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SPONGES FROM JØRGEN BRØNLUND FJORD,
NORTH GREENLAND

By OLE SECHER TENDAL

WITH 5 FIGURES IN THE TEXT

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OLE SECHER TENDAL
 Zoological Laboratory,
 University of Copenhagen
 Universitetsparken 15
 DK-2100 København Ø
 Denmark

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INTRODUCTION

During the Fourth Peary Land Expedition in the summer 1966 a little collection of sponges was obtained. For details on sampling stations see Just 1970. As most of the species in the collection are represented by only one, often small, specimen, it has not been possible to work out complete descriptions of the skeleton arrangements and to establish the variation. For this reason the material possesses mainly zoogeographical interest.

The sponges known from East Greenland were enumerated by LUNDBECK (1909) and BRØNDSTED (1914). Later on the materials from two Danish expeditions were worked up by BRØNDSTED (1916, 1933). Moreover some species of sponges were taken in the area by Russian expeditions in the years 1955–1958 (KOLTUN 1964).

LIST OF SPECIES IN THE COLLECTION

- Polymastia mammillaris* (MÜLLER, 1806)
- Mycale lingua* (BOWERBANK, 1866)
- Haliclona permollis* (BOWERBANK, 1866)
- Clathrina coriacea* (MONTAGU, 1818)
- Sycon ciliatum* (FABRICIUS, 1780)
- Grantessa glacialis* (HAECKEL, 1872)
- Grantia asconoides* (BREITFUSS, 1896)
- Achramorpha schulzei* (BREITFUSS, 1896).

The samples are preserved in alcohol, and the colours given are the present. Averages given are based on 25–50 measurements.

The material is kept in the Zoological Museum, University of Copenhagen.

DESCRIPTION OF THE MATERIAL

Class **Demospongia**Order **Hadromerina**Family **Polymastidae***Polymastia mammillaris* (MÜLLER, 1806)

For synonymy, see TOPSENT 1900, p. 131.

Locality. St. 52. Off Kap Knud Rasmussen. 29/7/1966. 160–180 m.
One specimen growing on an arenaceous foraminiferan.

Description. The sponge is cushion-shaped, about 4 mm in diameter and 2 mm high. The colour is whitish brown and the consistency is firm. The surface is strongly hispid with projecting skeleton spicules. No pores and oscules are seen, and no papillas are developed.

The skeleton is strongly radiate. From the inner of the sponge polyspicular fibres reach the cortex, where they spread more or less fan-shaped. The cortex is about $500\ \mu$ thick and very dense. It is composed of the fans of skeleton spicules together with numerous radiating short spicules.

Spicules. (Fig. 1). The skeleton spicules are styles, $800\text{--}1600\ \mu$ in length, on an average $1105\ \mu$. The width is $6\text{--}12\ \mu$. They are straight or slightly curved, with indistinct touch of head.

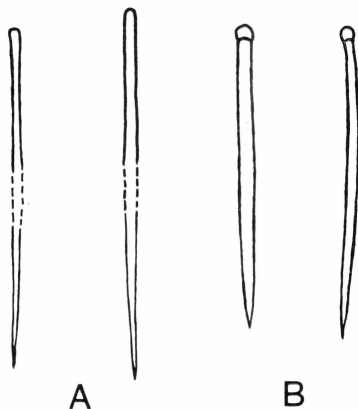


Fig. 1. *Polymastia mammillaris*. A Styles ($100\times$). B Tylostyles ($100\times$).

The short spicules in the cortex are tylostyles, $160\text{--}720\ \mu$ in length, on an average $380\ \mu$. The width is $6\text{--}12\ \mu$. They are straight or slightly curved, often just under the well-developed head.

Remarks. The sponge is here referred to *P. mammillaris* in spite of the lack of papillae. LEVINSSEN mentions (1886, p. 347) small specimens with only one indistinct papilla on the top.

Distribution. Cosmopolite.

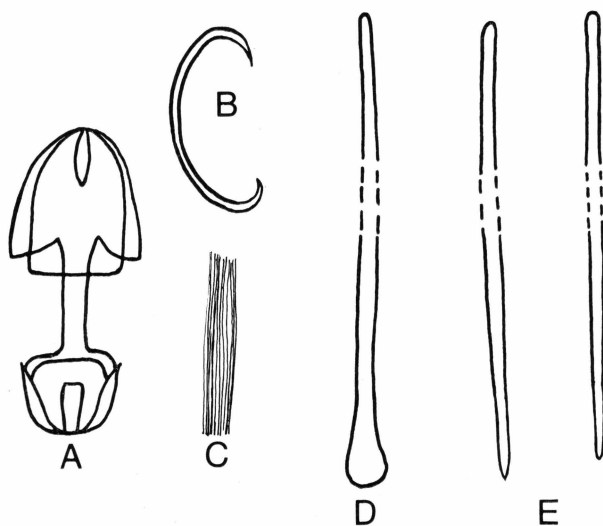


Fig. 2. *Mycale lingua*. A Anisochela (400 \times). B Sigma (1000 \times). C Trichodragma (400 \times). D Abnormal spicule (100 \times). E Styles (100 \times).

Order Poecilosclerina

Family Desmacidonidae

Mycale lingua (BOWERBANK, 1866)

For synonymy, see LUNDBECK 1905, p. 29 and TOPSENT 1924, p. 83.

Locality. St. 69. Off Vendenæs. 3/8/1966. 40–45 m. Clay. One specimen.

Description. The sponge is of nearly conical form, about 8 cm in diameter and 5,5 cm high. The colour is whitish. The consistency is soft, and the sponge is easily torn. The surface is somewhat rugged, and projecting spicules make it hispid. Pores are not seen, as the pore-furrows are contracted and only visible as slightly marked lines. Oscules are not seen.

Spicules. (Fig. 2). The megascleres are styles, 720–1040 μ in length, on an average 872 μ . The width is 12–18 μ . They are straight or, more rarely, slightly curved. They are tapering towards both ends. The pointed end is only rarely sharply pointed, most often it is rounded.

Spicules of the abnormal type mentioned by LUNDBECK (1905, p. 31) are found, but in very small number.

The anisochelas are remarkably rare. They are varying very much in length, 15–102 μ . There seems not to be clear dimension-categories, but this cannot be proved owing to the scarcity of these spicules.

The sigmas are varying in length from 20–30 μ , on an average 24,7 μ . They are variously curved.

The trichodragma are 37–75 μ in length. Most of them are about 60 μ . The single raphides are less than 1 μ in width. They are almost always found in trichodragmas.

Distribution. Widely distributed in the North Atlantic and the Arctic.

Order **Haplosclerina**

Family **Haliclonidae**

Haliclona permollis (BOWERBANK, 1866)

For the problems of the naming, see BURTON 1934, p. 535; LAUBENFELS 1936, p. 39; 1954, p. 64; 1957, p. 156.

Locality. St. 69. Off Vendenæs. 3/8/1966. 40–45 m. Clay. One specimen.

St. 70. Same locality and conditions as St. 69. One specimen.

Description. The two specimens are cushion-shaped. The greatest measures about 15×5×5 mm. The consistency is soft. The tissues of the sponges have nearly been lost so only the skeletons are left. These consist of oxeads 210–300 μ in length, on an average 247 μ . The width is 7,5–12,5 μ , on an average 10,8 μ . The spicules are connected at the ends by little spongin, and the skeleton is of isodictyal type.

Remarks. As the dermal membrane is lost, it is not possible to say, whether or not a dermal skeleton originally was present. Nothing in the skeleton indicates this. In reality it is not possible to say, whether it is a *Haliclona* or an *Adocia*.

A reexamination of the previously reported specimens of “*Reniera cinerea*” from East Greenland, which are kept in the Zoological Museum in Copenhagen, showed that in two samples (LUNDBECK 1909, p. 432; BRØNSTED 1933, p. 8) there is no dermal skeleton, whereas in the third (BRØNSTED 1916, p. 480) a dermal spiculation is well-developed.

Distribution. Presumably cosmopolitan.

Class **Calcarea**Order **Clathrinida**Family **Clathrinidae***Clathrina coriacea* (MONTAGU, 1818)

Locality. St. 52. Off Kap Knud Rasmussen. 29/7/1966. 160–180 m. Clay. One specimen on a worm tube.

St. 69. Off Vendenæs. 3/8/1966. 40–45 m. Clay. One specimen.

Description. Both specimens are stipitate. The one from St. 69 is 18 mm high, with the diameter about 1 mm at the base of the stalk, increasing to 6 mm in the head mass of the sponge, which consists of anastomosing tubes.

Spicules. Regular triactines with rays 30–180 μ in length, 5–10 μ in width and rounded ends. Tetractines are rare; they are of the same dimensions as the triactines, but with a short fourth ray.

Distribution. Cosmopolite.

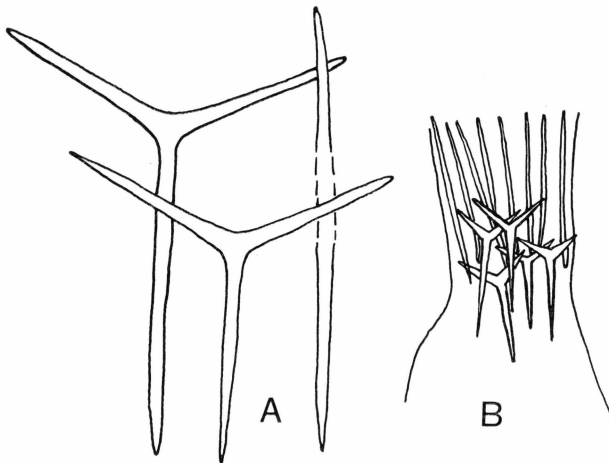


Fig. 3. *Sycon ciliatum*. A Triradiates and oxea (400 \times). B Oscular skeleton (100 \times).

Order **Sycettida**Family **Sycettidae***Sycon ciliatum* (FABRICIUS, 1780)

Locality. St. 56. N.E. of Kap Knud Rasmussen. 30/7/1966. 190–200 m. One specimen.

Description. The specimen is very small, only 2 mm long. It is of the ordinary form, with distinct collar.

Spicules. (Fig. 3). It has not been possible to clarify the position of the spicule-types in the skeleton.

Triradiates, both regular and sagittal are seen in the wall. The rays are 38–115 μ in length, 5–7,5 μ in width.

Tetraradiates are not found.

Diactines, straight or slightly curved, are of varying length. The longest measured was 270 μ , but it was broken in the end. The width is 2,5–7,5 μ .

As shown on fig. 3 triradiates are found well up on the collar.

Distribution. Cosmopolite.

Family **Heteropidae**

Grantessa glacialis (HAECKEL, 1872)

For synonymy, see BURTON 1963, p 332.

Locality. St. 40. Off the station. 21/7/1966. 30 m. Sand and clay. One specimen.

Description. The sponge is cylindrical, 21 mm long and 2 mm in diameter. It is somewhat tapering towards the oscule end. The colour is white and the consistency soft. The surface is smooth. The osculum is naked.

Spicules. Ectosomal sagittal triradiates with paired rays 90–150 μ in length, and 6–12 μ in width. Basal ray 90–150 μ in length, 12 μ in width. Subectosomal and subendosomal sagittal triradiates of the same dimensions, paired rays 120–240 μ in length, 12 μ in width. Basal ray 300–420 μ in length and 12 μ in width. Endosomal tetraradiates with apical ray (in the gastral lumen) 60–150 μ in length, 6–12 μ in width and basal rays (in the gastral wall) 120–180 μ in length, 12 μ in width.

Distribution. Arctic.

Family **Grantidae**

Grantia asconoides (BREITFUSS, 1896)

Locality. St. 52. Off Kap Knud Rasmussen. 29/7/1966. 160–180 m. Clay. One specimen on a worm tube.

Description. The 6 mm long body is situated on a pronounced 4 mm long stalk. The body is about 1,5 mm in diameter. The colour is yellow, and the consistency is rather soft. The surface is smooth. The osculum is terminal, without protecting spicules.

The skeleton (Fig. 4) is composed of ectosomal tangential triradiates, saggittal tube triradiates, subendosomal sagittal triradiates

and endosomal tetra- and triradiates with the apical ray projecting in the gastral lumen.

Spicules. Tangential ectosomal triradiates with rays 87–113 μ in length and 5–7,5 μ in width. Sagittal tube triradiates with paired rays 75–100 μ in length and basal ray 62–113 μ in length. Width of rays 5–7,5 μ . Subendosomal sagittal triradiates with paired rays about 75 μ and basal ray about 100 μ in length, width about 7,5 μ . Endosomal tetra- and triradiates with apical ray 75–90 μ and other rays about 100 μ in length. Width 5–7,5 μ .

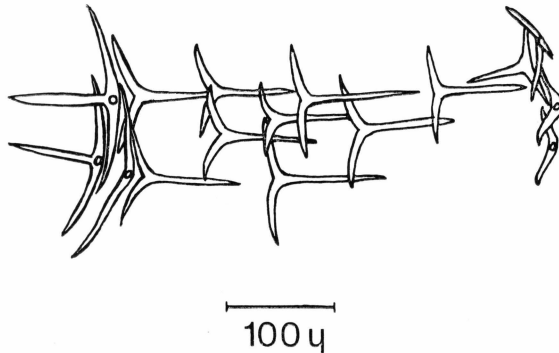


Fig. 4. Skeleton of *Grantia asconoides*. Gastral lumen to the left.

Remarks. The species was recorded for the first time from Greenland by KOLTUN (1964, p. 144).

Distribution. Arctic.

Achramorpha schulzei (BREITFUSS, 1896)

Ebnerella Schulzei BREITFUSS 1896, p. 429.

Ebnerella schulzei, BREITFUSS 1898, p. 113; 1898, p. 28; 1898, p. 8.

Ebnerella Schulzei, LUNDBECK 1909, p. 462.

Achramorpha schulzei, DENDY and ROW 1913, p. 765.

Achramorpha schulzei, BREITFUSS 1933, p. 237, p. 249.

Grantessa schulzei, KOLTUN 1964, p. 144, p. 161.

Achramorpha schulzei, BURTON 1963, p. 341.

Locality. St. 69. Off Vendenæs. 3/8/1966. 40–45 m. Clay. Two specimens.

Description. The greatest specimen is cylindrical, about 10 mm long and 3 mm in diameter, somewhat tapering towards the osculum end. The colour is yellowish brown and the consistency is firm. The surface is hispid with projecting spicules. Around the osculum is a well-developed fringe of numerous small rhabds. On the other specimen the osculum is naked.

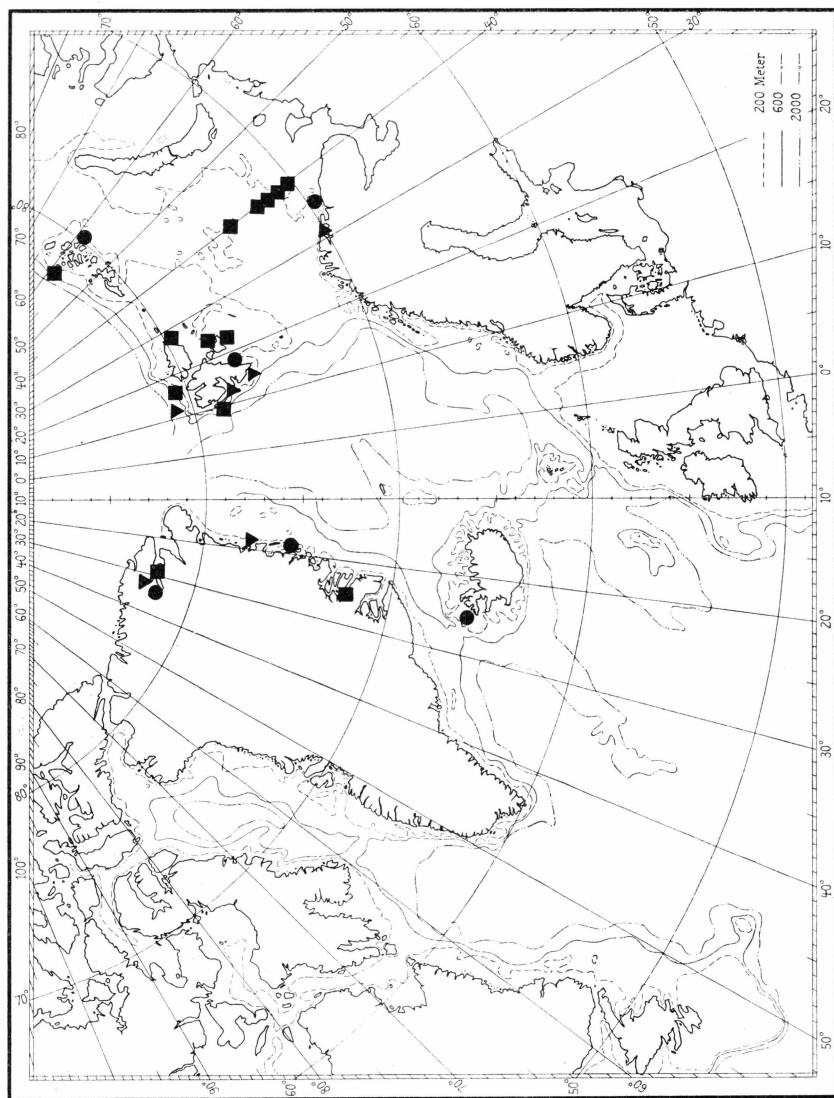


Fig. 5. The distribution of *Grantia glacialis* ●, *Grantia asconoides* ▼ and *Achramorpha schulzei* ■.

Spicules. Large oxeas up to 1 mm in length, 12–18 μ in width. Microxea 80–125 μ in length, 2.5 μ in width. Ectosomal regular triradiates with rays 120–210 μ in length and 6–8 μ in width. Ectosomal sagittal triradiates with basal rays 180–300 μ and paired rays 120–210 μ in length, width of all rays 6–8 μ . Endosomal sagittal triradiates with basal rays 360–420 μ and paired rays 120–180 μ in length. All rays about 10 μ in width. Endosomal tetraradiates with apical ray 90–150 μ in length and 6–12 μ in width. Other rays 150–180 μ in length and 6–9 μ in width.

Remarks. In the sample microxas were not found in the dermal membrane, only in the oscular fringe.

Distribution. Arctic.

ZOOGEOGRAPHICAL REMARKS

The collection was made about 82° N. and represents some of the most northerly known sponges. North of Spitsbergen and Franz Josefs Land sponges were taken by Russian expeditions (KOLTUN 1964). From Greenland the most northerly hitherto reported are from 77°–78° N. (BRØNSTED 1916; KOLTUN *l.c.*).

Five of the eight species in the collection are distributed outside the Arctic. Four of these (*Polymastia mammillaris*, *Haliclona permollis*, *Clathrina coriacea*, *Sycon ciliatum*) are cosmopolites, the fifth (*Mycale lingua*) is widely distributed in the North Atlantic area. The remaining three species are at present only known from the Arctic (Fig. 5).

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