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MORE NORTH JAMAICAN DEEP FORE-REEF SPONGES

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ABSTRACT

A second investigation of the North Jamaican deep fore-reef slope, using mixed gas to reach depths from 70 m to a maximum of 107 m depth, revealed 43 species, 9 of which are new to science: *Erylus incrustans, Polymastia fordei, Pseudaxinella flava, Phakellia bettinae, Iotrochota agglomerata, Callyspongia densasclera, Niphates lutea, Xestospongia deweerdtae*, and *Eurypongia lankesteri.*

INTRODUCTION

The high proportion of new sponge species discovered by mixed gas dives to the deep fore-reef of Jamaica (Lehnert & Van Soest, 1996) initiated a second enterprise to investigate the sponge fauna of this habitat more closely. In June and July 1996, nine mixed gas dives to depths from 70 to 107 m with a total bottom time of 180 minutes (and a total dive-time of 1107 min) were carried out in different localities in the Discovery Bay area on the north coast of Jamaica. Here we report new material collected during these dives, including 9 species new to science.

The most westward locality visited was Pinnacle II, a prominent reef structure exactly in front of the Discovery Bay Marine Laboratory. The area investigated extended eastward to a locality called Dairy Bull, roughly 5 km distance from Pinnacle II.

METHODS

Sponges or fragments of them were sampled after being photographed in situ. Specimens were then fixed in a glutaradehyde/cacodylate/seawater solution for 24 - 48 hours and after

rinsing in seawater transferred in several steps to 70% ethanol. Some samples were fixed in a formaldehyde/ethanol/seawater solution. From large specimens only part has been fixed, the rest was dried. Diving and identification followed procedures already described previously (Lehnert & Van Soest, 1996, 1998). Most material is deposited in the Zoological Museum, Amsterdam (ZMA), some additional specimens are kept in the Institute & Museum for Geology and Paleontology, Göttingen.

SYSTEMATICS

The order in which the species are treated follows Lehnert & Van Soest, 1998

Class Demospongiae
Order Astrophorida
Family Geodiidae Gray, 1867
Genus *Erylus* Gray, 1867

Erylus incrustans sp.n.
Figs. 1-8

Material: Holotype ZMA POR. 13510, Discovery Bay, Dairy Bull, 70.1 m, 27. 6. 1996, #J96/37-1

Description: Dark, grey-green, thinly, encrusting sponge (Fig. 7), 2 - 3 mm in thickness, lateral expansion up to 8 cm in diameter, overgrowing the skeleton of a dead *Ceratoporella nicholsoni.* Surface smooth. Numerous pores (< 0.1 mm) and several slightly elevated round oscules, 2 - 3 mm Ø, scattered over the surface. A large quantity of the sponge is nestling in bore-holes in the *Ceratoporella* skeleton.
Skeleton: There is a thick (1 mm) cortex of crowded aspidasters and below a thin veneer of sponge tissue with mega- and microscleres.
Spicules: Relatively small and rare triaenes (Fig. 2), with rhabds: 152-163 x 14-16 μm, cladi: 180 - 320 μm; oxeas or stylotes (Fig. 1): 560-1080 x 20 -38 μm; very thick aspidasters (Figs 1,4,5), surface sometimes with one or several knobby elevations or occasionally with a shallow, circular depression: 96-192 x 72-83 x 52-56 μm; tylasters (Figs 6,8) with microspined rays: 32-35 μm in diameter; small oxyasters (Fig. 8): 12-16 μm in diameter; slightly centrotylote, smooth microxeas (Fig. 3): 45-68 x 2-3 μm.
Remarks: Spicule types and dimensions of all known West-Indian species of *Erylus* are given in Table 1. Our specimen resembles *E. ministrongylus* Hechtel in many spicular characters, but differs in its encrusting growth form, in the grey-green colour, in having larger oxeas and in aster-morphology. Hechtel (1965) described his specimen as being hemispherical, yellow or pale orange in colour, and the surface covered by low tubercles.

A recent review of *Erylus* from Brazil (Mothes & Lerner, 1999) did not show any species close to our new species among the five recorded from that area.

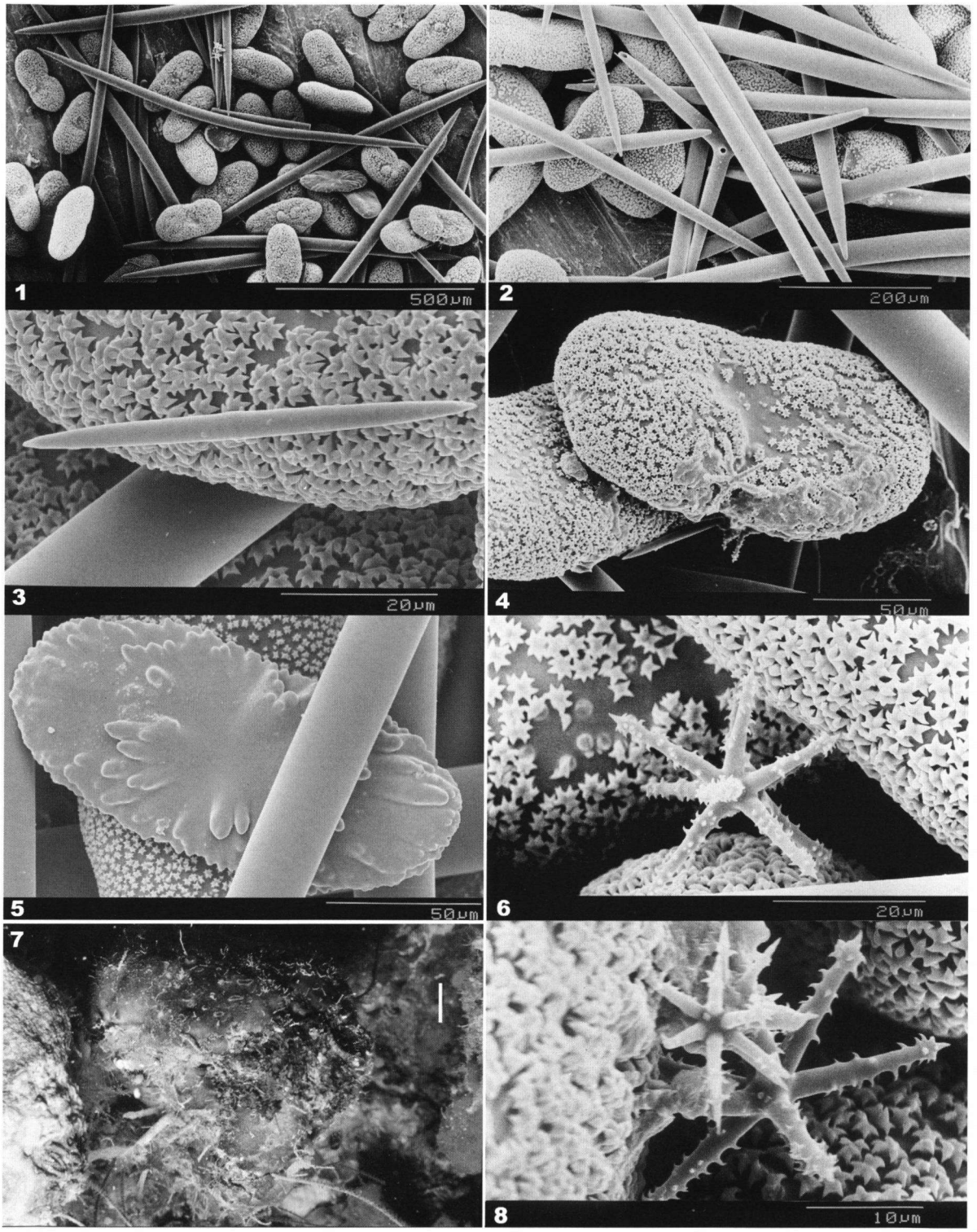
Order Lithistida
Family Theonellidae
Genus *Discodermia* Du Bocage, 1869

Discodermia sp.

Discodermia dissoluta sensu Lehnert & Van Soest, 1996: 55, figs. 2, 39-42 (not: Schmidt, 1880)

Material: ZMA POR. 13518, Discovery Bay, LTS, 85 m, 20. 6. 96, #J96/17-1,2; ZMA POR. 13519, Discovery Bay, LTS, 73 m, 20. 6. 96, #J96/20; ZMA POR. 13520, Discovery Bay, LTS, 82-91 m, 21. 6. 96, #J96/26-1,2,3,4,5; ZMA POR. 13521, Discovery Bay, LTS, 85 m, #J96/32-1,2; ZMA POR. 13522, Discovery Bay, MI, 82 m, #J96/34; ZMA POR. 13523, Discovery Bay, Dairy Bull, 79 m, #J96/36-1,2; ZMA POR. 13524, Discovery Bay, Dairy Bull, 79 m, #J96/38-1,2; ZMA POR. 13525+13538, Discovery Bay, Dairy Bull, 79 m, 28. 6.96, #J96/47-1,2; ZMA POR. 13526, Discovery Bay, LTS, 107 m, 4. 7. 96, #J96/50; ZMA POR. 13527, Discovery Bay, Pinnacle II, 79-85 m, #J96/56-1,3,4.

Description: Hard, conical, greyish white to yellow-brown sponges, 1.3-6 cm high and 0.5-5.5 cm in diameter. One or several apical oscules, an apical depression develops upon drying. Some specimens were growing on other sponges (*Topsentia ophirhaphidites*, *Ceratoporella nicholsoni*), some were partially overgrown by sponges (*Agelas* spp.,



Figs. 1-8: *Erylus incrustans* sp. n., (all SEM except 7) 1. overview of spicules including oxeas and aspidasters , 2. megascleres including a triaene, 3. centrotylote smooth microxea, 4. full-grown aspidaster, 5. incipient aspidaster, 6. tylaster, 7. holotype photographed in situ before collection (scale = 1 cm), 8. oxyaster (smaller aster) and tylaster.

Table 1: Spicule characters of West-Indian species of *Erylus*.

species	*amphiastera* Wintermann-Kilian & Kilian, 1984	*bahamensis* Pulitzer-Finali, 1986	*formosus* Sollas, 1888	*gofrilleri* Wiedenmayer, 1977	*ministrongylus* Hechtel, 1965	*trisphaerus* de Laubenfels, 1953	*transiens* Weltner, 1882	*incrustans* sp. n.
oxeas	amphioxeas 450-900 x 20-38	530-850 x 6-15	600-1000 x 10-20	610-690 x 8-18	strongyloxeas 370-551	900 x 12	700-2000 x 10-35	560-1080
triaenes	plagiotriaenes	orthotriaenes	orthotriaenes	orthotriaenes	orthotriaenes	calthrops-like	ortho	orthotriaenes
rhabd	280-470	370-590	300-480 x 12-19	500-580 x 12-16	187-311	270 x 12/ray	150-500 x 10-30	152-163 x 14-16
clad	120-190	120-340	170-265 x 7-12	180-240 x 9-12	119-319		100-400	180-320
aspidaster	78-128 x 124-225 x 52-56	125-190 x 19-40 "thin"	160-250 x 20-55	100-150 x 65-95	87-106 x 43-181 x 1-5	135 x 40-50 x 64-87	100-190 x 60-100	96-192 x 72-83 thin
centrotylote microxeas	50-70	31-50 x 2.5	38-55 x 2-3	oxeas & strongyles 35-70 x 1-4	37-80	50 x 2	30-58 x 1-3	45-68 x 2-3
aster I	amphiaster 69-300	tylaster 15-28	tylaster 14-28	tylaster 20-61	few rayed 9-33/ray	oxyeuaster 12	oxyaster 7-28	tylaster 32-35
aster II	---	10-12	present	---	oxyaster 10-25	chi-/tylasters 24	---	oxyaster 12-16

Eurypongia).
Skeleton: Ectosome: discorhabds with points facing in are scattered over the surface, most of the space in between is covered with microscleres. Choanosome: there is a rigid skeleton of tetracrepid desmata and numerous oxeas strewn in between.
Spicules: Tetracrepid desmata, difficult to measure; long oxeas: 200-920 x 4-10 μm; discotriaenes, with disc 120-240 μm in diameter. Microscleres in two size categories: small acanthose microxeas/microstrongyles: 12-16 x 3-4 μm, and large microxeas: 32-50 x 3-4 μm.
Remarks: According to M. Kelly (pers. comm.) this is a new species, which will be described in a forthcoming publication. This is the same species which was described as *D. dissoluta* by Lehnert & Van Soest, 1996. Some specimens (#J96/47-1 & 47-2, #J96/56-2) differ in size of the larger microsclere category which is here 64-96 x 3-4 μm. These characters were already mentioned in the description of deep-water specimens from Jamaica by Lehnert & Van Soest, 1996. All specimens differ from the description of *Discodermia dissoluta* given by Zea (1986) in having generally larger oxeas.

Order Hadromerida
Family Spirastrellidae Ridley & Dendy, 1886
Genus *Spirastrella* Schmidt, 1868

Spirastrella coccinea (Duchassaing & Michelotti, 1864)

Material: ZMA POR. 13512, Discovery Bay, LTS, 91 m, 21. 6. 1996, #J96/22; ZMA POR. 13515, Discovery Bay, Pinnacle II, 91 m, 5. 7. 1996, #J96/60-2; ZMA POR. 13514, Discovery Bay, Dairy Bull, 70 m, 27. 6. 1996, #J96/39-1; ZMA POR.13513, Discovery Bay, LTS, 88 m, 25. 6. 1996, #J96/32-7.

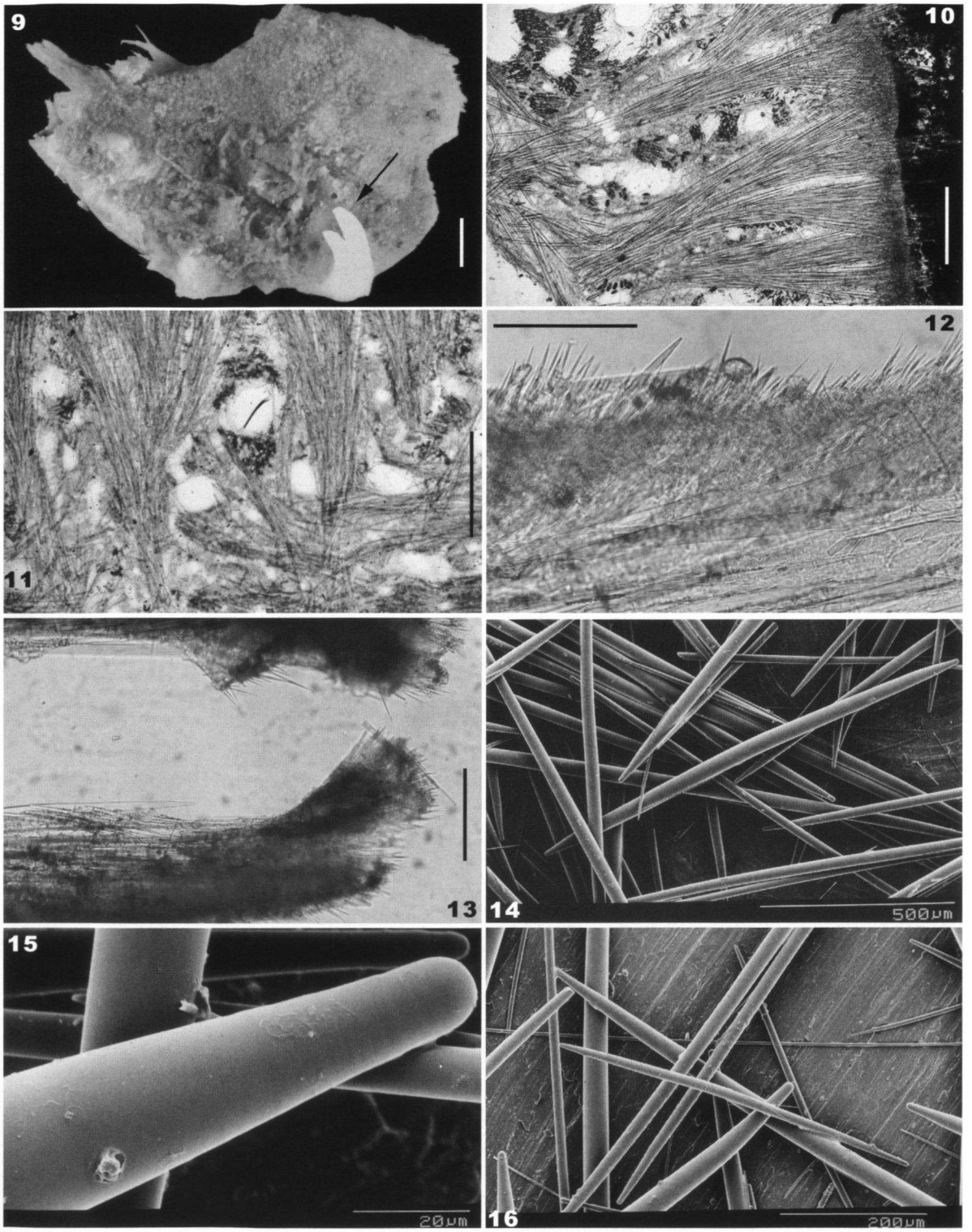
Description: Bright orange or red encusting sponges. Surface with skinny canals leading to oscules.
Spicules: Tylostyles: 280-680 x 7-16 μm; spirasters of wide size range: 16-42 μm
Remarks: All specimens were growing over the basal skeleton of *Ceratoporella nicholsoni.*

Family Polymastiidae Gray, 1868
Genus *Polymastia* Bowerbank, 1864

Polymastia fordei sp. n.
Figs. 9-18

Material: Holotype: ZMA POR. 13456, Discovery Bay, LTS, 82 m, 21. 6. 96, #J96/30.

Description: Dirty grey-brown, thickly encrusting sponge (Fig. 9) with a few whitish conical papillae, 1-2 cm long, diameter 2 mm at the top, 6 mm at base, with an apical oscule, 1 mm in diameter. Cortex ca. 4 mm in thickness, standing out white against the yellowish interior. Surface hispid. Very hard, incompressible.
Skeleton: Very dense arrangement of spicules in the three layers usual for the genus. In the ectosome of the main body of the sponge the small tylostyles are present in dense masses, but not arranged in a proper palisade, as is usual in *Polymastia*, but in considerable confusion. This layer has a thickness of 400-500 μm. In contrast, the ectosomal tylostyles in the papillae are more or less arranged in a palisade (Fig. 13). Below these, there is an area with a thickness of about 400 μm devoid of smaller megascleres, followed by a layer of subectosomal intermediate spicules arranged loosely but mostly parallel to the surface. This layer measures approximately 1200 μm. Thick spicule tracts start from focal points in the choanosome (Fig. 11), broaden out and overlap towards the surface (Fig. 10). These tracts consist of strongyloxeas and they protrude considerably beyond the confused layer of small tylostyles. In the interior thick spicule tracts of strongyloxeas make up the skeleton, arranged mainly parallel to the surface with numerous smaller tylostyles scattered in all directions. Longitudinal sections through the papillae (Fig. 12) show a central canal, longitudinal arrangement of tracts of strongyloxeas and an ectosomal perpendicular palisade of (sub-) tylostyles (Fig. 13).
Spicules: Main spicules are strongyloxeas to fusiform tylostyles, occasionally styles, sometimes with a simple telescoped end (Figs. 14-15, 17): 400-1914 x 10-52 μm; cortical (sub-)tylostyles (Figs. 16,18) in two size categories: large category, 225-355 x 7 -11 μm, small category, often with



Figs. 9-16: *Polymastia fordei* sp. n., 9. holotype ZMA POR. 13456, 10, cross section of peripheral skeleton showing outer confused layer of small tylostyles, subdermal cortical layer of large strongyloxeas, and lacunar layer of intermediate tylostyles arranged parallel to the surface (scale = 500 µm), 11. subcortical section showing focal points of tylostyle bundles (scale = 250 µm), 12. section of papillar surface with palisade of small tylostyles (scale = 100 µm), 13. cross section of papilla showing longitudinal skeleton (scale = 250 µm), 14. large strongyloxeas, 15. detail of strongyloxea, 16. intermediate tylostyle.

Table 2. Atlantic species of *Polymastia* with strongyloxeas, and central West Atlantic Polymastia.

	principal strongyloxeas	intermediary tylostyles	ectosomal tylostyles
P. inflata	620-1250 x 11-18	250-660 x 11-26	90-290 x 3-5
P. infrapilosa	1700-1900 x 23	300-700 x ?	150-240 x 7-8
P. grimaldi	1450-2275 x 21-26	210-676 x 10.4-21	172-286 x 5.2-7.8
P. spinula	724.5-926.8 x 10.4-15.6	332.8-478.4 x 5.2-10.4	124.8-156 x 5.2
P. uberrima	1315-1770 x 17-25	556-754 x 8-10	307-350 x 5
P. corticata	1634-2106 x 17-34	674-893 x 10.4-15.6	166-255 x 5.2-10.4
P. littoralis	1000-1500 x 27-30	450-600 x up to 27	140-240 x 5
P. tenax	806-1100 (tylost.) x 13-26	320-420 x 18-30	130-330 x 2.5-9
P. janeirensis	838-1231 x up to 21	229-828 x 3-?	75-175 x 1.5-4.3
P. fordei n.sp.	400-1914 x 10-52	225-355 x 7-11	145-235 x 1-5

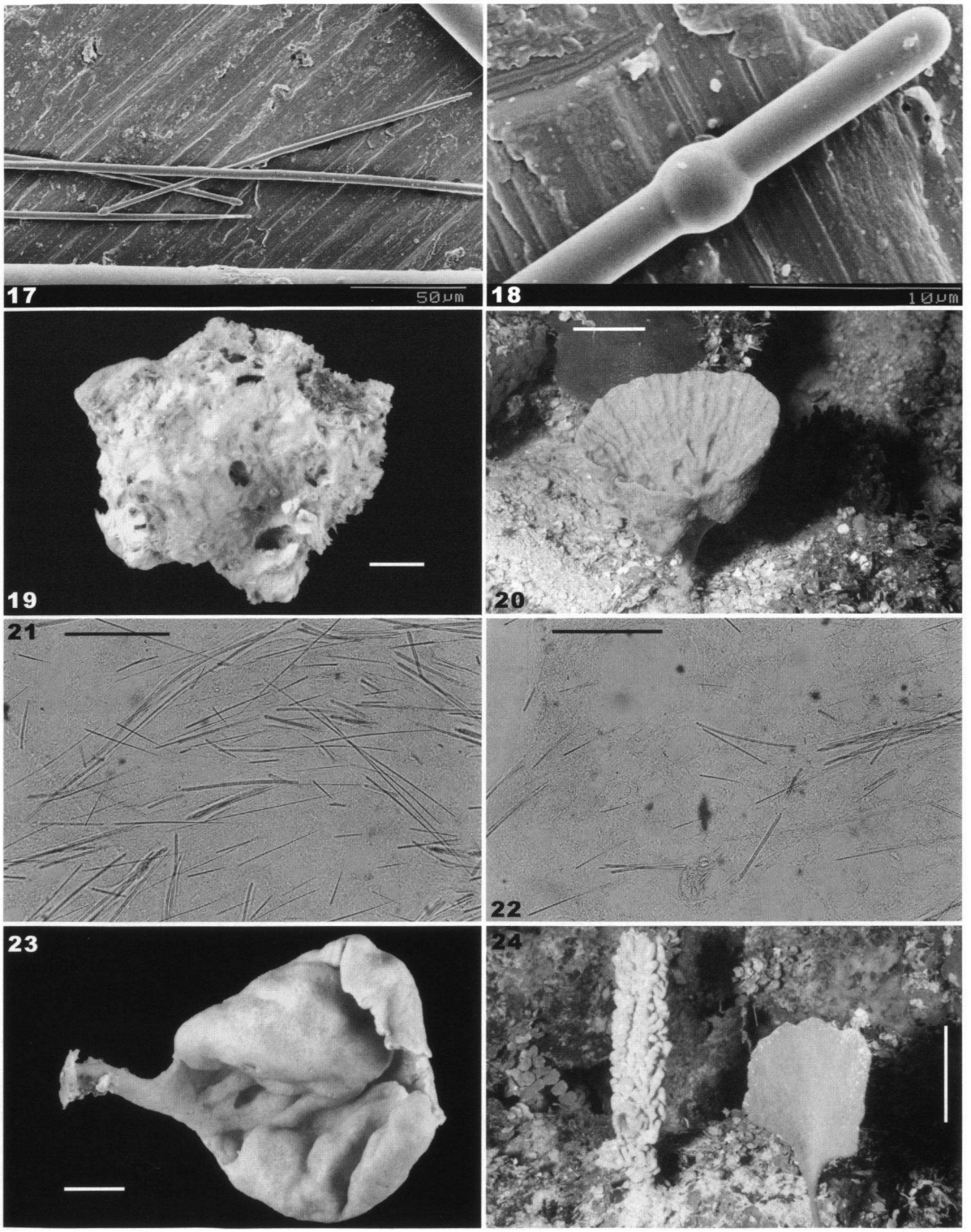
subterminal head (Fig. 18), occasionally polytylote malformations occur: 145-235 x 1-5 μm.

Etymology: Named after Peter Forde, who accompanied HL on several trimix-dives.

Remarks: According to Boury-Esnault (1987) and Boury-Esnault et. al. (1994) there are 18 valid species of *Polymastia* in the Atlantic. Ten do not have strongyloxeas or fusiform tylostyles and are therefore different in spiculation. Eight of them (*P. inflata* Cabioch, 1968; *P. infrapilosa* Topsent, 1927; *P. grimaldi* (Topsent, 1913); *P. spinula* Bowerbank, 1866, *P. uberrima* (Schmidt, 1870), *P. corticata* Ridley & Dendy, 1886, *P. littoralis* Stephens, 1915 and *P. janeirensis* (Boury-Esnault, 1971)) have strongyloxeas or fusiform tylostyles with additional tylostyles. Their spicule characters are listed along with those of our new species in Table 2.

P. fordei n.sp. differs from all these in having the ectosomal tylostyles of the main body arranged in densely confused masses. It differs from *P. inflata* in having longer and much thicker strongyloxeas, in having smaller and thinner intermediary tylostyles (*P. inflata* with a well rounded head, those our species more subtylostylote) and in having larger small tylostyles. Furthermore, *P. inflata* is known from the Eastern Atlantic only. It differs from *P. infrapilosa* in having thicker strongyloxeas of a much wider size-range and in having smaller intermediary tylostyles. *P. infrapilosa* has been found only once NE of Halifax. It differs from *P. grimaldi* in having fewer papillae, the principal strongyloxeas are smaller but thicker, intermediary spicules are smaller of narrower size-range and thinner. It differs from *P. spinula* in having shorter papillae, longer and thicker principal strongyloxeas, and smaller, thinner intermediary tylostyles. It differs from *P. uberrima* in having much thicker principal strongyloxeas of a much wider size-range, in having smaller intermediary tylostyles and smaller small tylostyles. NE Atlantic *P. corticata* has more than 100 papillae and is not optically hispid, whereas *P. fordei* has only a few and is hispid. South African *P. littoralis* likewise has numerous papillae and a smooth surface. Both *P. corticata* and *P. littoralis* have longer intermediary tylostyles.

P. janeirensis from Brazil is a dark purple sponge



Figs. 17-18. *Polymastia fordei* sp.n., 17. small tylostyle, 18. detail of small tylostyle. Fig. 19. *Pseudotrachya amaza* (De Laubenfels, 1934), habit of ZMA POR. 13547 (scale = 1 cm), Figs. 20-23. *Dictyonella foliaformis* Lehnert & Van Soest, 1996, 20. photographed in situ before collection (scale = 1 cm), 21-22, different parts of the choanosomal skeleton (scale = 250 µm), 23. habit of flabellate specimen ZMA POR. 13535 (scale = 1 cm), Fig. 24. *Axinella digitiformis* Lehnert & Van Soest, 1996, and *Phakellia bettinae* n.sp. photographed in situ before collection (scale = 5 cm).

with 30-60 papillae; its skeleton shows no gap between the ectosomal palisade and the parallel layer of intermediary megascleres; spicule sizes differ considerably with *P. fordei* n.sp. (see Table 2).

The only sympatric Central West Atlantic *Polymastia* is *P. tenax*. This differs from our new species in having mammiform papillae, and true tylostyles as the main megascleres; the orientation of the intermediate spicules is perpendicular rather than parallel with the surface.

Family Suberitidae Schmidt, 1870
Genus *Pseudotrachya* Hallmann, 1914

Pseudotrachya amaza (De Laubenfels, 1934)
Fig. 19

Anomolissa amaza De Laubenfels, 1934: 17
Pseudotrachya hystrix; Van Soest & Stentoft, 1988: 79, pl. X fig. 1, text-fig. 39 (not: Topsent, 1892)

Material: ZMA POR. 13547, Discovery Bay, Dairy Bull, 28. 6. 1996, 81 m, #J96/42.

Description: Thickly encrusting, orange-yellow (alive) or pale brown (dry) coloured, very hard sponge (Fig. 19). Size up to 4.5x4x1 cm. Surface hispid, looking velvet-like due to long projecting spicules. Round to oval oscules, 3-5 mm in diameter scattered over the surface.
Skeleton: Short but thick bundles of oxeas form spicule brushes at the surface and protrude approx. 900 μm over the surface. A dense layer of short oxeas, oriented perpendicular to the surface, 200-250 μm thick forms the ectosome. In the choanosome short and thick bundles of spicules are facing in all directions.
Spicules: Oxeas of two size categories, large oxeas, occasionally with one of the ends bluntly rounded: 480-1700 x 15-40 μm, small oxeas: 125-200 x 3-6 μm.
Remarks: With the discovery of yet another Caribbean specimen conforming to *Pseudotrachya*, it has become increasingly clear that in the Caribbean the sizes of the largest oxeas are considerably smaller than those *Pseudotrachya* specimens from the Mediterranean area. These are only 500-1700 μm in the Caribbean, while 2000-7000 μm in the Mediterranean (Topsent, 1892; Vacelet, 1969; Boury-Esnault et al., 1994). This apparently consistent difference, suggests distinctness at the specific level, and accordingly we propose here to assign Caribbean specimens to *P. amaza* (De Laubenfels, 1934 as *Anomolissa*). The holotype of this species, USNM 22348, was misinterpreted by De Laubenfels, as he judged rare and obviously foreign arcuate chelae to be evidence for Poecilosclerid affinity of it.

Order Chondrosida
Family Chondrillidae Gray, 1872
Genus *Chondrilla* Schmidt, 1862

Chondrilla nucula Schmidt, 1862

Material: ZMA POR. 13516, Discovery Bay, LTS, 4.7.1996, 107 m, #J96/51; ZMA POR. 13517, Discovery Bay, Pinnacle II, 5.7.1996, 85 m J96/57-3. Lehnert collection: Discovery Bay, LTS, 4.7.1996, 107 m, #J96/32-4.

Description: Dark greyish blue, massively incrusting sponge. Surface smooth, no oscules visible. Consistency like rubber.
Skeleton: Asters are densely packed in the ectosome to a thickness of about 400 μm. In the choanosome the asters are irregularly distributed, sometimes along canals, other areas may be devoid of them. Spherasters: 16-35 μm in diameter.
Remarks: This seems to be a very variable species. Three growth forms occur in Jamaica: a dark brown lumpy growth form which is restricted to lagoonal habitats, a light brown encrusting growth form occurs on the shallow fore-reef and covers larger areas, and the third growth form is represented by this deep fore-reef specimen.

Order Halichondrida
Family Halichondriidae
Genus *Axinyssa* von Lendenfeld, 1897

Axinyssa ambrosia (De Laubenfels, 1934)

Material: ZMA POR. 13545, Discovery Bay, LTS, 20.6.96, 85 m, #J96/14.

Description: Orange coloured, relatively soft, massive sponge. Easy to tear, surface lamellate. Many long canals, about 1 cm in diameter reaching the

surface. Abundant sediment particles in the interior.
Skeleton: Organic ectosome with only a few spicules, some of which are tangentially arranged but together do not form a specialized ectosomal skeleton. Surface with short conules, supported by spicule tracts, spicules protruding at the top of conules. Choanosome with short, sometimes branched, spicule tracts or spicules in confusion. Single spicules and spicule tracts with considerable amounts of spongin.
Spicules: Oxeas with single or multiple telescoped ends of irregular outline: 720-1160 x 6-16 μm.
Remarks: Van Soest et al.'s (1990) assignment of *Axinyssa* to the family Halichondriidae is here maintained, despite the fact that *Axinyssa* lacks the ectosomal skeleton characteristic for Halichondriidae. Hooper & Bergquist (1993) assigned the genus to Axinellidae, but that family has the spicules organized in a reticulation, which is entirely absent in *Axinyssa*. The vague tracts and fibrous choanosome fit more easily in the family Halichondriidae.

Genus *Topsentia* Berg, 1899

Topsentia ophiraphidites (De Laubenfels, 1934)

Material: ZMA POR. 13540, Discovery Bay, LTS, 19.6.1996, 76 m, #J96/7; ZMA POR. 13542, Discovery Bay, Pinnacle II, 5.7.1996, 85 m, #J96/57; ZMA POR 13541, Discovery Bay, Dairy Bull, 27.6.96, 76 m, #J96/38.

Description: Hard, cake-shaped to massive sponges, grey or brownish-green in live, light brown to ochre-coloured in the dry state. The surface is somewhat uneven and partially overgrown by *Halimeda* and calcareous algae.
Skeleton: There is a concentration of smaller oxeas near the surface and a confused arrangement of spicules in the interior.
Spicules: Three partially overlapping size categories of oxeas, large ones: 820-1280 x 22-35 μm, intermediates: 320-690 x 6-11 μm, and small ones: 128-330 x 4-6 μm.
Remarks: The spicule measurements conform to measurements given by Diaz et al., 1993.

The present record confirms the deep occurrence of this species testified by the origin of the type specimen from a depth down to the 72 m. The species is also recorded from very shallow reef and mangrove locations.

Topsentia bahamensis Diaz, Van Soest & Pomponi, 1993

Material: ZMA POR. 13543, Discovery Bay, LTS, 20.6.1996, 79 m, #J96/18; ZMA POR. 13544, Discovery Bay, LTS, 25.6.96, 90 m, #J96/32.

Description: These are long thick chimneys, with several long canals leading through the entire specimen. They conform to material described previously from the LTS location by Lehnert & Van Soest, 1996. Spicules are in two size categories (200-400 and 600-900 μm) rather than three, and the larger sizes are somewhat smaller than those of *T. ophirhaphidites.*

Family Desmoxyidae Hallmann, 1917
Genus *Julavis* de Laubenfels, 1936

Julavis jamaicensis Van Soest & Lehnert, 1997

Material: ZMA POR. 13516, Discovery Bay, LTS, 4.7.1996, 106 m, #J96/51.

Description: Very thinly (200-400 μm) encrusting on *Chondrilla nucula*, present in several thin sections.
Skeleton: Densely packed acanthostrongyles in confusion with single smooth long strongylostyles perpendicular to the surface. Scattered trichodragmas. Spicule dimensions as reported by Van Soest & Lehnert, 1997.
Remarks: This is the second record of the species and the third for this very rare genus.

Genus *Didiscus* Dendy, 1922

Didiscus oxeata Hechtel, 1983

Material: ZMA POR. 13532, 13539, Discovery Bay, Dairy Bull, 28.6.1996, 79 m, #J96/47-3.

Description: Yellow orange coloured, tough, fibrous

sponge, dark to light brown in the dry state. Surface smooth with numerous circular or elongate apertures, 3-5 mm in diameter. In some parts longer apertures which may become the described meandering grooves (Van Soest, 1984; Diaz et. al., 1993).
Skeleton: Ectosomal paratangential arrangement of all types of spicules. Confused arrangement of spicules in the choanosome. Frequent spicule tracts run perpendicular to the surface.
Spicules: Oxeas of two size classes: 670-1350 x 12-18 and 210-400 x 7-12 μm. Didiscorhabds, strongylote, microspined: 55-80 x 4-6 μm, bearing two discs of different diameter usually both in the same half of the spicule.

Family Dictyonellidae
Genus *Dictyonella* Schmidt, 1868

Dictyonella foliaformis Lehnert & Van Soest, 1996
Figs. 20-23

Material: ZMA POR. 13535, Discovery Bay, LTS, 19.6.1996, 62 m, #J96/12; ZMA POR. 13537, Discovery Bay, M1, 26.6.1996, 67 m, #J96/34-9; ZMA POR. 13536, Discovery Bay, LTS, 20.6.96, 70 m, #J96/19.

Description: This is a variable species (Fig. 20, 23). J96/12 and J96/34 are orange coloured sponges with a thick, short stalk (7 mm in diameter, 3-4 cm long) and a large, relatively thick blade (8 x 8 x 0.5 cm) with the sides of the blade almost completely fused, forming a nearly vase-shaped blade (J96/12, Fig. 23). In J96/34 the stalk is 5 mm in diameter and 4 cm long. There is no homogeneous blade but it is irregularly lobed with several smaller fused regions. J96/19 is a small specimen (about 10 cm long) in which the stalk dominates. It is branched with small blades/lobes (1 x 0.7-2.5 x 1 cm) appearing upward from the first branching. The colour of J96/19 was pale orange in life and is cream in spirit. The consistency of all specimens is elastic but resilient. The surface of the outer side of the blade is smooth, the inner side lamellate with small apertures scattered over the surface.
Skeleton: No clearly developed ectosome. Choanosome: long uni- to paucispicular spicule tracts, branching and anastomosing, completely embedded in clear spongin fibres, in places spongin dominating (Figs. 21-22).
Spicules: Undifferentiated styles, strongyles and oxeas: 360-760 x 2- 8 μm.
Remarks: These thick-bladed specimens are quite different from the growth form described by us (1996) but are regarded conspecific with regard to skeletal characters. It should be noted that growth form and colour of thin-bladed *D. foliaformis* are indistinguishable from *Phakellia bettinae* n.sp., whereas thin and thick-bladed *D. foliaformis* can easily be distinguished.

Family Axinellidae Carter, 1875
Genus *Axinella* Schmidt, 1862

Axinella digitiformis Lehnert & Van Soest, 1996
Fig. 24

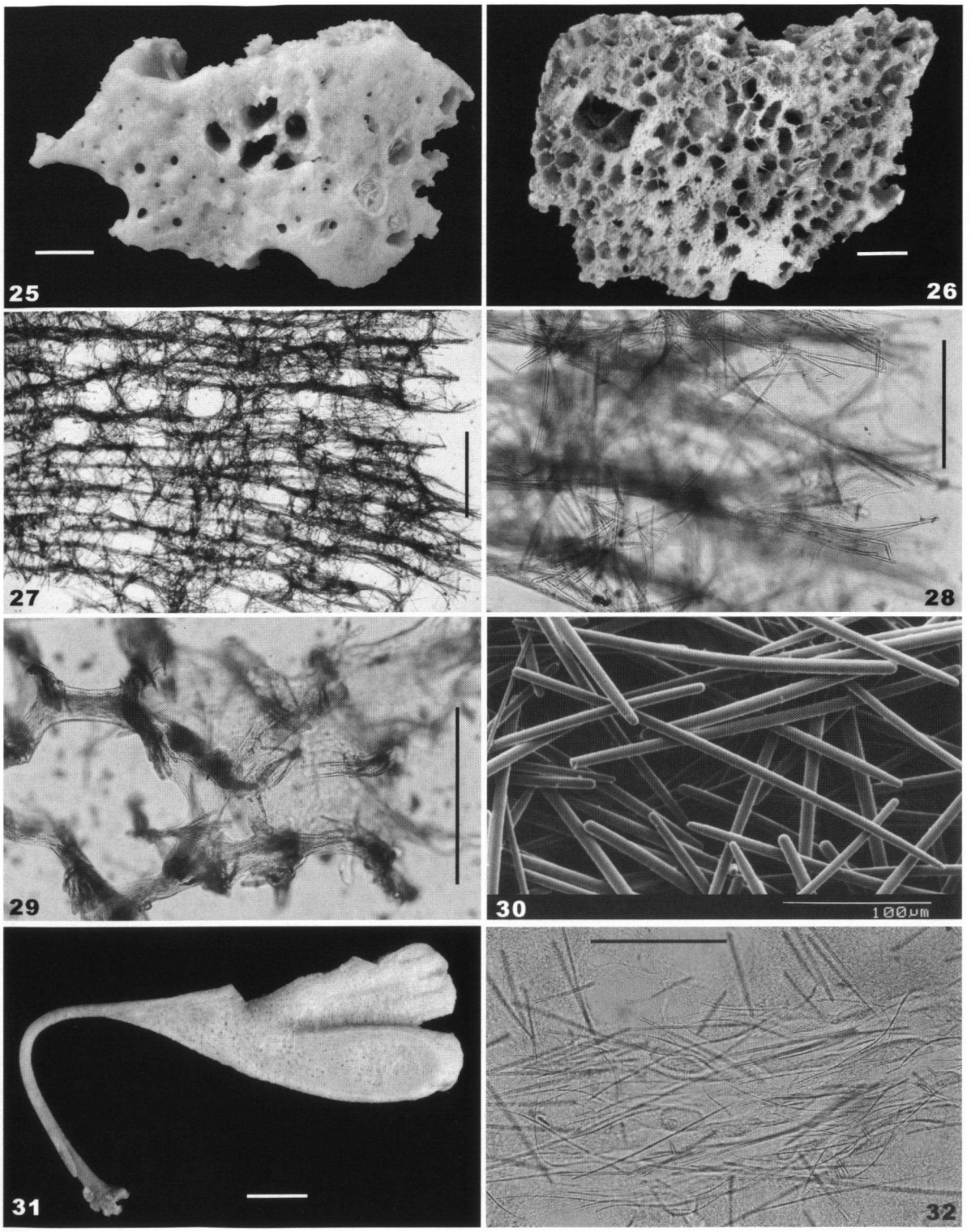
Material: ZMA POR. 13528, Discovery Bay, LTS, 20. 6. 96, 85 m, #J96/16; ZMA POR. 13529, Discovery Bay, LTS, 25. 6. 96, 88 m, #J96/32-9; ZMA POR. 13530, Discovery Bay, MI, 26. 6. 96, 73 m, #J96/34-8.

Description: Orange, hollow finger-shaped sponge, open at one side with a convoluted surface (Fig. 24, left). Growing from a small base, about 2 mm in diameter, to a height of 5.8 to 6.4 cm, 1.2 to 2 cm wide.
Skeleton: Ascending spicule tracts, connected by single spicules. Slight axial condensation.
Spicules: Large styles with tylote swelling: 300-550 x 10-15 μm; small styles to tylostyles: 220 -300 x 2-6 μm; oxeas: 340-640 x 7-16 μm.
Remarks: The species occurs on areas thinly covered with sediment.

Genus *?Pseudaxinella* Schmidt, 1875

Pseudaxinella(?) flava sp. n.
Figs. 25-30

Material: Holotype (alcohol, Fig. 25): ZMAPOR. 13563, Discovery Bay, Dairy Bull, 27.6.96, 76 m, #J96/39-5; paratype (dry, Fig. 26): ZMA POR. 13531, same data as the holotype.



Figs. 25-30: *Pseudaxinella flava* sp. n., 25. holotype ZMA POR. 13563 (scale = 1 cm), 26. paratype ZMA POR. 13531 (scale = 1 cm), 27. cross section showing reticulated skeleton (scale = 500 µm), 28. detail of cross section (scale = 250 µm), 29. surface skeleton (scale = 250 µm), 30. spicules. Figs. 31-32. *Phakellia bettinae* sp. n., 31. holotype ZMA POR. 13533 (scale = 1 cm), 32. section of choanosomal skeleton (scale = 250 µm).

Description: Yellow, massive sponge (Fig. 25) with smooth surface in life. Size up to 8x6x4 cm. In the dry state (Fig. 26) numerous openings become visible which are mostly covered by a skinny, organic veneer. One larger oscule is visible, 1.2 x 0.8 cm, which divides into two canals at a depth of 0.6 cm. Interior very cavernous.
Skeleton: Ectosome (Fig. 29): organic veneer into which spicule brushes protrude, the brushes are vaguely connected by single spicules or paucispicular tracts. Choanosome (Figs. 27-28): long ascending polyspicular tracts, embedded in spongin but spicules clearly dominating, 50-160 µm in diameter, lying at distances of 80-250 µm, connected by abundant single spicules in confusion, sometimes by very short paucispicular tracts. Spongin is present at the nodes. Spicule tracts end in erect spicule brushes at the surface.
Spicules: Styloids (Fig. 30) with one end tapering but mostly blunt, rarely true styles occur: 244-380 x 2-11 µm; thinner spicules are probably developmental stages.
Remarks: The skeletal arrangement resembles skeletons of the Haplosclerida, but assignment to this group is not possible because the specimen has no ectosomal skeleton and because of the occurence of styles. The present species is assigned to the Axinellidae, but the absence of plumose or plumoreticulate tracts make this assignment tentative. Possibly, this species is closely related to the recentlv described *Pseudaxinella* (?)*zeai* Alvarez et al., 1998, which shares the stylote shape of the spicules in combination with an Haplosclerid isodictyal skeleton. Shape, colour and spicule sizes of the two differ considerably, so specific distinctness is clear.
Etymology: From Lat. flavus = yellow, after the live colour of the sponge

Genus *Phakellia* Bowerbank, 1862

Phakellia bettinae sp. n.
Figs. 24, 31-32

Material: Holotype: ZMA POR. 13533 (Fig. 31), Discovery Bay, LTS, 19.6.1996, 60m, #J96/11; paratype: ZMA POR. 13534, Discovery Bay, Dairy Bull, 27.6.1996, 61 m, #J96/40.

Description: This orange coloured sponge (Fig. 24, right) has a thin stalk (8-10 cm long, 2-4 mm in diameter) and a thin blade (5-8 x 7-9 x 0.2 cm). The consistency is elastic. It is undistinguishable from *Dictyonella foliaformis* Lehnert & Van Soest, 1996, upon external characters. Both sides of the blade are smooth with small circular apertures (<1 mm), scattered over the surface.
Skeleton: Organic ectosome with single spicules in confusion. Choanosome (Fig. 32) consists of polyspicular tracts of sinuous strongyles, embedded in spongin and echinated by styles. The tracts are branched and anastomose again and are occasionally connected by tracts or single spicules.
Spicules: Styles, often with a telescoped or mucronate point: 370-1120 x 8-16 µm; sinuous strongyles: 256-960 x 1-3 µm; oxeas, mainly anisoxeas often with one or both ends telescoped or mucronate: 390-820 x 9-14 µm.
Remarks: We assigned the present species to *Phakellia* because it has distinct sinuous strongyles in combination with styles, often in echinating position. *Phakellia* is an axinellid genus with styles, sinuous strongyles and oxeas, and fan-shaped growth forms, characters which are shared with our new species, but *Phakellia* also has thick tracts of megascleres which are visible as "veins" through the fan, which are not present in our species. These are assumed to be reduced, due to its occurence in deep water. The new species stands out among Caribbean *Phakellia* species in its possession of oxeas.

P. folium Schmidt, 1870 differs from our material in colour (whitish grey alive for *P. folium*), in lacking oxeas, and in having the sinuous strongyles much thicker (7.5-32.5 µm). It shares with our new species similar length ranges for styles and sinuous strongyles and the lack of strongly developed spicule tracts ("veins") (Van Soest and Stentoft ,1988; Alvarez et al., 1998).

P. connexiva Ridley & Dendy, 1887 likewise lacks oxeas and has much thicker sinuous strongyles (15-47.5 µm). Moreover, that species posesses the characteristic "veins" (Alvarez et al., 1998).

Wintermann-Kilian & Kilian (1984) listed *P. robusta* Bowerbank, 1866 for Colombian waters. However, this cannot be correct because *P. robusta* is a North East Atlantic species lacking sinuous strongyles, in stead of which it has sinuous oxeas (Boury-Esnault et al., 1994). Since no description

was included with Wintermann-Kilian & Kilian's record, it is not possible to ascertain whether it conforms to our new species or one of both other Caribbean *Phakellia* species.
Etymology: Named after Bettina Schwarz-Lehnert, who accompanied HL on most voyages and dives. Her help and encouragement was a vital part of all investigations.

Family Agelasidae Verrill, 1907
Genus *Agelas* Duchassaing & Michelotti, 1864

Agelas clathrodes (Schmidt, 1870)

Material: ZMA POR. 13557, Discovery Bay, M1, 26.6.1996,76 m, #J96/34-2; ZMA POR. 13558, Discovery Bay, Dairy Bull, 27.6.1996, 76 m, #J96/39-2; ZMA POR. 13559, Discovery Bay, Dairy Bull, 28.6.1996, 73 m, #J96/43; ZMA POR. 13561, Discovery Bay, LTS, 19.6.1996, 76 m, #J96/13.

Description: Orange or yellow-orange coloured, massively incrusting or flattened, lobate sponge, irregular, lamellate surface, with numerous soft "thorns" and apertures, 0.2-1.8 cm in diameter, circular to elongate. Large apertures sometimes leading through the entire sponge. Smaller (<1 mm) pores in between, interior cavernous. Surface smooth. Consistency elastic, tough.
Skeleton: Ectosome organic with abundant foreign spicules. Underlying a reticulation of tangential spongin fibres, 20-60 µm in diameter, mesh size 100-300 µm. In places there are small spicule brushes protruding through the organic ectosome.
The choanosome is a comparatively dense reticulation of lightly cored or entirely uncored, moderately to heavily echinated sponginfibres, 80-210 µm in diameter; secondaries may not be clearly distinct, ranging 30-130 µm in diameter, always uncored, but usually echinate. Mesh size variable: 50-700 µm.
Spicules: Verticillated acanthostyles (n = 50): 97-251 x 6.6-11.6 µm, with 9-27 rows of minute thorns. Acanthoxeas may occur. Often one or two thick blunt thorns stand obliquely at the blunt end. Spicules are irregurlarly spined, spines reach the point, malformations, bent spicules, acanthoxeas, spicules with two or three points do occur.
Remarks: In colour and growth form this specimen conforms closely to Wiedenmayer's (1977) description of *Agelas clathrodes*. It also conforms in having an isotropic to vaguely anisotropic reticulation of spongin fibres echinated by relativley narrow acanthostyles. The present specimen differs from Wiedenmayer's description in absolute spicule sizes, but because these vary considerably within the genus they are considered to be conspecific.

Agelas conifera (Schmidt, 1870)

Material: ZMA POR 13556, Discovery Bay, LTS, 4.7.1996, 102 m, #J96/55.

Description: Dark brown, massively lobate sponge. Still dark brown in the dry state. Upper side covered with large, circular apertures, 0.5-1.4 cm in diameter and up to 4 cm deep, getting only slightly more narrow. In between these large apertures and on the other sides as well very abundant small apertures 1-3 mm in diameter. Interior cavernous in the surroundings of large apertures, dense in other parts.
Skeleton and spicules: Similar to that of *A. sceptrum*: long cored ascending fibres and interconnecting echinated secondary fibres. Verticillated acanthostyles: 90-200 x 8-10 µm, with 10-20 whorls.
Remarks: The surface and large rimmed oscules are typical of *A. conifera*, but the oscules are not raised in volcano-shaped lobes as is frequently the case in shallow-water specimens of this species.

Agelas dispar Duchassaing & Michelotti, 1864

Material: ZMA POR. 13548, Discovery Bay, LTS, 19.6.1996, 76 m, #J96/4; ZMA POR. 13549, Discovery Bay, Dairy Bull, 27.6.1996, 79 m, #J96/39-1; ZMA POR. 13550, Discovery Bay, LTS, 4.7.1996, 104 m, #J96/52; ZMA POR 13551, Discovery Bay, LTS, 4.7.1996, 104 m, #J96/53.

Description: Branched, lobate or finger-shaped sponge, up to 35 cm long, single branches 6-20 cm long and of variable (1.3-7 cm) diameter. There are flattened areas of the sponge, about 6 x 4 x 1 cm from which finger-shaped branches

develop, with the branches growing in the same level as the flattened area. Upper side dark brown, underside light brown with numerous groups of small pores. Groups of pores in elongate areas, often meandering, 0.5-3.5 cm long, 0.3-0.6 cm wide, single pores about 600-800 μm in diameter. The pores lead into large subdermal cavities. Numerous larger, circular openings (oscules?) mostly on upper, but less frequently also on underside, 0.1-0.7 cm in diameter. Surface smooth. Consistency elastic but firm, hard to cut, gives off a brown exudate while cut. Interior cavernous, dense in places.

Skeleton: The ectosome is organic with an underlying, incomplete reticulation of echinated spongin fibres, 30-100 μm in diameter, mesh size 100-500 μm. In some places ascending fibres protrude beyond the surface, 2-3 x the length of a spicule, crowded with echinating spicules, points facing out, forming spicule brushes, but generally the surface is even with spicules protruding only with a part of their length. Choanosome: there is a more dense reticulation of spongin fibres in the first 0.8-1 mm from the periphery inwards, mesh size 80-220 μm, getting then abruptly wider with a mesh size of 400-640 μm. In the dense part all points of spicules face toward the periphery, generally there is no clear distinction between primaries and secondaries. Most fibres are of equal diameter, 30-90 μm, echinated moderately and cored very rarely by 1-2 spicules. Here and there long ascending fibres occur, 30-230 μm, they are partially cored cored by 2-8 spicules per cross-section, lying 100-150 μm apart. The connecting fibres are of the same diameters, echinated only. In the wider part of the reticulation coring of ascending fibres becomes more rare. Echination of fibres is less dense, points of spicules face in all directions.

Spicules: Verticillated acanthostyles (n=200): 76-216 x 3.5-12 μm, with small knubby thorns in 6-26 whorls. Acanthostyles straight, slightly, or sometimes abruptly bent. Malformations with two points or fused spicules occur relatively often. Point of acanthostyles mostly long without thorns.

Remarks: The specimens conform to Duchassaing & Michelotti's type in shape, colour and surface characters. Also, in terms of colour, smooth surface and posession of relatively short spicules this sponge fits Wiedenmayer's description of *Agelas dispar*. It differs from it in growth form (massive in Wiedenmayer's specimen), in the occurrence of groups of pores on the underside with large subdermal cavities. Wiedenmayer described long rarely branched cored and echinated ascending fibres from the choanosome which are not present in this specimens. As is customary in this genus, there is little correspondence between habit and spicule characteristics of individual specimens, and consequently we adopt here a wide concept of *A. dispar* with a large variation in spicule sizes and ornamentation.

Orange, ball-shaped specimens assigned to *A. dispar* by e.g. Van Soest (1981) are now considered to belong to *A. clathrodes*, although future studies may prove them to be different species.

Agelas sceptrum (Lamarck, 1814)

Material: ZMA POR. 13555, Discovery Bay, LTS, 4.7.1996, 104 m, #J96/54.

Description: Orange coloured, finger-shaped sponge, ochre coloured in the dry state, up to 15 cm long and 1-2 cm in diameter. Circular oscules, 0.3-0.6 cm in diameter, scattered over the surface. Surface crowded with numerous small (around 0.1 cm) pores. Interior poruous, sponge still elastic in the dry state. Consistency alive elastic, soft, tough.

Skeleton: Ectosome organic with pores 100-150 μm in diameter and an underlying reticulation of spongin fibres, 40-80 μm in diameter and a mesh size of 100-350 μm. In the choanosome are long, cored ascending fibres, 80-120 μm in diameter with 4-8 spicules per cross section, lying at distances of 200-500 μm, mesh size 100-700 μm. Secondaries are echinated only, 50-100 μm in diameter.

Spicules: Verticillated acanthostyles (n = 100): 88-208 x 7.5-13 μm, with 10-22 regularly spaced rows of relatively low but broad thorns with a circular base and acute tips. Acanthostyles maintain a constant diameter until shortly before the pointed end.

Remarks: The skeleton is remarkably similar to that of a specimen of *A. conifera* described below. At first the two were considered conspecific on that basis.

Agelas schmidti Wilson, 1902

Material: ZMA POR. 13562, Discovery Bay, M1, 26.6.1996, 82 m, #J96/34-1.

Description: Small, orange coloured, club-shaped sponges, 3-3.5 cm long, 1-2 cm in diameter (3 specimens). Surface smooth, top with numerous tiny apertures, about 1 mm in diameter, interior hollow, outer walls 3-4 mm thick.
Skeleton: Ectosome: erect on the surface stand regurlarly spaced spicule brushes with 18-27 spicules per brush with a nearly circular outline. The surface is supported by a tangential reticulation of secondary fibres with a mesh size of 60-250 μm, echinated on the surface-side only. Choanosome: sometimes branched, heavily cored ascending fibres with 3-8 spicules per cross section and a diameter of 40-120 μm lying at distances of 40-250 μm. Interconnecting secondary fibres, 30-100 μm in diameter, and tertiary fibres, 20-40 μm in diameter make up meshes with sizes of 20-100 μm. There are large cavities (up to 7 mm) in the interior.
Spicules: Verticillated acanthostyles (n=50): 94-170 x 6- 13 μm, with 8-16 rows of spines. Short spineless point, hastately pointed. Rounded heads often with long oblique spines. Acanthoxeas may occur.
Remarks: Internal characters of the present specimen conform rather closely to Zea's (1987) and Van Soest & Stentoft's (1988) descriptions of *Agelas sceptrum*. It differs from their specimens in growth form and number of spicules forming the spicule brushes.

Agelas sventres Lehnert & Van Soest, 1996

Material: ZMA POR. 13553, Discovery Bay, Dairy Bull, 27.6.1996, 76 m, #J96/38; ZMA POR. 13554, Discovery Bay, Dairy Bull, 27.6.1996, 79 m, #J96/39-3; ZMA POR. 13552, Discovery Bay, Pinnacle II, 79 m, dead skeleton, #J96/58.

Description: The specimens differ in colour and size of apertures. They are considered to be conspecific in view of internal characters. J96/38 is a white-yellow finger-shaped sponge, 12-17 cm long and 1.5-2.3 cm in diameter. Surface smooth, several circular apertures, 1-3 mm in diameter scattered over the surface. Interior cavernous.
J96/39 is a bright orange coloured finger-shaped sponge, 12 cm long and 1.1-2.2 cm in diameter. Surface crowded with large circular apertures, 0.3-0.7 cm in diameter, which often lead through the entire sponge. Interior therefore extremely cavernous. Often several of these circular apertures fuse to form elongate apertures of irregular outline. J96/58 appears to be a dead skeleton only.
Skeleton: Ectosome organic with an underlying tangential reticulation of spongin fibres, 20-40 μm in diameter, uncored but echinated, mesh size 100-300 μm. Choanosome: long ascending fibres, 30-80 μm in diameter, cored (3-6 spicules per cross section) and echinated, lying at distances of 200-600 μm. The uncored secondaries and tertiaries with diameters of 30-50 μm are sparsely echinated. Mesh size 100-200 μm.
Spicules: Verticillated acanthostyles (n=50): 86-239 x 6-10.5 μm, with 7-15 rows of small spines. Long spineless point. Spicule diameter constant until reaching the point. Spicules sometimes bent.
Remarks: The growth form and cavernous interior of J96/39-3 and J96/58 conform definitely with the type of *Agelas sventres* Lehnert & Van Soest, 1996. J96/38 is considered conspecific in view of similar skeletal architecture and similar acanthostyles.

Agelas tubulata Lehnert & Van Soest, 1996
Fig. 33

Material: ZMA POR. 13560, Discovery Bay, LTS, 21.6.1996, 91 m, #J96/24.

Description: Long, brown, branching tubes (Fig. 33), whole sponge up to 1 m long, single tubes ca. 20-37 cm long, 3.5-5 cm in diameter, central aperture 2-2.5 cm in diameter. Numerous small (< 1 mm) pores scattered over the smooth surface. A few larger (2-4 mm) apertures visible. Interior walls of tubes lined with a thin, dirty yellow-coloured membrane. Consistency elastic, tough, brown to ochre-coloured exudate while cutting. Interior dense. Surface often infested by zoanthids.
Skeleton: Ectosome organic. Choanosome almost an isotropic reticulation of uncored (only occa-

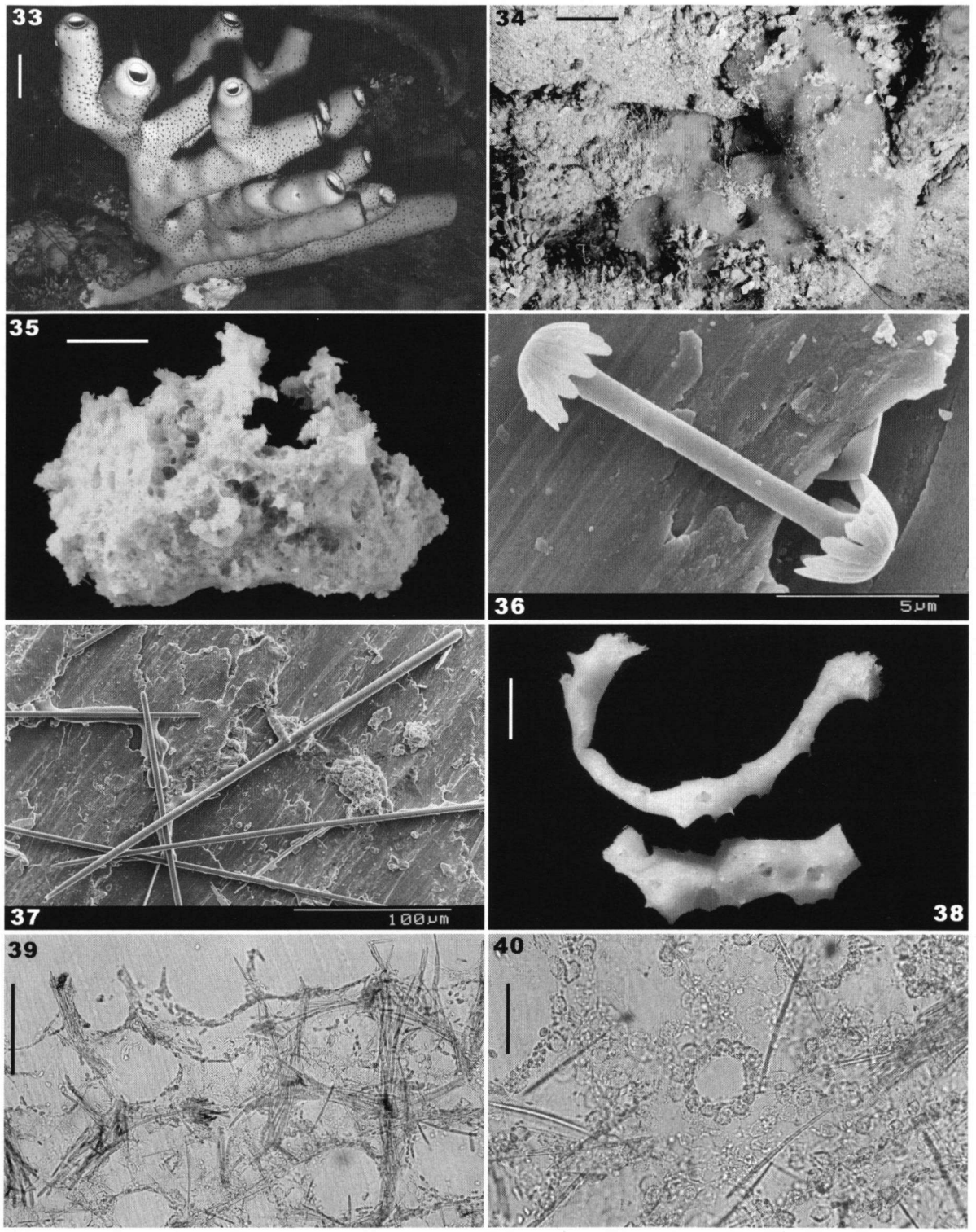


Fig. 33: *Agelas tubulata* Lehnert & Van Soest, 1996, photographed in situ before collection (scale = 5 cm). Figs 34-37. *Iotrochota agglomerata* sp. n., 34. photographed in situ before collection (scale = 1 cm), 35. holotype ZMA POR. 13564 (scale = 1 cm), 36. birotula, 37. style. Figs. 38-40, *Callyspongia densasclera* sp. n., 38. holotype ZMA POR. 13574 (scale = 1 cm), 39. cross section of peripheral skeleton (scale = 250 µm), 40. detail of choanosome (scale = 100 µm).

sionally a few coring spicules were observed) and sparsely echinated spongin fibres, 50-120 µm in diameter. Mesh size 150-600 µm.
Spicules: Verticillated acanthostyles (n=50): 78-210 x 5-12 µm, with 10-32 rows of minute thorns. Three rows of thorns at the blunt end are somewhat larger, towards the pointed end rows of thorns get crowded. Spicules mostly conical, getting narrower towards the tip.
Remarks: This species resembles the type of *A. tubulata* Lehnert & Van Soest, 1996 in habit but differs somewhat in skeletal architecture: The type specimen is reported to have a very neat anisotropic reticulation of ascending primary fibres, 40-70 µm in diameter, cored by 1-4 spicules, diverging to the surface, lying at distances of 300-400 µm apart, and interconnecting secondary fibres 20-50 µm diameter, forming almost square meshes; primary and secondary fibres are rather similar in diameter; here and there tertiary fibres. The present specimen has an almost isotropic reticulation of fibres with no clear distinction between ascending and connecting fibres. These features are apparently subject of considerable intraspecific variation.

Genus *Ceratoporella* Hickson, 1912

Ceratoporella nicholsoni (Hickson, 1911)

Material: Lehnert collection: J96/3-3,5, Runaway Bay, Pear Tree Bottom, cave, 18.6.96, 22m; J96/32-8, Discovery Bay, LTS, 25.6.96, 88 m; J96/34-7, Discovery Bay, MI, 26.6.96, 79 m.

Description: Mainly hemispherical with a calcareous, very dense basal skeleton. Surface smooth, orange coloured, sometimes cylindrical elevations caused by different growth of the basal skeleton. Oscular canals radiate around oscules. Additional to the basal skeleton there are verticillated acanthostyles of a wide size-range: 160-280 x 4-8 µm, with less regular whorls of spines than in *Agelas* spp.

Genus *Stromatospongia* Hartman, 1969

Stromatospongia vermicola Hartman, 1969

Material: Lehnert collection: J96/8, Discovery Bay, LTS, 19.6.96, 76 m; J96/9, Discovery Bay, LTS, 19.6.96, 76 m; J96/28, Discovery Bay, LTS, 21.6.96, 88 m; J96/34-10, Discovery Bay, MI, 26.6.96, 79 m.

Description: Orange-coloured sponge thinly growing on a calcareous basal skeleton, with a more irregular surface and less dense than *Ceratoporella nicholsoni.* Always growing together with a polychaete. Verticillated acanthostyles: 90-360 x 6-10 µm.

Genus *Hispidopetra* Hartman, 1969

Hispidopetra miniana Hartman, 1969

Material: Lehnert collection: J96/9, Discovery Bay, LTS, 19.6.96, 76 m.

Description: The living sponge is a thin dark orange-coloured encrustation, as in other "sclerosponges". The basal skeleton is very dense in the interior, comparable to *Ceratoporella*; the surface is tuberculate with many styles protruding. Calcareous basal skeleton. Smooth styles: 56-880 x 6-14 µm.

Order Poecilosclerida
Suborder Myxillina
Family ?Myxillidae Topsent, 1928
Genus *Iotrochota* Ridley, 1884

Iotrochota birotulata (Higgin, 1877)
Material: ZMA POR. 13577, Discovery Bay, MI, 26. 6. 96, 61 m, #J96/34-4.

Description: Black ramose sponge with yellow tinges. Surface conulose. Organic, pigmented ectosome. Choanosome a reticulation of spicule tracts. Spicules strongyles: 150-220 x 4-7 µm, styles: 140-247 x 4-8 µm, birotulates: 10-15 µm.

Iotrochota agglomerata sp. n.
Figs. 34-37

Material: Holotype: ZMA POR. 13564, Discovery Bay, Dairy Bull, 28.6.96, 79 m, #J96/47; paratype: ZMA POR. 13565, Discovery Bay, Dairy Bull, 28.6.96, 73 m, #J96/45-2.
Description: Thinly encrusting, orange coloured

sponge (Figs. 34-35). Size up to 4.5x3.5x0.5 cm. Agglutinates polychaete wormtubes and *Halimeda*- leaves. Between this encrustation and the substrate there are relatively large cavities left open. The underside of the sponge is several mm above the substrate, except for the periphery. Here foreign spicules of different sponges are agglutinated (calcareous spicules, spicules from *Polymastia*, *Spirastrella*, *Geodia*, *Didiscus* and *Erylus*).
Skeleton: Thin organic detachable ectosome with numerous oval pores, 50-100 μm in diameter, and mega-and microscleres strewn in confusion. Spicule brushes protrude from ascending fibres. The choanosome contains considerable amounts of sediment which obscures the plumose spicule tracts. Occasionally there are spongin sheets developed with several spicule tracts running through them.
Spicules: Styles (Fig. 37) to tylostyles, straight or flexous: 256-390 x 3-6 μm, birotulas (Fig. 36): 12-18 μm.
Remarks: At first, we tentatively assigned this species to *Iotrochopsamma* De Laubenfels, 1954, erected for *Iotrochota arbuscula* Whitelegge,1902, because of the incorporation of foreign material in this species. However, *I. arbuscula* has completely replaced its megascleres by sand, and thus does not conform to our specimen which has distinct tracts of megascleres between the foreign material. *Iotrochota* is closest to our material, even though there are no strongyles, and accordingly we propose to assign it to that genus. The present species differs from *I. birotulata* in colour, growth form and in having exclusivley styles instead of the usual strongyles and styles in *I. birotulata.* The styles and birotules are both larger than in *I. birotulata.* The presence of foreign spicules at the basis of this sponge together with some empty space between the underside of the sponge and the substrate points to the possibility that the present species overgrows other sponges which, when they die leave some empty space and their spicules at the basis of *I. agglomerata.*

Iotrochota does not fit well in the family Myxillidae and a new family assignment will be proposed in a forthcoming revision.
Etymology: Named after the agglomeration of foreign material in this species.

Family Crambeidae Lévi, 1963
Genus *Monanchora* Carter, 1883

Monanchora arbuscula (Duchassaing & Michelotti, 1864)

Material: ZMA POR. 13566, Discovery Bay, Dairy Bull, 27.6.1996, 61 m, #J96/39; ZMA POR. 13567, Discovery Bay, Dairy Bull, 28.6.96, 82 m, #J96/48.

Description: Bright red conulose, lamellate, often flattened sponge which starts from a narrow base. The cavernous bushy appearence is made from single branches which fuse again sometimes whereby a mainaxis is maintained.
Skeleton: Organic ectosome with some scattered spicules. In the choanosome frequently branched tracts of megascleres bound by considerable amounts of spongin.
Spicules: (Subtylo-) styles, 180-310 x 2-8 μm, possibly in two categories (thick and thin). No microscleres were present in the examined specimens.
Remarks: The complete absence of microscleres in the present specimens is disconcerting, but a recent study (Van Soest et al., 1996) demonstrated the likely conspecificity of such specimens with those possessing one or more categories of microscleres.

Suborder Mycalina
Family Desmacellidae Ridley & Dendy, 1886
Genus *Biemna* Gray, 1867

Biemna cribaria (Alcolado & Gotera, 1986)

Material: ZMA POR. 13568, Discovery Bay, LTS, 21.6.96, 91 m, #J96/25; ZMA POR. 13569, Discovery Bay, LTS, 21.6.1996, 88 m, #J96/28.
Description: Ochre-coloured big, barrel-shaped sponge with an apical depression with numerous oscules. Surface finely conulose, supported by spicule tracts, rough to the touch, lamellated. Consistency firm, elastic, easy to cut.
Skeleton: The ectosome is charged with sediment, oxeas protrude from choanosomal tracts. Paratangential reticulation of megascleres with single megascleres and microscleres in between.

Choanosome cavernous, with radially halichondroid, plumose polyspicular tracts with spongin, sometimes connected by paucispicular tracts with abundant rhaphids. In between large quantities of sigmata and brushes of rhaphids.
Spicules: Oxeas to strongyles, mammiform or multiple-telescoped endings: 300-550 x 8-12 μm; sigmata in two size categories, large: 50-77 μm, small: 20-26 μm; very abundant, thin rhaphids: 50-80 μm.
Remarks: The specimens conform to those reported from more shallow waters (Lehnert & Van Soest, 1998).

Order Haplosclerida
Family Chalinidae Gray, 1867
Genus *Haliclona* Grant, 1835

Haliclona strongylophora Lehnert & Van Soest, 1996

Material: ZMA POR. 13570, Discovery Bay, LTS, 21.6.96, 91 m, #J96/23; ZMA POR. 13571, Discovery Bay, LTS, 26.6.96, 85 m, #J96/33; ZMA POR. 13572, Discovery Bay, Dairy Bull, 27.6.96, 79 m, #J96/35.

Description: Soft, dark brown, massively encrusting sponge, ochre-coloured in the dry state. No oscules apparent. Surface smooth. Consistency soft, easily crumbled.
Skeleton: The ectosome is an irregular reticulation of single spicules with some sediment. The choanosome is an isotropic reticulation of single spicules with some short paucispicular ascending tracts connected by single spicules.
Spicules: Strongyles: 180-235 x 6-9 μm, thinner growth stages of the strongyles are present with the same length range.
Remarks: The specimens conform closely to the type material described from the same localities in slightly smaller depths (Lehnert & Van Soest, 1996).

Family Callyspongiidae de Laubenfels, 1936
Genus *Callyspongia* Duchassaing & Michelotti, 1864

Callyspongia (Spinosella) plicifera (Lamarck, 1814)

Material: ZMA POR. 13573, Discovery Bay, Dairy Bull, 27.6.96, 64 m, #J96/39-2.

Description: Vase-shaped sponge, getting broader upwards, sides folded. Creamy white coloured with bluish tinges, up to 30 cm in height.
Skeleton: Reticulation of spongin fibres, sparsely cored by thin, strongylote spicules. Ectosome: large meshes of primary fibres are divided into smaller meshes by secondary fibres. Choanosome: reticulation of primary, secondary and tertiary fibres, uncored or sparsely cored.
Spicules: Thin strongylotes: 60-90 x 1-2 μm.
Remarks: This deep-water specimen was white rather than the characteristic iridescent blue of shallow -water specimens. Nevertheless, the surface characters and overall shape are sufficiently similar to be confident that the colour difference is intraspecific variation.

Callyspongia (Callyspongia) densasclera sp. n.
Figs. 38-40

Material: Holotype: ZMA POR. 13574, Discovery Bay, LTS, 21.6.96, 91 m, #J96/21.

Description: Pale, dirty-yellow, thin, fingershaped sponges (Fig. 38), 5-8 cm high and 0.3-1 cm in diameter. Diameter irregular, largest at apical part of the sponge. Irregularly distributed soft "thorns" supported by polyspicular tracts and ending in protruding spicules. Round to oval oscules, 1-2 mm in diameter, flush with the surface. Surface smooth, but microhispid. Consistency firm and elastic.
Skeleton: Ectosome: irregular double-meshed tangential reticulation of polyspicular and paucispicular tracts, occasionally single spicules, embedded in spongin, enclosing larger meshes of about 400-500 μm diameter divided into several smaller meshes of about 100-200 μm. Fibres 25-80 μm in diameter. Upright, protruding spicule brushes frequently at the nodes (Fig. 39). Choanosome: rectangular reticulation of polyspicular tracts embedded in spongin. Spicule density very high compared to other *Callyspongia*. No clear distinction between primary and secondary fibres other than in position.
Spicules: Oxeas (Fig. 40), hastate, occasonally

styles: 184-232 x 6.5-8 μm.
Remarks: Clusters of sigmas were observed occasionally around the protruding spicule brushes and here and there also inside the sponge. Because of this patchy distribution they are regarded as foreign.

The present species has an unusually high ratio of spicules to spongin with the spicules clearly dominating. The asignment to *Callyspongia* is made on the basis of the rectangular choanosomal skeleton and somewhat obscured but nevertheless recognizable double-meshed surface skeleton. Except for *C. pallida*, all other species of the subgenus *Callyspongia* (*C. fallax*, *C. eschrichti*, *C. strongylophora*) have thin strongylote spicules and only slightly cored spongin fibres. *C. pallida* shares the high amount of spicules and spicule morphology with our new species. *C. pallida* differs in having a more regular reticulation of fibres, in having thinner fibres less crowded with spicules and in having shorter and thinner spicules.
Etymology: From Lat. densus: dense, and sclera: scleres/spicules, referring to the high density of spicules.

Family Niphatidae Van Soest, 1980
Genus *Amphimedon* Duchassaing & Michelotti, 1864

Amphimedon caribica (Pulitzer-Finali, 1986)

Material: ZMA POR. 13575, Discovery Bay, LTS, 21.6.96, 85 m, #J96/25; ZMA POR 13576, Discovery Bay, Pinnacle II, 5.7.96, 76 m, #J96/61.

Description: Large, pale yellow coloured platy sponge, up to 30 x 20 x 0.7 cm. Upper side with numerous circular oscules, 1-3 mm in diameter.
Skeleton: Ectosome: tangential reticulation of polyspicular tracts, bound by spongin, mesh size, 80-900 μm. Choanosome: an anisotropical reticulation of thicker primary fibres, connected by secondary fibres nearly at right angles, mesh size 50-800 μm, fibres 45-250 μm in diameter, cored by 3-10 spicules.
Spicules: Oxeas, occasionally styles and strongyles, 160-190 x 3-10 μm.
Remarks: The specimens conform to Pulitzer-Finali's description.

Genus *Niphates* Duchassaing & Michelotti, 1864

Niphates lutea sp. n.
Figs. 41-43

Material: Holotype: ZMA POR. 13578, Discovery Bay, Pinnacle II, 5.7.96, 82 m, #J96/56-6; paratype: ZMA POR. 13579, Mo-Bay, Discovery Bay, LTS, 20.6.96, 85 m #J96/17-3.

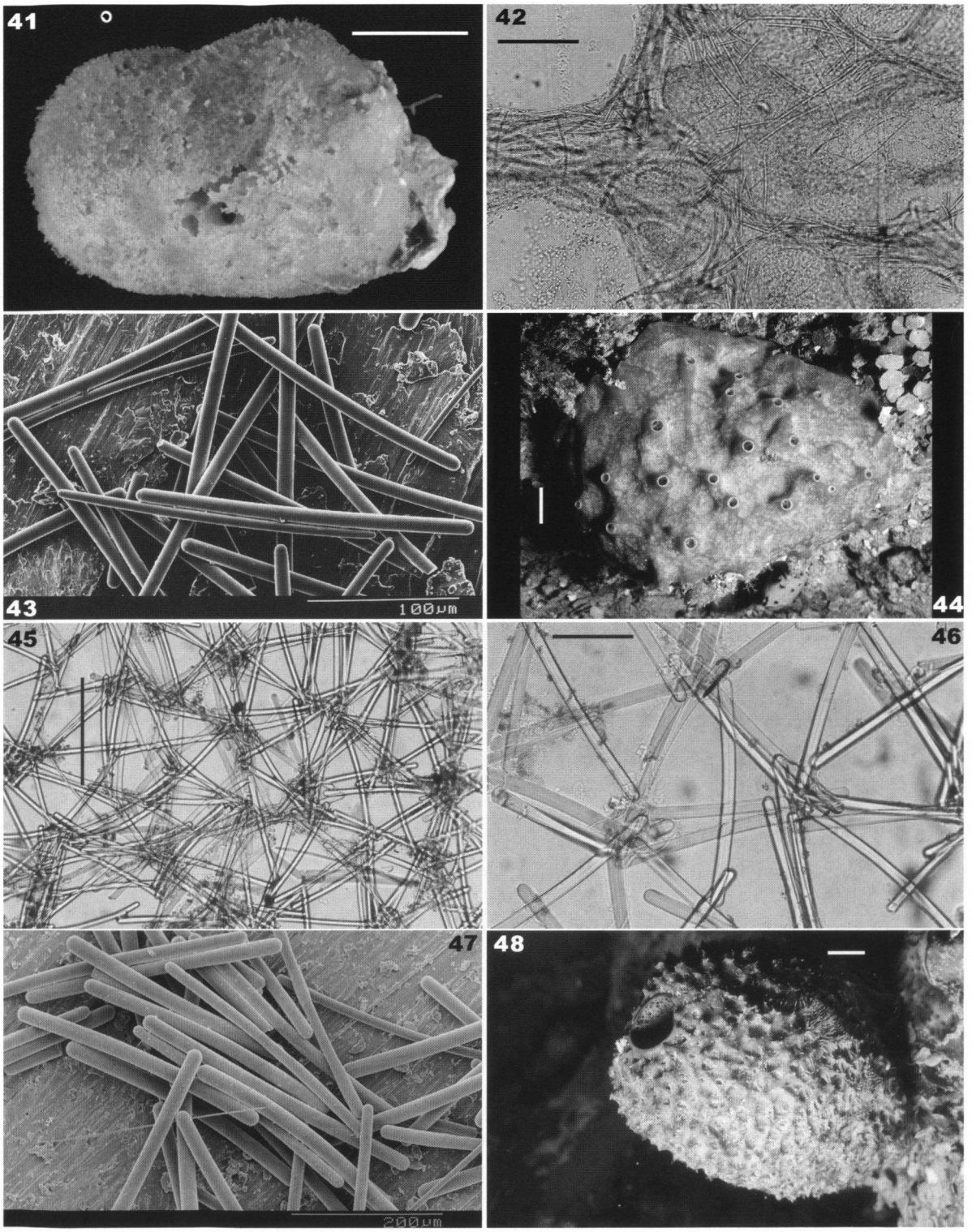
Description: Orange to yellow-orange coloured, nearly cylindrical sponge (Fig. 36), about 3 cm high and 1.2-3 cm in diameter. On one specimen two oscules 2-3 mm in diameter, flush with the surface are visible. Consistency elastic but firm. On top of one specimen there is a softer region, 3-4 mm thick where the skeleton consists of spongin embedded spicule tracts while the rest of the sponge is harder, due to numerous free spicules in confusion. The other specimen has this softer part over the whole periphery. These softer parts can be distinguished from the other surfaces by the unaided eye.
Skeleton: Ectosome: confused tangential reticulation of single spicules, sometimes short, vague tracts. Choanosome (Fig. 37): irregular reticulation of spongin embedded spicule tracts with many loose spicules in between. Fibre diameter: 40-120 μm, mesh size: 80-800 μm.
Spicules: Strongyles (Fig. 38): 168-280 x 5-11 μm.
Remarks: The only West-Indian *Niphates* with predominantly strongyles is *N. alba* Van Soest, 1980. This differs from our species in colour and shape and in somewhat smaller spicules.

The reticulation of polyspicular tracts in combination with strongyles is characteristic for *Strongylophora*, but *Strongylophora* has at least two size categories of strongyles which are lacking in our species.
Etymology: Lat. luteus: yellow-orange, named after the live colour of the sponge.

Family Petrosiidae Van Soest, 1980
Genus *Petrosia* Vosmaer, 1885

Petrosia pellasarca (De Laubenfels, 1934)

Material: ZMA POR. 13580, Discovery Bay, LTS, 20.6.96, 73 m, #J96/18-2.



Figs. 41-43. *Niphates lutea* sp. n., 41. holotype ZMA 13578 (scale = 1 cm), 42. cross section of skeleton (scale = 100 µm), 43. spicules. Figs. 44-47. *Xestospongia deweerdtae* sp. n., 44. photographed in situ before collection (scale = 1 cm), 45. choanosomal skeleton (scale = 250 µm), 46. ectosomal skeleton (scale = 100 µm), 47. spicules. Fig. 48. *Ircinia strobilina* (Lamarck, 1814), photographed in situ (scale = 1 cm).

Description: Brown, plate-like sponge. Size up to 30 cm in diameter and about 1 cm thick. Surface optically smooth but microhispid. Surface covered with minute circular pores (< 1 mm in diameter).
Skeleton: Ectosome a tangential reticulation of single spicules with erect spicule brushes at the nodes. The small size category of oxeas stands erect on ectosomal large oxeas. Choanosome of ascending paucispicular tracts or single spicules connected by single spicules, mesh size 100-150 μm.
Spicules: Strongylote oxeas, occasionally stylotes in two size-classes, small ectosomal strongylote oxeas: 20-34 x 2-3 μm echinating the larger strongyloxeas: 65-280 x 6-10 μm; microscleres rare thin toxas: 20-40 μm.
Remarks: The skeletal architecture resembles that in *Haliclona* but the two size classes of oxeas fit exactly the spicules of *P. pellasarca.*

Genus *Strongylophora* Dendy, 1922

Strongylophora dendyi Hechtel, 1969

Material: ZMA POR. 13591, Discovery Bay, LTS, 21.6.96, 85 m, #J96/29.

Description: Orange brown, almost hemispherical (3 cm in diameter), hard sponge. Three circular oscules, 3-4 mm in diameter, are scattered over the smooth surface. Interior dense. It is brown in preservative.
Skeleton: Ectosome: tangential reticulation of pauci- to polyspicular tracts, 30-70 μm in diameter, mesh-size 160-400 μm further divided by single large spicules. Small size-category of spicules echinate tracts. Choanosome: reticulation of polyspicular tracts, 40-100 μm in diameter, mesh size 100-500 μm, with many loose spicules in confusion in between.
Spicules: Strongyles in a wide size range, divisible in at least three size categories: 164-193 x 6-10, 97-117 x 3-5, and 44-61 μm; thin oxeas probably in two size categories: 160-176 x 2-3, and 45-86 x 2-3 μm.
Remarks: Hechtel's specimen was described as a thin encrustation, 2-3 mm in thickness, cream to dull white in colour. Our specimen was orange brown and nearly hemispherical. Hechtel described smaller microxeas (18-28 μm). The larger size-range of oxeas in our specimen is considered to be within species variability. Also, the distinction between oxeas and strongyles is frequently difficult in a large number of spicules.

In our specimen, two size categories of sigmata, 20-32 μm and 57-81 μm and thin toxas, 70-110 μm, have been observed, but these are considered foreign. Incorporation of foreign spicules seems to be common in this species as Hechtel reported arcuate isochelae and oxyspherasters in his specimen.

Genus *Xestospongia* de Laubenfels, 1932

Xestospongia muta (Schmidt, 1870)

Material: ZMA POR 13581, Discovery Bay; Dairy Bull, 28.6.96, 73 m, #J96/45; ZMA POR. 13582, 13601, Discovery Bay, LTS, 19.6.96, 70 m, #J96/6; ZMA POR. 13583, Discovery Bay, Dairy Bull, 28.6.96, 84 m, #J96/41.

Description: White, reddish brown and violet mottled, vase-shaped sponge, very hard.
Skeleton: Ectosome a tangential reticulation of polyspicular tracts and single spicules. Choanosome a reticulation of polyspicular tracts: 150-300 μm in diameter, mesh size: 150-1000 μm.
Spicules: Strongyloxeas: 300-460 μm.

Xestospongia deweerdtae sp. n.
Figs. 44-47

Material: Holotype: ZMA POR.13584, Discovery Bay, Pinnacle I, 26.6.96, 82 m, #J96/34; paratype: ZMA POR. 13585 (dry), Discovery Bay, LTS, 19.6.96, 76 m, #J96/10.

Description: Thickly enrusting, pink, red and white mottled sponge (Fig. 43). Size up to 10x8x2 cm. Surface smooth. Oscules, 4-6 mm in diameter, on top of conical elevations which are often connected by somewhat lower ridges. Consistency hard, in the dry state only slightly compressible.
Skeleton: The ectosome (Figs. 40, 42) is a dense tangential reticulation of single spicules. The ends of the strongyles are bound by spongin and 6 strongyles meet at one node. Meshes between

nodes of more or less triangular shape, mesh size determined by spicule size. The choanosome (Fig. 41) is an isotropic reticulation of single spicules with some paucispicular tracts with 2-5 spicules per cross-section. Mesh size: 160-580 µm.
Spicules: Thick strongyles (Fig. 39), ends sometimes thicker than the rest of the spicule: 272-346 x 16-32 µm; there are thinner growth stages of the spicules of the same length range.
Remarks: The present species is easily recognized by growth form and colour. It differs from other *Xestospongia* in its regular surface skeleton. It shares the relatively low spicule density with *X. proxima* which differs from our species in growth form, in having an irregular surface reticulation and in having oxeas. The regular spicule reticulation and the low spicule density remind somewhat of the skeletal arrangement in *Haliclona.*

Haliclona strongylophora is the only *Haliclona* species in the Caribbean known so far to have exclusively strongyles. The present new species differs from *H. strongylophora* in colour and growth form, in much longer and thicker strongyles and in having a regular ectosomal reticulation where the ends of strongyles are connected with several others in knotty nodes.
Etymology: Named after Walentina de Weerdt, who independently collected a specimen of this new species; also in recognition of her pioneering work on Chalinid sponges.

Family Phloeodictyidae Carter, 1882
Genus *Oceanapia* Norman, 1869

Oceanapia bartschi (De Laubenfels, 1934)

Material: ZMA POR 13588, Discovery Bay, LTS, 25.6.96, 85 m, #J96/32; ZMA POR. 13586, Discovery Bay, LTS, 20.6.96, 85 m, #J96/15; ZMA POR. 13587, Discovery Bay, LTS, 21.6.96, 91 m, #J96/25.

Description: Large vase-shaped, blackish-brown sponge. Numerous fistules, 3-5 mm in diameter and about 10 mm long cover the surface. Fistules communicate with canals with the same diameter in the interior. Inner side of vase with many circular openings, 1-3 mm in diameter, scattered over the surface.
Skeleton: Dominated by spongin. Abundant sediment particles incorporated becoming more scarce towards the interior. Ectosome: confused reticulation of single spicules supported by polyspicular tracts embedded in spongin. Inclusions of sediment particles in fibres. Choanosome: coarse reticulation of polyspicular tracts embedded in spongin, fibres 250-600 µm, mesh size 250-2000 µm, inclusions of sediment particles abundant in fibres. Between outer and inner wall of vase there are fine meshed, parallel, two-dimensional meshworks of spongin embedded spicule tracts. Distance between fine two-dimensional nets 2-4 mm. Spongin embedded polyspicular tracts, 120-280 µm in diameter with a mesh size of 100-700 µm. Spicules mainly in the central part of spongin-fibres. Fibres yellow, clearly laminated, free of sediment. Inner canals lined with a layer of confused single spicules, embedded in spongin, in parts spicules vaguely arranged in tracts.
Spicules: Strongyles of a wide size range: 78-300 x 2-10 µm.

Genus *Aka* De Laubenfels, 1936

Aka coralliphaga (Rützler, 1971)

Material: ZMA POR. 13589, Discovery Bay, Dairy Bull, 28.6.96, 73 m, #J96/44.

Description: Bright yellow sponge, occasionally thickly encrusting, but more often only thin walled, yellow oscular chimneys are visible at the surface. Large amounts of mucus when sponge is lifted out of the water.
Skeleton: Polygonal reticulation of polyspicular tracts.
Spicules: Mucronate oxeas, 120-165 x 3-7 µm.

Aka xamaycaensis (Pulitzer-Finali, 1986)

Material: ZMA POR. 13590, Discovery Bay, LTS, 20.6.96, 85 m, #J96/17.

Description: White tubes of 6-8 cm long, up to 12 mm in diameter, cut off at the substrate in which their base was excavating.
Skeleton: Ectosome: a round-meshed paratangen-

tial reticulation of spicule tracts surrounding uniform meshes of 100-150 µm in diameter. Choanosome differentiated into a subectosomal condensed fine-meshed isotropic reticulation made by spicule tracts of up to 40 µm in diameter with a core of 4-12 spicules forming meshes of 100-150 µm diameter, and a basal/central coarser reticulation of thick spicule tracts up to 150 µm in diameter forming irregular-shaped meshes of up to 600 µm.
Spicules: Mucronate oxeas, curved: 126-148 x 3-5 µm.
Remarks: The white colour in combination with the long, isodiametric tubes, is characteristic for this species.

Order Dictyoceratida
Family Spongiidae Gray, 1867
Genus *Hyattella* Lendenfeld, 1889

Hyattella cavernosa (Pallas, 1766)

Spongia bresiliana Boury-Esnault, 1973: 290, pl. 2 fig.3
Hyattella intestinalis; Van Soest, 1978: 23, pl. IV fig. 2, text-fig. 8 (not: Lamarck, 1814)

Material: ZMA POR. 13592, Discovery Bay, Dairy Bull, 28.6.96, 73 m, #J96/45.

Description: Branched, finger-shaped, brown-green coloured sponge. Up to 25 cm high and 1-2 cm in diameter. Interior cavernous, canals leading to oscules, 0.4-0.9 cm in diameter, flush with the surface.
Skeleton: There is a thin, detachable organic ectosome with abundant foreign spicules. The choanosome is a coarse reticulation of clear yellow spongin fibres, 16-47 µm in diameter, mesh size 160-900 µm. Meshes mostly hexagonal, fibres not stratified, but there is a weakly demarcated central part of the fibres (pith?). No clear distinction between primary and secondary fibres.
Remarks: Van Soest (1978) reported that the organic ectosome "is supported uniformly or only in places by a special dermal "veil" of very slender spongin fibres". This is absent in our specimen.

Family Irciniidae Gray, 1867
Genus *Ircinia* Nardo, 1833

Ircinia strobilina (Lamarck, 1816)
Fig. 48

Material: ZMA POR. 13594 (alcohol), 13595 (dry), Discovery Bay, Dairy Bull, 27.6.96, 67 m, #J96/39; ZMA POR. 13596, Discovery Bay, Dairy Bull, 28.6.96, 70 m, #J96/49.

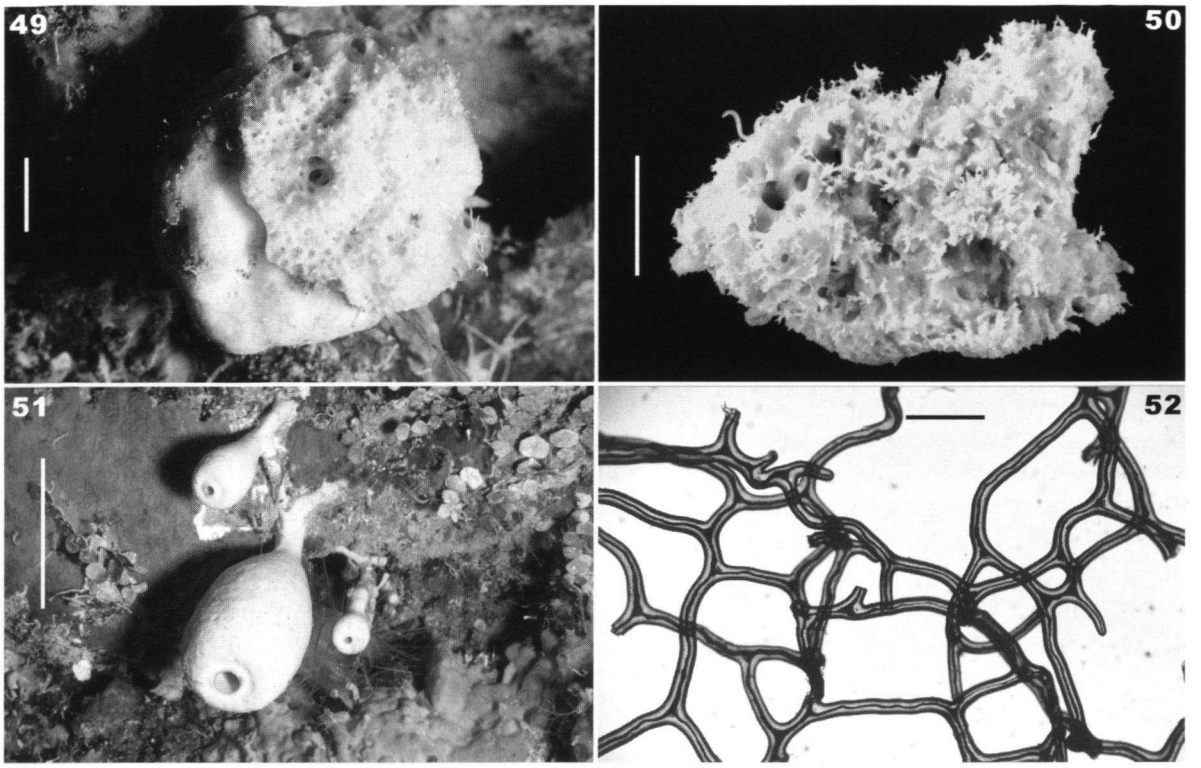
Description: Dark to light grey ovoid sponges which start from a narrow base. Surface covered with soft conules. On the surface there are areas of pore-fields and circular oscules, flush with the surface. Consistency elastic but difficult to cut. Shrinks considerably and gets hard upon drying.
Skeleton: Ectosome organic, loaded with sediment. Choanosome: primary fibres: 150-350 µm in diameter, loaded with sediment and foreign spicules; secondary fibres: 18-76 µm in diameter, with less or without foreign material. Filaments: 5-9 µm in diameter with distinct rounded to oval heads, 8-14 µm in diameter.
Remarks: The growth form of the specimen is somewhat unusual, but other characters fit with descriptions of *I. strobilina.*

Order Dendroceratida ?
Family Dysideidae Gray, 1867
Genus *Euryspongia* Row, 1911

Euryspongia lankesteri sp. n.
Figs. 49-50.

Material: Holotype: ZMA POR. 13593, Discovery Bay, Dairy Bull, 28.6.96, 79 m, #J96/47-2.

Description: Alive the holotype was a pale yellow, massively encrusting sponge (Fig. 49). It is about 6 cm in diameter, 2-3 cm high and was encrusting on *Discodermia* sp. The surface is irregularly reticulate to conulose and several circular oscules flush with the surface were observed in the live specimen. The sponge is very soft and easily crumbled (Fig. 50).
Skeleton: The primary fibres are irregular in outline and heavily cored by sediment and foreign spicules, they are 40-80 µm in diameter. The secondary fibres are devoid of foreign material,



Figs. 49-50. *Eurypongia lankesteri* sp. n., 49. photographed in situ before collection (scale = 1 cm), 50. holotype ZMA POR. 13593 (scale = 1 cm). Figs. 51-52. *Aplysina bathyphyla* Maldonado & Young, 1998, 51. photographed in situ before collection (scale = 1 cm), 52. polygonal reticulation of pithed fibres (scale = 500 μm).

clearly stratified, pale amber in colour, and 15-30 μm in diameter. The reticulation is very irregular, with secondary fibres extending in many directions, branching and subdividing without forming clearly defined meshes.

Remarks: The present species is assigned to *Eurypongia* because secondary fibres are stratified, uniformly pale-coloured, uncored, and are branching and anastomosing. It is not unlike *Eurypongia delicatula* Bergquist, 1995 from New Caledonia in aspects of the skeleton.

Our new species differs from *E. rosea* De Laubenfels, 1936 in its pale yellow colour (red-rose in *E. rosea*) and the much less conspicuous surface conules.

Etymology: Named after Kathy Lankester who accompanied HL on several trimix-dives.

Order Verongida
Family Aplysinidae Hyatt, 1877
Genus *Aplysina* Nardo, 1833

Aplysina bathyphyla Maldonado & Young, 1998
Figs. 51-52

Material: ZMA POR. 13597, Discovery Bay, LTS, 21.6.96, 88 m, #J96/27; ZMA POR. 13598, Discovery Bay, LTS, 25.6.96, 85 m, #J96/32.

Description: Tube shaped, whitish-yellow sponge with a basal thin stalk (Fig. 51). Turns black upon drying. Sponge up to 16 cm long, and 3.5 cm in diameter (4-6.5 cm in Maldonado & Young's specimens), stalk about 5 cm long and 1-1.3 cm in diameter. Central canal 1 cm in diameter. Surface smooth or very finely conulose. Diaphragm-like membrane around the apical opening. Asexual reproduction with stolons (Fig. 51).

Skeleton: Hexagonal meshwork of laminated and pithed spongin fibres (Fig. 52). Mesh-size: 0.6-2 mm. Fibres: 120-160 μm in diameter (Maldon-

ado & Young report a larger range: 114-242 μm); at the surface fibres are pointed and often bifurcate. Pith: 12-25% of the fibre diameter (Maldonado & Young record 9-12 %).

Ecology: Deep-water, 60-150 m.

Distribution: Bahamas, Jamaica.

Remarks: Our material conforms closely to the type and other specimens described by Maldonado & Young from the Bahamas. These authors discussed the resemblance of the present species with East Pacific *A. azteca* Gomez & Bakus, 1992, and they concluded that the two are not closely related and may in fact be members of different genera and families. *A. azteca* was reassigned to the genus *Suberea* Bergquist, 1995 recently erected in the family Aplysinellidae, because of its dendritic pattern of fibre arrrangement and thickness of fibres and pith. The authors omitted to discuss *Aiolochroia* Wiedenmayer (1977) as a possible alternative assignment for *azteca*, since that genus (with type *Dendrospongia crassa* Hyatt, 1875) likewise possesses dendritically arranged thick fibres with wide pith.

A further specimen of *A. bathyphila* to be reported is from the Bahamas, Lee Stocking Island, 1995, from a depth of 122 m (ZMA POR. 13599).

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