

ON A NEW SPECIES OF *NOTHRIA* MALMGREN (POLYCHAETA,  
ANNELIDA) FROM THE GULF OF MANNAR\*

By K. RANGARAJAN AND S. MAHADEVAN

*Central Marine Fisheries Research Institute, Mandapam Camp*

INTRODUCTION

FOR the sake of convenience Hartman (1944, '59) justified the separation of the composite genus *Onuphis* Audouin and Edwards from the nearly related genus *Nothria* Malmgren by the presence of branched gills in the former and simple gill filaments in the latter. Both the genera are represented in the Indian waters although the seven species described from this area have been grouped under the composite *Onuphis* by Fauvel (1953) probably unaware of Hartman's review.

In a dredging done at 6 p.m. on 25-4-61 in the Gulf of Mannar opposite Pudukkadu (79° 01' E., 9° 16' N.) at a depth of 4 metres, two complete specimens of polychaete worms of the family *Onuphidae* measuring 13.0 mm. (38 segments) and 8.0 mm. (25 segments) in length respectively, each living inside a peculiar, flattened tube measuring 14 mm. in length made of lamellibranch shell fragments (Fig. 4) were obtained. A critical examination of these two specimens reveal that they belong to the genus *Nothria*, but differ from the known species of *Nothria* in many features and as such is described here as *Nothria mannarensis* sp. nov.

In the course of this study we have been able to make a reappraisal of the description of an unnamed *Onuphis* species given by Monroe (1931) collected by the Great Barrier Reef Expedition from Low Isles at a depth of 16.2 metres (9 fathoms) and find that this should belong to the genus *Nothria*. He could not attribute this specimen to any species with certainty but drew attention to its affinities with *N. conchylega* (Sars) and *N. macrobranchiata* McIntosh from Japan. Herein, we have discussed the status of Monroe's *Onuphis* species in relation to *N. mannarensis* sp. nov. It is likely that when more material of *Onuphis* species becomes available it may have to be designated as a distinct species new to science.

*Nothria mannarensis* sp. nov.

Head rounded bearing five occipital tentacles mounted on short, ringed ceratophores with four annuli in each (Fig. 1); two pairs of eyes, the larger situated at postero-lateral base of posterior lateral occipital tentacles; anterior minute pair at base of anterior lateral occipital tentacles; posterior lateral tentacles longest; median occipital tentacle about 4/5 of its length and reaching back to 4th setiger and anterolaterals half as long as median tentacle; a pair of club-shaped frontal tentacles; a pair of thick palpi on ventral side (Fig. 2); a pair of short tentacular cirri on an achaetous segment; an achaetous anal segment with a pair of anal cirri (Fig. 3.).

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Mandibles consist of a pair of thin, elongated, distally expanded pieces, white in colour and calcified distally (Fig. 5) with inner medial corner black; maxillae (Fig. 6) thin and slightly chitinized; carriers longer than broad, basally pointed and black; arrangement of maxillary plates on left side are as follows: Max. I falcate, without teeth, II with 9 teeth, III with 8 teeth and unpaired plate with 8 teeth; on the right side Max. I is similarly falcate, without teeth, II and III with 9 teeth.

Gill unbranched, begins on 8th setiger as a small filament, shorter than dorsal cirrus (Fig. 9); at 10th setiger (Fig. 10) gill and dorsal cirrus are of same length; posteriorly gill rapidly increases in length and dorsal cirrus decreases so that at 13th setiger former twice as long as latter and at 20th setiger former six times as long.

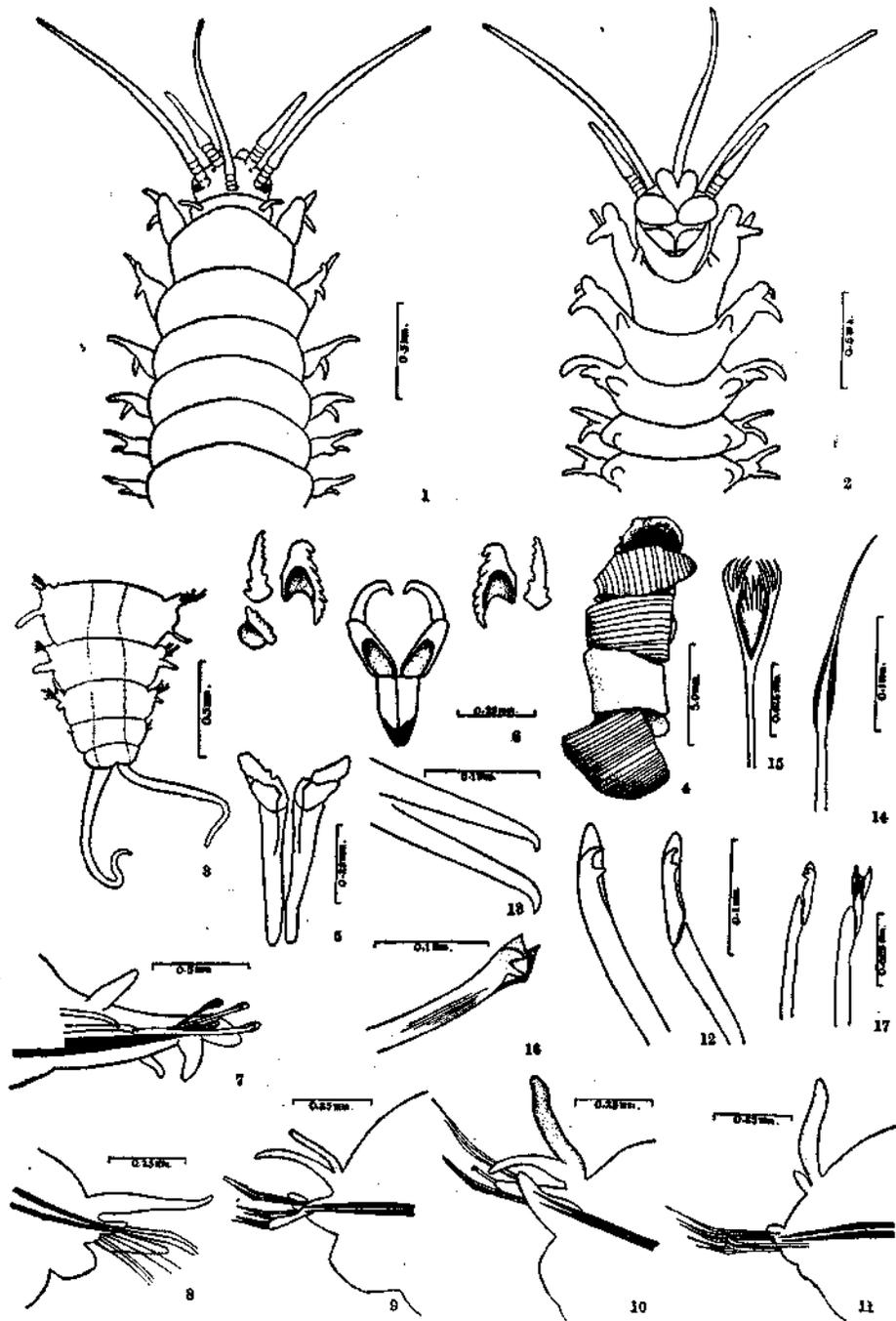
Parapodia of first and second setigers larger than succeeding ones and directed forwards, being situated at front edge of segment; ends of first parapodia in level with tips of palps; posterior pedal palps of first two parapodia elongated, ending in a small hood-like process covering hooks, and a stout ventral cirrus (Fig. 7); dorsal cirrus increasingly shorter from before backwards and are conical buds in hinder segments; ventral cirrus cirriform in anterior segments, becoming shorter and thicker in succeeding segments until by 4th it becomes pad-like (Fig. 8); cirriform prolongation of posterior lip of parapodia becomes gradually shorter until by about 15th setiger from where it completely disappears (Fig. 11).

First two parapodia carry both compound, bidentate, hooded setae (600-640  $\mu$  long) and simple, bidentate, hooded setae (675-700  $\mu$  long) (Fig. 12); simple, capillary setae in 3rd and 4th parapodia; bilimbate capillary setae (435-490  $\mu$  long) commence on 5th parapodia and present in all succeeding parapodia (Fig. 14); comb setae (135-145  $\mu$  long) with 16 teeth and edges turned inwards commence on 3rd parapodia and present in all succeeding parapodia (Fig. 15); 10th and succeeding parapodia except the last two carry two hooded, bidentate, subacicular setae (Fig. 16) in addition to bilimbate, capillary setae and comb setae; compound, bidentate, hooded setae (Fig. 17) present in last four parapodia; two pointed, acicular bristles (725-760  $\mu$  long) in all parapodia with their tips bent in anterior parapodia (Fig. 13).

The animal upto the 9th setiger is transparent. The rest of the setigers present a brownish appearance, probably due to the dark brown mass found inside.

#### HABIT AND HABITAT

Instead of the flattened membranaceous tube coated with mud and shells in which the allied species, *N. conchylega* (Sars) is reported living, the present form inhabits a curious flattened tube, measuring 14 mm. long, made of broken lamelli-branch shells cemented together (Fig. 4). The broken shell pieces forming the tube were identified as those of *Sunetta meroe* (Linn.), *Maetra mera* Reeve and *Glycymeris taylori* (Angas). The tube is lined inside longitudinally by a parallel row of sand grains in single file, thus forming a narrow groove in which the animal moves. The locomotion of the animal is very peculiar. The anterior half of the animal is thrust forward from the tube, the first two parapodia and their hooks get a firm hold on the substratum and the tube is pulled forwards by the contraction of the body. By repeating the above process the animal moves in short forward jerks.



FIGS. 1-17. *Nothria mannarensis* sp. nov. 1. Anterior part from the dorsal side. 2. Anterior part from the ventral side. 3. Posterior region, dorsal side. 4. Entire portion of the tube seen from above. 5. Mandible in ventral view. 6. Maxillary apparatus, dorsal view. 7. First parapodium in anterior view. 8. Fourth parapodium in anterior view. 9. Eighth parapodium in posterior view showing the gill filament. 10. Tenth parapodium in posterior view. 11. Fifteenth parapodium in posterior view. 12. Simple, bidentate, hooded seta and compound, bidentate, hooded seta from second parapodium. 13. Acicular bristles with bent tips from first parapodium. 14. Bilimbate, capillary seta from the ninth parapodium. 15. Comb seta from the thirty-second parapodium. 16. Hooded, bidentate, subacicular hook from the fifteenth parapodium. 17. Two views of compound, bidentate, hooded setae from the thirty-fifth parapodium.

The substratum from which the animals were dredged consists of coarse sand grains, shell fragments, numerous young bivalves and gastropod shells inhabited by hermit crabs. It is of interest to note that only flat shell fragments and not entire shells that form the covering of the animal.

*Holotype* : C.M.F.R.I. No. G.734/20. An entire animal measuring 13.0 mm. long and 1.0 mm. broad used for study.

*Paratype* : C.M.F.R.I. No. G.735/20. An entire animal measuring 8.0 mm. long and 1.0 mm. broad.

*Type locality* : Gulf of Mannar, opposite Pudumadam, 4 metres depth.

#### DISCUSSION

Of the 30 species listed under *Nothria* (Hartman, 1959) there are three categories (1) those with tridentate, hooded hooks (2) those with tridentate and bidentate, hooded hooks and (3) those with bidentate, hooded hooks only. *N. mannarensis* belongs to the third category to which *N. conchylega* (Sars), *Onuphis* species of Monro, *N. macrobranchiata* McIntosh (1885) and *N. lepta* (Chamberlin) are referable. In *N. lepta*, collected from the Pacific side of Panama from 1270 fathoms, the gill begins on the 6th setiger and continues upto the 53rd from where it disappears and unlike *N. mannarensis*, the first parapodium is not prolonged. Further the tube of this species is presumed to be of normal type (Monro, 1931). In *N. macrobranchiata*, the gill begins on the 9th setiger and the anterior, bidentate, hooks are described as simple. The affinities of the new species are more towards *N. conchylega* and *Onuphis* sp. of Monro (1931). In Table I the similarities and dissimilarities of these three species are clearly brought out. *Onuphis* sp. Monro (= *Nothria* sp.) is distinctly different from the closely related species, *N. conchylega* and *N. mannarensis*. Since the only specimen before Monro was incomplete (only 32, chaetigers) he left the species unnamed deliberately. His figure of the shell tube made of unbroken shells, measures nearly 21 mm. in length and the incomplete animal measures only 18 mm. in length. The entire specimen of *N. mannarensis* measuring 13 mm. possessed a tube 14 mm. long and as such it is reasonable to conclude that the maximum length of the entire specimen of *Onuphis* sp. described by Monro would not have exceeded 21 mm., the length of its tube. In view of this the setigers which Monro, unfortunately, could not describe would have been very few.

It is obvious from Table I and the foregoing accounts that *N. mannarensis* is markedly different from *N. conchylega* also, justifying the status given to the former as a new species.

Following the revision proposed by Hartman (1944) it may be seen that so far only two species of *Nothria* viz., *N. conchylega* and *N. holobranchiata* (Marenzeller) have been recorded from Indian waters (Fauvel, 1953). Both of these occur in the Gulf of Mannar. *N. mannarensis* is the third species now added to this list.

The appended key to the identification of the three species of *Nothria*, it is hoped, would be of help to future workers.

*Key to the NOTHRIA species described from the Indian waters*

1. Gill begins on first parapodium. *N. holobranchiata* (Marenzeller)
- Gill begins on 8-13th parapodia. 2
2. Gill begins on 11-13th parapodia ; inner lateral occipital tentacle longest ; pseudoarticulate, bidentate setae in first two parapodia ; distinct membranous tube present. *N. conchylega* (Sars)
- Gill begins on 8th parapodium ; posterior occipital tentacle longest ; compound, bidentate and simple, bidentate, hooded setae present in first two parapodia ; membranous tube absent. *N. mannarensis* sp. nov.

## SUMMARY

1. A small polychaetous annelid inhabiting a peculiar, flattened tube made of lamellibranch shell fragments dredged from the Gulf of Mannar opposite Pudukkottai has been referred to the family *Onuphidae*, genus *Nothria* and described as a new species, *N. mannarensis*.

2. A round head bearing five occipital tentacles, posterior lateral being long, a pair of club-shaped frontal tentacle and a pair of thick palpi on the ventral side, two pairs of eyes, a pair of tentacular cirri on an achaetous segment, an achaetous anal segment with a pair of anal cirri, origin of gill as a short filament on the 8th setiger, first two setigers larger and pointing forwards, ventral cirrus becoming a pad-like structure on the 4th setiger, disappearance of the cirriform process of the posterior lip of parapodia on the 15th setiger, gill and dorsal cirrus of same length in 10th setiger, presence of compound, bidentate, hooded setae and simple, bidentate, hooded setae in first two setigers, bilimbate, capillary setae from the 5th setiger, two bidentate hooded subacicular hooks in the posterior segments and the presence of compound, bidentate, hooded setae in the last four setigers are the distinguishing features of this species.

3. The specific characters of the present form are compared with those of the hitherto known species under the genus.

## ACKNOWLEDGEMENT

We have great pleasure in expressing our gratitude to Dr. S. Jones, Director of the Central Marine Fisheries Research Institute, for his kind encouragement and valuable suggestions during the course of this study. Our thanks are also due to Dr. E. G. Silas and Sri P. R. S. Tampi for carefully going through the manuscript and for offering valuable suggestions in the preparation of the paper.

TABLE I

	<i>Nothria conchylega</i> (Sars)	<i>Onuphis</i> sp. Monro (= <i>Nothria</i> sp.)	<i>Nothria mannarensis</i> sp.nov.
Eyes	Two pairs	One pair	Two pairs
Occipital tentacles	Inner lateral longest, reaching back to 8th setiger.	Median longest, reaching back to 11th setiger.	Postero-lateral longest, reaching back to 4th setiger.
Ventral cirri	Cirriform anteriorly, pad-like on 3rd setiger.	Pad-like on 6th setiger.	Cirriform anteriorly, pad-like on 4th setiger.
Gill	Begins anywhere from 10th to 20th setiger.	Begins on 9th setiger.	Begins on 8th setiger.
Size of gill	Not exceeding 1.5 times dorsal cirrus on 20th setiger (Fauvel, 1953, Fig. 128 e).	Equal to dorsal cirrus on 11th and longest on 25th, four times dorsal cirrus.	Equal to dorsal cirrus on 10th, longest on 20th setiger, six times dorsal cirrus.
First parapodium	Bidentate, pseudoarticulate setae or bluntly bidentate with no indication of articulation.	Compound, bidentate, hooded setae.	Compound, bidentate, hooded setae and simple, bidentate, hooded setae.
Second parapodium	3 pseudoarticulate, bidentate setae, 15-20 pectinate setae, 3 simple, limbate setae, and 2 obscurely articulate, bidentate, hooded hooks.	Compound, bidentate, hooded setae.	Compound, bidentate, hooded setae and simple bidentate hooded setae.
Third parapodium	Pseudoarticulate unbidentate setae	Capillary setae.	Simple, capillary setae and comb setae.
Fifth parapodium	?	?	Bilimbate, capillary setae and comb setae.
Median parapodium	Simple, pointed setae and 6 to 8 pectinate setae and 2 subacicular hooks.	Bilimbate, capillary, setae comb setae and a single, bidentate, subacicular hook.	Bilimbate, capillary setae, comb setae and two bidentate, hooded, subacicular hooks.
Subacicular hook	Two in number, bidentate, present from 13th setiger.	One, bidentate, present from 15th setiger.	Two, bidentate, hooded, present from 10th setiger (8th in paratype).
Posterior lip of parapodium	?	Disappears on 16th setiger.	Disappears on 15th setiger.
Tube	Greatly flattened, parchmentlike cylinder, covered above and below with shell fragments and flat pebbles.	Series of entire lamellibranch shells cemented together with their hinges at right angles to the long axis of tube; membranous cylinder absent.	Flattened tube, made of broken lamellibranch shells cemented together; membranous cylinder absent.

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