

ON THE OCCURRENCE OF DAIRELLA LATISSIMA AND DAIRELLA CALIFORNICA (AMPHIPODA) IN THE INDIAN OCEAN

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ABSTRACT

Studies on the taxonomy and distribution of the family Dairellidae (Hyperiidæ, Amphipoda) of the IOOE collections are presented. Dairellidae comprises only one genus, *Dairella* (Bovallius, 1887) with two species, *Dairella latissima* and *Dairella californica*. Both the species were originally recorded from the tropical and temperate regions of Atlantic and are deep water forms mostly collected at depths varying between 1000 m — 3000 m. *D. latissima* was known to occur in the Atlantic and Mediterranean and also in the Gulf of Aden, whereas, *D. californica* was recorded from the Pacific. The present record of the species form the first of its kind from the Indian Ocean.

INTRODUCTION

The report presented here arise from the study on the taxonomy and distribution of hyperiid amphipods of the IOOE collections carried out at the Indian Ocean Biological Centre. Out of 1927 samples collected from 200-0 m with IOS net only two had representatives of the family Dairellidae.

This family was treated as a sub family, Dairellinae by Bovallius (1887) under the family Phronimidae. Later it was raised to a separate family and the recent classification of Hyperiidea by Bowman & Gruner, 1968 (unpublished) has treated it as an independent family under the super family Phronimoidea.

Only one genus *Dairella* with two species, *D. latissima* and *D. californica* is hitherto known in the family Dairellidae. From the two samples of the present collections (Table 1), one juvenile male belonging to each of these species was obtained. Previous records of the species being from the Atlantic and Pacific oceans, opportunity is taken here to record them for the first time from the Indian Ocean. Detailed description of *D. californica* (male) is given since the original description of this species is based on a female.

ORDER AMPHIPODA

Sub-order Hyperiidea

Super family Phronimoidea

Family Dairellidae (Bov.) Vosseler 1901

Genus *Dairella* Bovallius, 1887

Dairella latissima Bovallius, 1887.

Dairella latissima. Bovallius, 1887, p. 24: 1889, p.336; Stebbing, 1888, p.342; Vosseler, 1901, p.51; Tattersall, 1906, p.18; Stewart, 1913, p.254; Stephensen, 1924, p.112; Spandal, 1927, p.169; Pirlot, 1929, p.108; Barnard, 1932, p.282; 1937, p.184; Chevreux, 1935, p.184; Reid, 1955, p.19; Grice and Hart, 1962, p.300; Dick, 1970, p.36.

Material examined: One juvenile male; Length 8.5 mm

Diagnostic features:

Head shorter than the first three peraeonal segments: first two peraeonal segments coalesced leaving a little trace of segmentation on the dorsal side. The fifth pair of peraeopods larger than the fourth, femur longer than the carpus. Femur of the last three pairs moderately dilated; first pair of uropods do not reach the apex of the last pair; rami of the last pair broadly ovate.

Remarks

The original description by Bovallius (1887) agrees fairly well with the present specimen (Fig.1) except in the following. The second and third joints of the first and second pairs of peraeopods (Fig. 1 D, E.) with small spines at their distal mar-

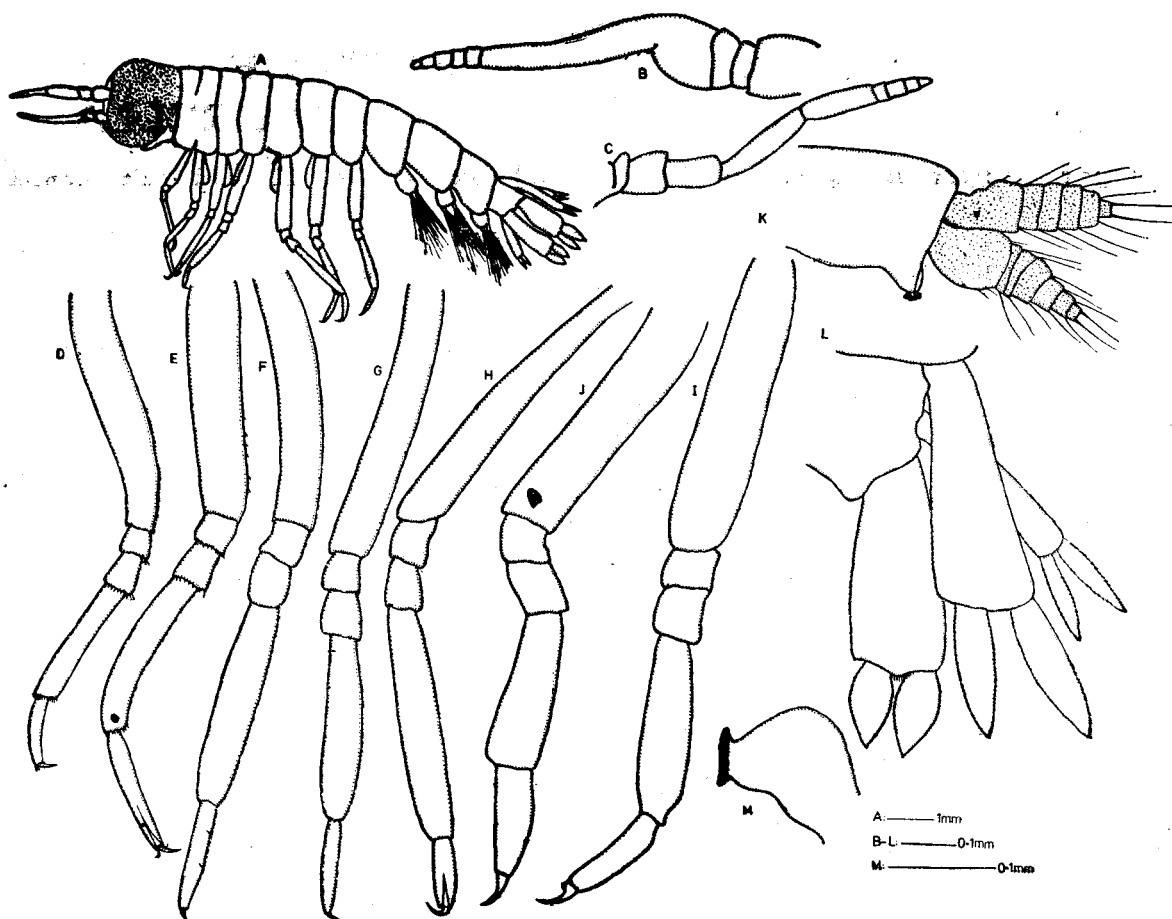


Fig. 1- A. *Dairella latissima* (young male from the side); B. First antenna; C. Second antenna; D- J. Peraeopods (one to seven); K. Pleopod; L. Urus; M. Mandible

gin. At the base of the dactylus of the second pair there are two spines, a smaller inner and a sharply curved outer. Dactylus of the sixth pair (Fig. 1. I) is quite thick and sharply curved.

Distribution

Atlantic:

A deep water species (Stephensen, 1924) previously recorded from the tropical and temperate regions of north Atlantic (Bovallius and Vosseler), off Cape Verde Islands (Stebbing), west coast of Ireland (Tattersall), west of British Islands (Stephensen), centre of Gulf of Biscay between Azores and Lisbon and between Tristan da Cunha and Cape of Good Hope (South equatorial current) (Spandal), between New York and Bermuda (Grice and Hart).

Mediterranean:

Between Cape Rosso and Monaco (Vosseler), Gulf of Genova and south of Formentera (Che-

vreux) and from the western basin of Mediterranean (Stephensen).

Indian Ocean:

One female specimen was recorded by Barnard (1937) from the Gulf of Aden which forms an adjacent body of water to the Indian Ocean. The present record forms the first record of a male from the Indian Ocean and it also indicates a considerable extension of its geographical range to southeast.

Dairella californica Bovallius, 1887.

Paraphronima californica (Bovallius, 1885) No.14, p. 11.

Dairella californica Bovallius, 1887, No. 16, p.24; Bovallius, 1889, part 1 & 2, p.333.

Material examined: One juvenile male; Length 11.5 mm.

Diagnostic features:

Head as long as the first three peraeonal segments together. First two peraeonal segments coalesced leaving only a little trace of segmentation. The fifth pair of peraeopods longer than the fourth unlike in the female in which it is shorter, femur longer than the carpus. First pair of uropods reach the apex of the last pair, rami of the last pair narrowly ovate.

Body broad, not compressed, the head and peraeon together longer than pleon.

Head globular, inflated, rising above the dorsal side of the peraeon, deeper than long; antennae fixed on the front side of the head inside antennal groove.

Eyes divided into four portions and occupy the whole surface of the head.

First pair of antennae (Fig. 2 B) not fully developed, first joint of the peduncle longer than the following together, the third joint is longer than second. Flagellar joint finger-like and twice as long as the whole peduncle with a small notch at the inner side, olfactory hairs not developed.

Second antennae (Fig. 2 C) not fully formed, the third segment of the peduncle is longer than the last peduncular joint and the following are short. Flagellum with sixteen joints and under margin without hairs.

The mouth parts are closely like that of the female (Bovallius, 1889).

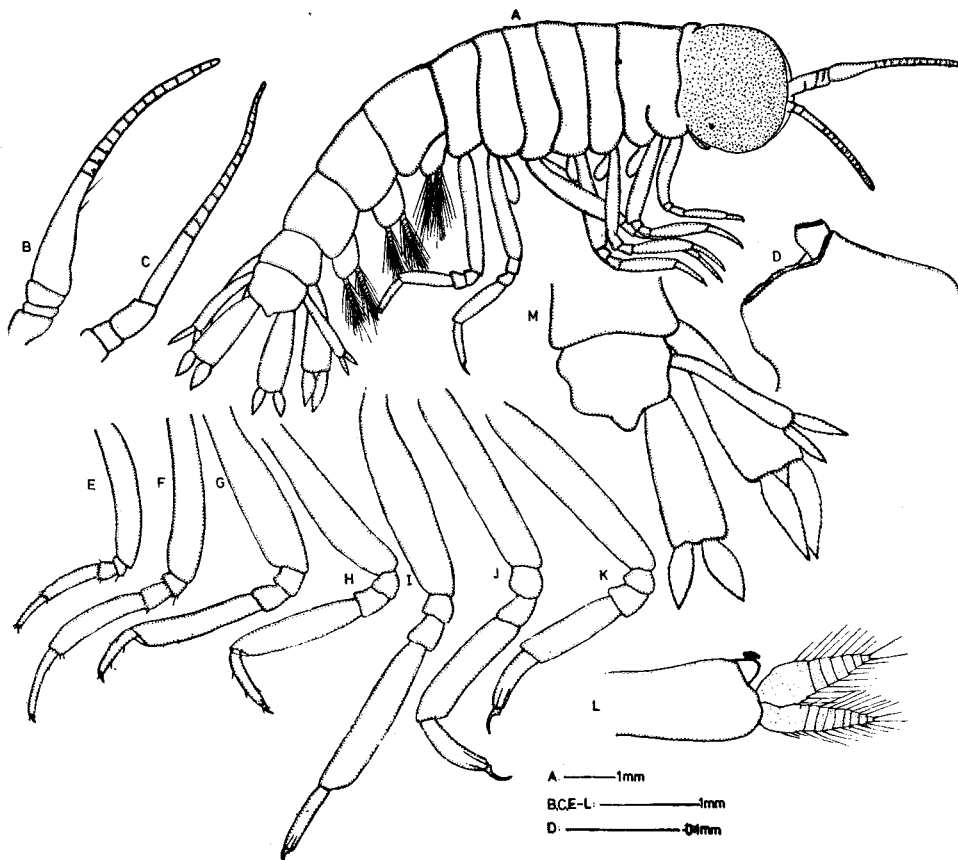


Fig. 2 A. *Dairella californica* (young male from the side); B. First antenna; C. Second antenna; D. Mandible; E-K. Peraeopods (one to seven); L. Pleopod; M. Urus.

The peraeon (Fig. 2 A), body broad, depressed as in isopods. First and second segments coalesced, the epimerals being free; along the front margin of the first segment there is a duplicature

of the integument probably serving the articulation of the head, third segment short, equal to fourth, the sixth and seventh longer. Epimerals coalesced with the corresponding segments but

their upper limit marked by a ridge as in *Dairella latissima*. Branchial vesicles are five pairs, bottle shaped, attached to the second and the four following peraeopods, fourth and fifth are comparatively longer.

First peraeopod (Fig. 2 E) shorter than the second, femur longer than the following segments together, second, third and fourth segments with small spines towards the distal margin, the fourth slightly curved. Metacarpus short with spines at the distal margin, dactylus simple and not so long.

Second peraeopod (Fig. 2 F) closely resembles the first except being longer.

Third and fourth peraeopods (Fig. 2 G & H) have both carpus almost as long as the femur, metacarpus with three to four spines, dactylus more developed and slightly curved than the preceding pair.

Fifth peraeopod (Fig. 2 I) longer than the following two, carpus shorter than femur; metacarpus narrow, dactylus curved.

Sixth and seventh pairs (Fig. 2 J & K) are almost equal in length, femur thick especially the sixth, dactylus well developed, sharply curved.

Pleon (Fig. 2 A) deeper than peraeon, hind corner of the pleonal segments slightly rounded.

Rami of pleopods (Fig. 2 L) shorter than peduncle, coupling spines planted in a straight row.

Urus (Fig. 2 M) longer than the last pleonal segment, first ural segment slightly broader than the last coalesced segment.

Uropod (Fig. 2 M): First pair reach beyond the apex of the 3rd pair, peduncle laminar, twice as broad at the apex as at the base. Inner margin fringed with spine-like teeth; rami lanceolate, equal in length, serrated on both margins and widely placed. In the second pair, peduncle much narrower with

small spines towards the inner margin, rami lanceolate, sub-equal, outer being longer and serrate on both margins. Peduncle of the third pair broad, laminar and constricted at the base, the outer margin fringed with minute spines, rami equal in length, distant from one another, inner ramus serrated on both margins, outer serrated only on the inner margin.

Remarks:

The original description of this species was based on a female by Bovallius (1887) and the present record of the male specimen agrees fairly well with the original except mainly in the characters like the fifth leg longer than the fourth, presence of a second pair of antennae, and antennal groove. The specimen on hand being a juvenile male, first and second antennae are not fully formed.

Distribution:

Originally female of this species was recorded from the temperate and tropical regions of the Pacific off the west coast of California (Bovallius, 1887). This is the first record of this species from Indian Ocean.

DISCUSSION

It is not easy to distinguish males of *Dairella latissima* and *D. californica* as it is possible in the case of the females of the two species. The characters given by Bovallius (1889), apply mainly to the females. For males the most reliable character seems to be the form of the third uropods (Fig. 1 L & 2 M).

The members of the family Dairellidae are deep water forms (Stephensen 1924). *Dairella latissima* has been mostly collected at depths varying between 1000 m — 3000 m except in one or two instances where it has been recorded from the subsurface waters (Chevreux, 1913). In the present collections *D. latissima* has been recorded from a haul made from 200 — 0 m and *D. californica* from 100 — 0 m (Table 1). The thermocline at these stations was observed at 50 m and 100 m (Table 1) respectively. From the vast collections

Table 1. Station position and hydrographic data

Vessel	Cruise No.	Station No.	Date	Latitude & Longitude	Time (local) hrs.	Wire	Depth (m)(sounding)	Temperature °C at		Salinity ‰ at		Thermocline at m.
								0 m	100 m	0 m	100 m	
Anton Bruun	A	12-B	3-3-63	17°36'N-68°30'E	1630	100-0	3400	27.97	25.12	35.58	36.23	100
„	5	327	30-4-63	06°51'N-75°02'E	0849	200-0	2699	30.11	14.17	33.53	35.09	50

made mostly from 200 — 0 m their presence in only two stations points to the fact that either they are mostly confined to deep waters as suggested by Stephensen (1924) or their distribution is quite restricted in the Indian Ocean.

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