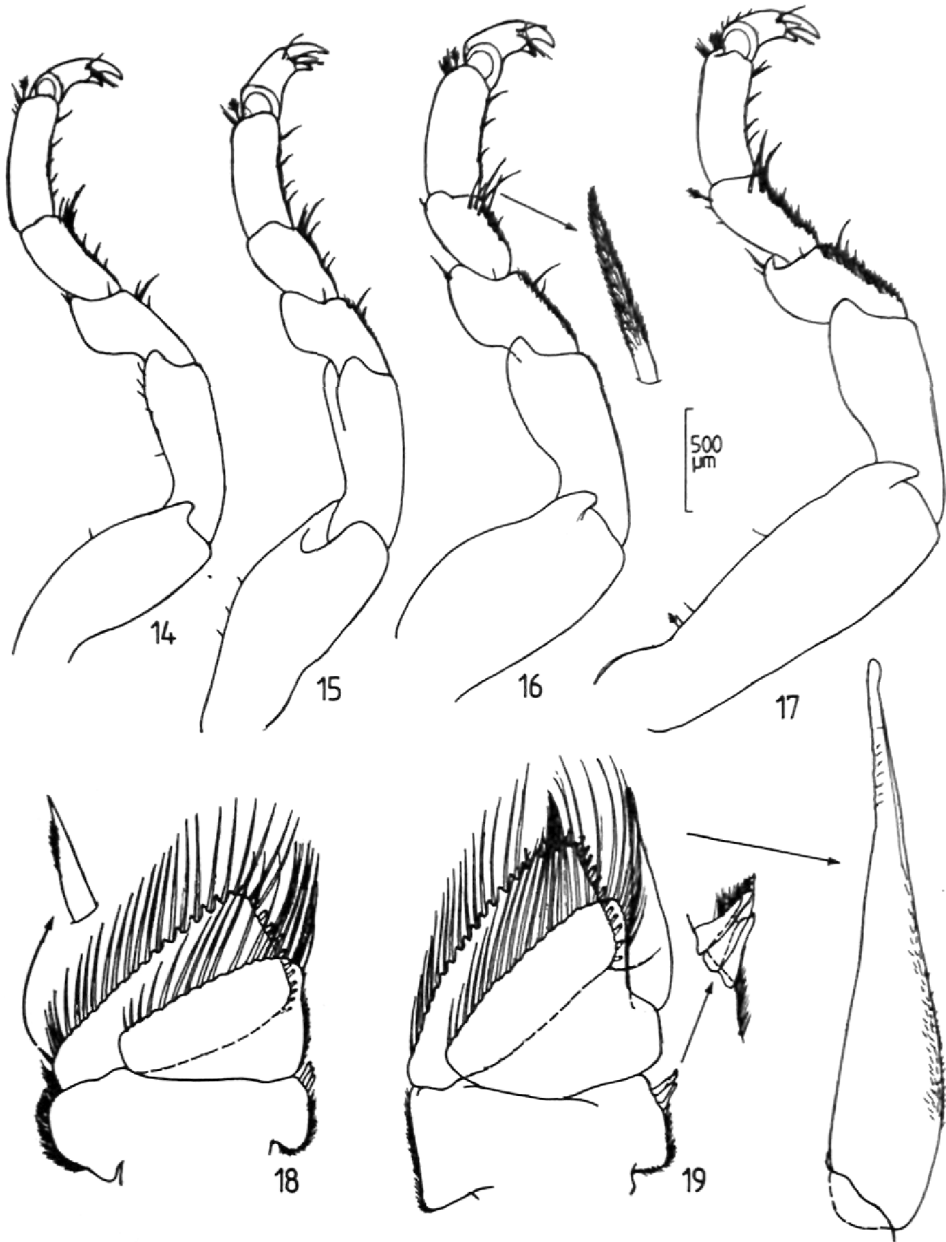
Figs. 1—7. *Cerceis tuberculata* n. sp., holotype σ : 1) dorsal view; 2) lateral view; 3) clypeal region; 4) pleotelson and uropods, ventral view; 5) antenna 1; 6) antenna 2; 7) penes

Description, σ : Total length 8.9—9.7 mm. Eyes large, laterally situated and well pigmented. Posterior margin of pereonites 6 and 7 with row of short setae. Moreover, dorsum of pereonite 7 with scattered granules in distal half. Pleon and pleotelson covered with short setae and granules. Pleotelson medially with 3 shallow, rounded tubercles, situated one after another; moreover, there are two shallow, rounded protuberances at each side of the medial tubercles. Distal part of pleotelson with a deep notch, covered by a roughly triangular, overhanging projection, which extends well beyond the level of the notch opening. Viewed ventrally, the ventilation slit of the distal pleotelson is divided medially by the distal pleotelsonic projection mentioned above. Epistome with sinuous lateral margins and acute apex. Penes short and robust, well separated.



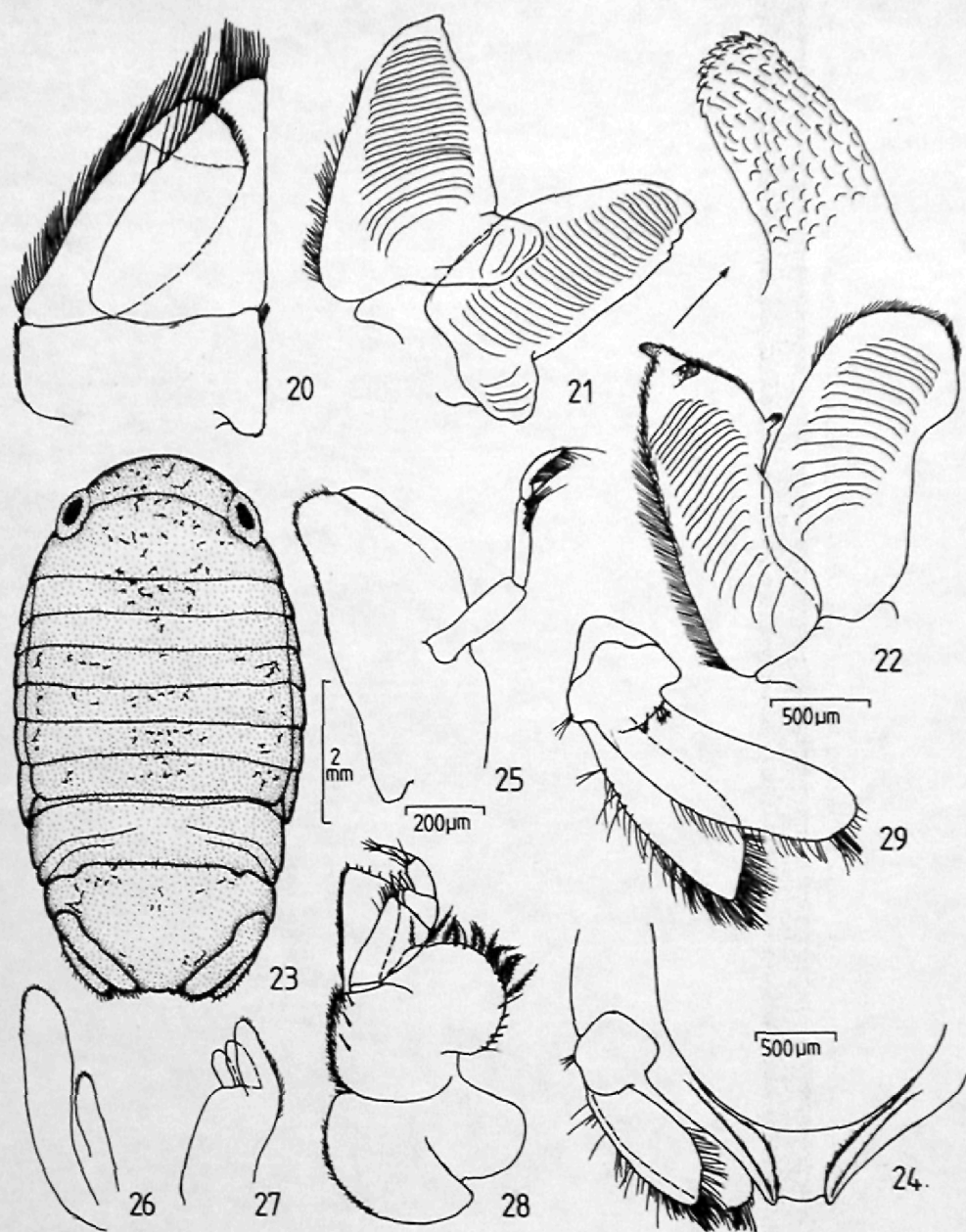
Figs. 8—13. *Cerceis tuberculata* n. sp., holotype ♂: 8) left mandible; 9) right mandible, two distal articles of palp omitted; 10) maxilla 1; 11) maxilla 2; 12) maxilliped; 13) pereopod 1

Antenna 1, peduncle of 3 articles; first article longer than second and third together; lateral margins of first article produced for complete accommodation of the inferior and superior margin of the second article; the inferior process of the first article being much longer than the superior; flagellum of 19 articles; articles 3—18 bearing aesthetasc. Antenna 2, peduncle of 5 articles, terminal one being longest; flagellum of 19 setose articles. Left mandible, incisor 4-cuspidate, lacinia mobilis 3-cuspidate; spine row of 5 fringed spines; molar blunt, its margin bearing 3 fringed setae; second article of 3-articulated palp longest; second article with 10 setae in distal half; third article with 17 setae over almost entire length of medial margin; moreover, apex of third article with group of 4 short spines and a more longer distal spine, all being sparsely fringed. Right mandible, spine row of incisor with 10 spines, as figured. Maxilla 1, inner ramus with 4 distal fringed setae; outer ramus with 9, partly denticulate spines. Maxilla 2, medial and distal margin of inner ramus with several setules



Figs. 14—19. *Cerceis tuberculata* n. sp., holotype ♂: 14) pereopod 2; 15) pereopod 3; 16) pereopod 6; 17) pereopod 7; 18) pleopod 1; 19) pleopod 2

and 14 fringed setae; inner and outer lobe of outer ramus with 9 slender distal setae, respectively. Endite of maxilliped with 12 distal spines of different shape, 6 being fringed; medial margin of endite with single coupling hook; mediolateral margin of palp articles 2—4 in 5-articulated palp produced into rounded, setose lobe; distal half of terminal palp article also bearing several setae. Pereopod 1 shorter and more robust than other pereopods; posterior and mesial margin of propodus bearing 10 denticulate spines of different lengths; carpus triangular. Carpus of pereopods 2—7 roughly rectangular, posterodistal margin bearing some fringed spines. Pereopod 7 longer than other pereopods. Sympodite of pleopods 1—3 with 3 coupling hooks. Endopodite of pleopod 1 much wider than long, its distal margin bearing 13 plumose setae; distal margin of the more longer exopodite truncate, its outer distal



Figs. 20—29. *Cerceis tuberculata* n. sp. — Holotype ♂, figs. 20—22: 20) pleopod 3; 21) pleopod 4; 22) pleopod 5. — Paratype, ovigerous ♀, figs. 23—29: 23) dorsal view; 24) pleotelson and right uropod, ventral view; 25) mandible; 26) maxilla 1; 27) maxilla 2; 28) maxilliped; 29) uropod, dorsal view

margin with about 7 pronounced teeth; outer and distal margin of exopodite with 34 plumose setae; moreover, exopodite bearing a short, fringed spine at outer proximal margin. Pleopod 2 with subtriangular endopodite; appendix masculina articulating at about midlength, well extending beyond distal margin of ramus with somewhat more than its distal half; appendix masculina broad proximally, tapering in its distal half to narrowly rounded apex; margin of endopodite bearing 26 plumose setae; exopodite truncate, with 16 pronounced teeth at outer margin; exopodite bearing 33 plumose setae at outer and distal margin. Endopodite of pleopod 3 triangular, with 21 plumose setae at outer distal margin; exopodite roughly ovate, with subterminal articulation;

outer and distal margin bearing about 60 plumose setae. All plumose marginal setae of rami in pleopods 1—3 drawn as simple setae. Both rami of pleopod 4 with several transverse ridges and with proximal, rounded lobe at medial margin. Pleopod 5, exopodite with a small internal and 2 somewhat larger, subterminal, denticulate bosses; both rami of pleopod 5 with several transverse ridges. Endopodite of uropod superiorly granular and setose; its acute apex extending well beyond distal margin of pleotelson; lateral margins of exopodite sinuous, with subapical tooth at each side, the mediolateral tooth always being larger; small tooth at outer distal margin lacking in some specimens; lanceolate exopodite longer than endopodite, its apex acute.

Ovigerous ♀: Total length 7.5 mm. Dorsal surface of body smooth. Cephalon blunt and broadly rounded. Pleotelson smooth, without tubercles; apex of pleotelson with a simple ventilation slit. Mouthparts strongly metamorphosed. Mandible compact, without functional incisor and molar process; articles of mandibular palp much narrower than in ♂; second article with 7, distal article with 15 setae. Rami of maxillae bare of any setae. Maxillipedal setae and spines greatly reduced in number, medial margin of endite lacking coupling hook. Endopodite of uropod longer and distally wider than exopodite, bearing 4 dorsal feathered sensory setae in proximal half.

Specimens lacking pigmentation, or with some scattered, irregular pigment patches.

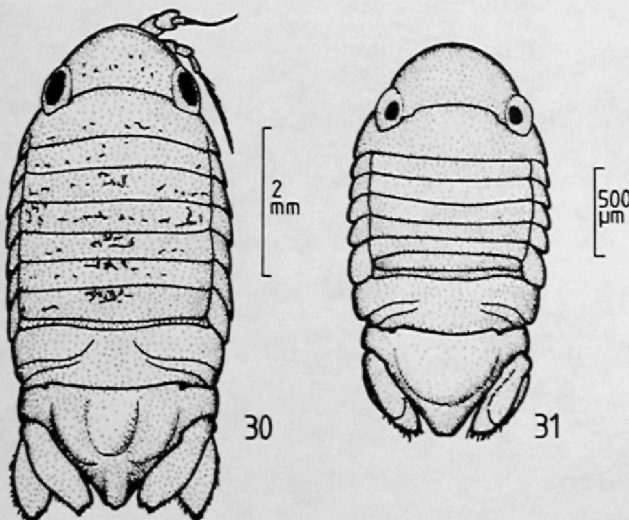
Immature adult: Total length 3.9—7.2 mm. Dorsal surface of body smooth. Pleotelson with a low, in outline ovate anteromedian tubercle and a low tubercle on either side of this; distal notch of ventilation slit with median, triangular tooth extending beyond notch opening.

Specimens lacking pigmentation, or cephalon and pereonites with some small, irregular pigment patches.

Postmanca: Total length 2.8—2.9 mm. Dorsal surface of body smooth. Cephalon blunt and broadly rounded.

Specimens lacking pigmentation, or with small pigment patches.

Manca: Total length 2.2 mm. In habitus and pigmentation quite similar to postmanca.



Figs. 30—31. *Cerceis tuberculata* n. sp., paratypes: 30) immature adult, dorsal view; 31) manca, dorsal view

Remarks: *Cerceis tuberculata* n. sp. and *Cerceis pustulosa* HARRISON & HOLDRICH, 1982 from Australia are sibling species, being very similar among one another in their habitus. Compared with the ♂ holotype of *pustulosa* (Queensland Museum, Australia, reference-number W 7969), some distinguishing features became apparent. *C. pustulosa* is larger (11.4 mm), though the size of the eyes in both species is almost the same. The cephalic part in front of the eyes is more pronounced in *pustulosa*. The mediodistal projection of the pleotelson is distally wider and apically more broadly rounded in *pustulosa*, lacking the rounded tubercle at its base, which is present in *tuberculata* n. sp. Further, the mediodistal margin of the uropodal exopodite is distinctly convex in *pustulosa* (cf. HARRISON & HOLDRICH 1982: 434, fig. 7). The new species resembles also *Cerceis granulata* PILLAI, 1954 from India. Compared with the original description (PILLAI 1954: 83, figs. 51—68), the following distinguishing features to *C. tuberculata* n. sp. can be seen. The pleotelsonic notch of *granulata* is very much longer, almost reaching the articulation of the uropods. The mediodistal tubercle of the pleotelson is elongate oval. The inferior process of the first article of the antenna 1 is shorter and apparently straight in *granulata*. The appendix masculina of that species is distinctly medially curved in its distal half. The best feature to distinguish males of *granulata* and *tuberculata* n. sp. seems to be the outline of the uropodal rami. The uropodal endopodite lacks the subterminal teeth in *granulata* and the lateral margins are not sinuous as in *tuberculata* n. sp. Moreover, the uropodal exopodite of *granulata* is distally much wider and does not have the conspicuous lanceolate shape of the new species.

All specimens collected at Sri Lanka have been found at the reef-flat with a moderate wave exposition and associated with barnacles along the more stronger exposed outer reef-flat. None of the specimens available comes from the sheltered inner part of the reef.

Dynoides BARNARD, 1914

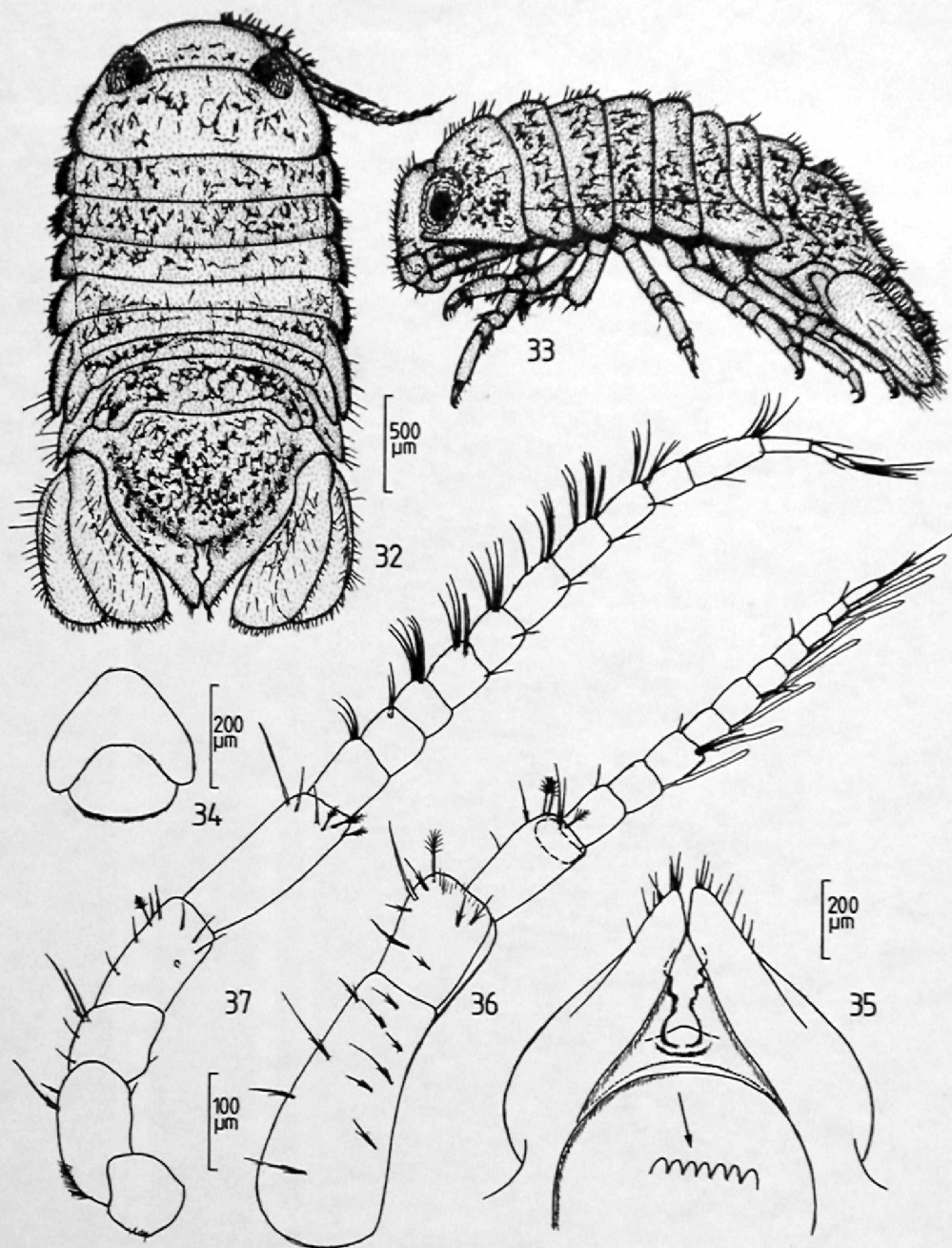
Dynoides indicus n. sp. (Figs. 32—64)

Holotype: ♂ (ZMB 26919a); outer reef-flat, exposed location; associated with sabellid colonies, intertidal, 6—16 May 1989.

Paratypes: 6 ♂, 6 ♀ (1 ovigerous), 11 immature adults including a preparatory ♂, collected together with holotype and deposited as follows: 3 ♂, 3 ♀, (1 ovigerous), 6 immature adults including preparatory ♂ (ZMB 26919b); 3 ♂, 3 ♀, 5 immature adults, Coll. MÜLLER.

Derivatio nominis: The specific name is derived from the geographic area of the type locality, the Indian Ocean.

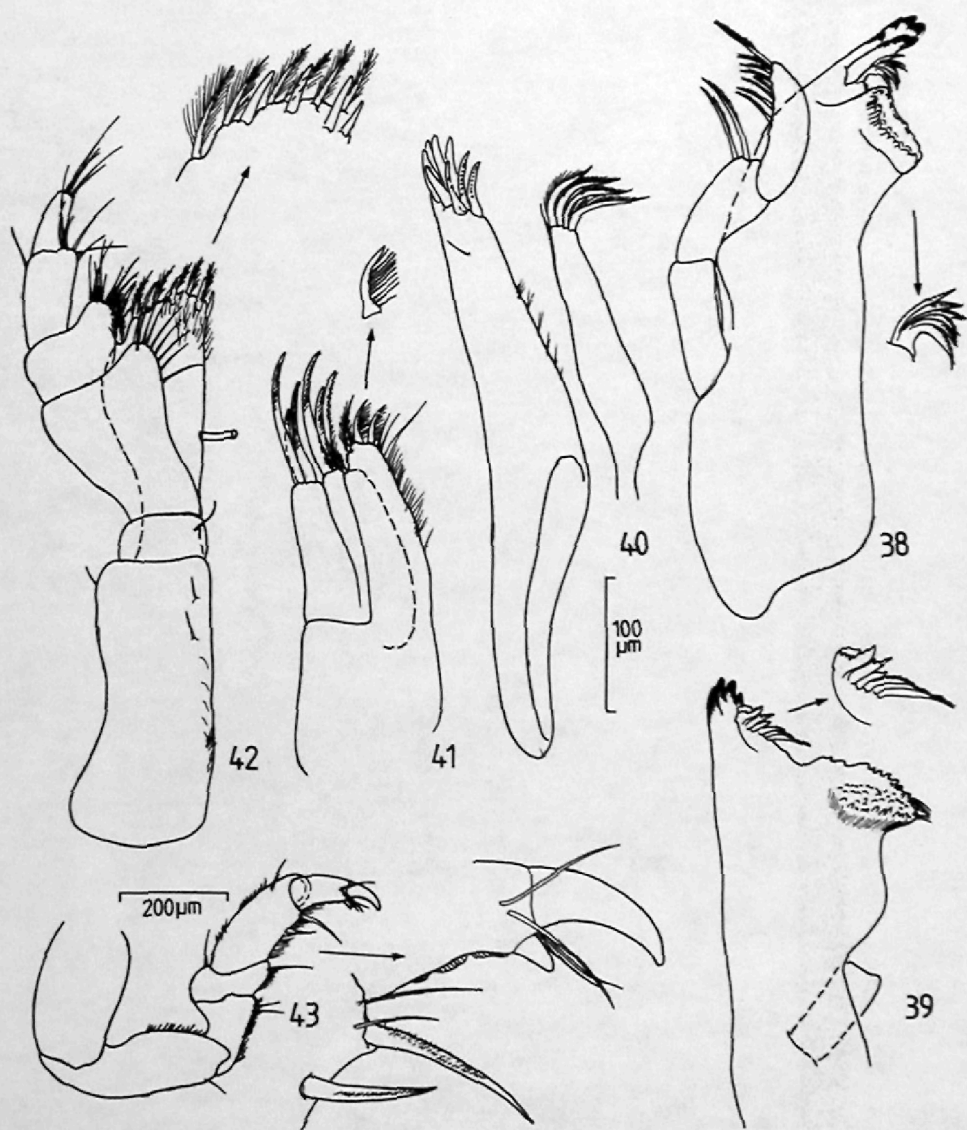
Description, ♂: Total length 2.8—3.9 mm. Eyes large, dorsolaterally situated and well pigmented. Dorsum of cephalon, pereonites and pleon covered with short setae. Distal margin of cephalon broadly rounded. Distal notch of pleotelson elongate, its lateral margins denticulate (2—3 teeth at each side); anterior part of notch covered by short, triangular, overhanging projection. Viewed ventrally, the ventilation slit, or notch of the pleotelson is widened anteriorly to an almost circular opening. The distal margin of the respiratory chamber has a row of numerous, tiny granules. Epistome with anterior margin truncate, lateral margins straight. Penes fused proximally over 3/5 of their entire length, tapering to acute apex.



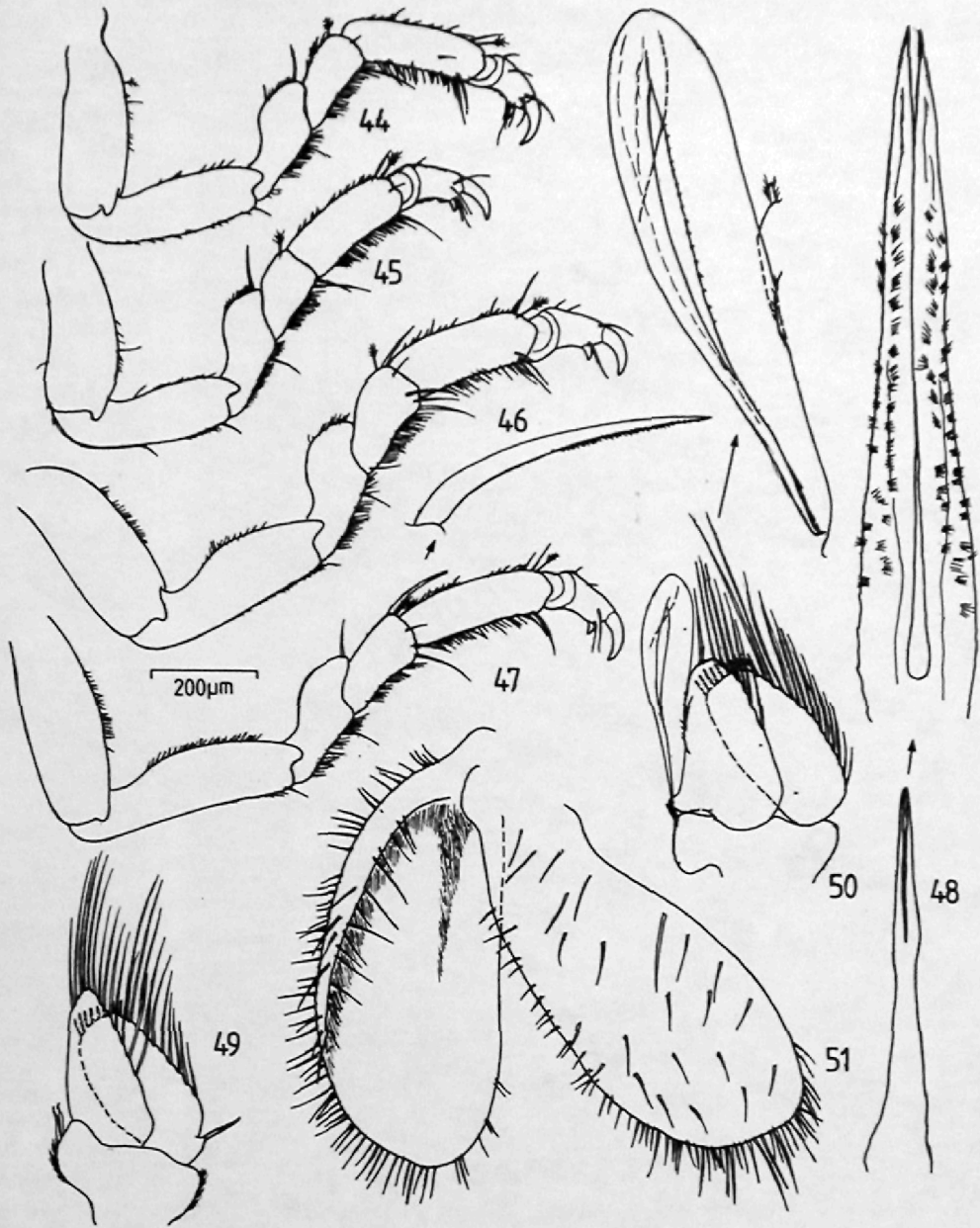
Figs. 32—37. *Dynoides indicus* n. sp., holotype ♂: 32) dorsal view; 33) lateral view; 34) clypeal region; 35) pleotelson, ventral view; 36) antenna 1; 37) antenna 2

Antenna 1, peduncle of 3 articles; first article longer than two distal articles together; flagellum of 11 articles; articles 3—10 bearing aesthetasc. Antenna 2, peduncle of 5 articles, terminal one being longest; flagellum of 13 setose articles. Left mandible, incisor and lacinia mobilis 4-cuspidate; spine row of 6 fringed spines; molar blunt; articles of 3-articulated palp subequal in length; distal margin of second article with 2, of terminal article with 8 fringed spines. Right mandible, spine row of incisor with 6 spines of different shape, as figured. Maxilla 1, inner ramus with 4 distal fringed spines and a short seta; outer ramus short seta and 8 short, partly denticulate spines. Maxilla 2, medial margin of inner ramus with several setules; distal margin

with 4 short, fringed spines; inner and outer lobe of outer ramus with 3 curved spines, respectively. Endite of maxilliped with 10 distal spines of different shape, 6 spines being fringed; medial margin of endite with single coupling hook; palp of 5 articles; mediolateral margin of palp articles 2—4 produced into rounded, setose lobe. Pereopod 1 much shorter than other pereopods; posterodistal margin of propodus with 2, sparsely fringed spines; basis and ischium subequal in length. Pereopod 2 slightly longer than pereopods 3—5, which are subequal in length. Carpus of pereopods 2—7 roughly rectangular. Posterior margin of propodus, carpus and merus in all pereopods with fringe of short setae and setules. Pereopod 7 slender and more longer than other pereopods; anterodistal margin of carpus with curved, sparsely fringed spine. Sympodite of pleopods 1—3 with 2 coupling hooks at mediolateral margin. Proximal outer margin of exopodite in pleopod 1 bearing prominent spine;

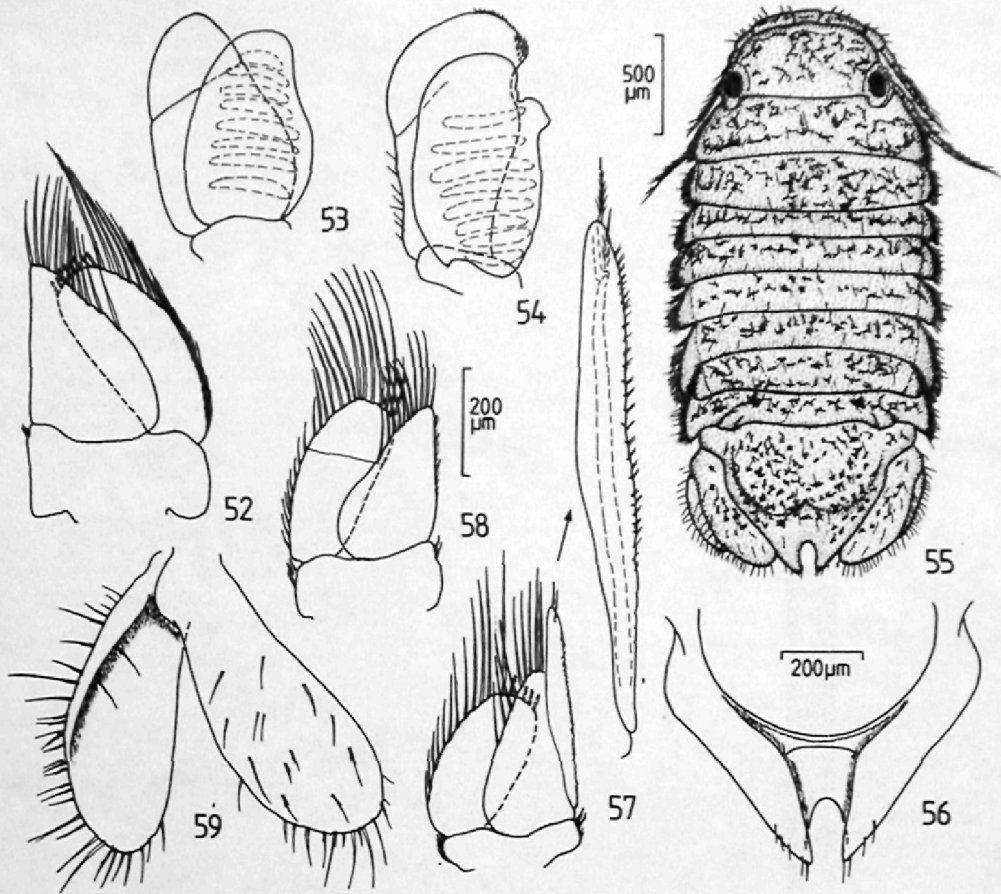


Figs. 38—43. *Dynoides indicus* n. sp., holotype ♂: 38) left mandible; 39) right mandible, two distal articles of palp omitted; 40) maxilla 1; 41) maxilla 2; 42) maxilliped; 43) pereopod 1



Figs. 44—51. *Dynoides indicus* n. sp., holotype ♂: 44) pereopod 1; 45) pereopod 3; 46) pereopod 6; 47) pereopod 7; 48) penes; 49) pleopod 1; 50) pleopod 2; 51) uropod

distal margin of exopodite truncate; outer and distal margin of exopodite bearing 18 plumose setae; endopodite elongate, roughly triangular, its distal margin bearing 13 plumose setae. Appendix masculina of pleopod 2 well extending beyond distal margin of subtriangular endopodite; distal half of appendix masculina slender, tapering doubled back on the proximal half; distal margin of endopodite with 8 plumose setae; exopodite similar in shape to exopodite of pleopod 1, outer and distal margin bearing 23 plumose setae. Endopodite of pleopod 3 triangular, distal margin with 12 plumose setae; exopodite in outline similar to exopodite of pleopod 1 and 2, outer and distal margin with 28 plumose setae. All plumose marginal setae of pleopodal rami drawn as simple setae. Exopodite of pleopod 4 with transverse articulation in distal third; endopodite with 8 transverse folds. Transverse articulation in exopodite of pleopod 5 incomplete, distal margin with medially directed, denticulate protuberance;



Figs. 52—59. *Dynoides indicus* n. sp. — Holotype ♂, figs. 52—54: 52) pleopod 3; 53) pleopod 4; 54) pleopod 5. — Paratype, preparatory ♂, figs. 55—59: 55) dorsal view; 56) pleotelson, ventral view; 57) pleopod 2; 58) pleopod 3; 59) uropod, dorsal view

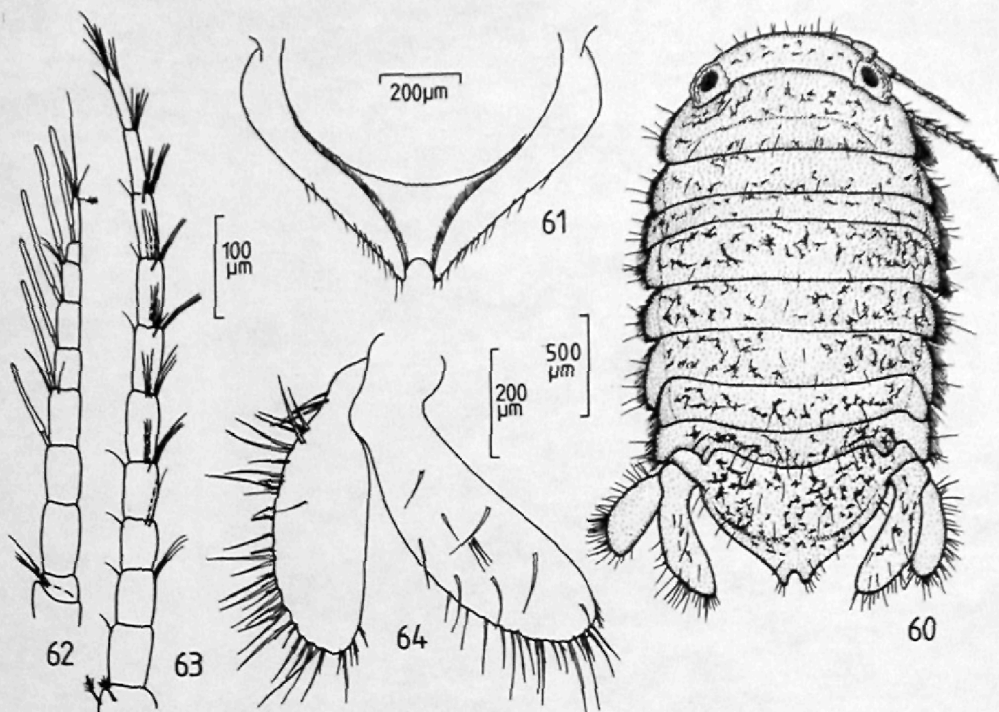
endopodite with 8 transverse folds and medially directed, subapical lobe. Uropods lamellar, distal margins of rami broadly rounded, extending beyond distal margin of pleotelson. Both exopodite and endopodite with numerous short setae present on outer and distal margin.

Dorsum of whole body and uropodal endopodite provided with irregular pigment reticulations.

Preparatory ♂: Total length 2.7 mm. Body more slender and cephalon longer than mature ♂ and ♀. Distal ventilation slit of pleotelson simple, oval. Incompletely developed appendix masculina of pleopod 2 freely articulating, extending beyond distal margin of ramus with 2/5 of its entire length; medial margin of appendix masculina with row of short setules, distal part with 2 short, fringed setae; endopodite with 9, exopodite with 19 marginal plumose setae. Pleopod 3, exopodite with transverse suture in distal half; exopodite with 23, endopodite with 11 marginal plumose setae. Uropodal exopodite more slender than in mature male; outer and distal margin of both uropodal rami less setose than in ♂.

Ovigerous ♀: Total length 2.8 mm. Body compact and pleotelson in the form of a flattened dome. Distal ventilation slit of pleotelson with almost semicircular margin.

Flagellum of antenna 1 9-articulated, articles 3—8 bearing aesthetasc. Flagellum of second antenna of 11 setose articles. Uropodal rami lamellar, more slender than in ♂.



Figs. 60—64. *Dynoides indicus* n. sp., paratype ♀: 60) dorsal view; 61) pleotelson, ventral view; 62) flagellum of antenna 1; 63) flagellum of antenna 2; 64) uropod, dorsal view

Remarks: In general habitus and shape of appendages the new species resembles most closely *Dynoides crenulatus* CARVACHO & HAASMANN, 1981 from Oaxaca at the Pacific Coast of Mexico. *D. indicus* n. sp. is best distinguishable from that species by its denticulate margin of the pleotelsonic ventilation slit in the ♂ and by the triangular projection overhanging the anterior part of that slit. Moreover, the distal, downcurved part of the appendix masculina is longer in *D. crenulatus*, reaching to the inner proximal edge of the sympodite of the second pleopod (cf. CARVACHO & HAASMANN 1981: 23, figs. 5—6).

At the type locality *D. indicus* n. sp. was found exclusively associated with sabellid colonies at the exposed outer reef-flat. Not a single specimen is available from the barnacle samples at the outer reef-flat and the other substratum collected at more sheltered reef locations. This supports the presumption, that this species may live in polychaete tubes.

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