STYLOCHEIRON INDICUS, A NEW EUPHAUSIID (CRUSTACEA: EUPHAUSIACEA) FROM INDIAN SEAS

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STYLOCHEIRON INDICUS, A NEW EUPHAUSIID (CRUSTACEA: EUPHAUSIACEA) FROM INDIAN SEAS*

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IN the material of Euphausiacea in the deep-water plankton collections made with the Indian Ocean Standard net from the Indo-Norwegian Project Research Vessel *VARUNA* off the west coast of India, we have been able to identify 22 species of seven genera and an undescribed species of the genus *Stylocheiron* Sars for which a new name *Stylocheiron indicus* sp. nov. is proposed here. A description of the new species follows.

Stylocheiron indicus SP. NOV. (FIG. 1, *a-k*)

Material.—Holotype *male*, length 11·0 mm., R. V. *VARUNA* Sta. 2138 : 9° 00′ N., 75° 58′ E. on 18-3-1964, between 10·15–11·00 hours, 300 to 0 m. vertical haul ; Allotype *female*, length 13·25 mm., from same sample as holotype ; Paratypes are listed in Table II. The type specimens are deposited in the research collections of the Central Marine Fisheries Research Institute, Mandapam Camp.

Description.—Frontal plate produced as a short rostrum; latter declivous with a concavity dorsally, depressed at tip which is bluntly rounded (Fig. 1, *f-i*); rostrum slightly shorter in male, but not markedly as in other species of *Stylocheiron* ; gastric region of carapace with a well-developed keel or crest antero-dorsally.

First segment of peduncle of first antenna with an acute spine mid-ventrally at its distal end ; mid-dorsally segment wanting in spines or tooth-like structures at distal end, but a tuft of moderately elongate setæ on a slightly elevated lobe present ; second and third segments of antennular peduncle of almost equal length and normal ; *upper flagellum* of first antenna relatively shorter in both sexes, 7-jointed, its length not exceeding combined length of second and third peduncular segments ; flagellum distally depressed, first two segments short, third to fifth segments progressively longer, sixth segment as long as third segment and seventh segment short as first segment ; sensory setæ present at joints and tip of flagellum ; *lower flagellum* of first antenna 7-jointed, its length slightly exceeding combined length of second and third peduncular segments ; flagellum laterally compressed, first segment longest, basally broader, exceeding combined length of first two segments of upper flagellum ; and thickened towards base carrying usual sensory filaments ; second and third segments short and narrow ; fifth to seventh segments each of almost equal length, fourth segment being slightly shorter.

Terminal segment of peduncle of second antenna with two long spines at its distal outer margin ; squama conspicuously broad, width being about one-fourth its length ; tip of squama falling short of tip of peduncle of first antenna ; squama with a rudimentary outer terminal spine and consequently wanting in a distinct terminal lobe.

Eye bilobate, upper portion smaller and narrower than lower portion ; widest part of lower lobe 1·46 to 1·86 times that of width of upper lobe ; in adults, height of eye does not exceed 1·4 times its greatest width ; crystal cones in upper lobe numerous, 14–16 in transverse row when viewed from top ; lobes dark brown, excepting periphery and portion between lobes which are honey-coloured.

Elongate third cormopod terminating in a false chela (Fig. 1, *c-d*) ; short setæ present on distal half of merus and basal part of carpus ; propodus swollen, distally bearing three marginal and a lateral spine of variable lengths, middle marginal spine being longer, strong and curved ; short dactylus with five spines on outer margin and one spine on inner margin of variable lengths ; one outer marginal spine (3rd from base) longest, strong and curved, meeting similar elongate spine of propodus in opposition to form a grasping organ ; propodus may also have a few small unmodified stiff marginal setæ. Denticle on lateral margin of carapace absent. Gills highly branched.

Abdominal segments smooth dorsally ; sixth segment relatively longer in female being 2·25 to 2·53 times longer than its depth while in male it is 2·01 to 2·44 (length measured along dorsal line and depth at deepest part of segment); combined length of fourth and fifth segments greater than that of sixth segment. Endopod

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of uropod slightly longer than exopod, reaching to almost tip of telson; two minute spines mid-dorsally in posterior half of telson.

Remarks.—A perusal of the literature shows that the following 13 species referable to the genus *Stylocheiron* Sars[1] (Genotype = *S. carinatum*

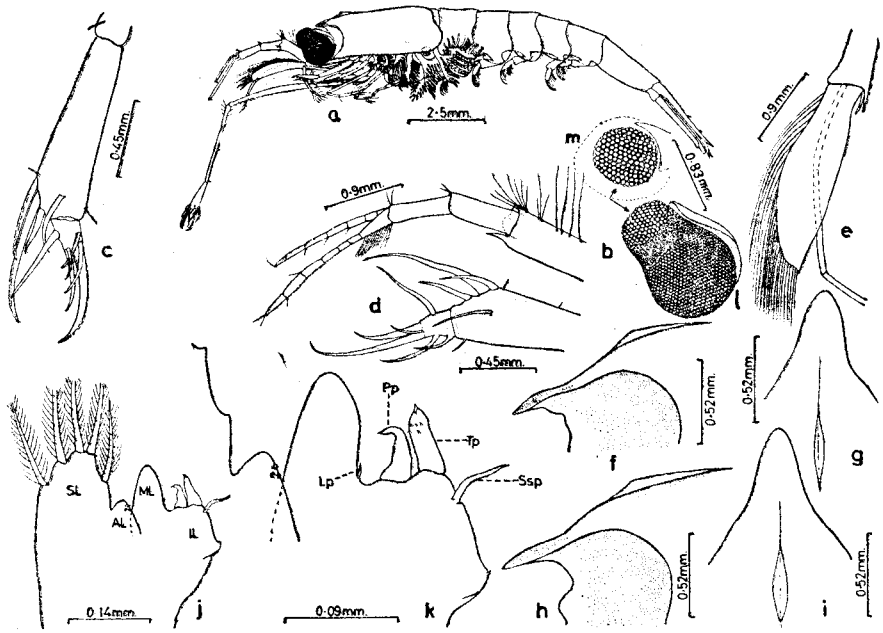

FIG 1. *Stylocheiron indicus* sp. nov. *a*, Lateral view of female; *b*, inner view of right first antenna; *c–d*, distal end of third cormopod showing false chela; *e*, second antenna; *f–g*, rostrum of male; *h–i*, rostrum of female; *j–k*, right copulatory organ of male from behind; *l–m*, eye enlarged. (AL–Auxiliary lobe; IL–inner lobe; ML–median lobe; SL–setiferous lobe; Lp–lateral process; Pp–proximal process; Ssp–spine-shaped process; and Tp–terminal process).

Male Copulatory Organ (Fig. 1, *j–k*).—Inner lobe with a rudimentary spine on a small lobe along its inner margin; spine-shaped process acutely pointed, strongly bent inwards and not longer than terminal process; latter more or less uniformly broad, length not exceeding three times its width; when viewed from behind, distal third of terminal process with a concavity in which are situated five or six distinct tooth-like processes in two rows; distal end of terminal process curved as a hood and narrows to a pointed tip; proximal process slightly shorter than terminal process, tapering towards tip and strongly bent in its distal third (as in *S. elongatum* of Sars[1]); lateral process minute, pointed, hardly one-sixth length of terminal process and situated at inner base of median lobe removed from base of proximal process; auxiliary lobe small, placed on inner lateral margin of setiferous lobe and with three or four coupling hooks.

Males are slightly smaller than females as can be seen from the measurements and body proportions of the salient characters given in Table I.

Sars[1]) have been described so far. They are: *S. carinatum* Sars, *S. armatum* Colosi,[2] *S. insulare* Hansen,[3] *S. affine* Hansen,[3] *S. suhmii* Sars,[1] *S. microphthalma* Hansen,[3] *S. longicorne* Sars,[1] *S. elongatum* Sars,[1] *S. maximum* Hansen,[4] *S. abbreviatum* Sars,[1] *S. robustum* Brinton,[5] *S. mastigophorum* Chun,[6] and *S. chelifer* Chun.[7] In addition to these species, Gurney[8] described the developmental stages of *Stylocheiron* spp., and Sheard[9] listed *Stylocheiron* sp. from two stations from the B.A.N.Z. Antarctic Research Expedition 1929–31.

Of the 13 species mentioned above, the last two are synonyms of earlier described species, *S. mastigophorum* part synonym of *S. suhmii* and *S. longicorne*; and *S. chelifer* a junior synonym of *S. abbreviatum* (Hansen[6]; Tattersall[10] Boden[11]). Hansen[3] divided the genus into three groups on the basis of the armature of the propodus and dactylus of the third cormopod and on this basis the first two species in the above list will fall under one group characterised by the penultimate segment of the cormopod having only lateral setæ; the third to the eighth species in a second group

TABLE I

Sex	T.L.* (mm.)	6th Abdominal segment			L. of 4th and 5th abd. seg. (mm.)	Eye				Ht. of crest (mm.)	L. of eye / L. of body
		Length (mm.)	Depth (mm.)	Length/ Depth		Length (mm.)	(A) Width of upper part (mm.)	(B) Width of lower part (mm.)	B/A		
Male ..	27	22	22	22	22	14	14	14	14	19	14
	8·75–12·0	1·36–1·67	0·64–0·79	2·01–2·44	1·50–1·99	0·99–1·27	0·42–0·63	0·73–0·94	1·43–1·80	0·06–0·09	0·09–0·11
	(10·94)	(1·58)	(0·74)	(2·15)	(1·85)	(1·17)	(0·53)	(0·86)	(1·63)	(0·08)	(0·10)
Female ..	56	34	34	34	34	19	19	19	19	32	19
	8·25–13·75	1·73–2·12	0·–74 0·87	2·25–2·53	1·82–2·29	1·08–1·41	0·52–0·64	0·83–1·03	1·57–1·86	0·05–0·09	0·09–0·10
	(11·30)	(1·94)	(0·81)	(2·38)	(2·07)	(1·26)	(0·55)	(0·96)	(1·73)	(0·08)	(0·10)

* The number of specimens is given first followed by the range, and the mean in parenthesis. In addition to the adults 33 immature specimens measured are 6·5 to 8·25 mm. in total length (mean = 7·49 mm.).

TABLE II

Localities of capture of Stylocheiron indicus *sp. nov.*

Sta. No.	Date	Hours	Latitude/ Longitude	Depth of haul (m.)	Depth at sta. (m.)	No. of specimens	Total length (mm.)
2138	18—3-1964	10·15–11·00	9° 00′ N., 75° 58′ E	300–0	320	M-8	11·0 –11·75
						F-12	12·0 –13·5
,,	,,	,,	,,	200–0	,,	M-13	10·5 –12·0
						F-21	11·75–13·75
2139	19—3–1964	12·20–12·35	9° 00′ N., 76° 08′ E	200–0	240	M-1	9·75
						F-1	13·00
2143	20—3–1964	10·10–11·45	10° 00′ N- 75° 51′ E	175–0	180	M-6	8·75–11·25
						F-31	8·25–11·5
						IM-41	6·5 – 8·25

(M–Male; F–Female; IM–Immature)

characterised by the third cormopod terminating in a false chela having no real immovable finger; and the ninth to eleventh species in a third group in which the third cormopod terminates in a true chela with a well-developed immovable finger from the penultimate joint.

The new species *S. indicus* belongs to the second group which Hansen[3] named the "longicorne-group" which is also recognised by later workers (Sheard,[9] Boden,[11] Brinton[12]). Within this group, its affinities are decidedly towards *S. elongatum*, but it can be distinguished from it by its bilobate eye and the disposition of the crystal cones; the nature of the rostrum; the male copulatory organ; and the deeper sixth abdominal segment which is shorter than the combined lengths of the 4th and 5th segments. In the combination of the following characters, *S. indicus* differs from the other five species of the "longicorne-group". The nature of the rostrum; the presence of a well-developed antero-dorsal keel on the gastric region; the peduncle of the first antenna stout, showing no apparent sexual dimorphism and with the basal segment wanting in spines or denticles at its upper distal end; the broad squama of the second antenna devoid of a terminal lobe; the terminal segment of the peduncle of the second antenna having two conspicuously elongate spines at its distal end; in the structure of the male copulatory organ, especially the armature of the terminal process; and in the disposition of the numerous crystal cones in the upper lobe of the eye (in adult 14–16 when viewed from top), not permitting an easy count of the transverse row of cones, as only the facets and no part of the cones are visible on all sides.

We wish to thank Dr. Edward Brinton for examining our material and confirming our identification of the new species and for his

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