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# THE DANISH INGOLF-EXPEDITION

VOLUME IV.

11.

## TOMOPTERIDÆ AND TYPHLOSCOLECIDÆ.

BY

ELISE WESENBERG-LUND.

WITH 1 PLATE, 3 MAPS IN THE TEXT, AND A CHART.

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## Introduction.

The present paper deals with the material of *Tomopteridæ* and *Typhloscolecidæ* collected by the two expeditions made by the Danish cruiser "Ingolf" in the summers of the years 1895 and 1896. The object of these expeditions was to undertake scientific deep-sea explorations in the seas around the Faroes, Iceland and Greenland. Besides these deep-sea dredgings a rather great number of pelagic samples were, however, taken and of these the pelagic annelids are worked out here. Besides the "Ingolf" collections this paper also deals with the material of the two above named families collected in the same area, and dating from as well the collections of the Zoological Museum of Copenhagen as the collections brought home by the "Thor", the "Michael Sars", and the "Dana", and finally the material which, especially at the end of the last century, was collected and sent down by Danish officials in Greenland.

In systematical respect the material does not offer anything of particular interest. It contains 5 species of *Tomopteridæ*:

1. *Tomopteris (Johnstonella) helgolandica* Greeff.
2. *T. Nisseni* Rosa.
3. *T. Cavallii* Rosa.
4. *T. septentrionalis* Quatrefages.
5. *T. Kefersteini* Greeff.

and 2 species of the family *Typhloscolecidæ*:

1. *Travisiopsis lanceolata* Southern.
2. *T. Levinseni* Southern.

In zoogeographical respect the material here worked out may possibly give us some new indications as to the distribution of the *Tomopteridæ* and the *Typhloscolecidæ* in the North Atlantic area. I put this so cautiously because the material unfortunately is so small; I shall therefore confine myself to point out which new facts are to be stated by means of the material at hand as regards the distribution, and abstain from giving any interpretations.

Both species of *Typhloscolecidæ* have hitherto been reported only from more southern localities. Southern mentions the coast of Ireland as the northernmost finding-place for both species. In the material



at hand *T. lanceolata* is collected S. of Iceland and *T. Levinseni* in the Davis Strait. This may indicate a far greater range in the northern Atlantic.

*Tomopteris Kefersteini* was hitherto reported only from the Mediterranean, the Canary Islands etc.; in this paper it is reported from the sea between Scotland and Iceland. *T. Cavallii* was reported from the coast of Ireland; in the present material it is found from the Denmark Strait and the Irminger Sea.

It holds good of the species here named, and some others too, that they may have a far greater range northwards than hitherto known.

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## Family Tomopteridæ Grube.

### Sub-Genus Johnstonella Gosse.

#### **Tomopteris (Johnstonella) helgolandica** Greef.

(Pl. figs. 4, 5, 6).

1860. *Tomopteris onisciformis* Carp. & Clap. Trans Linn. Soc. Lond. **33** p. 49.  
1878. — *vitrina* Vejd. Zeitschr. f. wiss. Zool. **31** p. 81.  
1879. — *helgolandica* Greef. Zeitschr. f. wiss. Zool. **32** p. 264.  
1900. — *helgolandica* Apst. Ergebn. d. Plankton-Exp. **2** p. 38.  
1908. — *catharina* Rosa. Publ. del. R. Istit. di Studi Sup. Firenze p. 283.  
1922. — *helgolandica* Mal. & Car. Rés. Campagnes Sci. du Prince de Monaco **61** p. 35.  
1923. — — Fauvel. Faune de France **5** p. 221.

The "Ingolf" Expedition has not taken this species. The following localities date from the "Thor", the "Michael Sars" and the "Dana":

57°52' N. 9°52' W. 1500 m. 65 m. w. 3 spec. — 61°20' N. 10°59' W. > 1000 m. 15 m. w. 1 spec. —  
61°30' N. 17°08' W. > 2000 m. 180 m. w. 3 spec. — 61°49' N. 14°11' W. > 1000 m. 100 m. w. 3 spec. —  
68°43' N. 11°45' W. 406 m. 2 spec. — The "Michael Sars" 1902. St. 78. 60°55' N. 8°56' W. 69 m. ca. 50 spec.  
— The "Dana" 1934. St. 5156. 61°30' N. 6°22' W. 65 m. 1 spec.

The size of this beautiful Tomopterid varies rather much. The largest specimen measures 41 mm, the smallest 20 mm. All of them are adult with gonads developed in both the dorsal and ventral parapodia. The number of segments of the body varies from 17 to 21. The first pair of cirri is lacking in all the specimens. The second pair is very broad at the base and the bristle is thick, strong, and yellow. This pair of cirri does not attain the length of the body. In the midline of the prostomium an incision highly varying in depth is found. The eyes are black and set widely apart from each other. The brain forms a white transversal bridge with a faint incision at the foremost margin. The ciliated epaulettes are well developed, each of them forming a triangular figure, the proximal part of which is triangularly bent. The pharynx is muscular, spoutlike, short and strong, and obliquely cut.

The tail is not distinctly set off from the trunk. It is sausage-shaped and rounded at the end. It carries a number of rudimentary parapodia, the last of which are not even divided into a dorsal and ventral ramus.

The parapodia of the trunk are long and slender; the greatest of them are about twice as long as the



breadth of the body. The two rami are pointed; the pinnæ of the trunk-parapodia are circular or oval, whereas those of the tail are more oblong.

As regards the glands of the pinnæ we find the chromophile ones in all the ventral pinnæ. This gland is often comparatively small; even when it is filled with secretion it does not attain any remarkable size and may be little conspicuous. It is situated ventrally to the margin of the ventral ramus of all the parapodia; the content of the filled gland has a hyaline character. — The rosette-formed organs are very distinct, marked with a central brown spot. They are situated in the pinnæ, close to the parapodial trunk and close to the apex of the latter. Even in the first rudimentary parapodia of the tail the rosettes are distinct. The situation of the rosettes seems to be very constant. — In addition to these rosettes of the pinnæ we find in the two first parapodia a rosette-shaped organ at the ventral parapodial trunk proper, in some few specimens there are two, and in a single one there are even three.

The reproductive organs are present in all the parapodia of the trunk both in the dorsal and ventral rami.

The species is beautifully coloured; the whole body is transversally striated with dark-brown lines on the dorsal side. At the cylindrical tail the brown pigment forms rings with equally broad intervals.

Distribution: *T. helgolandica* is widely spread in the Atlantic; it is found in the Mediterranean and taken off the coast of Portugal (Malaquin & Carin). It seems to be especially abundant in Irish waters (Southern 1911). It enters the Channel. The "Plankton Expedition" has dredged it abundantly off New Foundland and at several stations in the North Sea. According to No. 33, 48, and 70 of the Publications de circonstance "Catalogues des espèces de plantes et d'animaux observées dans le plankton", edited by "Conseil permanent internat. pour l'exploration de la mer" the species is furthermore known from the Kattegat, Skagerrak, the Norwegian Sea etc.; thus the species is widely distributed in the northern part of the Atlantic.

The finding places of the specimens at hand group round 60° N. and 10° W. Evidently, the northern limit of distribution of the species is to be found at the latitude mentioned above.

### Genus *Tomopteris* (str. sensu) Eschscholtz.

#### *Tomopteris Nisseni* Rosa.

(Pl. fig. 13, 14, 15).

1908. *Tomopteris Nisseni* Rosa. Publ. del R. Istit. di Studi Sup. in Firenze. p. 292.  
 1911. — — Southern. Fisheries, Ireland, Sci. Invest. **3** p. 17.  
 1922. — — Malaquin & Carin. Rés. Campagnes Sci. du Prince de Monaco **61** p. 35.  
 1923. — — Fauvel. Faune de France **5** p. 222.

The "Ingolf" Expedition has taken the species at the following locality:

63°30' N. 54°25' W. 1 spec.

The material furthermore contains specimens from the following localities:

59°14' N. 6°04' W. 1 spec. Rink. — 66°12' N. 52°15' W. 4 spec. Olrik. — 50°16' N. 11°27' W.

Southern. — All the following stations date from the "Thor": 48°09' N. 8°30' W. 600—995 m. 300 m. w.



240 min. 4 spec. — 50°45' N. 11°53' W. > 2000 m. 200 m. w. 1 spec. — 51°00' N. 11°43' W. 1200 m. 300 m. w. 570 min. 3 spec. — 57°52' N. 9°53' W. 1020—1490 m. 65 m. w. 120 min. 8 spec. — 61°30' N. 17°08' W. 1800 m. 25 m. w. 180 min. 1 spec. — 62°47' N. 15°03' W. 1950 m. 15 m. w. 20 min. 5 spec. — 65°00' N. 28°10' W. 1240 m. 15 m. w. 15 min. 8 spec. — 65°20' N. 27°12.5' W. 2 spec. — 65°27' N. 27°10' W. 700 m. 15 m. w. 60 min. 1 spec.

One of the largest specimens of this species measures 50 mm in toto; of these 8 mm form the tail; the smallest specimen is only 7 mm. The number of body segments in the largest specimen is 25, that of the tail 12. This latter is rather short, and the parapodia of the tail are highly rudimentary. The first pair of cirri is absent even in the smallest specimens. The second pair varies much in length, abt.  $1\frac{1}{2}$ —2 times the length of the body. The tentacles are broad and between them is a deep incision. The eyes are large and of a brown colour, the brain short and broad. The ciliated epaulettes are each composed of two parallel ridges between which there is a deep furrow. I do not agree with Rosa who states that they are indistinct ("mal visibili"). The parapodia are very long and slender; the two rami are transparent and very long, slender and conical. The pinnæ are white and rounded and very characteristically plicated at the margins; they are closely set with numerous glandular tubes.

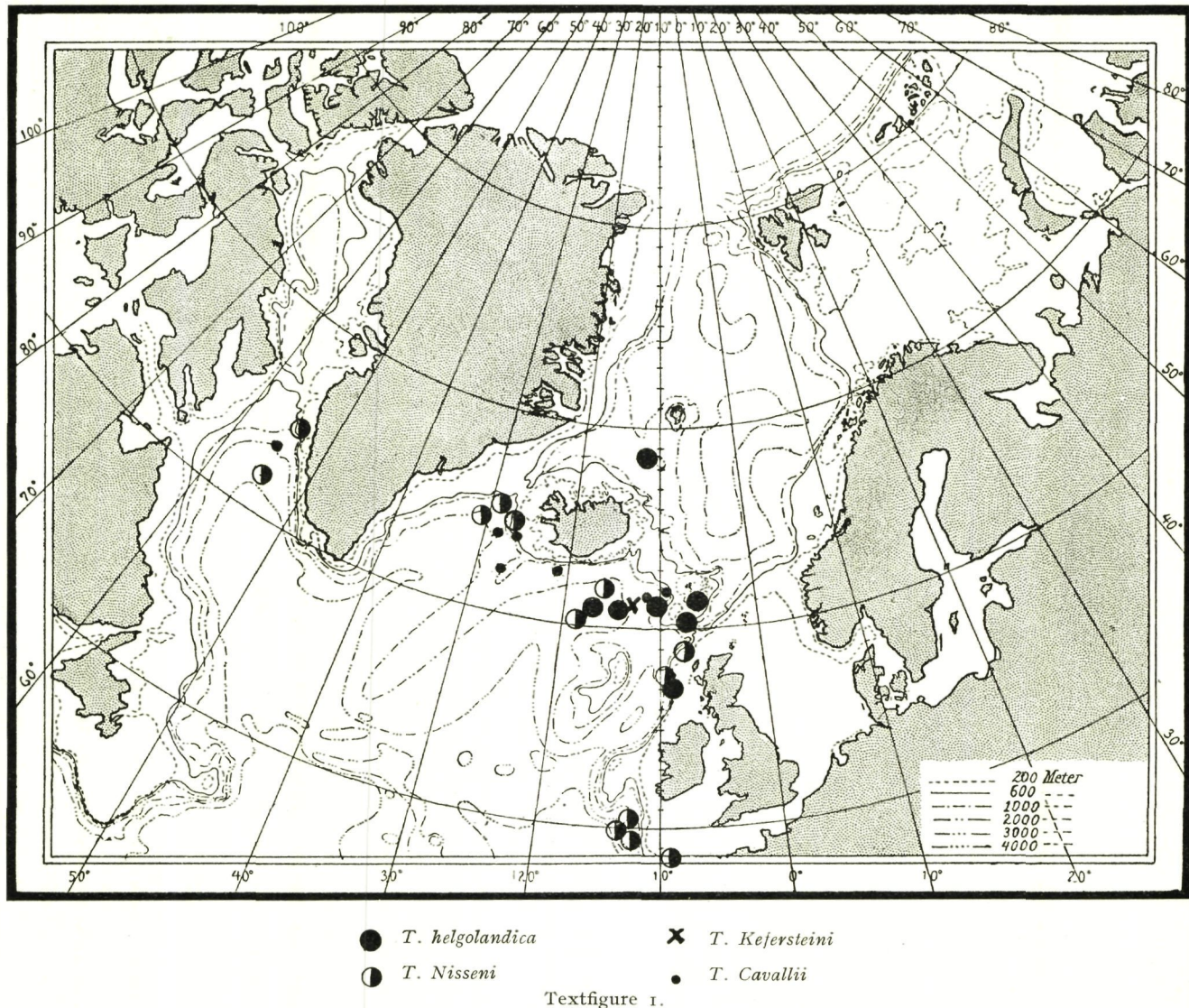
As to the glands the chromophile gland is very large, formed like a great button, all white and very conspicuous. It is found on the ventral side of the ventral parapodial ramus, close to the apex. The glandular tubes are radially arranged, pointing towards the opening of the gland which is found in the centre. The first parapodium in which the chromophile gland is present is the fourth. In the parapodia of the tail the gland has disappeared. The hyaline glands are very conspicuous too; they are heavily stained by a dark brownish secretion in the central part. They are found in both wings of the parapodia, constantly situated at the apex of the parapodial rami. The ventral hyaline gland is always found from the third parapodium, whereas the arrangement of the dorsal glands varies much. Generally it is found in the 8th and the following wings, but it may be present in the 5th, the 6th and the 7th too. Rosa states that it is found from the 3rd one. In the specimens at hand this was never the case; my observations fully agree with those of Southern and Carin & Malaquin. Even in the parapodia of the tail the glands in question are easily discernible, nearly to the outmost tip of the tail.

The reproductive organs are only found in the dorsal ramus. They commence in the second parapodium.

Distribution: *Tomopteris Nisseni* seems to have a very wide distribution. It has previously been described by Rosa from the South Atlantic. Southern records it from several stations in Irish waters and states: "though not previously observed this species appears to be fairly common in the northern offshoot of the Gulf-Stream, as it has been frequently taken off the west coast of Ireland, and I have examined specimens from the Atlantic south of Iceland." — In the material at hand we find specimens from Normandy and S. and S.W. of Ireland as well as from some localities W. of Scotland and S. of Iceland. All these finding places agree with Southern, as they are just situated in the northern offshoot of the Gulf-Stream. Specially interesting are on the other hand the localities W. of Iceland and W. of Greenland; they now represent the northernmost limit for the species hitherto known. How has this Atlantic and Lusitanian species which is



always found near the surface of the ocean, entered these two areas, viz: the Irminger Sea and the Davis Strait? They have probably followed the branch of the North Atlantic Drift which W. of Ireland turns northwards and, following the south and west coast of Iceland, enters the northern part of the Denmark Strait. Part of this current transforms into the cold East Greenland current, which turns round Cape Farewell, and running close to the shore enters the Davis Strait. In the summer season the surface water in this strait



attains such high temperatures that a priori we are allowed to suppose that *T. Nisseni* may thrive here. (Both hauls in the Davis Strait were made in the height of the summer). This accounts for the occurrence of the species 1) south of the submarine ridge across the Davis Strait between Holstensborg and Cape Wolsingham in Baffin Land and 2) W. of Iceland, and, finally, 3) for the non-occurrence of the species at the coast of East Greenland. There is only little probability that it will extend beyond the above mentioned ridge or be found in the sea north and east of Iceland (The Norwegian Sea); as the temperature of the water in these localities will be too low for the species to subsist there. We are allowed to presume that larger materials of pelagic



polychetes collected in the future in the northern Atlantic will prove that the species is widely scattered over the greater part of this area, and that the finding places marked on the map (fig. 1) just indicate its northern limit.

### **Tomopteris Cavallii** Rosa.

(Pl. fig. 1, 2, 3)

1908. *Tomopteris Cavallii* Rosa. Publ. del R. Istit. di Studi Sup. in Firenze p. 304.

1911. — — Southern. Fisheries, Ireland, Sci. Invest. 3 p. 29.

1923. — — Fauvel. Faune de France 5 p. 222.

The "Ingolf" Expedition has taken the species at two stations.

St. 25. 63°30' N. 54°25' W. 1 spec. — St. 83. 62°25' N. 28°30' W. 1 spec.

The material also contains specimens from the following localities, dating from the "Thor": 62°21' N. 10°59' W. > 1000 m. 15 m. w. 15 min. 1 spec. — 61°49' N. 14°11' W. > 1000 m. 100 m. w. 5 spec. — 65° 27' N. 27°10' W. 700 m. 15 m. w. 2 spec. — 65°50' N. 26°53' W. 392 m. 15 m. w. 15 min. 1 spec. — "Dana" St. 5090. 63°38' N. 21°58' W. 15 m. w.

This small and almost transparent Tomopterid only measures abt. 12—13 mm. The tentacles are broad and flat, the first pair of cirri is lacking, the second pair is very long and slender, a little more than  $\frac{2}{3}$  of the length of the body. The ciliated epaulettes resemble those of *T. Kefersteini* very much; but as far as I can see the two species may be distinguished from each other by the head, the situation of the eyes being different (Pl. fig. 2 and 11).

The neck is short and very broad. In the specimens at hand the number of parapodia lies between 15 and 17. The parapodial rami are short and pointed, the wings big and rounded. The chromophile gland is situated in the ventral parapodium, at the ventral side of the ramus it is highly developed, distinctly convex. The first pair of feet in which this gland is to be found is the 4th one. Hyaline glands are not present. The reproductive organs are found in the dorsal ramus only. They commence in the first pair of feet and continue right into the smallest ones of the hind tip of the body.

Distribution: Rosa records the species from the South Atlantic (Bahia, Buenos Aires), the Pacific (Valparaiso, Callao, New Caledonia), New Zealand, and the Indian Ocean (Ceylon). From the North Atlantic Southern (1911) records it from several stations in Irish waters. The finding places here recorded between Scotland and Iceland and South of Iceland, and especially the single find in the Davis Strait, may indicate the northernmost limit hitherto known of the species.

### **Tomopteris septentrionalis** Quatref.

(Pl. fig. 7, 8, 9; textfig. 2).

1865. *Tomopteris septentrionalis* Quatref. Hist. nat. des annel. II 1<sup>re</sup> partie p. 219.

1900. — — Apstein. Ergebn. d. Plankton-Exp. 2 p. 41.

1908. — — Rosa. Publ. del R. Istit. di Studi Sup. Firenze. p. 297.

1922. — — Malaquin & Carin. Rés. Campagnes Sci. du Prince de Monaco. 61, p. 38.

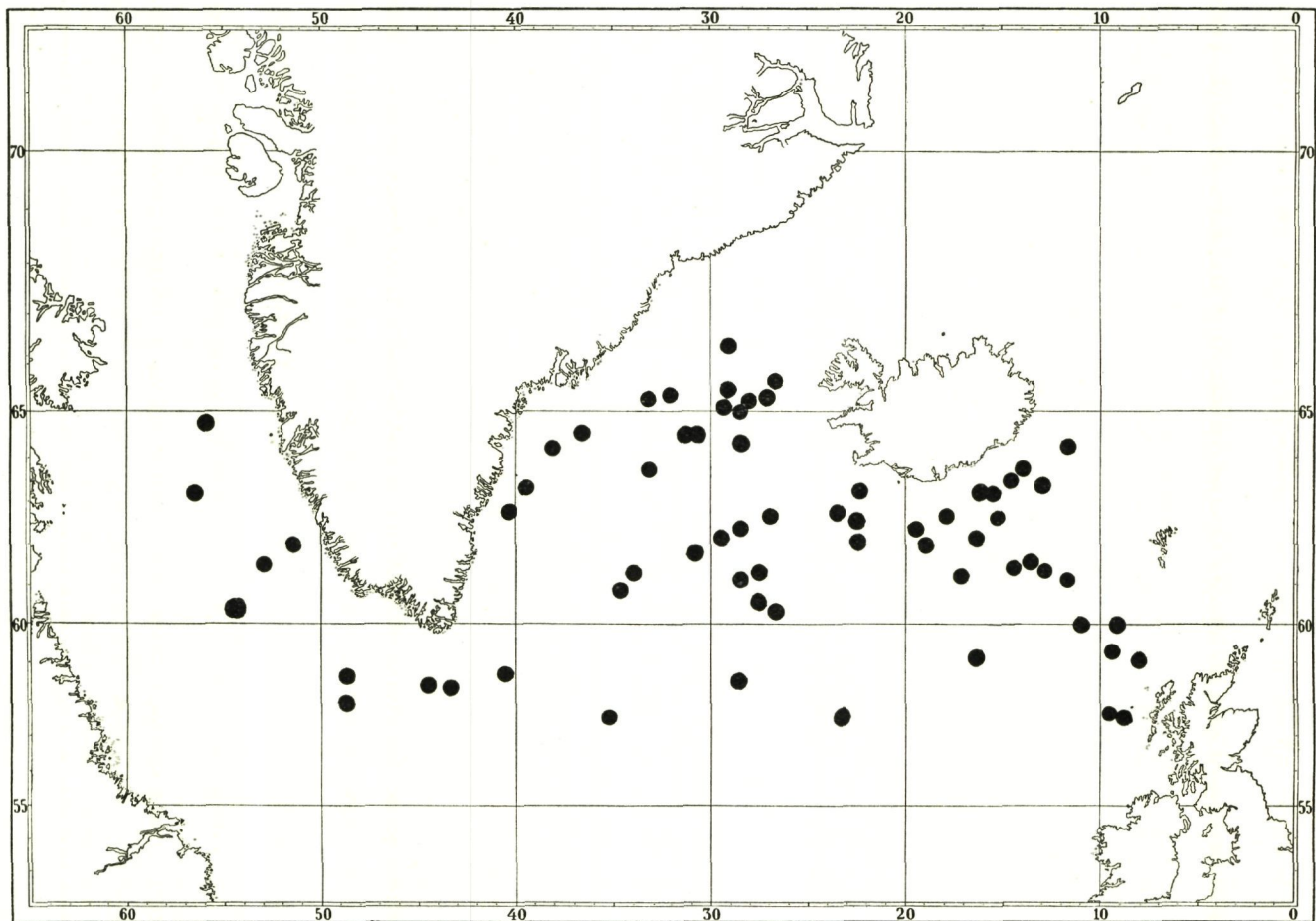
1923. — — Fauvel. Faune de France 5 p. 224.

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The "Ingolf" Expedition has taken the species in the following localities:

St. 10.  $64^{\circ}24' N.$   $28^{\circ}50' W.$  — St. 11.  $64^{\circ}34' N.$   $31^{\circ}12' W.$  — St. 17.  $62^{\circ}49' N.$   $26^{\circ}55' W.$  — St. 18.  $61^{\circ}44' N.$   $30^{\circ}29' W.$  — St. 19.  $60^{\circ}29' N.$   $34^{\circ}14' W.$  — St. 20.  $58^{\circ}20' N.$   $40^{\circ}48' W.$  — St. 22.  $58^{\circ}10' N.$   $48^{\circ}25' W.$  — St. 24.  $63^{\circ}06' N.$   $56^{\circ}00' W.$  — St. 27.  $64^{\circ}54' N.$   $55^{\circ}10' W.$  — St. 37.  $60^{\circ}17' N.$   $54^{\circ}05' W.$  — St. 47.  $61^{\circ}32' N.$   $13^{\circ}40' W.$  — St. 49.  $62^{\circ}07' N.$   $15^{\circ}07' W.$  — St. 52.  $63^{\circ}57' N.$   $13^{\circ}32' W.$  — St. 53.  $63^{\circ}15' N.$   $15^{\circ}07' W.$  — St. 54.  $63^{\circ}08' N.$   $15^{\circ}40' W.$  — St. 57.  $63^{\circ}37' N.$   $13^{\circ}02' W.$  — St. 63.  $62^{\circ}40' N.$   $19^{\circ}05' W.$  — St. 68.  $62^{\circ}06' N.$



Textfigure 2. Finding-places for *Tomopteris septentrionalis*.

The following localities have not been charted:  $51^{\circ}00' N.$   $11^{\circ}43' W.$  —  $50^{\circ}45' N.$   $11^{\circ}53' W.$  —  $50^{\circ}40' N.$   $44^{\circ}00' W.$  —  $50^{\circ}25' N.$   $12^{\circ}44' W.$  —  $48^{\circ}09' N.$   $8^{\circ}30' W.$

$22^{\circ}30' W.$  — St. 69.  $62^{\circ}40' N.$   $22^{\circ}17' W.$  — St. 73.  $62^{\circ}58' N.$   $23^{\circ}28' W.$  — St. 77.  $60^{\circ}10' N.$   $26^{\circ}59' W.$  — St. 80.  $61^{\circ}02' N.$   $29^{\circ}32' W.$  — St. 83.  $62^{\circ}25' N.$   $28^{\circ}30' W.$  — St. 91.  $64^{\circ}44' N.$   $31^{\circ}00' W.$  — St. 94.  $64^{\circ}56' N.$   $36^{\circ}19' W.$  — St. 96.  $65^{\circ}24' N.$   $29^{\circ}00' W.$  — St. 97.  $65^{\circ}28' N.$   $27^{\circ}39' W.$  Furthermore in the following localities (stat. vac.):  $60^{\circ}23' N.$   $27^{\circ}25' W.$  —  $61^{\circ}30' N.$   $27^{\circ}30' W.$  —  $62^{\circ}00' N.$   $29^{\circ}20' W.$  —  $65^{\circ}24' N.$   $29^{\circ}00' W.$

The material furthermore contains specimens from the following localities:

$50^{\circ}40' N.$   $44^{\circ}00' W.$  Olrik. —  $57^{\circ}32' N.$   $23^{\circ}31' W.$  Olrik 1859. —  $57^{\circ}55' N.$   $48^{\circ}43' W.$  Olrik 1859. —  $57^{\circ}27' N.$   $35^{\circ} W.$  Olrik 1864. —  $58^{\circ}29' N.$   $44^{\circ}54' W.$  Olrik 1864. —  $59^{\circ}37' N.$   $8^{\circ} W.$  Olrik 1866. —  $57^{\circ}25' N.$



42°12' W. Olrik 1867. — 59°09' N. 16°00' W. Olrik 1867. — 61° N. 34' W. Borch 1859. — 60° N. 9' W. Rink. — Off the Davis Strait. — 60° N. 11' W. — 60 miles off the Davis Strait. — 59°36' N. 9°32' W. Holm 1884. — 58°59' N. 28°24' W. Ostenfeld 1900.

The following localities date from the collections of the "Thor":

South of Ireland: 48°09' N. 8°30' W. 300 m. w. 600 m. 240 min. ∞ spec. — 50°25' N. 12°44' W. 2480 m. 1 spec. — 50°45' N. 11°53' W. 200 m. w. > 2000 m. 4 spec. — W. and S.W. of Ireland: 51°00' N. 11°43' W. 300 m. w. 1020 m. 570 min. 25 spec. — S. Iceland to Scotland: 57°52' N. 9°53' W. 85 m. w. 30 spec. — 61°49' N. 14°11' W. 100 m. w. > 1000 m. 60 min. 9 spec. — 62°49' N. 18°46' W. 100 m. w. 224 m. 120 min. 3 spec. — W. of the Faroes to S.E. Iceland: 61°21' N. 10°59' W. 15 m. w. > 1000 m. 15 min. 5 spec. — 61°41' N. 13°31' W. 15 m. w. > 1000 m. 15 min. 5 spec. — 62°47' N. 15°03' W. 15 m. w. 1950 m. 20 min. 6 spec. — 64°12' N. 11°45' W. 20 m. w. 316 m. 20 min. 1 spec. — South of Iceland: 61°30' N. 17°08' W. 25 m. w. > 2000 m. 180 min. 30 spec. — 61°34' N. 19°05' W. 15 m. w. 2160 m. 60 min. 15 spec. — 62°10.8' N. 19°36' W. 2140 m. — 63°29' N. 21°25' W. 110 m. w. 100 m. 180 min. 1 spec. — N. W. of Iceland: 65°00' N. 28°10' W. 15 m. w. 1240 m. 15 min. 20 spec. — 65°27' N. 27°10' W. 15 m. w. 700 m. 60 min. 30 spec. — 65°50' N. 26°53' W. 15 m. w. 392 m. 15 min. 4 spec. — W. of the Hebrides: 57°52' N. 9°53' W. 25 m. w. 1020 m. 120 min. 1 spec. —

The following localities date from the collections of the "Dana":

The Davis Strait: 61°47' N. 52°55' W. 1900 m. w. 3000 m. ∞ spec. — 62°02' N. 51°35' W. 100 m. w. 10 spec. — The Denmark Strait: 64°12' N. 38°12' W. 65 m. w. ∞ spec. — 65°17' N. 33°05' W. 65 m. w. ∞ spec. — 65°23' N. 32°05' W. 250 m. w. ∞ spec. — 66°22' N. 29°20' W. 15 m. w. ∞ spec. — S.E. Greenland to Iceland: 62°41' N. 40°30' W. 15 m. w. ∞ spec. — 63°27' N. 39°38' W. 250 m. w. ∞ spec. — 63°51' N. 33°51' N. 50 m. w. ∞ spec. — S. Iceland to Scotland: 63°38' N. 14°31' W. 1800 m. w. 10 spec.

This Tomopterid, the most common in the northern part of the Atlantic, measures maximum 20 mm., but by far the greater part of the specimens are only abt. 10 mm. The number of parapodia is abt. 20. The body is white, flattened and pointed at the hind tip. The frontal line of the head is very characteristic in having beautifully curved broad tentacles. Prostomium is slightly incised. The neck is rather long and slender. The brain is slightly bilobed, the eyes large and brownish. The first pair of cirri is always absent, the second pair is long and slim, longer than the half of the body. The ciliated epaulettes forming a V-like figure are very well developed and easily recognizable. The parapodia are more than twice as long as the breadth of the trunk; the two rami are long and pointed, the pinnæ rounded, especially the ventral one.

The arrangement of the parapodial glands varies much. Usually the two anterior parapodia are quite without glands. The chromophile gland forms no distinct organ, but some long parallel glandular tubes lying at the apex of the ventral parapodial ramus are especially susceptible of hæmatoxylin. Behind these tubes a very great number of glandular tubes are found; also they are easily coloured by hæmatoxylin, and without doubt they form part of the chromophile gland. This gland is found from the 4th parapodium and in almost all the succeeding ones. The hyaline glands are small and indistinct, often very difficult to detect. They generally commence at the third parapodium, but in the material at hand I have found them from the very first parapodium in a rather great number of specimens. They too are lying apically, a little above and behind



the chromophile tubes. The reproductive organs are found from the 2nd to abt. the 15th parapodium and in the dorsal ramus only.

**Distribution:** *T. septentrionalis* is by far the best represented Tomopterid in the present material. It is found in numerous samples from the area between Scotland and Iceland and from the Irminger Sea too. From this latter area also Apstein reports it, and some finding places S.W. of Ireland agree with the statements of Southern. Thus none of the finding places given here are outside the hitherto known area of distribution of the species. The material worked out here confirms the statements of Apstein a. o. to the effect that *T. septentrionalis* is the quantitatively most common species throughout the North Atlantic. According to Apstein the species is replaced by *T. helgolandica* at abt. 60° N. Lat. and 20° W. Long. In this statement the above mentioned author is evidently not right, because the material at hand contains numerous specimens dating from a great number of hauls made just between 60°—65° N. Lat. and 20°—10° W. Long. indeed the greater part of finds originate from this area.

As to the vertical distribution the species is seldom found in shallow waters. Southern reports that at the coast of Ireland it seldom crosses the 200-fathom line. In this respect it differs from *T. helgolandica* which, besides being found in the open waters of the deep-sea, may occur in more shallow waters.

*T. septentrionalis* is furthermore known from the Norwegian Sea, the North Sea and Skagerrak and the Mediterranean.

### **Tomopteris Kefersteini Greeff.**

(Pl. fig. 10, 11, 12).

1879. *Tomopteris Kefersteini* Greeff. Zeitschr. f. wiss. Zool. **32** p. 274.

1908. — — Rosa. Publ. del R. Istit. di Studi Sup. in Firenze p. 313.

1923. — — Fauvel. Faune de France **5** p. 225.

non Apstein 1900.

Locality: 61°49' N. 14°11' W. > 1000 m. 100 m. w. "Thor" St. 286. 2. VIII. 1904. 1 spec.

The single specimen of this minute and slender and insufficiently known Tomopterid only measures 5 mm. 15 segments in the body. The first pair of cirri was not to be found; the second pair is very slender and attains little more than half the length of the body. The neck is short and strong. The ciliated grooves are very inconspicuous, short and broad, forming a small protrusion behind the broad, pointed tentacles. The brain is oblong; the eyes fairly closely set and reddish. The rami of the parapodia are short and pointed, the pinnæ large and rounded.

On the ventral side of each of the ventral pinnæ a very voluminous chromophile gland is found, and besides this gland there is in both the dorsal and ventral pinna a distinct, brown coloured organ consisting of some few, rounded bodies constantly placed at the apex of the parapodial rami. Whether these organs should be considered rosette-shaped organs or hyaline glands is uncertain. The reproductive organs are found in both the dorsal and the ventral branch of each parapodia.

**Distribution:** The species is hitherto only known from the Atlantic (Canary Islands, Bermudas etc. (The Plankton Expedition)) and the Mediterranean. The single find here recorded half-way between Scotland and Iceland may indicate a wider distribution.



## Family Typhloscolecidae Uljanin.

### *Travisiopsis lanceolata* Southern.

1910. *Travisiopsis lanceolata* Southern. Mag. of Nat. Hist. (8) 5 p. 428.  
1911. — — Southern. Fisheries, Ireland, Sci. Invest. III p. 30.  
1916. — — Fauvel. Rés. Camp. Sci. du Prince de Monaco 48 p. 75.  
1923. — — Fauvel. Faune de France, 5 p. 229.

The "Thor" St. 164. 1903. 62°10.5' N. 19°36' W. > 1900 m. 100 m. w. 1 spec. — The "Thor" St. 82. 1905. 51°00' N. 11°43' W. 1200 m. 2 spec. — The "Thor" St. 165. 1905. 60°00' N. 10°35' W. 1050 m. 1 spec.

The species, which is closely related to *T. lobifera*, is of a white, yellowish tinge and the best preserved specimen is quite transparent. The biggest of the four specimens measures 38 mm. the smallest 16 mm. The species is one of the very biggest members of the family. The body, which has 22 segments, tapers towards both ends. The prostomium is conical and terminates in a filiform prolongation. The nuchal organ ("lateral tentacles" Southern) surrounds the median dorsal papilla anteriorly; posteriorly it forms two rather long, round appendages. Their free tips reach about unto the place of attachment for the cirri of the third segment, i. e. not so far backwards as mentioned by Fauvel and Southern, as far as I can see. The tips diverge a little from each other. They correspond to the ciliated epaulettes of the *Tomopteridae*. The caruncle, or the median dorsal papilla, is semicircular, anteriorly rounded, but posteriorly with a little distinct prolongation. The buccal segments and the two following ones have only a single pair of cirri; in the rest of the segments there are a ventral as well as a dorsal lobe present. The first cirri are kidney-shaped, the rest more or less square with a narrow area of attachment. Close to this a deep indentation is seen. Backwards the cirri become more and more elongated and pointed, yet the shape may vary rather much, and it seems to me that Southern's drawing is a little deceiving, because so pointed as this author draws the very hindmost pair of cirri I have never seen them in any of the specimens at my disposal. The anal cirri are of such a shape and length that most probably they may be used for steering. In the middle they have a firm hyalin rib. The setae, which are acicular, are imbedded in highly reduced parapodia in a number of only one aciculum and two bristles. They are placed a little anteriorly to the place of attachment of the cirri.

Distribution: Gulf of Gascogne, the Azores, the Canaries (Fauvel), coast of Ireland (Southern). — The localities published in the present paper are the northernmost ones hitherto known.

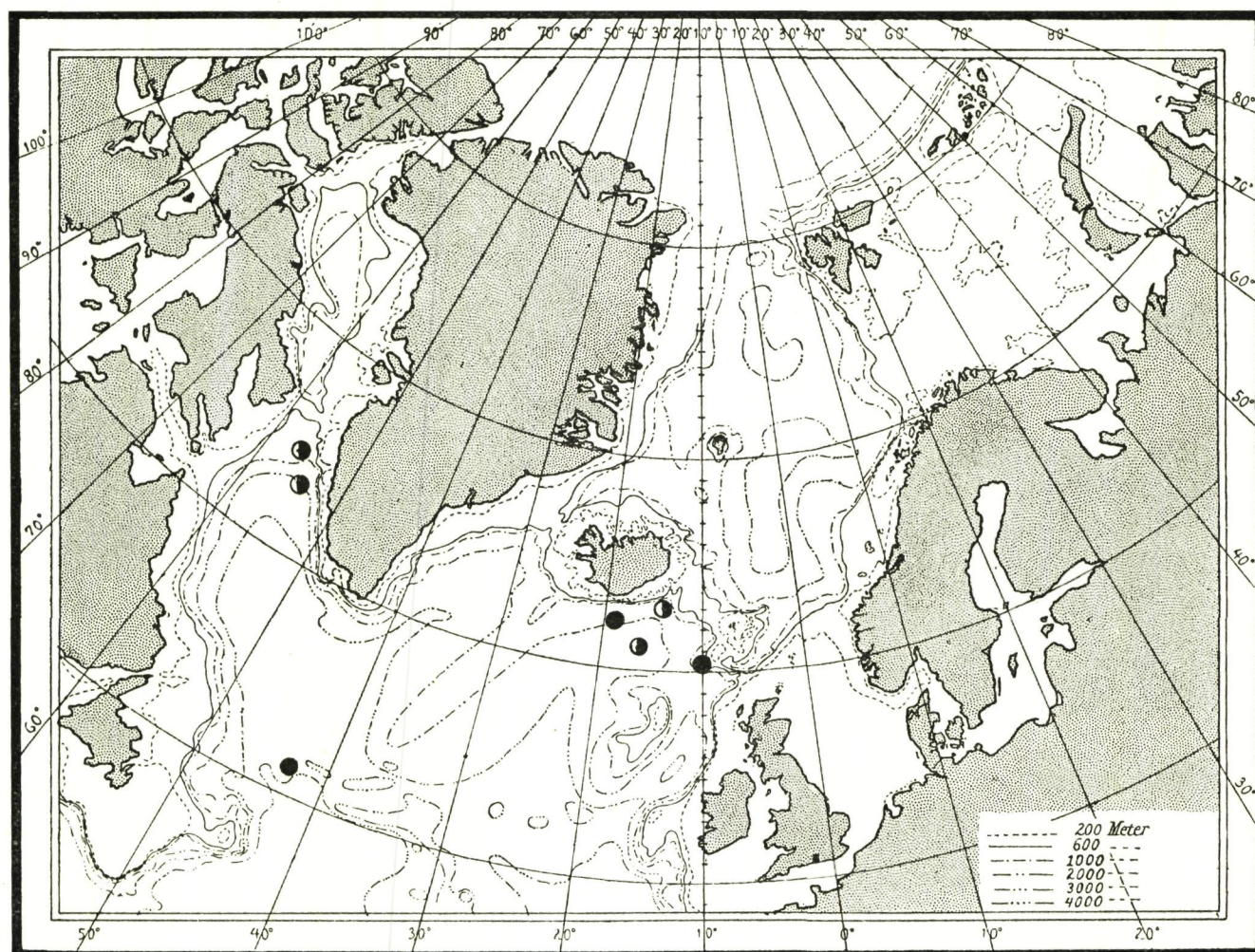


**Travisiopsis Levinseni** Southern.

1910. *Travisiopsis Levinseni* Southern. Ann. Mag. Nat. Hist. (8) 5 p. 428.

1916. — — Fauvel. Rés. des Camp. scient. Monaco 48 p. 76.

1923. — — Fauvel. Faune de France 5 p. 229.



● *T. lanceolata*

● *T. Levinseni*

Textfigure 3.

Localities: 61°30' N. 17°8' W. The "Thor" St. 183. 1904. 5 spec. — 64°01' N. 55°30' W. The "Tjalfe" St. 338. 14—15 m. w. 1185 m. 2 spec. — 63°18' N. 54°55' W. The "Tjalfe" St. 333. 1530 m. 5 spec. — 63°38' N. 14°13' W. The "Dana" St. 5113. 2000 m. w. 2 spec.

The specimens at hand vary in size from 4 mm to 31 mm. The species is colourless and tapers toward both ends. It is more slender than the previous species and yet the number of segments is greater, it is constantly found to be 25. The three pairs of tentacular cirri are different in shape and size, whereas the cirri of the body segments are square and easily recognizable from the body cirri of *T. lanceolata* by the broad attachment, at each side of which there is a little rounded indentation. The setæ are situated just in front



of the attachment. The anal cirri are very long and broadest at their distal ends, thus being distinctly spatulate. They may be excellent steering apparatuses. As far as I can see I must agree with Southern who reports that it is only the dorsal cirri of the hind end of the body which are transformed into spatulate blades, whereas the ventral ones constantly are small and of the usual shape. I do not think that this is an abnormal condition due to the fact that the ventral cirri are being regenerated, as Southern supposes. I find them to be small and just like normal dorsal cirri in all the specimens examined.

Prostomium much resembles that of *T. lanceolata*, it only ends in a tip which is more slender and elongated than in this related species; in *T. Levinseni* it is rather filiform. The central dorsal papilla is large, flat, rectangular with rounded corners. The nuchal organs are short and broad and diverge highly posteriorly. They do not surround the median papilla, i. e., the two anterior lobes of the organ which are present in *T. lanceolata* are absent in this species. These lobes may be said to be substituted by two very small rounded caruncles lying close to both sides of the median papilla, and also touching the anterior margins of the nuchal organs (comp. Southern's drawing 1911. Pl. 2. fig. 7). These caruncles are perfectly free and are in no tissue-connection with the other organs<sup>1)</sup>.

Distribution: The species is hitherto only known from the Azores and the coast of Ireland. The localities reported here are thus by far the northernmost finding places and may indicate that the species really is widely spread all over the northern Atlantic.

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<sup>1)</sup> A renewed examination of a greater number of *T. Levinseni* from West Greenland has shown that the description of the nuchal organ given here, is not quite correct. The lateral lobes are not independent organs but really form parts of the lateral tentacles. The above written description is due to the contraction of the specimen. Compare: Meddelelser om Grønland Vol. 80 (Added while in press).



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1923. — Polychètes errantes. Faune de France **5**.
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1911. — The *Alciopinæ*, *Tomopteridæ* and *Typhloscolecidæ*. Fisheries, Ireland. Sci. Invest. **3**.
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## EXPLANATION OF THE PLATE.

Fig. 1—3. *Tomopteris Cavallii* Rosa.

— 4—6. *Tomopteris (Johnstonella) helgolandica* Greeff.

— 7—9. *Tomopteris septentrionalis* Quatrefages.

— 10—12. *Tomopteris Kefersteini* Greeff.

— 13—15. *Tomopteris Nisseni* Rosa.

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