

III. FURTHER RECORDS OF INDIAN BRACKISH WATER MYSIDAE WITH DESCRIPTIONS OF A NEW GENUS AND SPECIES.

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(Plates xii-xiii.)

In 1908 I described two new species of Mysidae from brackish water, near Calcutta (*Rec. Ind. Mus.*, vol. ii, pt. 3, 1908). Since that time, Dr. Annandale and his staff have continued their exploration of the brackish waters of India and have sent to me, from time to time, samples of the Mysidae they found in their material, for identification. Most of the specimens sent me were found to belong to one or other of the two forms I had previously described. They have proved to be abundant and widely distributed on the east coast of India. Among the material sent me, however, I found a bottle of specimens from a brackish creek near Bombay, which proved to belong to an undescribed species requiring the formation of a new genus.

In the present paper, I give a description with figures of the new species and a complete list of all the records for the two previously described forms. These three species are, so far as I am aware, the only Mysidae known from the littoral of India. Many purely marine species must still await discovery and it seems probable that further work in the brackish waters of the west coast will bring to light undescribed forms.

I am much indebted to Dr. Annandale for the opportunity of examining the material here dealt with and to Mr. S. W. Kemp for valuable notes on the occurrence of the species and for a complete list of known localities. To both these gentlemen I desire to express my best thanks.

Macropsis orientalis, Tattersall.

M. orientalis, Tattersall, *Rec. Ind. Mus.*, vol. ii, pt. 3, 1908.

Complete list of localities.

(1). Chittagong town, brackish ponds near river. (*N. Annandale* and *S. W. Kemp*.)

(2). Dhappa, near Calcutta, brackish ponds (*N. Annandale*).
Type locality.

Found since in abundance in the same district, in water with 5.09-7.41 g. NaCl per litre.

(3). Port Canning, Lower Bengal, brackish ponds (*N. Annandale*).

(4). Zoological Gardens, Calcutta, fresh water (*S. W. Kemp*). (The pond in which Mr. Kemp took the specimens is filled periodically from a creek of the R. Hughli. *N. A.*)

(5). Belgachia, Calcutta, brackish water canal. (*S. W. Kemp*.)

(6). Garia, Lower Bengal, brackish ponds (*N. Annandale* and *S. W. Kemp*).

(7). Nalbano, L. Chilka, Puri district, brackish water (*J. T. Jenkins*).

(8). S. end of L. Chilka (inland), brackish water (*N. Annandale*).

(9). Barkul, Chilka Lake, in water with 4.09 g. NaCl per litre (*F. H. Gravely*).

(10). Rambha, Ganjam district, brackish ponds (*N. Annandale*).

(11). Vizagapatam backwater, Vizagapatam, salt water (*S. W. Kemp*).

(12). Sar Lake, nr. Puri, Orissa, fresh water (*N. Annandale*).

(13). Madpur, Bengal (*R. A. Hodgart*).

(14). Edge of the Mahanadi River, Cuttack, Orissa (*N. Annandale*).

I am indebted to Mr. Kemp for the above list of records for this species and for samples of specimens from nearly all the localities, from which I have been able to confirm Mr. Kemp's determinations. When forwarding the list of captures, Mr. Kemp kindly gave me the following note on the general occurrence of this species. "The species usually occurs in enormous numbers swimming in shoals. In one instance, when a strong breeze was blowing, it was noticed that the shoal kept to the windward side of the pond. In the neighbourhood of Calcutta, it seems to prefer ponds and canals, of slowly moving water, which are brackish, but does not occur in the salt lakes proper. None the less, as shown in the records given above, it is sometimes found in water almost or fully as salt as the sea and the fresh water record from a pond in the Zoological Gardens at Calcutta, cannot be questioned."

Since writing the above, Mr. Kemp forwarded to me specimens from Madpur, in the Midnapore district from absolutely fresh water, "at least thirty miles away from the nearest possible source of saline contamination"

The species was taken in abundance at all the above localities.

We may therefore summarise our knowledge of the distribution of this species by saying that it is an abundant form at the head of the Bay of Bengal and on the east coast of India, from Chittagong and the delta of the Ganges to Vizagapatam, usually found in brackish water or in fresh water not far distant from the influence of brackish tidal streams, but occasionally found in abso-

lutely fresh water, beyond suspicion of saline contamination as at Madpur or in the Zoological Gardens at Calcutta, or in water almost as salt as the sea as at L. Chilka.

I have seen no specimens at all from the west coast of India.

Potamomysis assimilis, Tattersall.

P. assimilis, Tattersall, *loc. cit.*

(Plate xiii, fig. 14.)

Complete list of localities.

(1). Chittagong town, brackish ponds near river (*N. Annandale* and *S. W. Kemp*).

(2). Dhappa, near Calcutta. brackish ponds (*N. Annandale*).
Type locality.

(3). Garia, Lower Bengal, brackish ponds (*N. Annandale* and *S. W. Kemp*).

(4). Sar Lake, near Puri, Orissa, fresh water (*N. Annandale*).

(5). Edge of the Mahanadi River, Cuttack, Orissa, fresh water (*N. Annandale*).

I have seen specimens from all these localities. This species has a general distribution very closely agreeing with that of *Macropsis orientalis*. It is generally found in company with the latter, but is apparently as a rule not nearly so abundant. Moreover, it seems to prefer brackish water, since it has not yet been taken in water as salt as the sea and only twice has it been found in fresh water. It has not yet been found on the west coast of India.

The additional material that I have been able to examine of this species has enabled me to supplement my original description. I find that in mature males, 6 mm. in length, there is a prominent hirsute lobe on the antennules, similar in form to but shorter than the same appendage in *Macropsis orientalis*. At the time of describing the species, my largest male specimen measured only 4 mm. and in specimens of that size, the appendage is just beginning to show itself as a small hirsute tubercle.

The female has two pairs of incubatory lamellae.

In the specimens from the Mahanadi River, I find that the small spines arming the truncate apex of the telson show a tendency to an arrangement in series of shorter spines with a longer spine between each series (see plate xiii, fig. 14). This arrangement was shown to a much less extent in the type specimens but is probably characteristic of the species.

Most of the specimens have a row of black chromatophores on the inner margin of the outer uropod.

Genus *Indomysis*, nov.

Form of the body comparatively slender.

Eyes well developed.

Carapace not produced in the form of a rostral plate ; lateral corners acutely produced.

Superior antennae of the usual structure but wanting the hirsute appendage in the male.

Antennal scale narrowly oval in shape, setose all round, unjointed.

Telson short, entire, quadrangular in shape, lateral margins armed with a few short spines; apex truncate, armed with a row of small teeth.

First, second and third pairs of pleopods in the male, as in the female. Fourth pair distinctly biramous, inner ramus quite small and bearing only a few delicate setae, outer ramus considerably elongate, extending beyond the posterior margin of the last segment of the pleon, consisting of a single elongate joint terminated by a long slender spiniform seta. Fifth pair elongate, extending beyond the posterior margin of the last segment of the pleon, consisting of a single linear joint armed with setae.

It is possible that the characters of the mandibular palp and the terminal joints of the sixth, seventh and eighth thoracic limbs, as given in the description of the type species below may be found to be of generic significance when further species of the genus are discovered.

This new genus is distinguished by the combination of characters afforded by the unjointed antennal scale, the short entire quadrangular telson and the form of the pleopods in the male. It resembles the genus *Potamomysis* in the form of the telson, but the latter genus has the antennal scale jointed and the pleopods of the male quite different, the fifth pleopod resembling the first, second and third, and the fourth of entirely distinct form. I know of no other genus with which it can be confused. Only one species, the type of the genus, *Indomysis annandalei*, is as yet known.

Indomysis annandalei, gen. et sp. nov.

(Plate xii, figs. 1-5 and pl. xiii, figs. 6-13.)

Form (fig. 1) of the body moderately slender, thorax more than half as long as the pleon.

Carapace leaving the last segment of the thorax fully exposed; anterior margin not produced in the form of a rostral plate but almost regularly and evenly round and slightly upturned; anterolateral corners produced into acute spiniform projections; a small obtuse frontal spine visible below the anterior margin of the carapace.

Eyes well developed and almost completely uncovered by the carapace; form nearly cylindrical, one and a half times as long as wide, cornea occupying rather less than the distal half of the eye, hardly at all expanded, pigment black.

Superior antenna (fig. 2) somewhat slender, proximal joint of the peduncle longer than the distal two combined, the latter each

armed on their inner distal corners with a single very long and stout plumose seta; hirsute appendage apparently lacking in male specimens.

Inferior antenna with the peduncle about one half as long as the scale, last two joints subequal.

Antennal scale (fig. 3) about four and a half times as long as broad in its widest part, extending considerably beyond the distal end of the antennular peduncle, narrowly oval or lanceolate in shape, setose all round, without a second joint; basal joint from which the scale springs with the outer distal corner acutely produced.

Mandible with a well developed molar process; second joint of the palp linear, not expanded and unarmed; third joint of the palp comparatively short.

First and second thoracic legs (figs. 4-5) of normal form and structure, the masticatory lobes of the first pair well developed.

Third pair of thoracic legs (fig. 6) long and slender; tarsus slightly longer than the merus, three jointed, the first joint the longest; nail well developed.

Fourth and fifth pairs of thoracic legs (figs. 7-8) similar in form to the third pair but having the tarsus shorter and only two jointed; the tarsus of the fifth pair shorter than the tarsus of the fourth.

Sixth and seventh pairs of legs (fig. 9) peculiarly modified; ischial joint long and slender longer than the meral joint; tarsus short and robust, two jointed, second joint quite short; nail well developed and rather robust, having on its inside a strong toothed spine; on the lower distal corner of the first joint of the tarsus there is a long and strong slightly curved spine, which, with the dactylus gives the appearance of a chelate termination to the limbs.

Eighth thoracic legs (fig. 10) long and slender; merus longer than the same joint in the sixth and seventh legs and more slender; tarsus reduced to a single quite short joint, expanded distally, terminating in a short curved nail; the expanded distal end of the tarsal joint forms a sort of palmar edge on which the dactylus can inpinge and is armed with a row of six or seven short spines.

First five segments of the pleon roughly subequal in length; sixth segment about one and three quarters as long as the fifth.

Telson (fig. 13) shorter than the last segment of the pleon, one third as long again as broad at the base and almost three times as long as broad at the apex; latter squarely truncate, armed at each angle with a single spine between which is a row of small teeth, extending entirely across the whole apex of the telson, some of the teeth longer than the others; lateral margins of the telson armed proximally with four to seven short spines, the distal portion of the lateral margins unarmed. In the example figured, the left margin of the telson bears only four spines while the right margin bears seven.

Inner uropods one and three quarters as long as the telson, without spines on its inner margins; otocyst rather large.

Outer uropods twice as long as the telson.

First, second and third pleopods in the male similar to those of the female; fourth pleopods (fig. 11) distinctly biramous, inner ramus quite small and armed with a few slender setae; outer ramus extending beyond the posterior end of the last segment of the pleon, consisting of a single joint terminated by a very long stout spiniform seta; fifth pleopods (fig. 12) elongate, reaching backwards as far as the outer ramus of the fourth pair, consisting of a single joint armed at the distal end with about four very long and slender setae.

Marsupial pouch of the female, composed of two pairs of lamellae

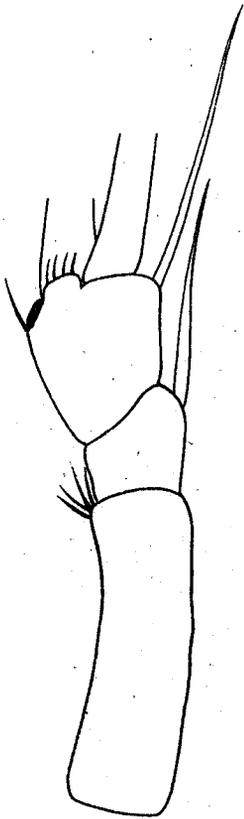
Locality. Brackish creek at Panvel, near Bombay, February, 1911 (*J. Caunter*). About two hundred specimens up to 7 mm. in length.

I dedicate the species to Dr. Annandale, the Superintendent of the Indian Museum, who has done so much to elucidate the brackish water fauna of India. I have not seen any specimens from any other locality in India

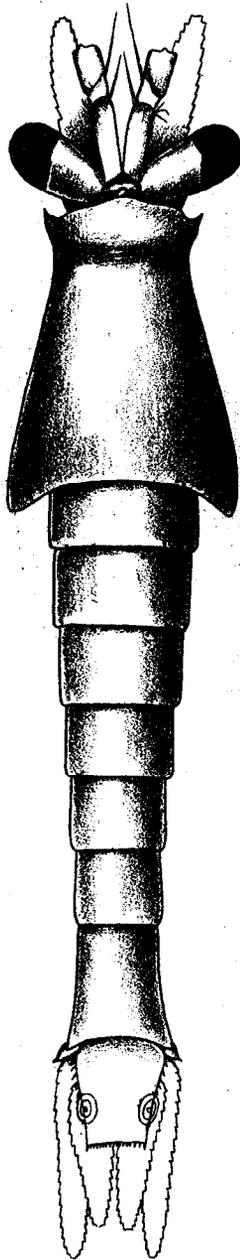
This species differs from all other members of the sub-family Mysinae in the form of the pleopods of the male and the elongate form of the fifth pleopods necessitates a modification of the definition of the sub-family in order that this species may be included. The pseudochelate appearance of the sixth and seventh thoracic limbs, and the peculiar form of the extremity of the eighth thoracic limbs are quite characteristic and unknown to me in any other species.

EXPLANATION OF PLATE XII.

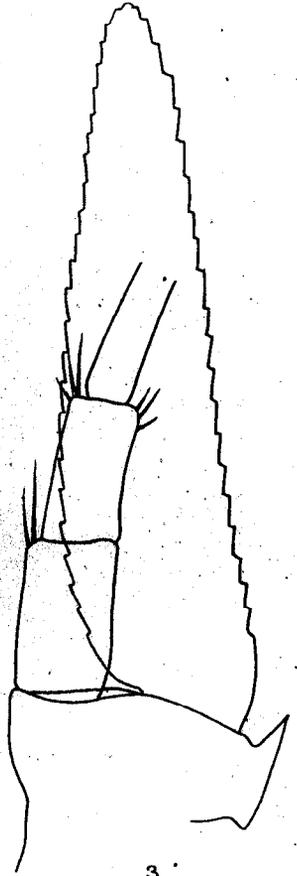
- FIG 1.—*Indomysis annandalei*, adult female.
- „ 2.— „ „ , antennular peduncle.
- „ 3.— „ „ , antennal scale.
- „ 4.— „ „ , endopod of the first thoracic limb.
- „ 5.— „ „ , endopod of the second thoracic limb.



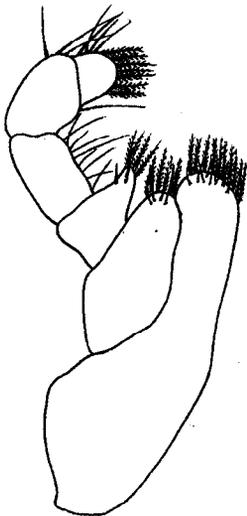
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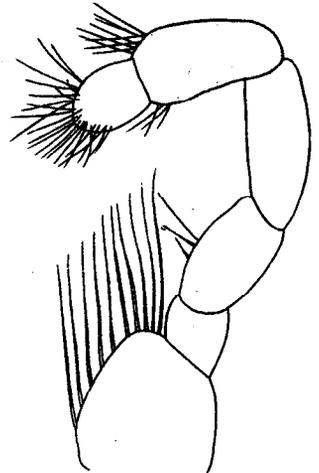
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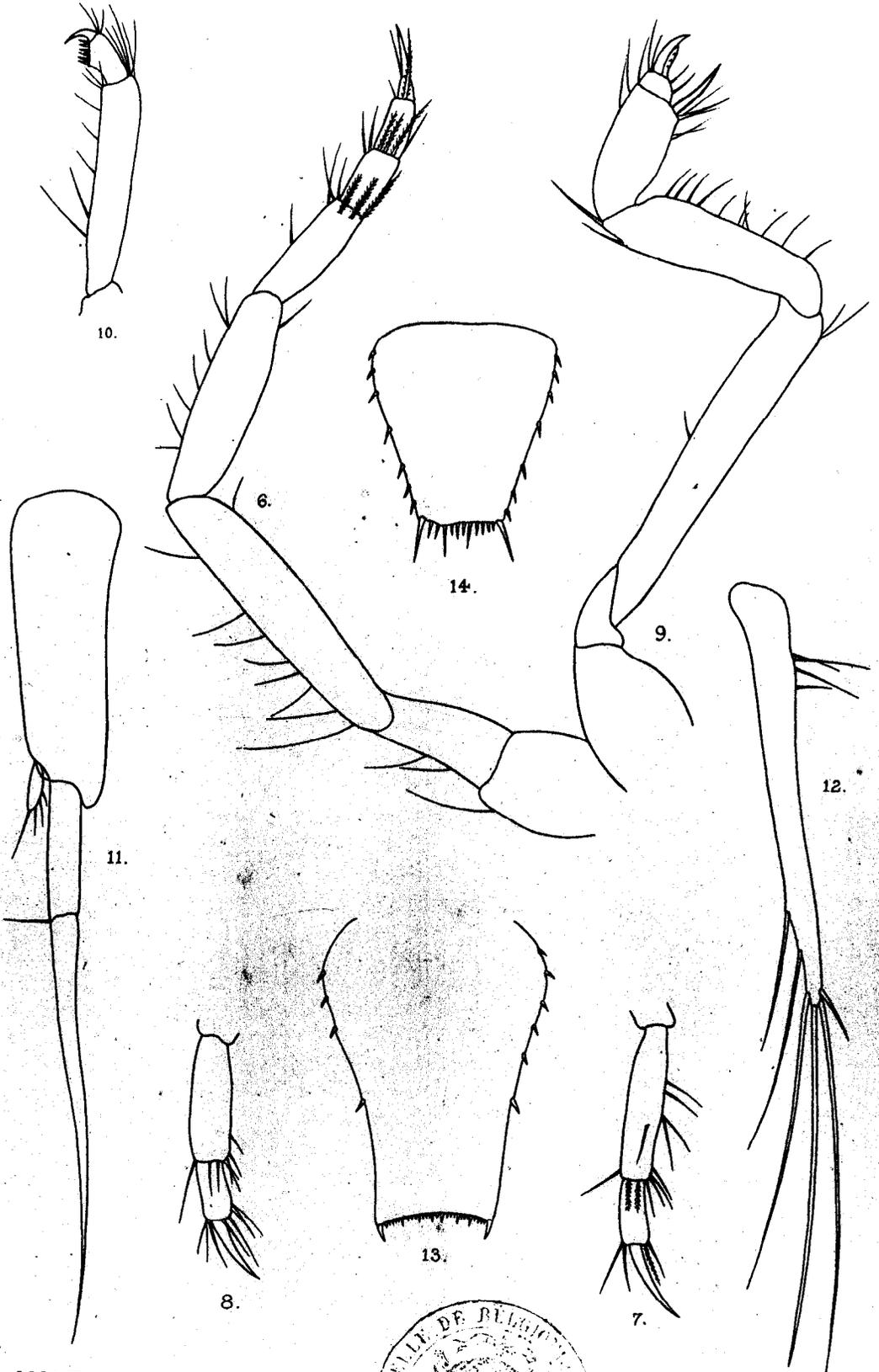
A.C. Chowdhary, lith.



INDOMYSIS ANNANDALEI, gen. nov., sp. nov.

EXPLANATION OF PLATE XIII

- FIG. 6.—*Indomysis annandalei*, endopod of the third thoracic limb.
- „ 7.— „ „ „ , tarsus of the fourth thoracic limb.
- „ 8.— „ „ „ , tarsus of the fifth thoracic limb.
- „ 9.— „ „ „ , endopod of the seventh thoracic limb.
- „ 10.— „ „ „ , tarsus of the eighth thoracic limb.
- „ 11.— „ „ „ , fourth pleopod of the male
- „ 12.— „ „ „ , fifth pleopod of the male.
- „ 13.— „ „ „ , telson.
- „ 14.—*Potamomysis assimilis*, telson.



W. M. T. del.

A. C. Chowdhary, lith.

Figs. 1-13. *INDOMYSIS ANNANDALEI*, gen. nov., sp. nov.
 Fig. 14. *POTAMOMYSIS ASSIMILIS*, Tattersall.

