

**A NEW SPECIES OF PEDUNCULATE BARNACLE OF THE GENUS
LEPAS (CIRRIPIEDIA : THORACICA) FROM THE EASTERN
INDIAN OCEAN**

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ABSTRACT

Lepas gnanamuthui, a new species of Cirripede collected from drift wood off the south coast of Java and the west coast of Great Nicobar is described and discussed. Distinctive features include angularly bent carina with an external narrow central ridge, four filamentary appendages, distinct pectination of mandible and maxilla I and in the arrangement and nature of setae, spines and hairs on the segments of the cirri.

INTRODUCTION

DURING the course of investigations on the Cirripedes of the Indian Ocean, a hitherto undescribed species of the Genus *Lepas* (Family Lepadidae) has been found and is described here.

The author is grateful to: the UNESCO, the Government of India and Dr. M. L. Roonwal, former Director, Zoological Survey of India for the award of a fellowship to participate in the 35th Cruise of the R.V. *Vityaz*. Thanks are also due to Professor P. L. Bezrukov, the leader; Captain E. A. Avramenko and other Scientists of the 35th Cruise of the R.V. *Vityaz* for their help while collecting the Cirripedes during this Cruise.

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***Lepas gnanamuthui** sp. nov.**

(Fig. 1 : a-i)

***Material examined* :**

Two adults (including the holotype, Z.S.I. Reg. No. C 492/2) from drift-wood from pleistone net collection at R.V. *Vityaz* Stn. no. 5168 (Lat. 8°00' S ; Long. 105° 24'E) coll. A. Daniel, 16. vii. 1962.

One adult from drift-wood from pleistone net collection at R.V. *Vityaz* stn. no. 5170 (Lat. 10° 02' S ; Long. 105° 23' E) coll. A. Daniel, 17. vii. 1962.

* This new species has been named after my teacher, late Dr. C. P. Gnanamuthu, Professor of Zoology, Madras University.

Two adult specimens from drift-wood from horizontal plankton collection during Great Nicobar Expedition : M.V. *Yamuna* Stn. no. 1 (Lat. 6° 59' N, Long. 93° 38'E). coll., A. Daniel, 16. iii. 1966.

Diagnosis : Carina angularly bent, upper part concave within and externally with central ridge ; lower part flat with semi-circular basal disc. Mandible with six teeth including inferior angle, upper and lower margins of all teeth (excepting upper margin of first) and lateral surfaces of three lower teeth with denticles. Filamentary appendages four. First cirrus with each segment bearing plumose setae along entire margin. Each segment of cirri iv to vi with fine hairs arranged in lengthwise rows of two groups on lateral surface ; anterior margin with a pair of very long, a pair of moderately long and several pairs of short setae ; posterior distal end with two pairs of long, stout, curved spines and several pairs of thin straight spines.

Description : The specimens have a capitular length of 14.0-14.4 mm. and a breadth of 10.0 -10.2 mm. with the peduncle measuring 5.0-5.3 mm. in length and 3.5-3.6 mm. in breadth.

The capitulum is greatly swollen. The valves are placed rather distant from each other (Fig. 1a), excessively thin, brittle and covered by thin chitinous membrane

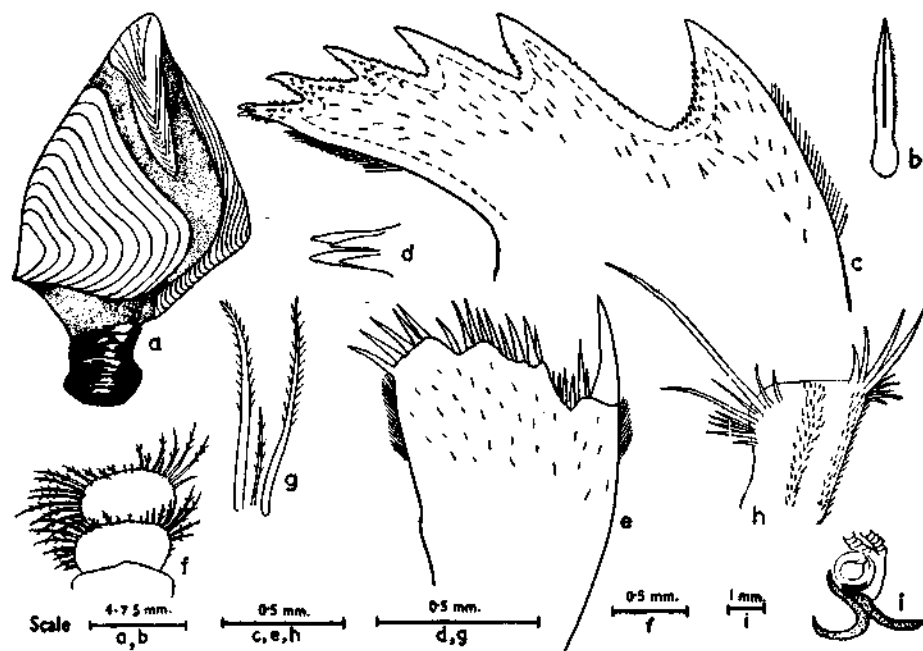


FIG. 1. *Lepas gnanamuthui* sp. nov.,—a. entire animal, side view ; b. carina, dorsal view ; c. mandible ; d. sixth tooth of mandible, enlarged ; e. maxilla I ; f. two segments of anterior ramus of first cirrus ; g. Plumose setae of anterior ramus of first cirrus ; h. Single segment of sixth cirrus and i. Filamentary appendages, side view.

which is clothed with minute spines, especially along the margins of the valves. The tergo-carinal margin of the *scutum* is hollowed in the centre and protuberant at the lower part, the occludent margin is almost straight for two-thirds its length from

the base and is inwardly deflected at the apical region; the basal margin is strongly reflexed and produced into a rounded disc under the umbone. The tergum is flat with the scutal margin hollowed at the upper part and the occludent margin moderately arched outwards; the carinal margin is straight for most of its length except at the apical region where it is arched. The carina (Fig. 1a, b) is angularly bent with the upper and lower parts of almost equal length; the upper part has a bluntly pointed apical tip and is broad at the base i.e. at the region of the umbo; it is concave within and furnished externally with a central ridge which is narrow at the apical end and comparatively broad at the base; the lower part is flat, almost of equal width with a slightly expanded semicircular base.

The peduncle (Fig. 1a) is short, with wrinkled surface and devoid of spines. The *labrum* is bullate and fringed with a number of hairs. The palp is provided with several long setae on inner margin. The *mandible* (Fig. 1c) bears six teeth including inferior angle and the entire lateral surface is clothed with strong setae; the superior and inferior margins bear numerous long and thin hair-like setae; the lower margins of all teeth, upper margins and lateral surfaces of fourth, fifth and sixth teeth are armed with several strong denticles; upper margins of second and third teeth bear several weak denticles; the inferior angle (or sixth tooth) is provided with four prominent spines at tip of which one pair is very long (Fig. 1d). The *first maxilla* (Fig. 1e) is stepformed, with the first step separated by a deep excavation and armed with one long stout spine followed by several thin and shorter spines; with three regular steps below bearing a row of spines. The lateral surface is clothed with numerous spinules. The superior and inferior margins bear numerous long and thin hair-like setae. The *second maxilla* is elongated and clothed with long hair-like spines along the entire margin.

The cirri are moderately long and only slightly curved. The number of segments in the rami of the specimens examined is as follows:

Cirrus i : 10-11, 11-12 ;	Cirrus ii : 12-14, 12-14 ;
Cirrus iii : 12-14, 12-14 ;	Cirrus iv : 15-16, 15-16 ;
Cirrus v : 16-18, 16-18 ;	Cirrus vi : 19-20, 19-20.

The first cirrus has very unequal rami, the posterior ramus being two-thirds, as long as the anterior. The segments of both rami are protuberant and bear plumose setae (Fig. 1f) along margin of entire segment (Fig. 1g). The second and third pairs of cirri are alike in shape and structure. The segments are not protuberant and bear long non-plumose setae. The fourth, fifth and sixth pairs of cirri are alike in shape and structure. The anterior margin of each segment is protuberant at upper part which bears a pair of very long setae (longer than the length of the segment), a pair of moderately long setae below (slightly longer than the width of the segment), and several pairs of short setae (Fig. 1h). At the posterior distal end each segment is armed with two pairs of long, stout, curved spines, of which one pair is longer and stouter than the other and several pairs of thin straight spines below. Laterally, numerous fine bristles occur in the middle and at the posterior margin of each segment in lengthwise rows (Fig. 1h).

The caudal appendages are smooth with rounded summits. There are four filamentary appendages (Fig. 1i) on either side. The penis is long, tapering, distinctly annulated and bears setae and spines scattered over surface and at tip.

Remarks: The genus *Lepas* Linne, 1767 has been grouped into three subgenera

Hyalolepas, *Anatifa* and *Dosima* by Annandale 1909 (*vide* Daniel, 1952, 1956 and Daniel & Premkumar, 1967).

The present species clearly belongs to the subgenus *Dosima* because of the angularly bent carina and presence of a basal disc. This subgenus is considered to include the following valid species and forms: *L. fascicularis* Ellis & Solander, 1786, *L. fascicularis donovani* (Leach), 1818; *L. fascicularis villosa* Darwin, 1851 and *L. fascicularis aurivilli* Nilsson-Cantell 1921. In all these species and subspecies, there are five filamentary appendages on each side, the mandible bears five plain teeth without denticles (except in *L. fascicularis aurivilli* where also small spines occur on both edges of the teeth and to some extent on the surface), maxilla I has two unequal upper spines and the segments of the three posterior cirri bear triangular brushes of spines on the anterior margin, features distinct from those found in the present forms. Further, in *L. fascicularis* the lower part of the angularly bent carina is expanded into a flat oblong disc; in the subspecies *donovani* the upper part of the carina is flat and spear shaped; in the subspecies *villosa* the carina is extremely narrow with the upper part of nearly the same width throughout and the terga with the lower part much acuminate; and in the subspecies *aurivilli* the carina has the same width throughout, with short cirri and broad segments, features not present in the new species.

The new species resembles the subspecies *donovani* and *aurivilli* in the carina having an external narrow central ridge. It also resembles subspecies *villosa* and subspecies *aurivilli* to some extent in the body and cirri being villose.

The new species differs conspicuously from all the known species, subspecies and forms of the genus *Lepas* in the peculiar shape of the carina, the presence of four filamentary appendages, the distinct pectination of the mandible and maxilla I and in the arrangement and nature of the setae, spines and hairs on the segments of the cirri.

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