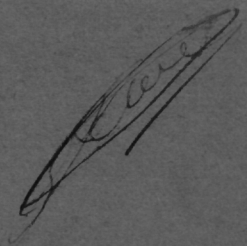


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*Alkmaria romijni* Horst from Ringkøbing  
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## A Viviparous Brackish-water Ampharetid, *Alkmaria romijni* Horst from Ringkøbing Fjord.

By

Elise Wesenberg-Lund.

In the spring of 1933 I was engaged in the determination of the Annelids collected in 1932 in Ringkøbing Fjord by the Danish Biological Station under the direction of Dr. H. Blegvad. The material contained only few species, viz. *Notomastus latericius* and some *Nephtys* and *Nereis*, and further a rather great number of a very small, tube-building Ampharetid, unknown to me.

In January 1934 Annelids were again collected; among a very considerable number of *Polydora ciliata* a good deal of the same Ampharetid were refound. By a thorough examination of older collections from Ringkøbing Fjord the species was recognized in samples from 1929 from the northern part of the fjord. — I here wish to extend my sincerest thanks to Dr. H. Blegvad for placing this interesting material at my disposal, for his help and good advice.

A consultation of the literature on Ampharetids and other terebellomorphe polychæta (especially Fauvel 1897, Hesse 1917 and Meyer 1923) soon showed that the species at hand was unknown to these authors. It then occurred to me that the species might be known from the Zuider Zee, Haarlemmer Haff or Alkmarder Meer etc., the hydrographic conditions of which I presumed to be similar to those of Ringkøbing Fjord. By consulting the Dutch literature I found a paper by Horst 1920 "Twee sedentaire Polychæten uit het brakke water"; in this paper a new genus of Terebellids is described under the name of *Alkmaria*. The drawing and description led me to the suggestion that what Horst had described was actually an Ampharetid. The same suggestion is set forth in "Faune de France" by Fauvel (1927, p. 240) who states the following about the genus: "Elle me semble cependant se rattacher au Ampharétiens plutôt qu'aux Térébelliens".

An examination of the specimens from Ringkøbing Fjord soon showed that they were identical with Horst's *Alkmaria romijni*, and that this genus belongs to the *Ampharetidæ*. Horst had only few individuals at his disposal and both his description and figure are very insufficient. But the material collected in Ringkøbing Fjord contains

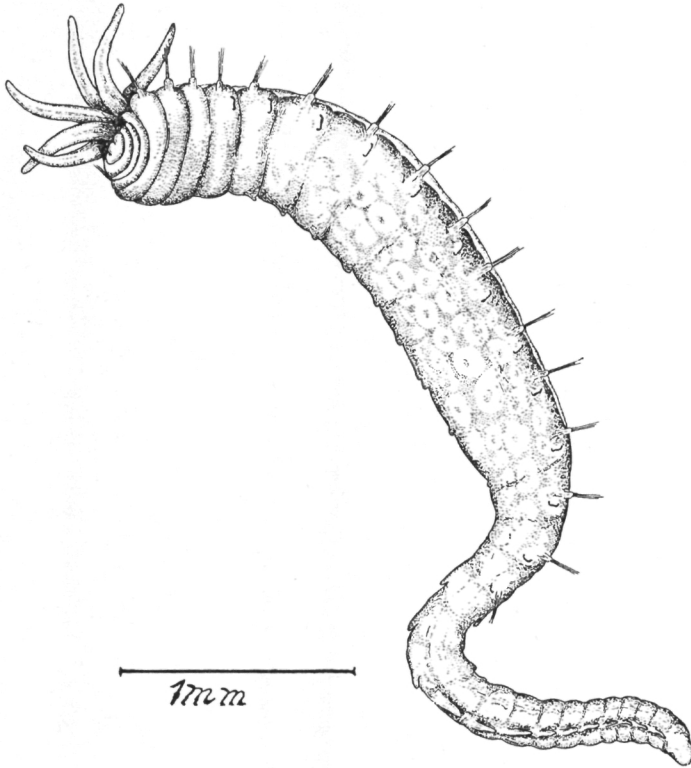


Fig. 1. *Alkmaria romijni* Horst enlarged. Poul H. Winther del.

some two hundred specimens. In the following I shall try and give a more thorough description of this genus, which does not seem to have been known hitherto from other places than Alkmarder Meer. In the literature it is mentioned by Horst only, and after him quoted by Fauvel.

The size of *Alkmaria romijni* varies from 3—5 mm. They all live in tubes built of a very thin almost transparent film incrustated with minute quartz grains and particles of clay glued together by means of a rusty

fixative. Some of the samples contain a considerable number of individuals, which seems to indicate that in some places the bottom of the fjord has been quite covered with the small red tubes of the worms.

The colour of the worm is white. The four dark, transverse bands on the ventral side which Horst describes, are lacking in all the specimens from Ringkøbing Fjord. Prostomium is circular, faintly trilobate and has two dark eyes spots. In all specimens the tentacles are invisible. One could be apt to think that they were entirely absent, but once by

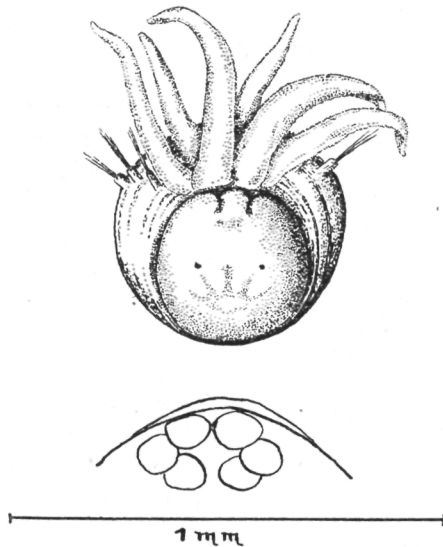


Fig. 2. Cephalic lobe and the first segments. Beneath the situation of the bases of the gills.  
Poul H. Winther del.

dissection I succeeded in finding some delicate filaments, so that the tentacles are certainly present; but in all the specimens examined by me they are retracted.

There are 3 pairs of long subulate gills. They are arranged in two groups on the dorsal side of the foremost rings. They are, however, set so close as to actually constitute a simple group. The foremost pair is the biggest and broadest, and in some specimens arranged close to each other, in other specimens at a slight distance. The two hindmost ones are always arranged so close as to fuse at their bases; between these two pairs the central pair appears always a little spaced from each other



but each of the two gills so close to the gill in front and behind as to fuse at the base of the latter. Thus the bases of all 6 gills form an elliptic figure either closed or faintly opened in front (Fig. 2).

There are no paleæ. The thorax consists of 19 segments. The first 3 segments are achætous, the first chætiger being the fourth segment. The first segment with hooks is the seventh thoracal one. Thus there are in all 16 setigerous thoracal feet. The abdomen has 14 segments all furnished with hooks except the hindmost one. There are no anal cirri. The abdomen proper ends conically.

The neuropodia are simple, conical projections; the chætæ are all alike, uncompounded, capillary and unlimbated (fig. 3). The ventral feet are shaped like transversal ridges. The hooks are arranged in a simple row. The posterior part of the hook is rounded, and there are about 4 pointed teeth arranged behind each other in a single line (fig. 3).

Fauvel (1927) winds up his comments on the genus *Alkmaria* as follows: "Peut-être est-ce une jeune *Samytha*?"

There is no doubt that the genus *Alkmaria* is nearly related to *Samytha* which it resembles in lacking paleæ, in having 6 subulate gills and 13 notopodia with hooks in the abdominal part of the body. It is, however, distinguished from *Samytha* among other things by the arrangement of the gills, by the fact that the number of segments, carrying both neuro- and notopodia is 13 (in *Samytha* 14), by the dorsal chætæ being unlimbate, and, finally, by the fact that the number of hooks in the notopodia is far smaller; the number of teeth of the hooks is likewise smaller in *Alkmaria* than in *Samytha*.

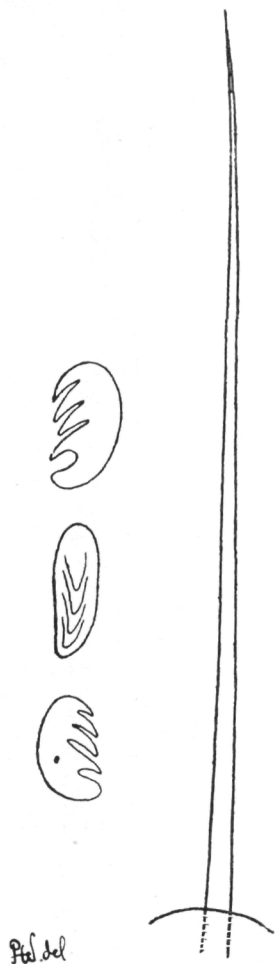


Fig. 3. Hooks ( $\times 1600$ ) and bristle ( $\times 1300$ ).

One should perhaps be inclined to think that some of these characters might indicate that *Alkmaria* is a juvenile form. That this supposition is entirely wrong is, however, shown by the fact that in the tubes a considerable number (upwards of 25) of youngs are found which bear a close resemblance to the larvæ figured by Fauvel (1897, fig. 121). Inside the worms big embryos are furthermore found. Thus we have in the first place to deal with adults, secondly with viviparous forms. — The youngs show a distinct segmentation, two black eye spots and setigerous neuropodia.

Only the worms taken in the summer months contained youngs; there were no traces of youngs in the worms of the samples taken in January. Thus the spawning season is in August—September.

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The map shows the stations where *Alkmaria* was taken in Ringkøbing Fjord. The figure above the station indicates the depth in meters, the figure below indicates the number of individuals of the sample. Petersen's 0.1m.<sup>2</sup> grab was employed in all places. The encircled stations indicate the finds in September 1929 which have been published in a paper on the Annelids from Ringkøbing Fjord by Hj. Ditlevsen (1934). The big black spots are the stations in the summer 1932. The little black spots in front of the big black ones indicate that *Alkmaria* was also found at these stations in 1934. Everywhere below the 3 m. curve the bottom is muddy or mixed with sand; the same holds good of the westernmost station in Skernaa Dyb. The bottom at the southernmost and easternmost stations in Nordre Dyb is likewise muddy, but several loose stones are found in the mud. There is only hard bottom at the two northernmost stations at Baggesholm and at the three western stations off Lyngvig lighthouse. This shows accordingly that *Alkmaria* mainly occurs in soft muddy bottom.

The first finds of *Alkmaria* were all made in the northern part of the fjord and they date from 1929 (Ditlevsen 1934). At that time Ringkøbing Fjord opened into the North Sea at Nymindegab in the southern part of the fjord; thus the northern part of it was the fresher. Concerning the hydrography reference is made to Jacobsen (1934). In 1931 the sluices at Hvidesande in the northern part were opened, whereas the entrance at Nymindegab was closed. In conformity with

the fact that the southern part is now of the lowest salinity, by far the greatest number of *Alkmaria* was found in the Søndre Dyb and the Skernaa Dyb in 1932, when renewed quantitative investigations of the bottom fauna were made. In the course of these few years the species has thus spread over the entire fjord in the direction south-north following the drop in the salinity. Whether *Alkmaria* will continue to occur throughout the fjord, in some places even in comparatively great numbers is a thing which remains to be seen in the years to come; for according as the sluices at Hvide Sande are kept open or closed, the salinity of the fjord still will be subject to fluctuations in the course of quite few days. In the course of a single week it may thus vary as much as from 10 ‰ to 23 ‰. The highest salinity registered in 1933 in the fjord was 30 ‰ at Hvide Sande. In the southernmost part the highest salinity was 20 ‰. But also here in the brackish part the percentage is strongly fluctuating. In December it had thus fallen to 1.8 ‰.

As regards the salinity in Alkmarder-Meer, it is on an average far lower than in Ringkøbing Fjord. According to Horst it will be about 5 ‰ in the autumn and 0.9 ‰ in the spring. — Thus there is no doubt that we have to deal with a true brackish-water annelid, as far as I know the first known among the Ampharetids.

*Alkmaria* has not been a permanent inhabitant of Ringkøbing Fjord for a long period. Until 1845 the salinity was probably so high that it has hardly been able to subsist there. In the years 1845—1910 the salinity dropped owing to the entrance from the North Sea narrowing more and more. In this first brackish-water period no quantitative investigations of the bottom fauna were made in the fjord, and we therefore know nothing about the occurrence of the species. From 1910—15 we have another salt-water period, succeeded by the second brackish-water period from 1915—31. Since 1931 the salinity of the fjord is slowly increasing. We suppose that we are allowed to infer that in the brackish-water periods the worm spreads all over the fjord, whereas it recedes to the mouths of the rivulets in the salt-water periods. Unfortunately, no quantitative investigations of the bottom fauna are recorded from other North Sea fjords; but presumably it must be considered probable that *Alkmaria romijni* is distributed all over the tidal zones of Holland, Northwest Germany and Jutland, along the west coast of Jutland in fjords and creeks, where the water is of a

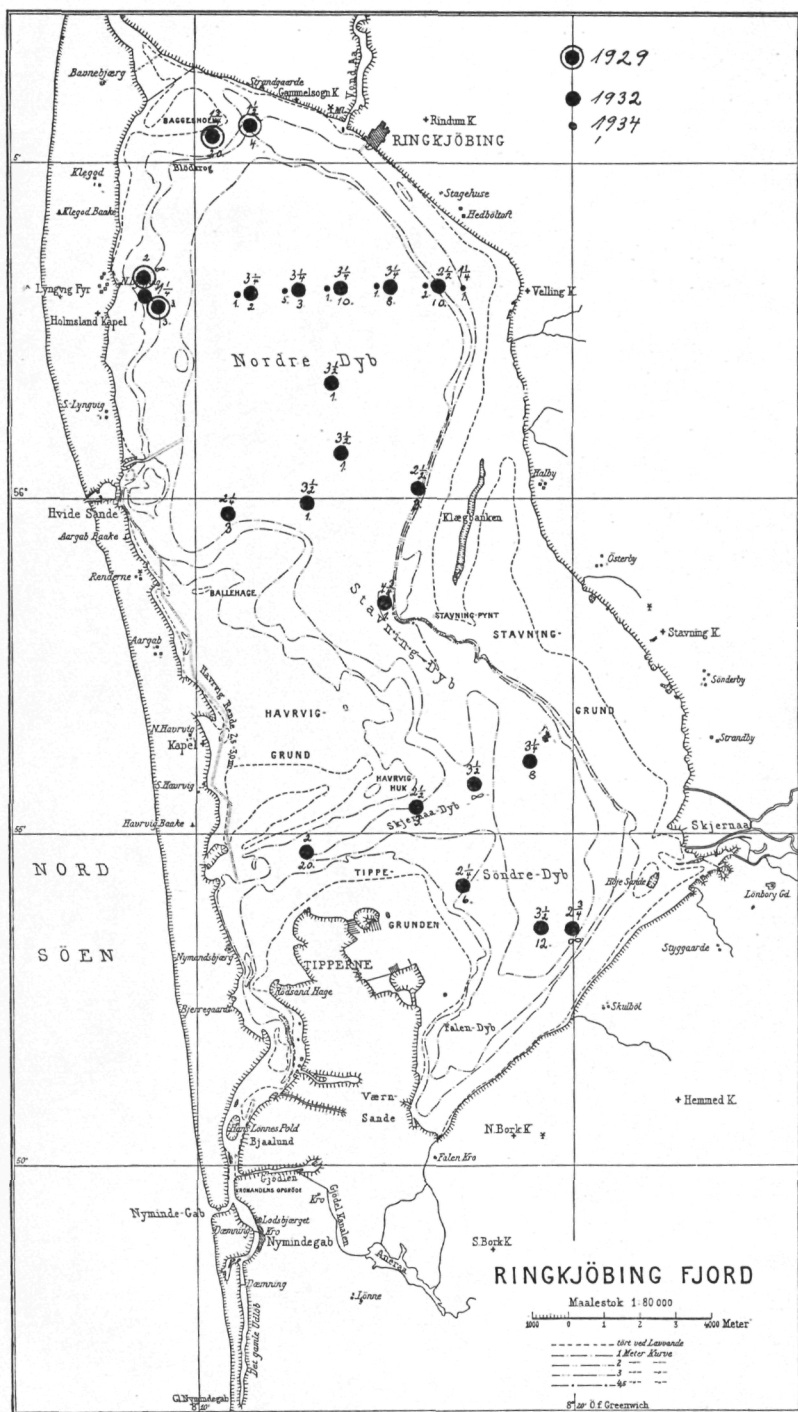


Fig. 4. Map showing the finds of *Alkmarmia romijni* Horst in Ringkjøbing Fjord. (For explanation see the text).

suitable salinity and where owing to its small size and the absence of systematical investigations, it has not been found hitherto.

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