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THE ZOOLOGY OF EAST GREENLAND

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OCTOCORALLIA

BY

F. JENSENIUS MADSEN

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WITH 5 FIGURES IN THE TEXT

KØBENHAVN

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BIANCO LUNOS BOGTRYKKERI

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The first record on Octocorals from East Greenland was made in 1874 by MOEBIUS who in the report of the second German North-Polar expedition 1869—70 mentioned *Briareum grandiflorum* Sars as taken off the island Shannon, the identification, however, being wrong as suspected by LÜTKEN (1875) and later proved by JUNGENSEN (1915, 1916); the specimens in reality being of the Nephthyid: *Capnella glomerata* (Verrill). The next reference to East-Greenland Octocorals was made by KOLTHOFF who 1901 recorded the capture of an *Umbellula* in Kejsler Franz Josephs Fjord, which specimen JUNGENSEN in 1904 identified with *Umbellula encrinus* (L.). JUNGENSEN (1904) published in addition two more East-Greenland finds of *U. encrinus* made in 1900 by the Danish East-Greenland Expedition with the "Antarctic" (the AMDRUP-HARTZ-expedition); and in *Conspectus Fauna Groenlandicæ* JUNGENSEN (1915) further recorded four additional species of East-Greenland Octocorals, viz: three more Nephthyid corals: *Eunephthya rubiformis* (Ehrbg.) (= *Gersemia rubiformis* (Ehrbg.) s. l.), *E. fruticosa* (M. Sars) (= *G. rubiformis* s. l.), *E. florida* (Rthk.) (= *Capnella florida* (Rthk.)), and a Sea-pen: *Virgularia affinis* Kor. & Dan. (= *V. glacialis* Köll.), the collection of these being made by the above-mentioned East-Greenland Expedition of 1900, RYDER's expedition with the "Hekla" 1891—92, and the "Danmark" Expedition 1906—08 respectively. In his paper on the Alcyonaria of East-Greenland JUNGENSEN (1916) finally discussed the zoogeography of these species more closely.

MOLANDER described in 1915 a new species of a Nephthyid: *Eunephthya groenlandica*, which was taken by the Swedish "Sofia" expedition in an undefined locality at East Greenland (the species by JUNGENSEN (1917) made a synonym of *E. glomerata*), and recorded further from East Greenland: *Gersemia rubiformis*, *G. clavata* (= *G. rubiformis* s. l.), and *G. fruticosa* (= *G. rubiformis* s. l.), all taken by the Swedish Greenland expedition 1899; KRAMP in 1933 recorded *Eunephthya florida* and *Virgularia tuberculata* Marshall as taken in Mikis Fjord by the Second Danish East-Greenland Expedition 1932, and in 1944 I recorded as new to East Greenland *Stenogorgia borealis* Kramp collected in Lindenows Fjord in 1932 by Mr. P. M. HANSEN, Fishery-Biologist for Greenland.

This is hitherto all which has been published as to the Octocoral-fauna of East Greenland. In the following survey records are given of new finds of previously known East-Greenland species made by the Trearssexpedition 1931—34, and finally the Sea-pen *Anthoptilum grandiflorum*, collected by P. M. HANSEN, is recorded from Lindenows Fjord. The number of species of East-Greenland Octocorals known at present then being eight, as two of the species of Nephthyid corals recognized by JUNGENSEN (*Eunephtya rubiformis* and *E. fruticosa*) can not be hold apart, as shown by me in 1944.

In the following survey all the East-Greenland localities are given in which each species has been found up to now. The coast is divided into five sections from north to south, viz: Nordøstkyst (= north east coast) Area, Kejser Franz Josephs Fjord Area, Scoresbysund Area, Kangerdlugssuaq Area, and Sydøstkyst (= south-east coast) Area (cf. the map fig. 1). The spelling of the geographical names is in accordance with the maps and with the wishes of the editorial committee, and needs a few explanatory remarks: Sund = sound, Bugt = bay, Havn = harbour, Ø = island, Kap = cape, and Pynt = point.

## ALCYONACEA

### 1. *Gersemia rubiformis* (Ehrenberg).

*Lobularia rubiformis* EHRENBURG 1834 pp. 58—59.

*Eunephtya rubiformis* + *fruticosa* JUNGENSEN 1915 pp. 1171—1181.

— — + — — 1916 pp. 487—493.

*Gersemia rubiformis* + *waeiformis* + *clavata* + *fruticosa* + *mirabilis* MOLANDER 1918 pp. 48—70 fig. 12, pl. 1 figs. 1—13.

*Gersemia rubiformis* JENSENIUS MADSEN 1944 pp. 27—28.

#### East-Greenland records:

*Eunephtya rubiformis* + *fruticosa* JUNGENSEN 1915 pp. 1171, 1177.

*Gersemia rubiformis* + *clavata* + *fruticosa* MOLANDER 1915 pp. 53, 57, 63.

*Eunephtya rubiformis* + *fruticosa* JUNGENSEN 1916 pp. 489, 492.

#### Occurrence at East Greenland:

##### *Nordøstkyst Area:*

Danmarks Havn, Sundet between Renskæret and Maatten, ca. 76°42' N, 45—95 m. (JUNGENSEN 1915, 1916). 11 colonies, f. *rubiformis* Deichm., 3 of the colonies with red sclerites.

##### *Kejser Franz Josephs Fjord Area:*

4 Sml. E. of Holland Øen, ca. 73°35' N, 130 m. 4 colonies, f. *rubiformis* Deichm.

73°30' N, 20°18' W, 25—27 m. (MOLANDER 1915).

73°20' N, 21°20' W, 70 m. (MOLANDER 1915).

E. of Zoologdalen on Ymers Ø, Kejser Franz Josephs Fjord, 180 m. 1 colony, f. *r.* × f. *f.*

Off Kap Weber, Kejser Franz Josephs Fjord, 100—110 m. (MOLANDER 1915).

S. W. of Kap Franklin, Foster Bugt, 320 m. 4 colonies, f. *f.* × f. *r.*

The mouth of Duséns Fjord, W. of Kap Graah, ca. 73°15' N, 150 m. 2 colonies, f. *fruticosa* Deichm.?

Duséns Fjord, 2 Sml. E. of the anchor place, 70—100 m. f. *rubiformis* Deichm.?

Antarctics Sund, a little inside the West opening, ca. 73°10' N, 230 m. 2 colonies, f. *fruticosa* Deichm.

5 Sml. S. of Bontekoe Øen, ca. 73°05' N, 245 m. 1 colony, (f. *fruticosa* Deichm.?)

Sofia Sund, a little E. of Botanikerbugten, ca. 73°05' N, 210 m. 3 colonies, f. *rubiformis* Deichm.?

Solitærbugten, Ella Ø, ca. 72°50' N, 320 m. 13 colonies, f. *r.* × f. *f.*

Between Maria Ø and Ella Ø, 250 m. 7 colonies, (f. *rubiformis* Deichm.?)

#### *Scoresbysund Area:*

Hurry Fjord, 70°50' N, 95 m. (JUNGERSEN 1915, 1916). 18 colonies, f. *rubiformis* Deichm., one of the colonies with faintly red sclerites.

At Fame Øerne, Hurry Fjord, 18—25 m. 18 colonies, (f. *fruticosa* (Deichm.?) and f. *rubiformis*, two of the latter specimens with more or less strongly red sclerites.

Ca. 1 Kvml. inside the mouth of Hurry Fjord, 35—38 m. 1 colony, f. *rubiformis* Deichm. with bright red sclerites.

Off the mouth of Hurry Fjord, ca. 70°20' N, 140, 145 m. 9 colonies, f. *fruticosa* Deichm. and f. *rubiformis* Deichm.

Scoresby Sund, 22°29' W, 70 m. (MOLANDER 1915).

Hvalrosbugt, at Scoresbysund, 30—35 m. 1 colony, f. *rubiformis* Deichm.

Entrance to Scoresby Sund, 70°28' N, 23° W, 19—123 m. (JUNGERSEN 1915, 1916). 3 colonies, f. *fruticosa* Deichm.

Off Kap Hooker, Scoresby Sund, 140, 150 m. 11 colonies, (f. *fruticosa* Deichm.?) and f. *rubiformis* Deichm., one of the latter colonies with faintly red sclerites.

Henry Land, 69°34' N, 38 m. (JUNGERSEN 1915, 1916). 2 colonies, f. *rubiformis* Deichm., one of them with red sclerites.

#### *Sydøstkyst Area:*

At Angmagssalik. 1 colony, f. *fruticosa* Deichm.

At Tasissaq, 65°37' N, 45—56 m. (JUNGERSEN 1915, 1916), 1 colony, f. *rubiformis* Deichm. with red sclerites.

Nanûserq, N. of Lindenows Fjord, 150 m. 1 colony, f. *rubiformis* Deichm.(?).

Distribution: Circumpolar, panarctic—western Atlantic-boreal. Widely distributed; known from all arctic waters; in the North Pacific penetrating so far south as the Japanese Sea, and in the North Atlantic penetrating so far south in the eastern part as Stavanger Fjord and in the western part so far south as Cape Cod. Bathymetrical distribution: 3—3600 m.

Remarks: In *Gersemia rubiformis* I range all at present known North-Atlantic Nephthyid corals with retractile anthocodia, in which I differ from JUNGERSEN (1915, 1916, 1917) and other authors (MOLLANDER, BROCH, VERRILL, DEICHMANN, and KRAMP) who have dealt with these forms, and who all among them recognize two or even more species without, however, agreeing in their conception of these. The reasons why after having studied a very large material, about a thousand colonies, of this group of Nephthyids I came to the conclusion that they were all of one species are set forth in my treatment of the species in the report of the "Ingolf"-Expedition (vol. 5 pt. 13) to which I must refer for a more close discussion of the problem. Here only a few particulars will be given concerning the East-Greenland specimens.

Firstly, in the enumeration above, it is indicated, as was also the case in my previous treatment of the species, whether the colonies in question have 1) fairly small anthocodia set well apart on the branch tips or 2) somewhat larger anthocodia set more closely so that there are left no distinct spaces of coenenchyma between them when they are expanded. Specimens with the first characters correspond to what DEICHMANN in 1936 defined as *Eunephthya rubiformis* and are therefore in the list above marked forma *rubiformis* Deichmann; specimens with the last-mentioned characters correspond to what DEICHMANN called *E. fruticosa* and are therefore marked f. *fruticosa* Deichm. In several cases it has, however, been impossible to decide to which form the colony should be referred. It must also be emphasized that the distribution of the specimens on these two forma does no more than tell something about their general appearance, there being, as far as my examinations have shown, no connection between, on the one side, the manner of growth of the colonies and, on the other side, the appearance and the distribution of the sclerites, all possible intermediate stages and combinations being found.

When, notwithstanding that, the distinction above is made in the material it is due to the fact that though the North-Atlantic Nephthyids with retractile anthocodia in my opinion must all be considered as being of one, however extremely variable species it is nevertheless

possible to distinguish some specimens, the red-sclerited ones, which in some way make up a group of their own within the great bulk of variation, the red-sclerited specimens all being rather small, in a contracted state never more than about 6 cm high, having small anthocodia set well apart on the branch tips (thus all belonging to f. *rubiformis* Deichm.) and never having any distinct stem below the cluster of branches. And it is just these red-sclerited specimens which constitute what JUNGERSEN regarded as the species *Eunephthya rubiformis*.

In the collections of the Zoological Museum of Copenhagen there are, surely, represented a few colourless colonies (from the Kara Sea) which JUNGERSEN has determined as *E. rubiformis*, but it may in these cases reasonably be supposed that the colour of the sclerites has faded away since JUNGERSEN made his determinations, there being a span of more than fifty years between that time and now. JUNGERSEN has certainly also (1917 p. 10) in one case referred to *E. rubiformis* a specimen of which he stated that it had not the usual brick-red colour but was only faintly pink (and thus possibly had colourless sclerites), but he then did the identification with much doubt. As far as I can tell thus the only or in any case the principal diagnostic character which JUNGERSEN has used to distinguish his *E. rubiformis* from his *E. fruticosa* has been the colour of the sclerites, but of course the use of this as a specific character is worthless when then specimens which in any other respect are quite alike become distributed on different species.

The reason why the red-sclerited specimens in some way makes up a group of their own may be due to the fact that the possession of red sclerites generally is a rare phenomenon, a perception I also ventilated in my paper of 1944. Among a greater material of red-sclerited specimens probably also specimens of the growth-form *fruticosa* Deichmann might be found. In any case BROCH in his paper of 1935 on the Octocorals of the North Pacific mentions dark-red specimens in both what he calls *E. rubiformis* and what he calls *E. fruticosa* though without stating definitely whether the colour was due to the sclerites, as may be supposed, or not. BROCH, by the way, in this paper also expresses doubt as to whether it in reality is possible to distinguish clearly between the two species: *E. rubiformis* and *E. fruticosa*.

When so much is said here about the red-sclerited specimens it is because such colonies precisely at East Greenland make up a rather large percentage, red-sclerited specimens being found in at least 7 of the 26 localities enumerated above.

Red-sclerited specimens in the very large collection of this species in the Zoological Museum of Copenhagen are else only represented from the Kara Sea, Pierre et Miquelon off Newfoundland, Jones Sound (76°08' N, 80°53' W) 80 m, Exeter Sound in Baffin land (ca. 66°20' N) 100 m,

the southernmost part of the Davis Strait (55°00' N, 56°34' W) 314 m, and off Seydisfjord in East Iceland (a small colony with very faintly red sclerites).

Concerning the last-mentioned localities it may be noted that JUNGENSEN in 1916 (p. 489) stated that what he called *E. rubiformis* had not hitherto been found at the coasts of Iceland or in the Baffin Bay or Davis Strait.

In the literature red-sclerited specimens of northern Nephthyid corals with retractile anthocodiae have been recorded from the Kara Sea (JUNGENSEN 1886), from Porsangerfjord in the northernmost Norway, Jan Mayen, Beeren Eiland, and off the coast of West Siberia (76°29' N, 84°04' W and 76°48' N, 88°39' W) (JUNGENSEN 1917 p. 10), further from Spitsbergen (BROCH 1913), and from off the north coast of East Siberia (BROCH 1928); and as indicated above it appears from BROCH's paper of 1935 that he also has had red-sclerited specimens from the Sea of Okhotsk and the Bering Sea, in any case, however, such are recorded from both the Sea of Okhotsk and the Bering Strait by VERRILL (1922 p. 6, 8). VERRILL (1922) further recorded red-sclerited specimens from the Polar Sea off Alaska (beach—60 m), the southern and eastern part of the Hudson Bay, and in the West Atlantic from the bay of St. Lawrence, the fishing "Banks" off Newfoundland and Nova Scotia, and the bay of Fundy.

VERRILL, as indicated above, in the group of northern Nephthyids with retractile anthocodia distinguished between more species, and it may be mentioned that of these his species *Gersima rubiformis* quite corresponds to JUNGENSEN's *Eunephthya rubiformis*, the principal diagnostic character of the species after VERRILL (1922 p. 7) being the bright red colour of the sclerites as contrasted with the allied northern forms though VERRILL also admits specimens with colourless sclerites in the species. VERRILL mentions also that the form among the fishermen of the "Banks" is known by the trivial name: "Sea strawberry".

It is seen from the survey above of the occurrences of red-sclerited specimens that such are largely confined to high-arctic regions and maybe low temperatures favour the formation of red sclerites. Still both colourless and red-sclerited and else quite identical colonies may be found in the same locality, as also appears from the list of East-Greenland localities above, and the red-sclerited specimens can therefore, as already maintained, only be regarded as a quite casual variation of no specific value.

2. *Capnella glomerata* (Verrill).

- Eunepithya glomerata* JUNGERSEN 1915 pp. 1164—1169.  
 — — — 1916 pp. 493—495.  
*Capnella* — BROCH 1939 p. 14.  
 — — JENSENIUS MADSEN 1944 pp. 28—30 fig. 22.

Of this species three forms may be distinguished, which all occur at East Greenland.

*Capnella glomerata* (Verrill) f. *lütkeni* Marenzeller.

- Ammothea Luetkeni* MARENZELLER 1877 pp. 372—374 pl. 3 fig. 1.  
*Eunepithya glomerata* MOLANDER 1915 pp. 72—74 fig. 13a, pl. 2 fig. 19.  
*Capnella glomerata* f. *lutkeni* JENSENIUS MADSEN 1944 p. 29 fig. 22 a—g.

## East-Greenland records:

- Briareum grandiflorum* MOEBIUS 1874 p. 280.<sup>1)</sup>  
*Eunepithya glomerata* JUNGERSEN 1915 p. 1168.  
 — — — 1916 pp. 494—495.  
*Capnella glomerata* f. *lutkeni* JENSENIUS MADSEN 1944 p. 29 fig. 22 a—g.

## Occurrence at East Greenland:

*Nordøstkyst Area:*

- The sound between Renskæret and Maatten, ca. 76°42' N, 45—95 m.  
 (JUNGERSEN 1915, 1916).  
 Off Sonjas Havn, 76°35' N, 18°26' W, 150 m. (JUNGERSEN 1915, 1916).  
 Off Shannon, ca. 75°25' N, (MOEBIUS 1874).

*Kejser Franz Josefs Fjord Area:*

- 73°39' N, 18°14' W, 202 m.  
 Sofia Sund, a little E. of Botanikerbugten, ca. 73°05' N, 210 m.  
 Between Maria Ø and Ella Ø, 250 m.

*Scoresbysund Area:*

- Off Raffles Ø, ca. 70°32' N, 21°35' W, 235 m.  
 Kap Tobin, 70°23' N, 22° W, 107 m. (JUNGERSEN 1915, 1916).  
 Hurry Fjord, 70°50' N, 95 m. (JUNGERSEN 1915, 1916).  
 Off the mouth of Hurry Fjord, 88 m, 140 m.  
 Off the mouth of Rosenvinges Bugt, Scoresby Sund, 300 m.  
 Off Kap Hooker, Scoresby Sund, 150 m.  
 Henry Land, 69°34' N, 38 m.

*Sydøstkyst Area:*

- At Tasissaq 65°37' N, 47—56 m. (JUNGERSEN 1915, 1916).  
 At Tasissaq, 65°35' N, 56—95 m.

<sup>1)</sup> JUNGERSEN (1915 p. 1156) after a reexamination of this specimen was able to state that it was an *E. glomerata*, most probably it also is of the form *lütkeni*.

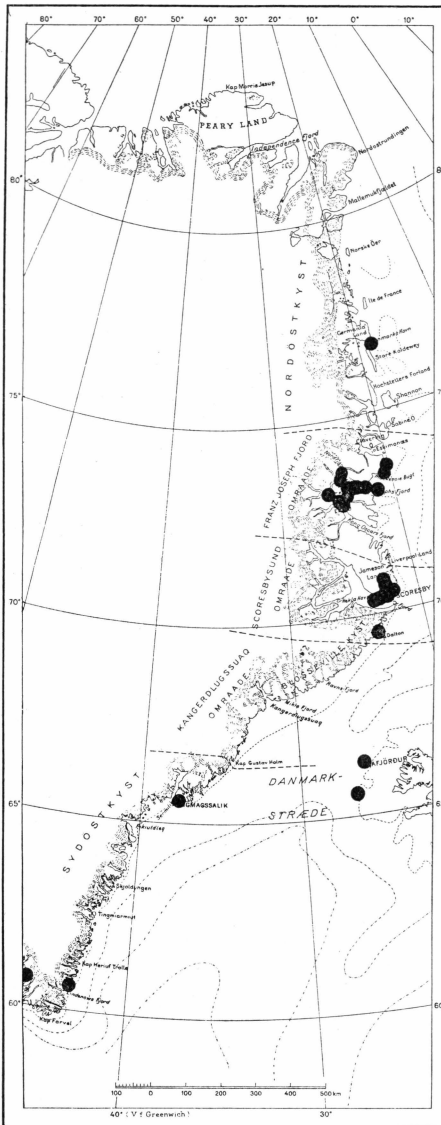


Fig. 1.

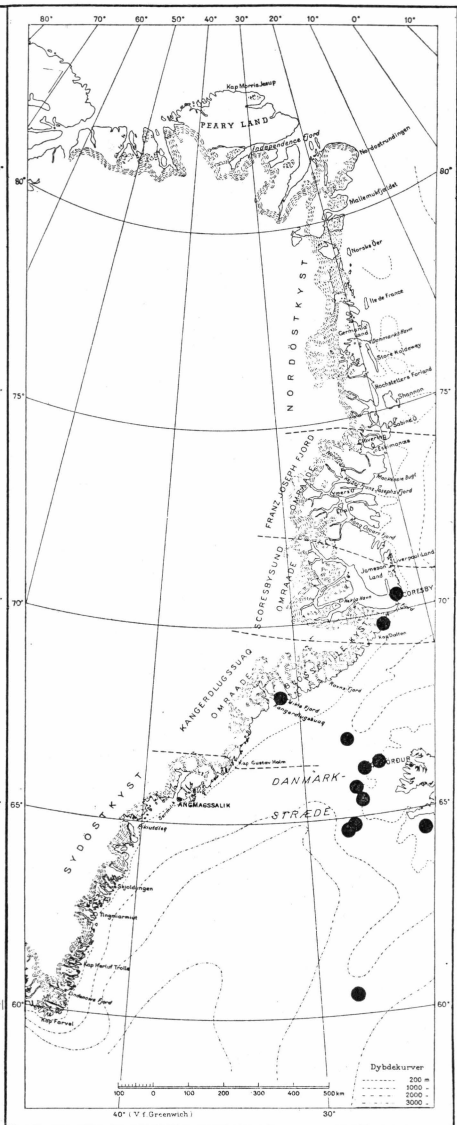
*Gersemia rubiformis* (EHRENBERG).

Fig. 2.

*Capnella florida* (RATHKE).

64°56' N. 36°19' W, 384 m. (JENSENIUS MADSEN 1944).

Lindenows Fjord, in the first northern branch, 250 m.

Lindenows Fjord, 100—150 m.

Distribution: Atlantic-panarctic—western Atlantic-boreal. Vide further under the following form. Bathymetrical distribution: 14—1497 m.

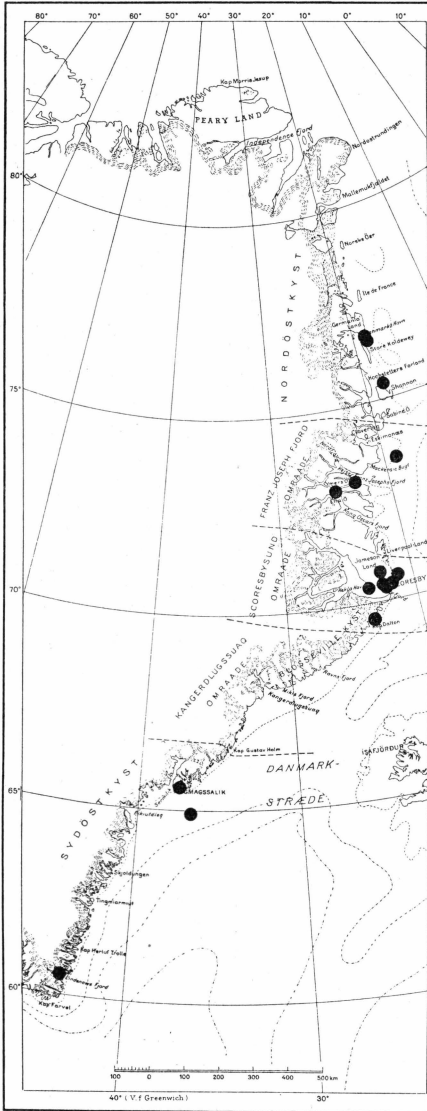


Fig. 3.

*Capnella glomerata* (VERRILL) f. *lütkeni*.

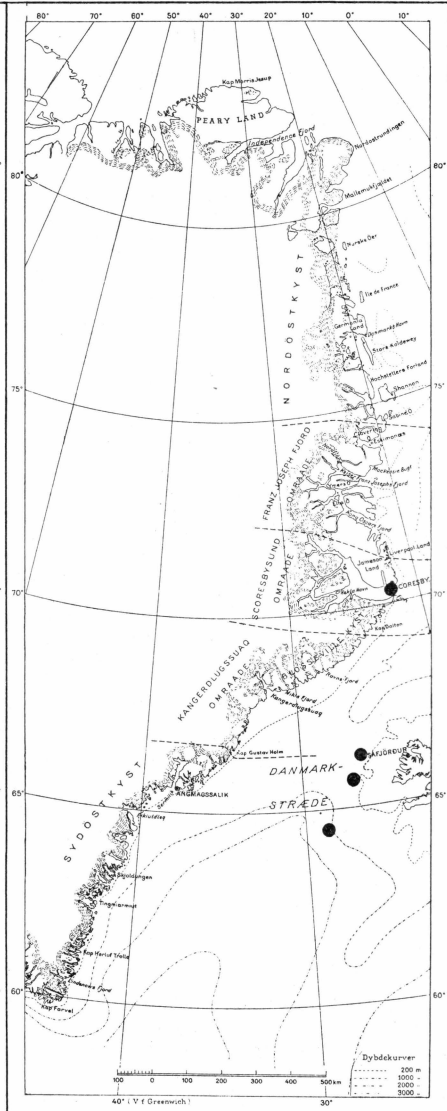


Fig. 4.

*Capnella glomerata* (VERRILL) f. *flavescens*.

*Capnella glomerata* (Verrill) f. *flavescens* (Danielssen).

*Eunephthya glomerata* VERRILL 1869 p. 284.

*Nephthya flavescens* DANIELSSEN pp. 81—87 pl. 11.

*Eunephthya flavescens* MOLANDER 1915 pp. 74—78 fig. 13 b, pl. 2 figs. 15, 16.

*Capnella glomerata* f. *flavescens* JENSENIUS MADSEN 1944 pp. 29—30 fig. 22 h—q.

East-Greenland record:

*Capnella glomerata* f. *flavescens* JENSENIUS MADSEN 1944 p. 30.

Occurrence at East Greenland:

*Scoresbysund Area:*

Off the mouth of Rosenvinges Bugt, Scoresby Sund, 300 m. (JENSENIUS MADSEN 1944).

Remarks: This single colony, though surely belonging in the forma *flavescens*, is in its very numerous and slender sclerites passing over in the forma *groenlandica*.

Distribution: Atlantic-panarctic—western Atlantic-boreal. Bathymetrical distribution: 60—1484 m.

The two forms, *lütkeni* and *flavescens*, have an almost identical distribution, being known from the Barents Sea, the Norwegian Sea, the Baffin Bay, the Davis Strait, the North-Atlantic Ocean just south of the Wyville Thomson Ridge, and the West-Atlantic Ocean off New Foundland and Nova Scotia. In the Norwegian Sea<sup>1)</sup>, however, f. *lütkeni* is by far the most common in the western part, off East Greenland, whereas the reverse is the case in the eastern part, off Norway. According to VERRILL *C. glomerata* has been found in about 2700 m depth off N. America, which of the forms this refers to is however unknown.

*Capnella glomerata* (Verrill) f. *groenlandica* Molander.

*Eunephthya groenlandica* MOLANDER 1915 pp. 78—79 fig. 13 c, pl. 2 fig. 18.

*Capnella glomerata* f. *groenlandica* JENSENIUS MADSEN 1944 p. 30 fig. 22 r—x.

East-Greenland record:

*Eunephthya groenlandica* MOLANDER 1915 p. 79.

Occurrence at East Greenland:

*Sydøstkyst Area:*

An undefined locality, 234 m.

Distribution: Besides from the above-mentioned undefined locality in East Greenland, the species is only known from an undefined locality on the north coast of Iceland, 30 m, and from a locality a little west of the Faroes, 490 m.

3. *Capnella florida* (Rathke).

*Gorgonia florida* RATHKE 1806 p. 20 pl. 137.

*Eunephthya florida* JUNGERSEN 1915 pp. 1169—1171.

— — — 1916 pp. 495—497.

*Capnella* — BROCH 1939 p. 14.

— — JENSENIUS MADSEN 1944 pp. 30—31 fig. 21 g—h.

<sup>1)</sup> The sea lying between Norway, Spitsbergen, Greenland, Iceland and the North Sea.

## East-Greenland records:

- Eunephthya florida* JUNGENSEN 1915 p. 1171.  
 — — — 1916 p. 496.  
 — — KRAMP 1933 p. 17.

## Occurrence at East Greenland:

*Scoresbysund Area:*

- Off Kap Tobin, 70°23' N, ca. 22° W, 107 m. (JUNGENSEN 1915, 1916).  
 Turner Sund, 69°45' N, 22°20' W, 6 m. (JUNGENSEN 1915, 1916).

*Kangerdlugssuaq Area:*

- Mikis Fjord, ca. 68°10' N, 130 m. (KRAMP 1933).

Distribution: Atlantic-panarctic—boreal; known from the Norwegian Sea, the Baffin Bay, the Davis Strait, and the North-Atlantic Ocean as far south as off the Irish coast and off New Foundland. Bathymetrical distribution: 6—1500 m.

## GORGONACEA

4. *Stenogorgia borealis* Kramp.

- Stenogorgia borealis* JUNGENSEN 1915 p. 1186 (nomen nudum).  
 — — KRAMP 1930 pp. 6—11 figs. 2—5.

## East-Greenland record:

- Stenogorgia borealis* JENSENIUS MADSEN 1944 p. 43.

## Occurrence at East Greenland:

*Sydøstkyst Area:*

- Lindenows Fjord, 300 m (JENSENIUS MADSEN 1944).

Distribution: Atlantic-boreal; found in the North-Atlantic Ocean in some localities on the Wyville Thomson Ridge from the Faroes to Greenland, and somewhat southwest of Iceland in 913 and 1630 m depth respectively; in Greenland known from the above-mentioned locality on the south-east coast, and from Kvanefjord and Bredefjord on the south-west coast. Bathymetrical distribution: 83—1630 m.

## PENNATULACEA

5. *Virgularia glacialis* Kölliker.

- Virgularia glacialis* KÖLLIKER 1872 p. 113 pl. 13 figs. 116, 117.  
*Virgularia affinis* JUNGENSEN 1916 pp. 1190—1191.  
 — — — 1916 pp. 497—500 figs. 1, 2.

## East Greenland records:

- Virgularia affinis* JUNGENSEN 1915 p. 1191.  
 — — — 1916 p. 498.

## Occurrence at East Greenland:

*Kejser Franz Josephs Fjord Area:*

At Canning Land, 71°30' N, 380 m. (JUNGENSEN 1915, 1916).

Distribution. Atlantic-panarctic. Besides from the above-mentioned locality known from Varanger Fjord in northern Norway, 115—185 m, from a locality north of Iceland, 66°32' N, 15°15' W, 141 m, and from the Kara Sea, 77°14' N, 70°00' E (BROCH 1940<sup>1</sup>).

6. *Virgularia tuberculata* Marshall.

- Virgularia tuberculata* MARSHALL 1883 p. 57 pl. 31 figs. 1—4.  
 — *cladiscus* JUNGENSEN 1904 pp. 33—37.

## East Greenland record:

- Virgularia tuberculata* KRAMP 1933 p. 17.

## Occurrence at East Greenland:

*Kangerdlugssuaq Area:*

Mikis Fjord, 68°15' N, 32°39' W, 150 m. (KRAMP 1933).

Distribution: Atlantic-panarctic—eastern Atlantic-boreal. Common in the eastern part of the Norwegian Sea along the Scandinavian coast in depths from about 75 to 1050 m, though mainly found in depths more than 200 m, and penetrating into the Skagerrak where in Gullmar fjord it has been found in only 35 m depth; known from several localities east and south of Iceland, and from a few localities from north of the Faroes to south-west of Ireland; also found between the Beeren Island and Spitsbergen, in a locality somewhat west of the Taimyr peninsula on the north coast of Siberia, at the above-mentioned locality on the east coast of Greenland, and in the Baffin Bay in 680 m. THOMSON (1927 p. 58) moreover records the species from a locality at the Cap Verde Islands, 628 m. Bathymetrical distribution: 35—1050 m.

7. *Anthoptilum grandiflorum* (Verrill).

- Virgularia grandiflora* VERRILL 1879 p. 239.  
*Anthoptilum thomsoni* KÖLLIKER 1880 pp. 13—14, pl. IV figs. 16—18.  
 — *grandiflorum* JUNGENSEN 1904 pp. 66—67.  
 — — — 1915 pp. 1193—1197.

<sup>1</sup>) I have not actually seen this paper, but has been informed as to its contents by Dr. HJ. BROCH.

- Anthoptilum grandiflorum* HICKSON 1916 pp. 138—143.  
 — — KRAMP 1932 pp. 11—13.  
 — — DEICHMANN 1936 pp. 276—277.

Not previously recorded from East Greenland.

Occurrence at East Greenland:

*Sydøstkyst Area:*

The central part of Lindenows Fjord, ca. 800 m.

Remarks: The present specimen has the usual pale colour with brown tentacles of specimens in alcohol. It is of a rather considerable size and measures in detail as follows:

Total length .....	80 cm.
Length of peduncle .....	12 cm.
Diameter of the upper enlargement of the peduncle	2.2 cm.
Proportion between peduncle and polypar .....	1:5.7 cm.
Breadth of the naked forsal surface of the rhachis....	0.4 cm.
Length of the longer anthocodia with the tentacles...	1.8 cm.

In the lower fifth of the polypar the anthocodia of the autozooids are placed somewhat irregularly, though with a marked tendency to form more or less distinct, oblique rows of 4—5 which often may be a little coalesced basally, whereas in the upper part of the polypar they are fairly regularly placed in oblique and mostly very distinct rows each made up of from 5 to 10 anthocodia which may be coalesced basally and thus forming wings. The arrangement of these rows in the main part of the polypar typically is so that laterodorsally there on each side (nearest the rhachis-streak) are placed about 6—7 anthocodia in a distinct wing, whereas ventrolaterally on each side, alternating with the former, there are placed more irregularly formed rows of 5—6 anthocodia which are somewhat fused basally however usually not forming any distinct wing but rather a cluster. These lateroventral rows may continue over the ventral side and thus there is no distinct ventral stripe.

JUNGERSEN in 1904 described from the North-Atlantic waters near Greenland two species of *Anthoptilum*, viz: *grandiflorum* and *murrayi*. KÜKENTHAL & BROCH 1911 united these into one. JUNGERSEN, however, in 1915 still maintained his view that there were two species and expressed the opinion that the latter authors' material all belonged to his *A. murrayi*. HICKSON 1916 p. 142 also kept JUNGERSEN's species from 1904 apart and used for them JUNGERSEN's names, whereas he regarded KÜKENTHAL & BROCH's specimens from the Indian Ocean as a new species, naming it *A. kükenthali*.

I have not been able to compare the above described specimen with those specimens from the North-Atlantic which JUNGERSEN re-

garded as *A. grandiflorum*, as they have disappeared from our collections, but I have been able to compare it with the specimens of *murrayi* taken by the "Ingolf"; and the specimen from East Greenland differs in general appearance so considerably from these that they after my opinion can

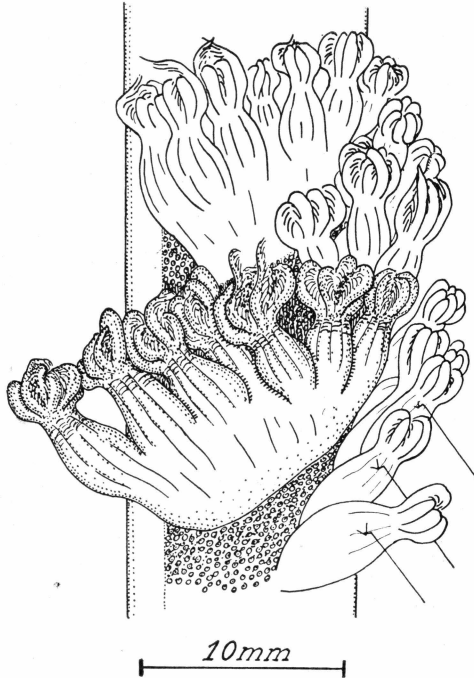


Fig. 5. A section from the middle part of the *Anthoptilum* specimen from Lindeno's Fjord, seen from the right. The figure shows the rhachis-streak to the left and two laterodorsal wings. The anthocodia in the ventrolateral row below have been bent away that they should not cover the wing in the drawing. Those anthocodia seen ventrally between the two laterodorsal wings belong partly to a row on the right lateral side and partly to a row which from the left lateral side passes over the ventral side.

not be specifically identical. The East-Greenland specimen, on the other hand, very closely resembles a specimen from off the Cape of Good Hope which both HICKSON and JUNGENSEN have considered a typical *A. grandiflorum*.

Distribution: Abyssal Atlantic; known from the Davis Strait, the western part of the Atlantic Ocean as far south as off Buenos Ayres, and from off the Cape of Good Hope in the East Atlantic. Bathymetrical distribution: ca. 250—2750 m.

8. *Umbellula encrinus* (L.).

*Isis encrinus* LINNÉ 1758 p. 800.

*Umbellula lindahlia* KÖLLIKER 1875 p. 11.

— *encrinus* DANIELSSEN & KOREN 1884 pp. 13—56 pl. 5—12.

— *lindahlia* + *encrinus* JUNGENSEN 1904 pp. 75—87 pl. 3 figs. 37—51.

— *encrinus* JUNGENSEN 1916 pp. 500—503.

## East-Greenland records:

*Umbellula* KOLTHOFF 1901 p. 176.

— *encrinus* JUNGENSEN 1904 p. 86—87.

— — — 1916 p. 502.

## Occurrence at East Greenland:

*Nordøstkyst Area:*

Off Maroussia, east of Lille Koldewey, 76°40' N, 283 m. (JUNGENSEN 1916).

*Kejser Franz Josefs Fjord Area:*

Entrance of Kejser Franz Josefs Fjord, 73°20' N, 200—300 m. (KOLTHOFF 1901).

Entrance of Kejser Franz Josefs Fjord, off Kap Franklin, 325 m.

Off Canning Land, 71°30' N, 381 m. (JUNGENSEN 1904, 1916).

*Scoresbysund Area:*

Off Kap Brewster, 70°09' N, 22°05' W, 466 m. (JUNGENSEN 1904, 1916).

*Sydøstkyst Area:*

In the central part of Lindenows Fjord, ca. 800 m.

Remarks: The two specimens which have been captured in East Greenland since JUNGENSEN published his report on the Alcyonaria from this area both show some interesting features and a few data will therefore be given here.

The specimen from Lindenows Fjord, which was collected by Mr. P. M. HANSEN, is a large one, measuring 154 cm in total length, and has a cluster containing a very considerable number of anthocodia, viz: 55, the largest of which measures 5.5 cm. In this *Umbellula*-specimen the tentacle in most of the siphonozooids on the rhachis club is pinnate. BROCH (1911 p. 7) in his description of *Umbellula gracilis* Marshall stated that the siphonozooids had a "thin tentacle, often with pinnules", and HICKSON (1916 p. 124) in his important account on the Pennatulacea said that such (the pinnate tentacles of the siphonozooids) had not been described in any other species of *Umbellula*, which, however, was not correct as already KOREN & DANIELSSEN in 1884 p. 54 had described such in *U. encrinus* and pl. 10 fig. 56 given an excellent figure of a siphonozooid with a pinnate tentacle; KÜKENTHAL & BROCH 1913 mentioned this feature too in some of the species they discussed. As the tentacles

of the siphonozooids are often drawn in or else worn off it is usually rather difficult to state anything about them, I have, however, also in specimens of *U. encrinus* from the cold part of the Norwegian Sea seen pinnate tentacles on the siphonozooids though they were far from so common as in the specimen from the Lindenow's Fjord.

That the specimen from Lindenow's Fjord is not an *U. gracilis* is shown by its distinctly quadrangular axis with the four deep furrows.

The specimen from off Kap Franklin is also a rather large one. It is about 113 cm in total length and measures in detail as follows:

Length of the basal bulb (= region V by HICKSON 1916 p. 117 fig. 28) .....	2.3 cm.
Diameter of same .....	1.2 cm.
Length of the »lower swelling of the stalk» (= HICKSON's region IV) .....	9.5 cm.
Diameter of same .....	1.3 cm.
Length of the slender part of the "stem" (= HICKSON's region III) .....	90 cm.
Smallest diameter of same .....	ca. 0.25 cm.
Length of the rhachis club (= HICKSON's region II) .....	4.5 cm.
Breadth of same .....	3.1 cm.
Length of the largest authocodium .....	4.3 cm.
Length of corresponding tentacles .....	4 cm.

The number of autozooids in the cluster is 27, and this specimen is remarkable in besides having an extra autozooid, outside the cluster, about 16 cm below the rhachis club, where it is placed on a small, slightly protruding part of the coenenchyma with rather many siphonozooids. The length of the anthocodium of this single authozooid is 0.8 cm and its tentacles measure up to 1.5 cm.

Distribution: Atlantic-panarctic; rather common in the Norwegian Sea and the Baffin Bay and from here penetrating into the Denmark Strait, 1070 m, and the Faroe Channel, 1097—1300 m; besides known from the Kara Sea, and the Arctic Sea, 80°35' N, 7°19' E. A juvenile unidentifiable *Umbellula* has also been taken in the southern part of the Davis Strait in 2700 m. Bathymetrical distribution: about 200—1500 m.

JUNGERSEN (1916 p. 502) doubts whether any of the specimens of *Umbellula* hitherto taken in the Atlantic Ocean outside its northernmost subarctic parts should be identical with *U. encrinus*. The finds of *U. encrinus* and *U. lindahlia* in the Biscaya Bay and between Madeira and the Azores, 1732 and 4400 m depth respectively, recorded by I. A. THOMSON 1927 p. 61 must also be taken with some scepticism. These latter specimens may possibly belong to *U. gracilis* Marshall.

## GENERAL REMARKS

The Octocoral-fauna of East Greenland, as it is known at present, is made up of eight species, viz: a larger group comprising six species which are known from the high-arctic region north of about 69° N and also may be found at the south-east coast, and a smaller group of, at present, only two species, which are of boreal and abyssal-Atlantic distribution respectively and only found at the south-east coast in greater depth, i. e. in the comparatively warm water of Atlantic origin which is met with here.

The larger group, the arctic element, comprises the species:

*Gersemia rubiformis*  
*Capnella glomerata*  
— *florida*  
*Virgularia glacialis*  
— *tuberculata*  
*Umbellula encrinus*

These species may all be found at negative as well as positive temperatures. Two of them: *Virgularia glacialis* and *Umbellula encrinus*, are, as far as is known, in their distribution bound to panarctic and mainly high-arctic regions; *Umbellula* specimens from the abyssal Atlantic has certainly several times been recorded as *U. encrinus*, but in none of these cases the correctness of the identification seems quite certain and may therefore be doubted. The other four species in this group occur besides in panarctic regions also in deeper water in boreal regions, *Virgularia tuberculata* in the boreal East-Atlantic, *Capnella florida* as well in the boreal East- as the boreal West-Atlantic, and *Gersemia rubiformis* and *Capnella glomerata* only in the boreal West-Atlantic, none of the latter two being found in the East-Atlantic south of about 60° N.

Of this arctic element *Gersemia rubiformis* is circumpolar whereas none of the other five have been found west of the polar stream which crosses the polar basin from about the western Siberia to Greenland and the American archipelago, all the species being of eastern (or Atlantic) arctic distribution.

In their vertical distribution these species are mainly archibenthal to abyssal, but all the four Nephthyids may in high-arctic regions be met with in fairly shallow water, i. e. depths below about 50 m, *Gersemia rubiformis* even at the beach.

To the arctic element enumerated above two other species, viz: the higharctic Alcyonacean: *Ceratocaulon wandeli* Jungersen and the panarctic Stoloniferan: *Clavularia alba* (Grieg), will probably have to be added when more thorough investigations have been carried on along the East Greenland coast.

Of the Octocoral species at present known from East Greenland only two are, as indicated above, not arctic, viz:

*Stenogorgia borealis*  
*Anthoptilum grandiflorum*

the first of these being a northern boreal form, the other an abyssal Atlantic form. As, however, the way in which the collecting has been carried on along the East-Greenland coast and the gear used for dredging have not in general been very suitable for capturing such Octocorals as Sea-pens and Gorgonarians, it may be concluded with certainty that several more species will be found at the south-east coast in deeper water where the occurrence of archibenthal and abyssal Atlantic forms will not be influenced by the cold East-Greenland Current, and probably most of the species known from the archibenthal and abyssal North-Atlantic will be found here sooner or later.

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