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INDOCANDONA KRISHNAKANTI, Gen. et Sp. Nov. (CRUSTACEA : OSTRACODA : CANDONIDAE) FROM SUBTERRANEAN WATER OF BIHAR, INDIA.

By

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(With 3 Text-figures)

INTRODUCTION

Very few living and fossil species of the family candonidae (Ostracoda : Crustacea) belonging to the genera *Candona* Baird and *Candonopsis* Vavra have been reported from India (Bhatia and Singh, 1970, 1971 ; Mckenjee and Bhatia, 1971 ; Singh, 1972 and Victor and Fernando, 1979). Most of the records are from Kashmir valley.

The present paper records a new taxon of ostracoda from subterranean waters in Bihar. Since the material on which this paper is based can not be assigned to any known genus or species a new genus and species under the family candonidae are being established to accommodate specimens under the family candonidae.

INDOCANDONA Gen. nov.

Diagnostic characters : Five whorls of spicules in the Zenker's organ ; furca with only one long claw ; maxillary palps of the male symmetrically structured, only one exopodial seta on the maxilla ; lobe 'a' of the hemipenis slender and postero-distaly oriented. Shape of the shell mytiloid, with longitudinal striations ; 2nd thoracic leg resembling that in *Mixtacandona*.

Type species : *Indocandona krishnakanti*, sp. nov.

Indocandona is closely allied to *Mixtacandona* Klie, in general appearance but only 5 whorls of spicules in the Zenker's organ, and furca with only one long claw, distinguish it from the latter.

Indocandona krishnakanti, sp. nov.

(Text-figs. 1-3)

Male : Shell snow white, mytiloid (Text-fig 1B,) in lateral view, height 39-40 percent of the length ; width less than half the height ;

surface smooth with a few punctations ; free margin devoid of any tuberculations ; ventral margin excavate in the middle, dorsal margin convex, anterior broadly rounded, posterior broadly acuminate ; greatest height anteromedial. In dorsal view (Text-fig 1A) Subelliptical, narrowing at both extremities ; greatest breadth medial and about 1/5-1/6th of the length ; marginal pore canals few and straight at anterior margin, normal pore canals scattered, simple, open ; central muscle scar typical candonine ; left valve slightly longer than the right at the posterior extremity Internal lamellae broad anteriorly and posteriorly, narrow ventrally, with concentric lines converging at posterior end.

Antennule (Text-fig. 1C) : 7 segmented, segmental length ratios 10 : 4 : 3 : 3 : 3 : 4 : 5, natatory setae 4 on terminal and 5 on penultimate segments and 6-7 times as long as the 7th segment.

Antenna (Text-fig. 1D-H) : Natatory setae absent, endopod 4 segmented with length ratios 8 : 3 : 2.5 : 2 ; proximal seta pilose, Y. seta about 75 percent of first segment in length, distal segment of Y-seta 60 percent of its total length. Distal half of inner margin of second segment elevated and projected into 3 prominent round ridges (Text-fig. 1G) provided with setae Y_1 T_4 and T_3. Setae T_2 and T_1 arise from the distal margin of the segment. Seta Y_1 is a small aesthetasc while T_4 is serrated. T_2 & T_2 (Text-fig. 1G) are male bristles having bulbs pointed terminally.

Segment three, long narrow, distal end with 2 stout long claws (Text-fig. 1 H.....G2 G3) with serrated inner margin in distal 2/3rd, G small and Z_3 present in males.

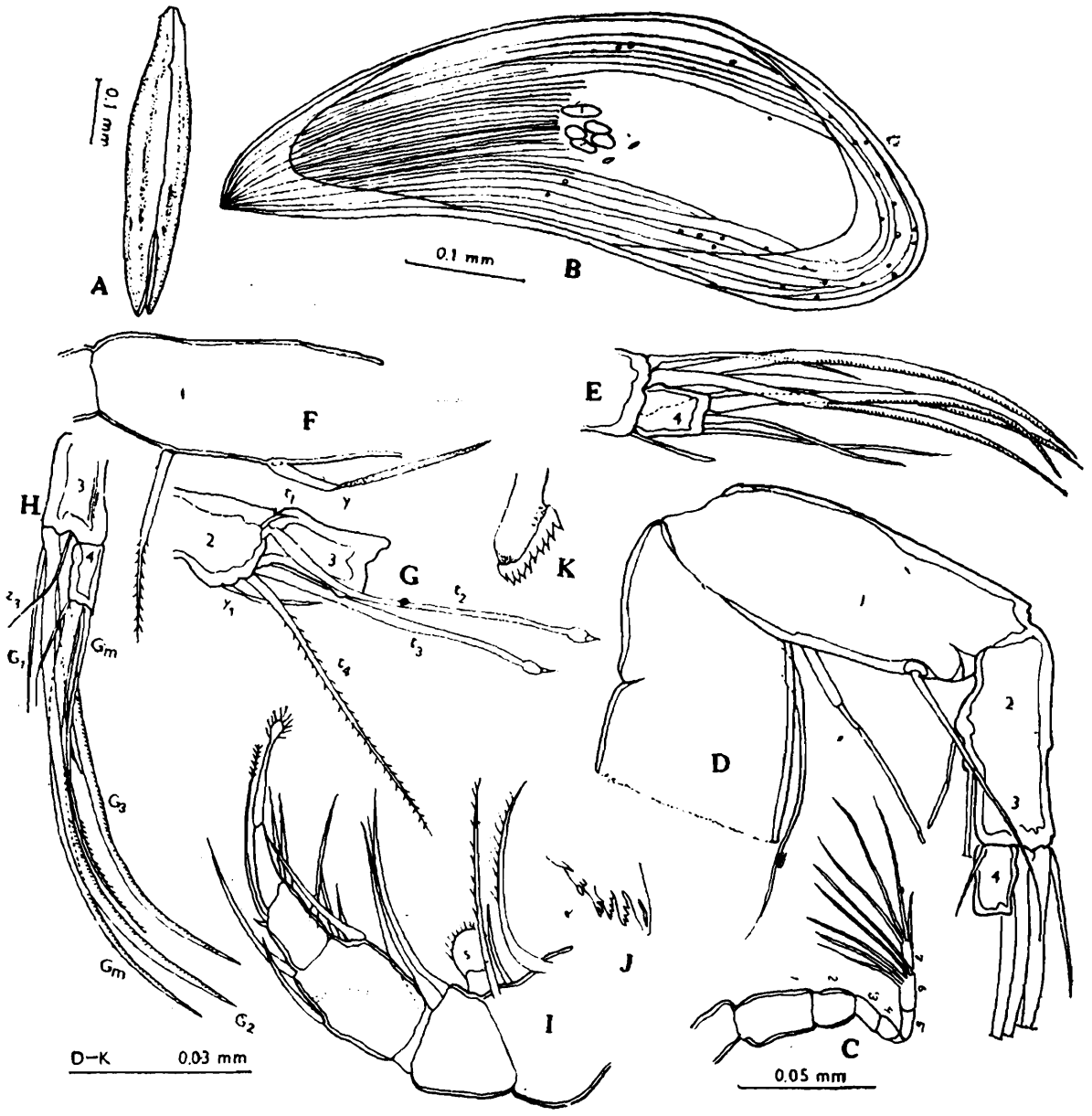
Segment four, narrow elongated with one serrated claw as long as G2 & G3. Other 3 setae narrow 1/3-1/2 of the claw length.

Rake like organ (Text-fig. 1K) 10 denticles.

Mandible (Text-fig. 1J) : Multidentate teeth, mandibular palp (Text-fig. 1I) 4-segmented, segment 1, with 2 plumose and 1 simple small seta and a broad leaf like setose plate (Text-fig. 1 I, S) on its inner margin. Segment 2 with 3 long simple setae, segment 3 with 2 long and 2 small simple setae. Segment 4 with 2 simple setae. Palp terminates into a stout elongate tapering seta with setose bulbus tip.

Maxillule (Text-fig. 2 A) : First lobe with 6 simple bristles ; 2nd and 3rd with 5 simple bristles on each.

Maxilla (Text-fig. 2B, C) : Prehensile palps more or less symmetrical, a small hyaline toe like projection on its outer subapical region (Text-fig. 2C) ; exopod a single, simple seta.



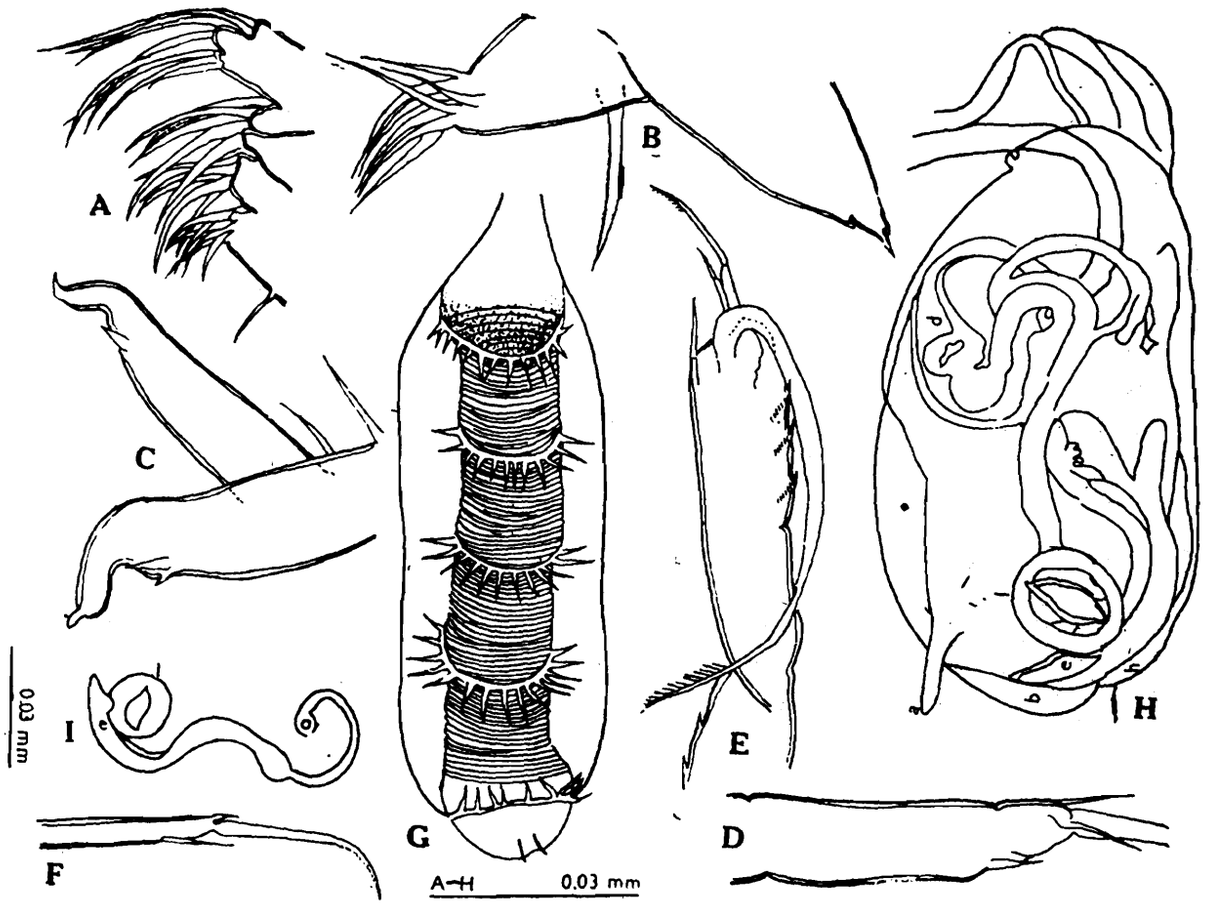
Text-fig. 1. A. Dorsal view of the shell
B. Lateral view of the shell
C. Antennule
D-E. Antenna ♀
F-H. Antenna ♂
I. Mandibular palp ♂
J. Mandibular teeth
K. Rake like organ

Thoracopod I. (Text-fig. 2D) : Length ratio of the 4 distal segments 12 : 5 : 7 : 2, terminal claw little more than the last 3 segments combined.

Thoracopod II. (Text-fig. 2E) : Four segmented, penultimate segment sutured medially carrying a small simple, and a very long reflexed plumose seta ; terminal segment small but distinct with one terminal plumose and a minute subterminal seta. The inner or dorsal margin of the 2+3 segment with 3 equidistant minute spines having a row of microtrichs in each along their bases. There are 3 minute spines on the lower margin of the first segment but without any visible microtrich.

Furca (Text-figs. 2F & 3B) : Straight, long with a single long curved claw weakly serrated in distal one third, one small terminal bristle and a dorsal seta much longer than the terminal bristle which is set back from the claw by a distance equal to 1/3rd of its own length behind the origin of the claw, length of the ramus 16 times the least width.

Zenker's organ—With five whorls (Text-fig. 2G) of spicules.



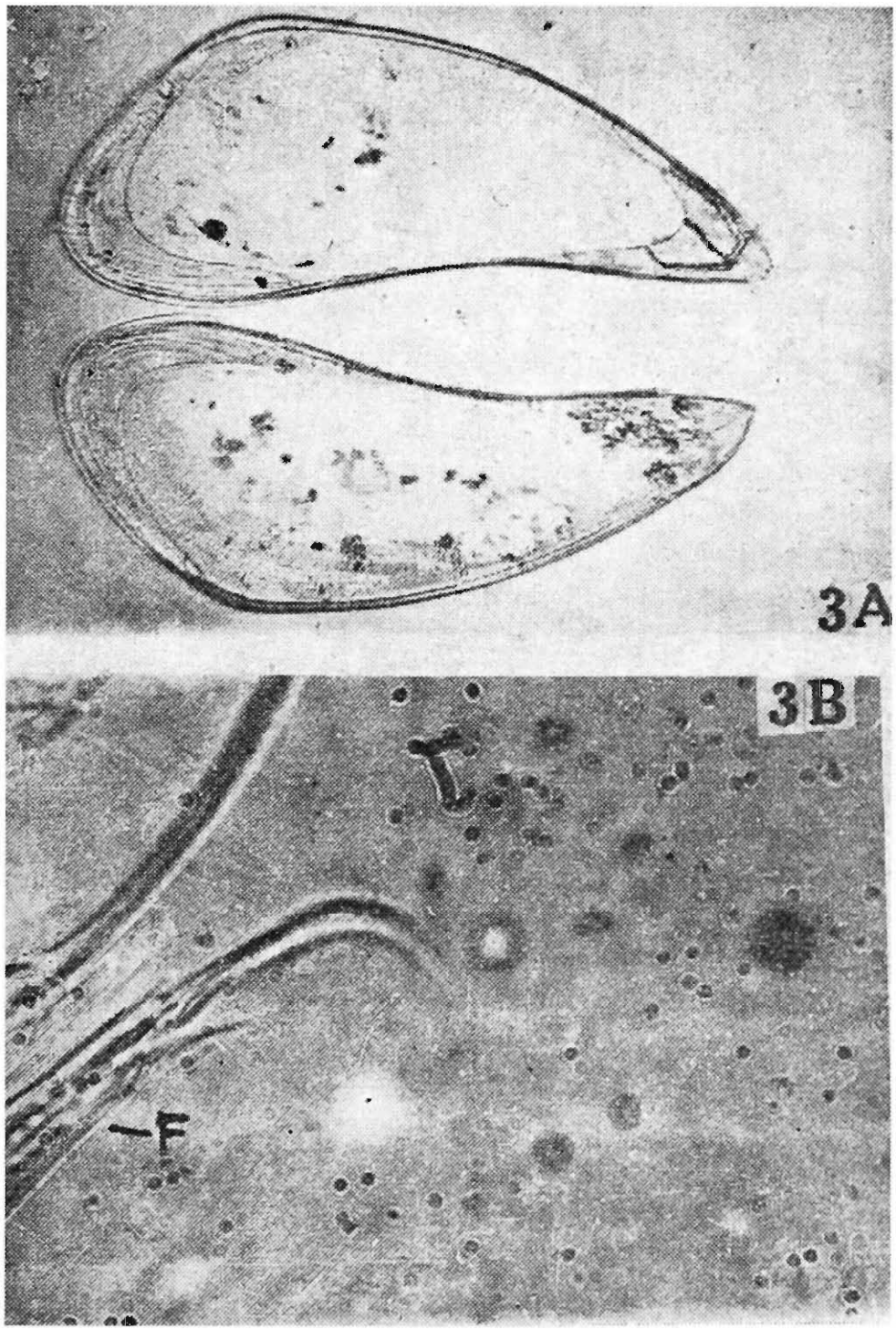
Text-fig. 2. A. Maxillule
B. Maxilla ♀
C. Maxillary palp ♂
D. First thoracic leg ♂
E. Second thoracic leg ♂
F. Furca ♂
G. Zenker's organ.
H. Hemipenis General view.
I. Bursa copulatrix and copulatory tube

Hemipenes (Text-fig. 2H) : Elongated elliptical in outline, lateral lobe, 'a' slender and postero-distally oriented, lobes, 'b' and 'h' are rounded as shown in entire view (Text-fig. 2). Bursa copulatrix similar to *M. elegans* but apical lobe more elongated and narrow. Copulatory tube (Text-fig. 2) more or less rounded but flexible.

Eyes : Absent.

Female : Second antenna (Text-fig. 1D, E) with only 3 segments, 2 & 3 not clearly separated from one another, with only two ridges

(Text-fig. 1D) on the inner margin. Y-seta on first segment 77% of first segment, G_2 and G_3 (claws) long and serrated. Fourth segment wider than in male. Rake like organ with 9 denticles. Endopodite of maxilla conical, witn one terminal and two subterminal, short projections. The female genital organ is poorly developed. The ratio of females to males 3 : 1 in natural habitat.



Text-fig. 3. A. Photograph of valves ♀

B. Furca (♂) showing both ramii together.

Holotype : 1 ♂ (on slide Nos. 3a, 3b) Reg. No. A 1013 Zoological Survey of India, Gangetic Plains Regional Station, Patna ; Loc. Monghyr, Bihar, India ; from a well in Belan Bazar. Coll. Lakshman Ram (L. Prasad Gupta), 9-XII.-1977.

Paratypes : 1 ♂ (on slide No. 5) Reg. No. A-1014, 4 ♀ ♀ in Spirit Reg. No. A—1015,.....Zoological Survey of India, Gangetic Plains Regional Station, Patna. Details same as for the holotype.

3 ♀ ♀ (on slides No. 1. 6, 7, 8) Reg. No. A—1016, Zoological Survey of India, Gangetic Plains Regional Station Patna, details same as for the holotype.

Measurements : Male : length, 0.49-0.55, height 0.21, breadth 0.092 mm. Female : Length, 0.55, height, 0.22, breandth, 0.09 mm.

Discussion : The new genus *Indocandana* Gupta appears to be closer to *Mixtacandona*, a genus occurring in south east Europe and in Lake Baikal in the Soviet Union, and containing several species reported from subterranean waters. It can, however, be easily distinguished from the South European genus in the furca having a single long terminal claw and only five whorls of spicules in the Zenker's organ.

Indocandona krishnakanti bears similarities with *Mixtacandona elegans* in its shell outline. However in the detailed structures of the antenna it shows several differences more salient of which are detailed here.

The inner margin of second endopodial segment of male antenna in *I. krishnakanti* is produced into ridges while in all other it is more or less straight, the claws are serrated. The maxillary palps are small and stout in males and exopod is represented by a simple minute seta. Plumose nature of terminal and reflexed setae of 2nd thoracopod in *I. krishnakanti* is also important and minute spines and microtriches at their bases on the dorsal margin of 3rd segment resemble those in *M. juberthieae* Danielopol (1978). Zenker's organ with 5 whorls of spicules have been reported in *Candona morimoti*. (Mackenzie, 1972). *Indocandona krishnakanti* can be very well placed in *ljovuschkini* group of *Mixtacandona*, the shape of hemipenis is more or less elliptical and is much different from that in *M. elegans*. The copulatory tube has close similarity with that in *M. tabacarui* (Danielopol & Cvetkov, 1979) and the bursa copulatrix to that of *Mixtacandona elegans* in its outline. It seems that *Indocandona* was isolated much earlier from *Mixtacandona* in the evolutionary line. This is supported by the nature of spicules and shape and number of whorls on the Zenker's organ as given by Danielopol (1978, p. 91).

Biogeography :

Most of the species of *Mixtacandona* have been reported from the sbuterranean waters in South east Europe and lake Baikal and also fossils from the same region from the Pliocene period. All the above distributional records whether living or fossils suggest that these ostracods were once widely distributed in the South east Europe, U.S.S.R. and other parts of Northern hemisphere.

SUMMARY

A new genus and species of ostracod *Indocandona krishnakanti* has been described from the subterranean water of Bihar, India. Its relationship with the nearest genus *Mixtacandona* Klie, and biogeography have been discussed.

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