

## AMALOSOMA EDDYSTONENSE SP.N., A NEW SPECIES OF BONELLIIDAE

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In October 1921, a specimen of an echiuroid was taken in the otter trawl of the S.S. *Salpa*, in the neighbourhood of the Eddystone lighthouse. The specimen, a female, was provisionally identified by Mr E. Ford as *Hamingia arctica* Kör & Dan. The pharynx and uteri were opened in an unsuccessful search for males, after which the specimen was preserved in alcohol and put in the museum at the Plymouth Laboratory. In the following month, two more specimens were taken in the dredge by Dr R. S. Clark, a few miles from the same locality, and placed in the museum without further examination. No more specimens were obtained until April 1925, when one was taken in a trawl off Rame Head, near the entrance to Plymouth Harbour. This specimen was examined by O. D. Hunt, and was found to be a female with uteri containing ripe eggs. Twenty-eight males of minute size were discovered attached externally to the female in a groove in the skin which extended for a short distance in the median line just posterior to what appeared to be a single genital orifice.

The males described by Lanchester from the pharynx of *Hamingia arctica*, and those from the uterus of *Acanthohamingia* described by Ikeda, closely resemble those of *Bonellia* in possessing a ciliated epidermis and in their nematoform shape. The males found by Hunt, however, were neither ciliated nor of such an elongated form. This difference showed at once that the species was not *Hamingia arctica* as supposed. Hunt therefore re-examined all the specimens in the Museum, and in each case males of the new type were found attached externally in a similar fashion and in a similar position.

Partially embedded in the thick epidermis of the female, these males are easily overlooked, as they had been on the specimen examined by Ford, on which Hunt subsequently found a single male. The two other specimens provided thirty-eight and thirty males respectively.

Four more specimens have been obtained since then from the same locality, two with attached males and two with none.

Since it was decided to include the records of this capture in the new edition of the *Plymouth Marine Fauna*, it finally became necessary to name it. Hunt, in manuscript 1925, recognized that the animals belonged to a new genus and species, but owing to pressure of work was unable to complete his observations. To him I am indebted for his generous gesture in placing his notes,

drawings and specimens at my disposal, and to Dr D. P. Wilson for the suggestion that I should have the privilege of examining and reporting on the material.

#### CLASSIFICATION OF THE BONELLIIDAE

The classification of the Bonelliidae has always presented difficulties, and several attempts have been made to clarify it. A revision undertaken by Fisher summarized the state of the accepted classification (1946, pp. 249-62) and he described three new genera. New material, and the fact that he had overlooked an important paper by Monro (1927), caused him to study the family again, and in the following year (Fisher, 1947), he published a fresh revision, adding three more new genera, including the genus *Amalosoma*, which interests us here. Most of his new genera contain but a single species, and it may be felt that more genera have been created than necessary, but at least he has put the classification on a reasonable basis. I have not had the opportunity of examining many animals belonging to this family and so have no personal comments to make on his classification, which I have adopted.

#### GENUS *AMALOSOMA* FISHER, 1947

Fisher (1946, pp. 260-2, pls. 31, 32) described a new species of *Acanthohamingia* Ikeda, from Japan, which he named *A. paradola*, and which differed in several important particulars from the two previously described species of this genus, *A. shiplei* and *A. ijimai*. In his second revision, he recognized that these differences were sufficient to warrant the creation of a new genus which he called *Amalosoma* (Fisher, 1947, p. 856), the generic criteria being the absence of minute setae in the genital groove of the female; the anal trees being numerous, slender, sparsely branched, arising for the most part independently from the very thin wall of the cloaca; there being two nephridia; and the male possessing a pair of curved setae.

A second species, so far known only as occurring in the Plymouth area, is now added to the genus.

#### *Amalosoma eddystonense* n.sp.

##### *Holotype—female*

The body is 144 mm in length, and no proboscis is preserved. Judging, however, by the appearance of the anterior portion there has been one, but probably broken off and lost during dredging. The body wall on the anterior and posterior thirds is solid, cylindrical and heavily papillated, and the diameters of these two portions are some 13 and 15 mm respectively. The middle third is swollen to the appearance of a thin-walled balloon, some 25 mm in diameter, through which the viscera can be seen.

The skin is covered, except in the thin portion, with numerous irregularly shaped flattened papillae, which are most numerous and largest anteriorly and posteriorly, less numerous in the middle portions of the body, and smallest ventrally.

The internal anatomy, so far as can be made out in its slightly macerated state, closely resembles that of *A. paradola*. The pharynx is similarly enlarged, and the arrangement of the neuro-intestinal blood vessels, so far as can be seen, is much the same. The gut is also long, as in the previous species. In *A. paradola*, Fisher described the nerve cord as being extremely thin, only 0.135 mm in diameter, but in this species it seems normal and the average diameter is 0.5 mm.

The two nephridiophores are packed with large ova, which have an average diameter of 0.45–0.5 mm. The ova are not enclosed in a follicle.

The anal trees, in all specimens, are much macerated, but arise as single stems from the cloaca, as described for *A. paradola*. They are, however, fewer, larger and more branched than in that species, to judge by Fisher's figure (1946, pl. 31, fig. 6). In the specimen dissected and drawn by Hunt, but not included in the material I have seen, they seem to have filled the posterior third of the body with a solid mass of tubules. Each branch ends in a conical-shaped wide-mouthed cup.

#### Male

The male is small, usually just under 2 mm in length, planiform or oblong. It is attached externally to the female in the nuptial groove by two hooked genital setae, which have comparatively large and well-developed muscular attachments. The body wall has two muscle layers, circular and longitudinal. The cuticle is not ciliated.

It agrees in most respects with Fisher's description of *A. paradola*.

The other females are very much macerated internally. Most are cylindrical in shape, but one resembles the type in having a thin expanded middle portion. In these the papillae are largest and most numerous anteriorly and posteriorly, less numerous in the middle region and least numerous ventrally. The colour of the spirit specimens is a uniform greyish yellow; in life these animals are a dull mid-green on the papillae with a similar but paler colour between them.

The species is referable to the genus *Amalosoma*, and there is not a great deal of difference between *A. paradola* and *A. eddystonense* but I hesitate to consider them as belonging to a single species. The chief differences are shown in Table 1.

*Distribution.* Eddystone grounds Oct. and Nov. 1921, Sept. 1926, May 1927. (Marine Biological Association, 1931, p. 148). Eddystone grounds and Rame Head, April 1925, July 1929 (specimen submitted by O. D. Hunt).

*Breeding.* Of the specimens examined only the type carried ova. This specimen, taken in April 1925, has the nephridia occupying about one-eighth of the body cavity; full of ova.

TABLE I

	<i>A. paradola</i>	<i>A. eddystonense</i>
Body	Pear-shaped	Sausage-shaped
Body wall	Very thin, viscera visible	Body-wall very thick: in only two specimens is there a thin-walled median enlargement
Nerve cord	Very thin, 0.135 mm	Thick, 0.5 mm diameter
Anal trees	Arising, one presumes, as numerous individual stems from the cloaca; branches bearing funnels few, short, not branching. Funnels vase-like, widest at the base	Arising from a few individual stems from the cloaca; branches bearing funnels numerous, long and sometimes themselves branching. Funnels ciliated, conical, widest at the mouth

## SUMMARY

The animals recorded as *Hamingia arctica* Kören & Danielssen in the *Plymouth Marine Fauna* (Marine Biological Association, 1931) were recognized some years ago by O. D. Hunt as belonging to a, then, new genus and species. His description was, unfortunately, never published, and his genus must be suppressed in favour of *Amalosoma* created by Fisher in 1947. His species remains valid but the name he originally suggested, *eddystonia*, from the locality in which it was first taken, has been changed to *eddystonense* in accordance with accepted practice.

*A. eddystonense* differs from the other described member of the genus, namely *A. paradola*, in having a cylindrical instead of a pear-shaped body; generally a thick cuticle; a thick instead of a thin nerve cord, and strong anal trees ending in conical cups.

The males, minute in size and deeply embedded in the thick epidermis of the genital groove of the female, are easily overlooked.

The species has been taken on several occasions near the Eddystone Lighthouse and off Rame Head, near Plymouth.

## REFERENCES

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