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## DESCRIPTION AND CLASSIFICATION OF DICTYOCERATID SPONGES FROM THE NORTHERN RED SEA

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### ABSTRACT

Seven dictyoceratid sponge species were collected from the Gulf of Aqaba, Northern Red Sea. Two new species were recognized: *Scalariispongia aqabaensis* n. sp. and *Spongia lesleighae* n. sp. Five others belong to the known species, *Fascaplysinopsis reticulata* (Hentschel, 1912), *Phyllospongia papyracea* (Esper, 1806), *Hyattella tubaria* (Lendenfeld, 1889), *Spongia arabica* (Keller, 1889) and *Spongia irregularis* (Lendenfeld, 1889). *Hyattella tubaria*, considered a synonym of *H. intestinalis* Lamarck, 1814) by Cook & Bergquist (2002) is demonstrated to be a valid species. Specimens are described and illustrated by photographs of preserved specimens and microphotographs of sections.

Keywords: Demospongiae, Dictyoceratida, taxonomy, new species, Gulf of Aqaba, Red Sea

### INTRODUCTION

The diversity and prevalence of sponges of the Red Sea remains underexplored, with only a handful of monographic reports, most of which are antiquated. Nevertheless, from this literature dictyoceratid sponges are exceptionally diverse (37 species recorded). Although many of these comprise single, old, or (currently) dubious records, many others concern species from widely different localities, such as *Spongia zimocca* Schmidt, 1862, *Hippospongia communis* (Lamarck, 1814), *Fasciospongia cavernosa* Schmidt, 1862, *Ircinia variabilis* (Schmidt, 1862), and *Dysidea fragilis*

(Montagu, 1818). Others are clearly dubiously allocated, e.g. *Thorecta meandrinus* and *Stelospongia lordi*, both species distinguished by Lendenfeld, 1889 and reported from wide-ranging locations including Southern Australia and the Red Sea. Thus, the published fauna is in urgent need of revision, and the living fauna of the Red Sea requires further investigation. The order in which the species are treated here follows the Systema Porifera (Hooper & Van Soest, 2002). The present study concerns dictyoceratid sponges collected recently in the Ras Mohamed area, Egyptian part of the Gulf of Aqaba, in the Northern Red Sea. It is part of an ongoing series of papers on

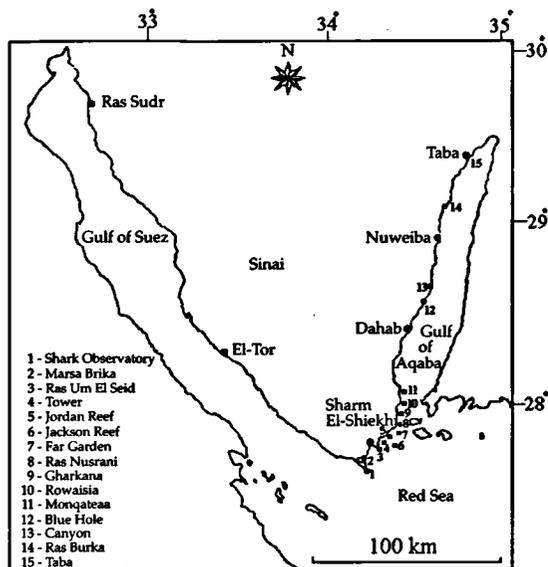


Fig. 1. Localities from which sponges were collected.

sponges from the area (Helmy & Van Soest, submitted). The main aim of the work is to identify and classify common sponge species from the Northern Red Sea in order to build a modern database of the sponges that are prevalent in this region. This work may facilitate future projects investigating the bioactivity of Red Sea sponges against pathogenic organisms and other uses beneficial to mankind.

## MATERIALS AND METHODS

Sponge specimens were collected by SCUBA diving in various localities of the Gulf of Aqaba, indicated on the map (Fig. 1). Specimens were numbered, then morphologically described following the format 'colour/shape/texture/skeleton'. The specimens were transferred to ethanol 70% and incorporated in the collections of the Zoological Museum of Amsterdam (ZMA); fragments were deposited in the Marine Science dept., Suez Canal University, Egypt.

Sponge sections were prepared by cutting as thin a slice as possible parallel to the sponge surface (tangential section) and a similar thin cross section at right angles from surface to the inner parts (choanosomal section) of the sponge. The sections were air-dried and mounted on slides with Canada Balsam.

**MATERIAL.** - ZMA Por. 17344, *Fascaplysinopsis reticulata* (Hentschel, 1912), El Gharkana, 5 m, 27°14'N 33°51'E.

ZMA Por. 7909, *Fascaplysinopsis reticulata* (Hentschel, 1912), Indonesia, Snellius II Exped. stat. 016/II/01, Tukang Besi islands, southern reef of Karang Kaledupa, east of entrance, 1-10 m, 05°56'S 123°48'E, 06-IX-1984, coll. R.W.M. van Soest.

ZMA Por. 17345, *Scalariispongia aqabaensis* n. sp., holotype, El Gharkana, 11 m, 27°14'N 33°51'E.

ZMA Por. 207, *Fasciospongia cavernosa* sensu Lévi, 1965, Eritrean Red Sea, Dahlak archipelago, Nocrá, 18-III-1962 (registered as '*Fasciospongia ridleyi* (Burton, 1952)', new combination).

ZMA Por. 2459, *Fasciospongia cavernosa* sensu Lévi, 1965 (same data as ZMA Por. 207 but registered under this name).

ZMA Por. 17346, *Phyllospongia papyracea* (Esper, 1806), Hurgada, 7 m, 27°14'N 33°51'E.

ZMA Por. 15201, *Phyllospongia papyracea* (Esper, 1806), Indonesia, SW Sulawesi, Pulau Badi, coll. N.J. de Voogd, 28-VI-1997.

ZMA Por. 17347, *Hyatella tubaria* Lendenfeld, 1889, Safaga, 3 m, 26°46'58"N 33°56'40"E.

ZMA Por. 17348, *Spongia irregularis* Lendenfeld, 1886, El Rowaisia, 4 m, 28°10'59"N 34°26'28"E.

ZMA Por. 17349, *Spongia arabica* Keller, 1889, El Monqateaa, 4 m, 28°12'29"N 34°25'30"E.

ZMA Por. 17350, *Spongia leslighae* n. sp., holotype, El Rowaisia, 5 m, 28°10'59"N 34°26'28"E.

## SYSTEMATIC DESCRIPTIONS

Phylum Porifera

Class Demospongiae

Order Dictyoceratida

Family Thorectidae

Subfamily Thorectinae

Genus *Fascaplysinopsis* Bergquist, 1980

***Fascaplysinopsis reticulata*** (Hentschel, 1912)

Figs. 2A-B

*Aplysinopsis reticulata* Hentschel, 1912: 437, pl. 15 fig. 1, pl. 16 fig. 9.

*Fasciospongia cavernosa*; Lévi, 1965; 24 (not: Schmidt, 1862).

?*Cacospongia ridleyi* Burton, 1952: 172.

**MATERIAL.** - ZMA Por. 17344, El Gharkana, 5 m, coll. T. Helmy, 30-VII-2000.

**DESCRIPTION.** - Colour: black, with white fibres on surface. Choanosome is brownish.

Shape: massive irregular, up to 15 cm high.

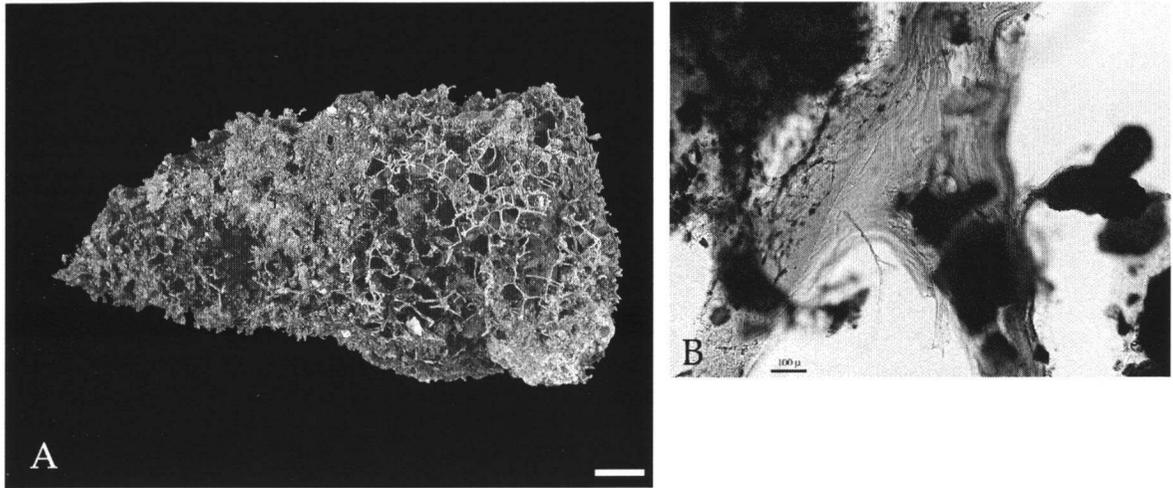


Fig. 2. *Fascaplysinopsis reticulata* (Hentschel, 1912). A, habit (scale bar = 1 cm). B, fibres (scale bar = 100  $\mu$ m).

Surface: conulose (Fig. 2A) and in life characterized by a network of superficial hard fibres distributed over the whole surface. They are connecting conules and forming ridges 2 mm high. Surface covered in some parts by a sand coat, which appears non-structural, induced by high amount of suspended sediment.

Texture: firm, hardly compressible and difficult to tear. This is also the case with the superficial fibres, which are hard to cut or tear.

Skeleton: primary fibres which are thick, fasciculated and cored with detritus and small shells of foraminiferans and small gastropods. The fibres on the surface are of very large diameter (200-280  $\mu$ m). Primary and secondary fibres composing a network of hard fibres on the surface connecting the conules. Mesh size of the interconnected fibres ranged between 0.2 and 0.5 mm. Secondary fibres are not cored with detritus and branch in irregular fashion, they measure 30-145  $\mu$ m (Fig. 2B). Choanosomal skeleton similar to the superficial skeleton.

ECOLOGY. - Shallow-water; on dead coral substrates and in mangrove communities especially on the pneumatophores of *Avicennia marina*.

DISTRIBUTION. - This sponge is widespread in the region, recorded from El Gharqana, El Monqateaa, and El Rowaisia at Nabq protectorate, north of the Sharm El Sheikh area on the Sinai Peninsula (pers. obs.). Elsewhere, recorded

from many Indian Ocean and West-Pacific localities.

DISCUSSION. - We were able to confirm the specific identity of our material by comparing our material with that of Indonesian specimens in collections of ZMA. Hentschel (1912) described *Aplysinopsis reticulata* (now *Fascaplysinopsis*) as erect, massively branched. His figure shows that it is upright lobose (see also Bergquist, 1980). This shape is also found in *F. reticulata* from the northern Red Sea.

*F. reticulata* is the only species recognized in the genus *Fascaplysinopsis*. Bergquist (1980) and Cook & Bergquist (2002) give primary fibre diameter as up to 5 mm and secondary connectives as up to 1.5 mm. Both Hentschel's (1912) and our specimen show fibres much thinner (200-300  $\mu$ m), and we wonder whether Bergquist (l.c.) meant to indicate that the fascicles of fibres measure up to 5000  $\mu$ m, rather than the individual fibres.

Hentschel (1912) may have described the colour of the facultative sandy cover on the surface of the sponge when he gave the colour of *F. reticulata* as yellow greyish or black. Likewise, the colour of Red Sea specimens is basically black with brownish choanosome. This is more or less confirmed by Bergquist (1980), who described the sponge surface colour as shiny black and the interior pale lemon yellow.

Lévi's (1965) record of *Fasciospongia cavernosa* conforms to the present species, as we were able

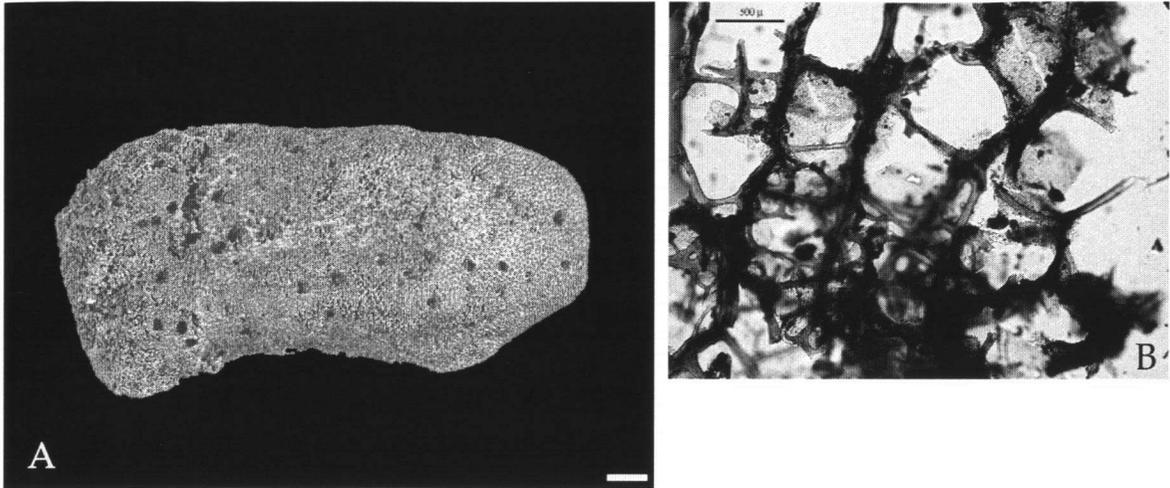


Fig. 3. *Scalarispongia aqabaensis* n. sp. A, habit (scale bar = 1 cm). B, skeleton showing the ladder-like arrangement of the fibres (scale bar = 500  $\mu$ m).

to establish from examining his specimens, ZMA Por. 207 and 2457, from the Dahlak Archipelago, Eritrea. Lévi (1965) suggested that this material was also synonymous with *Cacospongia ridleyi* Burton, 1952. For a more extensive treatment of this suggestion see below.

Genus *Scalarispongia* Cook & Bergquist, 2000

***Scalarispongia aqabaensis* n. sp.**

Figs. 3A-B

**MATERIAL.** - Holotype ZMA Por. 17345, El Gharkana, 11 m, coll. T. Helmy, 30-VII-2000. Many similar specimens were observed but not collected.

**DESCRIPTION.** - Colour: black alive and preserved. Colour of the subectosomal region is light brown.

Shape: regular or irregular massive pads or cushions.

Surface: unarmored, microconulose with conules 1 or 2 mm high and 2 to 4 mm apart. Oscules evenly distributed over the surface, diameter 3-5 mm (Fig. 3A).

Texture: tough, difficult to tear and cut, hardly compressible when *in situ* and incompressible when preserved in alcohol.

Skeleton: primary spongin fibres 90-150  $\mu$ m and secondary 25-60  $\mu$ m; they are concentrically laminated. The primary fibres are cored with detritus while the secondary fibres are uncored. Primary fibres and secondary fibres are arranged in a lad-

der-like pattern (Fig. 3B). They interconnect at right angles to form regular meshes, measuring 294-505  $\mu$ m.

**ECOLOGY.** - Attached to dead corals or hard rocks, mostly on the fore reef.

**DISTRIBUTION.** - It is widely distributed: Shark Observatory, Ras Um El Seed, Ras Nusrani and Shark bay sites in the southern part of the Gulf of Aqaba.

**ETYMOLOGY.** - Named after the type locality, the Gulf of Aqaba.

**DISCUSSION.** - This is the first record of the genus *Scalarispongia* from the Red Sea. The type species *Scalarispongia scalaris* is a Mediterranean species established by Schmidt, 1862: 26, see also Vacelet (1959). *S. scalaris* is characterized by its ladder-like structure.

There is a slight possibility that our material is conspecific with *Cacospongia ridleyi* Burton (1952), described from the Gulf of Aqaba. In his description, Burton compared the external form of his new species to *Cacospongia cavernosa* Ridley, 1884 and *Fasciospongia cavernosa* Schmidt, 1862. He described the skeleton as having large meshes and heavily cored with sand grains and other foreign bodies. The description of this specimen appears in agreement with *Fasciospongia cavernosa* Schmidt sensu Lévi, 1965 (= *Fascaplysinopsis reticulata*, see

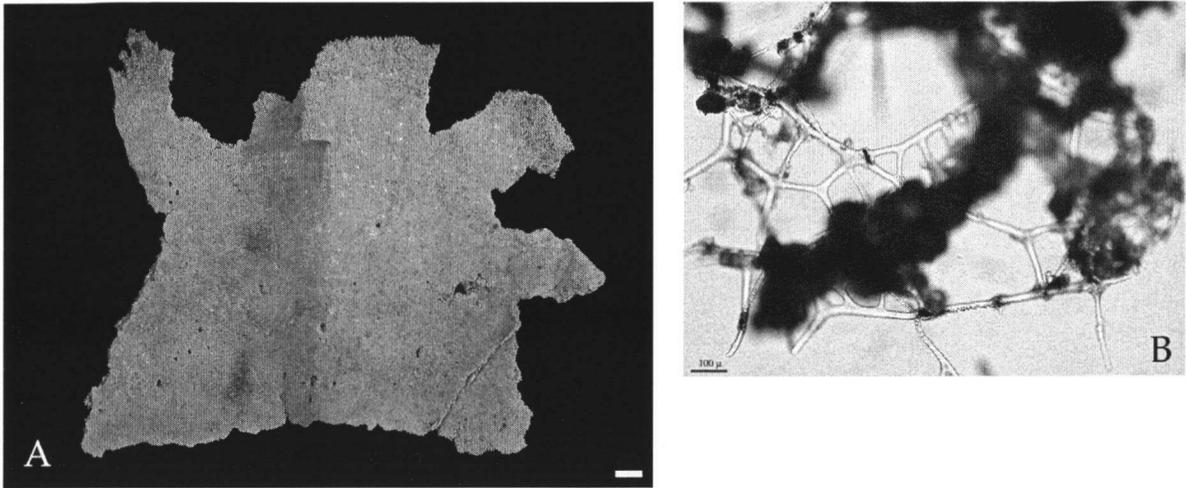


Fig. 4. *Phyllospongia papyracea* (Esper, 1806). A, habit of damaged specimen (scale bar = 1 cm). B, skeleton (scale bar = 100  $\mu$ m).

above), and indeed Lévi (l.c.) assigned *C. ridleyi* to *F. cavernosa*. Further details of the type specimen are not provided by Burton (1952). We asked Ms Clare Valentine (BMNH) for the loan of the type specimen of *Cacospongia ridleyi*, but she informed us that it appears to be absent or no longer present in the London collections, and that its whereabouts are unknown. In view of the fact that Burton's remarks do not convey a distinct similarity with our material and since we will probably never be able to ascertain whether our present material conforms to *C. ridleyi* or not, we feel justified in erecting this new species.

The present record extends the distribution of the genus *Scalarispongia* to the Red Sea.

Subfamily Phyllospongiinae  
Genus *Phyllospongia* Ehlers, 1870

***Phyllospongia papyracea* (Esper, 1806)**

Figs. 4A-B

*Spongia papyracea* Esper, 1806: 38, pl. 65, 65A figs. 1-2.

**MATERIAL.** - ZMA Por. 17346, Hurgada, 7 m, coll. T. Helmy, 12-IX-2000.

**DESCRIPTION.** - Colour: beige.

Shape: lamellate foliose flat sponge taking the form of a wide leaf or fan-shaped lamella, 1-2 mm thick; sponge body attached to the substra-

tum by a thinner stalk 2-3 cm long, ending in a wider base or holdfast, 4-6 cm wide (Fig. 4A).

Surface: smooth with many evenly distributed oscula, 2 mm in diameter.

Texture: easily damaged and compressible in alcohol.

Skeleton: the surface is covered by a sand coat (Fig. 4B). The skeleton is composed of primary fibres 60-85-105  $\mu$ m cored with sand particles. Secondary fibres 11-14-17  $\mu$ m have a light yellow colour and form with the interconnected tertiary fibres of 3-5  $\mu$ m a network of meshes 40-65-235  $\mu$ m. There is no clear differentiation into ecto- and choanosomal skeleton as the sponge is only 1-2 mm thin (Fig. 4B).

**ECOLOGY.** - Although the present specimen was found unattached, it is likely to have originated from reefs.

**DISTRIBUTION.** - It was collected at only one site in Ras Mohamed protectorate, and is apparently rare. Elsewhere, its common all over the Indo-West Pacific.

**DISCUSSION.** - The specimen is considerably damaged and to verify the identification we compared it with specimens in the collection of ZMA (e.g. ZMA Por. 15201 from Indonesia). The extremely thin lamellate body is shared with these ZMA specimens and conforms also to recent re-descriptions in Bergquist et al. (1988).

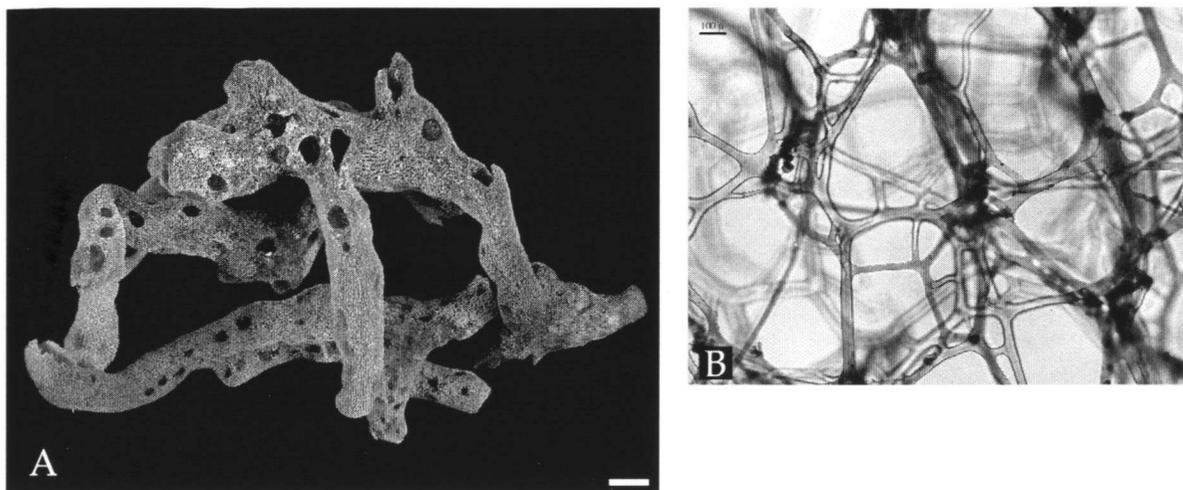


Fig. 5. *Hyattella tubaria* Lendenfeld, 1889. A, habit (scale bar = 1 cm). B, superficial skeleton (scale bar = 100  $\mu$ m).

Family Spongiidae

Genus *Hyattella* Lendenfeld, 1888

***Hyattella tubaria*** Lendenfeld, 1889

Figs. 5A-B

*Hyattella tubaria* Lendenfeld, 1889: 117, pl. 15 fig. 3.

**MATERIAL.** - ZMA Por. 17347, Safaga, 3 m, coll. T. Helmy, 14-IX-2000.

**DESCRIPTION.** - Colour: brown alive and preserved.

Shape: a network of interconnecting hollow tubes 30 cm wide, tubes 1-2 cm thick. The lumen of the tubes ranges between 7 to 15 mm and the thickness of the walls 2-4 mm.

Surface: smooth with well distributed oscula 7-8 mm in diameter.

Texture: compressible and easy to tear (Fig. 5A).

Skeleton: the superficial skeleton consists of primary fibres of brown colour, 35-42-50  $\mu$ m cored with foreign material, and secondary fibres without a core of foreign material. Interconnecting fibres forming a polygonal mesh of 400-500-600  $\mu$ m in diameter. Interior skeleton lacking cored primary fibres and composed mainly of interconnecting, yellow coloured, fibres making smaller polygonal meshes 60-200-400  $\mu$ m (Fig. 5B).

**ECOLOGY.** - Found on the fore reef attached to

hard substrata.

**DISTRIBUTION.** - The species was collected from only one site of the study area and is apparently rare. Lendenfeld's (1889) record of the species included the Red Sea and Aden, as well as more widespread in the Indian Ocean.

**DISCUSSION.** - The specimen matches closely with the description of Lendenfeld (1889), who described his material as tubular, irregularly cylindrical processes, more or less vertical and coalescent with each other to a great extent to form a reticulate structure. The lumen of Lendenfeld's and our specimens have similar width and the walls have the same range of thickness as well. Lendenfeld's description of the skeleton refers to an irregular network with primary fibres of chestnut brown colour, diameter 60  $\mu$ m, and connecting fibres of 25-45  $\mu$ m, whereas meshes were 350  $\mu$ m and they were rounded to angular. All these features closely match our specimen. Cook & Bergquist (2002) assigned *H. tubaria* to the synonymy of *Hyattella intestinalis* (Lamarck, 1814). This species, although clathrate, does not form discrete hollow tubes like *H. tubaria* and therefore we disagree with this synonymization and propose to retain it as a valid species.

Genus *Spongia* Linnaeus, 1759

Subgenus *Spongia (Spongia)* Linnaeus, 1759

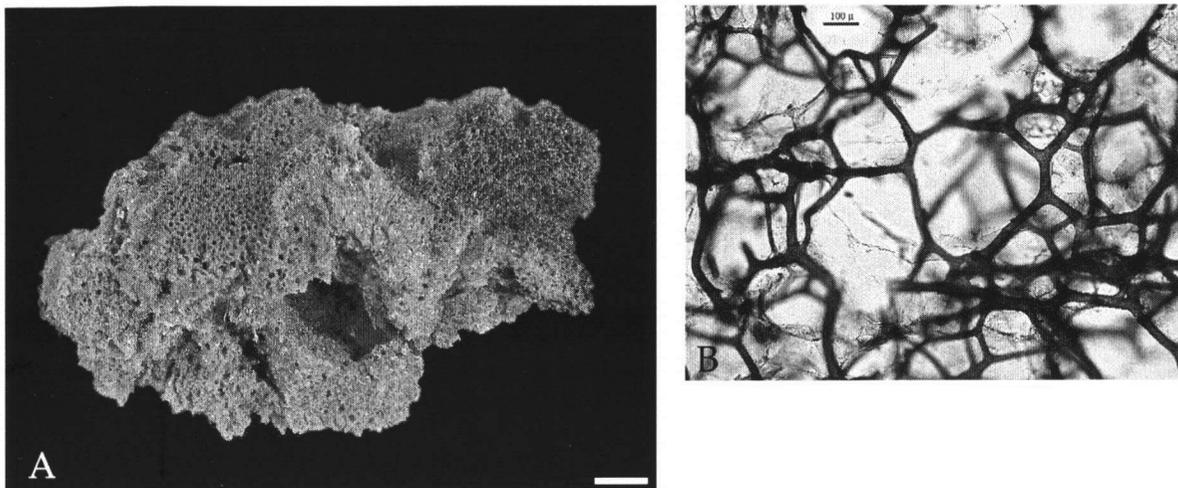


Fig. 6. *Spongia (Spongia) irregularis* (Lendenfeld, 1885). A, habit (scale bar = 1 cm). B, choanosomal skeleton (scale bar = 100  $\mu$ m).

***Spongia (Spongia) irregularis*** (Lendenfeld, 1885)

Figs. 6A-B

*Euspongia irregularis* Lendenfeld, 1885: 485;  
Lendenfeld, 1889a: 245.

**MATERIAL.** - ZMA Por. 17348, El Rowaisia, 4 m, coll. T. Helmy, 22-VII-2000.

**DESCRIPTION.** - Colour: black surface and internal tissues brown with some reddish darker patches.

Shape: massive, globular, irregularly lobed with undulating outline.

Surface: bumpy, caused by protruding fibre endings (Fig. 6A).

Texture: compressible and easy to tear.

Skeleton: near-surface skeleton composed of polygonal meshes 110-200-350  $\mu$ m formed by rare primary fibres 70-92-112  $\mu$ m and secondary fibres 35-48-56  $\mu$ m. Secondary fibres are brown coloured due to an unknown deposit on their surface. The choanosomal skeleton shows very rare primaries and the secondary fibres are more or less of the same diameter as in the superficial skeleton (Fig. 6B).

**ECOLOGY.** - Attached to mangrove tree pneumatophores and other hard substrata on the reef flat.

**DISTRIBUTION.** - Found in the sites of Nabq protectorate in south Sinai, El Gharkana and El Monqateaa. Elsewhere in the Red Sea the species has been reported from Eritrea (Lévi, 1965), and in the Indian and Pacific oceans there are also frequent reports.

**DISCUSSION.** - According to Lendenfeld (1885, 1889), this species is exceedingly variable in shape and general appearance. Sometimes it is cake-shaped, more or less spherical, small specimens are generally higher than broad, whilst the sponge after reaching a certain size grows in height but no longer in breadth. The surface of the living sponge is generally covered with conuli 1-2 mm. The oscula are either confined to fine membranes which cover the grooves in the skeleton, very small and situated in groups, or they are large and scattered (Lendenfeld, 1889). Lévi (1965) described *S. irregularis* from the Red Sea as massive, measuring 125x120x40 mm, black colour, and the skeleton composed of primary fibres 100  $\mu$ m in diameter and secondaries 10-15  $\mu$ m in diameter. Lendenfeld gave varietal names to about ten different shapes, e.g. var. *pertusa*, *fistulosa*, *lutea*, *dura*, *tenuis*, *villosa*, *frondosa*, *jacksoniana*, *silicata* and *mollior* (Lendenfeld, 1889), but we believe it is not warranted to assign taxonomic status to these forms, nor can we be certain to which of these our specimen would belong. What the relationship of this species and its 'varieties' is

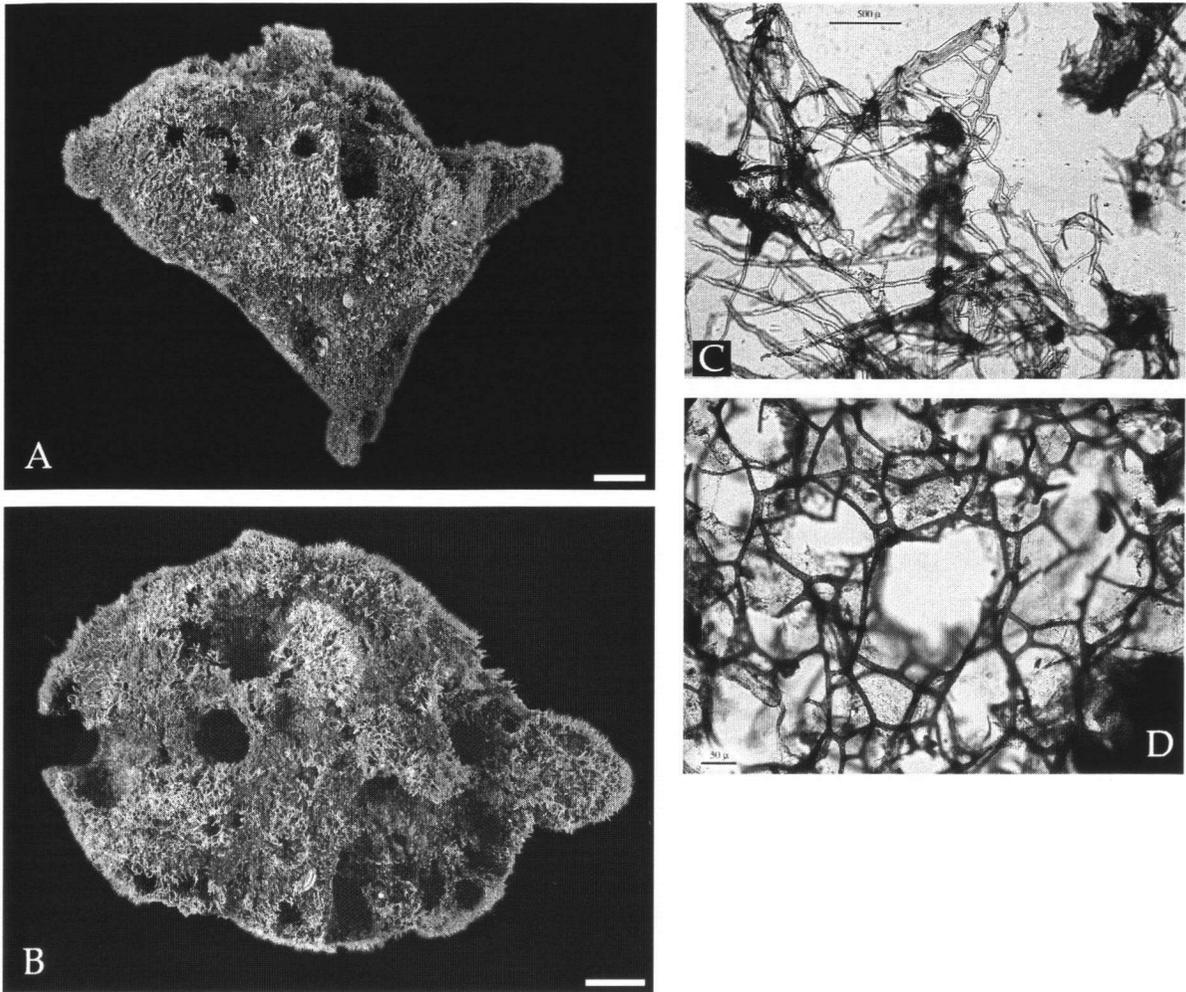


Fig. 7. *Spongia (Spongia) arabica* (Keller, 1889). A, habit in side view (scale bar = 1 cm). B, habit in upper view (scale bar = 1 cm). C, peripheral skeleton (scale bar = 500  $\mu$ m). D, choanosomal skeleton (scale bar = 50  $\mu$ m).

with *Euspongia officinalis* var. *irregularis* Schulze, 1878b from the Mediterranean remains elusive. Accordingly, we consider the name of the species and this identification tentative.

***Spongia (Spongia) arabica* (Keller, 1889)**  
Figs. 7A-C

*Euspongia officinalis* var. *arabica* Keller, 1889: 342.

MATERIAL. - ZMA Por. 17349, El Monqateaa, 4 m, coll. T. Helmy, 22-VII-2000.

DESCRIPTION. - Colour: black with yellow fibres protruding from the surface and the reddish stalk. Shape: massive, globular, pedunculate, attached to the substrate by a thick stalk.

Surface: covered with large conules 0.5-2 mm high and apart, and yellowish fibres emerge beyond the ectosome (characteristic post-collection artefact) (Figs. 7A, B).

Texture: compressible and easy to tear because of its elastic unarmored fibres. Sand is incorporated in the interior.

Skeleton: superficial skeleton of reticulate polygonal meshes 180-250-360  $\mu$ m in diameter formed by yellowish primary fibres 50-80  $\mu$ m, occasionally much thicker in the surface conules up to 140  $\mu$ m, cored with sand particles, and secondary fibres 20-30-50  $\mu$ m (Fig. 7C). The choanosomal skeleton rarely has primaries and is formed mainly by amber-coloured secondary fibres 22-35-50  $\mu$ m forming polygonal meshes 120-280-460  $\mu$ m in diameter (Fig. 7D).

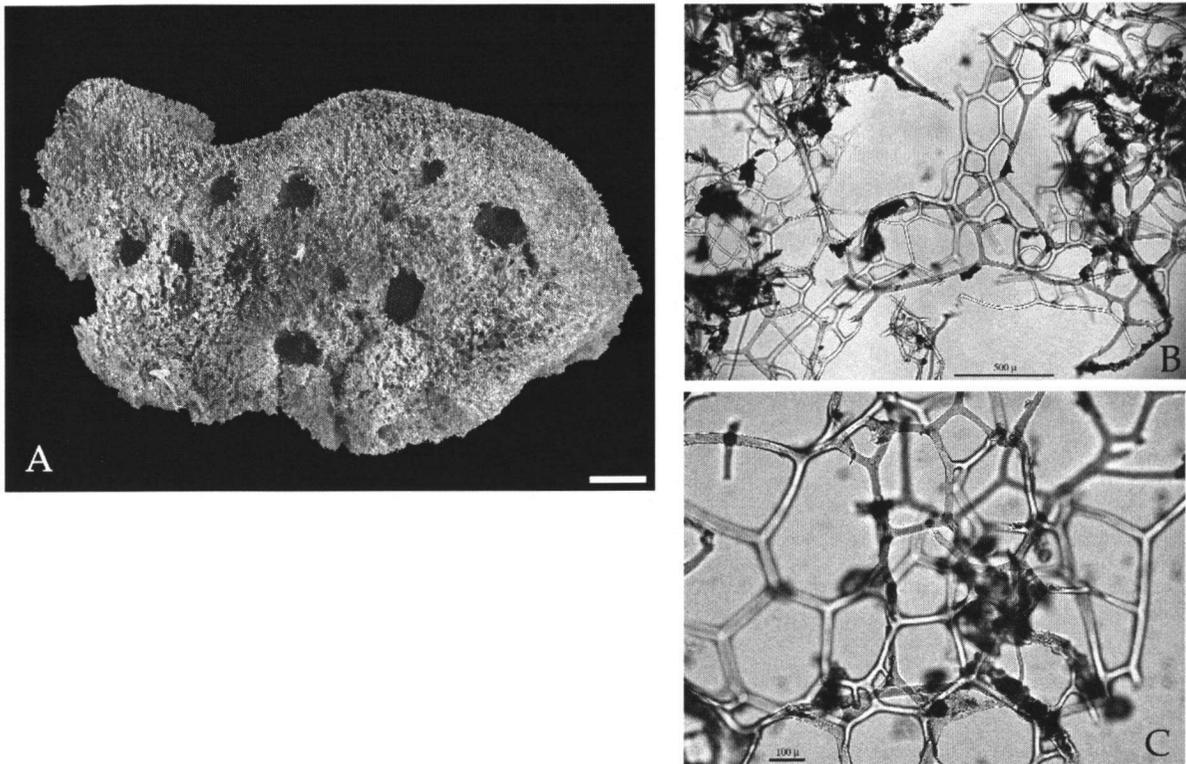


Fig. 8. *Spongia leslighae* n. sp. A. habit (scale bar = 1 cm). B, peripheral skeleton showing polygonal meshes (scale bar = 500  $\mu$ m). C, choanosomal skeleton showing the uniform size of the meshes (scale bar = 100  $\mu$ m).

**ECOLOGY.** - Usually attached to rocky substrata on the reef flat or dead corals.

**DISTRIBUTION.** - Found in several sites of the Nabq protectorate in south Sinai, El Gharkana and El Rowaisia (pers. observ.). Furthermore, it is reported from Suakin, Massaua and Jabal El Zeit (Keller, 1889)

**DISCUSSION.** - Fibre dimensions of our specimen more or less match those of Keller's description, who records an average of 80  $\mu$ m for primary fibres and 25  $\mu$ m for the secondary fibres. The mesh size average is 400  $\mu$ m, which is slightly larger than in our specimen. The surface of *S. arabica* has been described as strongly conulose, richly filled with sand particles and the primary fibres run vertically then turn to a course parallel to the surface in the peripheral parts (Keller, 1889). Assignment of our material to Keller's species is made on the basis of shape and the regularity of the fibre reticulation.

***Spongia (Spongia) leslighae* n. sp.**  
Figs. 8A-C

**MATERIAL.** - Holotype: ZMA Por. 17350, El Rowaisia, 5 m, coll. T. Helmy, 22-VII-2000. Several additional specimens were observed but not collected.

**DESCRIPTION.** - Colour: yellowish brown.  
Shape: massive, globular, 5-10 cm high and 8-13 cm width. Oscula 0.5-1.5 cm in diameter on the surface and as many as 8-12 oscula over an area approximately 35 cm<sup>2</sup>. Surface: bumpy, furry due to protruding fibres giving it furry touch (Fig. 8A). Texture: very compressible and easily torn.  
Skeleton: superficial skeleton of reticulate yellow primary fibres 45-60-75  $\mu$ m containing sand particles and secondary fibres 11-22-27  $\mu$ m connecting the primaries forming polygonal meshes 164-197-353  $\mu$ m (Fig. 8B). Choanosomal skeleton not different from the superficial skeleton and with the same size of fibres and meshes (Fig. 8C).

**ECOLOGY.** - Attached to hard substrata on the

Table 1. Characteristics of *Spongia* species reported from the Red Sea.

Species name	Shape	Surface
<i>S. lesleighae</i> n.sp.	massive, globular protruding fibres	bumpy-furry appearance due to
<i>S. irregularis</i> Lendenfeld, this paper	massive globular, irregularly lobed	bumpy surface due to protruding fibres
<i>S. irregularis</i> sensu Lévi, 1965	massive	surface with few equal conules
<i>S. arabica</i> , this paper	massive upright, globular, with stalk-like base	covered with large conules
<i>S. arabica</i> Keller, 1889	massive upright, with broad base	bumpy, richly covered with sand particles
<i>S. zimocca</i> sensu Row, 1911 as <i>Euspongia</i>	irregularly massive, sometimes flat or club shaped	irregular with broad round projecting ridges
<i>S. officinalis ceylonensis</i> sensu Row, 1911 as <i>Euspongia</i>	subspherical cushion regular in shape	very finely conulose
<i>S. officinalis exigua</i> sensu Lévi, 1965	irregularly massive	covered with small conuli
<i>Spongia</i> sp. Lévi, 1965	massive, tubular	black, no details mentioned
<i>Spongia</i> sp. '1940' Lévi, 1965	massive	black, no details mentioned
<i>Spongia</i> sp. '2976' Lévi, 1965	massive, convex	black, conules, 1-2 mm at distance of 400-600µm

Table 1. Continued.

Species name	Primary fibre diameter µm	Secondary fibre diameter µm	Mesh size range µm
<i>S. lesleighae</i> n.sp.	45-60-75	11-22-27	164-197-353
<i>S. irregularis</i> Lendenfeld, this paper	70-92-112	35-48-56	110-200-350
<i>S. irregularis</i> sensu Lévi, 1965	100	25-30	not mentioned
<i>S. arabica</i> , this paper	50-140	20-30-50 & 22-35-50	180-250-360 & 120-280-460
<i>S. arabica</i> Keller, 1889	80	25	400
<i>S. zimocca</i> sensu Row, 1911 as <i>Euspongia</i>	40 (scarce)	20-34	400
<i>S. officinalis ceylonensis</i> sensu Row, 1911 as <i>Euspongia</i>	150	20	200
<i>S. officinalis exigua</i> sensu Lévi, 1965	40-70	40-55	200-500
<i>Spongia</i> sp. Lévi, 1965	125-175	30-45	100
<i>Spongia</i> sp. '1940' Lévi, 1965	40-50	25-35	200-600
<i>Spongia</i> sp. '2976' Lévi, 1965	40-50	30	not mentioned

reef flat adjacent to the mangroves and on the mangrove pneumatophores of *Avicennia marina*.

**DISTRIBUTION.** - Next to the type locality, the species was also found in several other sites of the Nabq protectorate in south Sinai, El Gharkana and El Monqateaa (pers. obs.).

**ETYMOLOGY.** - Named after Miss Lesleigh Helmy to acknowledge her help during the collection of the sponges and continuous support.

**DISCUSSION.** - This sponge has a bumpy (finely conulose), furry surface which is considered characteristic for the species among its congeners of the study area. Characters of the *Spongia* (*Spongia*) species recorded from the Red Sea are summarized in Table 1. There are no descriptions in the Red Sea literature matching those of the present species, and although no exhaustive study of all records of Indian Ocean *Spongia* (*Spongia*) could be made within the framework of the present project, it appears undescribed and merits distinction at the species level from both other

recorded *Spongia* (*Spongia*). It has a finer fibre skeleton compared to those of *S. irregularis* and *S. arabica*. Primary and secondary fibres are smaller in size than those of *S. irregularis* (primary fibres 70-92-112, and secondary 35-48-56 µm) and *S. arabica* (primary 50-120, and secondary 20-30-50 µm) and have not such protruding yellowish fibres making sharp conules as in *S. arabica*, but only very soft surface fibres. The bumpy surface is unlike that of the conulose surface of *S. arabica*. Sand particles are present in the inner parts in *S. leslighae* n. sp., but not so frequent as in *S. arabica*.

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