SPONGES FROM THE SOUTH-WEST OF AFRICA: DESCRIPTION OF SPECIES.

by María-Jesús Uría
Instituto de Investigaciones Pequeñas, Apdo 15, ILANES (Gonao), C.S.I.C.
Spain.

ABSTRACT

This paper deals with the faunistic study of 27 species of sponges collected off Namibia during different Spanish expeditions. Most of the species are described and some taxonomic aspects are also considered.

The name *P. levii* is proposed for the southern African species *P. levii* Lévi, since this latter name has already been used for a North Atlantic species (Stephens 1917).

INTRODUCTION

The sponges dealt with in this paper were collected by a commercial trawler from the slope and continental shelf of Namibia. As the main objective of these expeditions was to study the Namibia’s trawl fisheries, the samples were taken from soft bottoms, where trawlers were able to operate. Therefore, areas with rocky or hard bottoms, with a higher sponge diversity, were purposely avoided, and as a result just four stations produced sponges. It is, however, also possible that certain small, unconventionally-shaped specimens or encrusting forms were missed.

The sponges found have been re-described in order to illustrate possible species variability and to enable the aptness of the classifications to be verified. Four new species from this same area (*Isodactyla chichatoua*, *Ponars broquenelensis*, *Microxoa namibiana* and *Geißleria fortis*) have already been described (Uría, 1984).

MATERIAL AND METHODS

The material was sampled by trawl gears operated from the trawler “Chicha-Touza”. Effective trawling time lasted half an hour, and the coordinates given indicate the position at the beginning of each trawl.

Sampling Stations

- Station VP-1: Valdivia Bank, 26°11’S, 60°16’E. Depth 223-242m. Hard bottom covered by extensions of *Pachastrellus montifera*.
- Station BP-5: S 137°9’E. Depth 240m. Sandy and muddy bottom.
- Station BF-55: 29°45.8’S; 140°37.4’E. Depth 467m. Green-grey mud.
- Station BP-58: 29°30.9’S; 146°55.5’E. Depth 260-289m. Bottom of dead, hard corals. Infralittoral zone off Walvis Bay. The chaloids of the alga *Ecklonia maxima* were trolled off Walvis Bay. The good condition of the en-dobent fauna indicated that it came from a nearby littoral zone.

RESULTS

Description of species

Order Astrophorida

Family Pachastrellidae Carter 1875

*Ponars sphaera* (Lendenfeld 1906)

Synonymy: *Pappysula sphaera* Lendenfeld 1906

Material examined: 1 specimen (B-27) growing on a *Lophodella* skeleton. Station BP-58.

Description: Encrusting specimen. Surface smooth but rough to the touch, with a reticulated pattern produced by the tangential arrangement of the clados of dichotomies. Oostrea and ostias not evident. Consistency firm and the colour, in yellow white.

Spicules (Fig. 1a)

Dichotomies: With a relatively short rhomboid, 700-850 μm x 70-94 μm in size, and a diademaclad longer than protoclad (300-450 μm x 13-19 μm and 100-150 μm x 24-33 μm, respectively).

Oosta: fusiform, curved, 850-1.580 μm x 12-52 μm in size.

Microxoa: Very characteristic in shape. The ends of the larger ones are curved to the same side; the smallest ones are centrotyle. Size: 30-120 μm x 4-6 μm.

Skeletal arrangement: Main skeleton made up of irregularly arranged oostrea and dichotomies with clad tangential to the sponge surface and rhomboids directed towards. Microxoa scattered in the choanosome and densely aggregated in the ectosomal layer.


Remarks: The author agrees with Topsom (1894) that the presence of absence of oostrea is not sufficient to differentiate the two genera when the rest of the sponges are similar. For this reason the author regards the genus *Pappysula* Schmidt 1868 to be a synonym of *Ponars*.

This species differs from *P. candidata* in the size of the megacelees and the shape of the micraxes.

Family Pachastrellidae Carter 1875

*Pachastrella montifera* Schmidt 1868

Synonymy: *Pachastrella abyssi* Schmidt 1868

Material examined: Some fragments (V-1, V-5, V-6 and V-8) of a large specimen some m2 in size, serving as a substrate for *P. abyssi*, many gastropods and starfishes. Station VP-7.

Specimen with typical external features and spicules. Colour in spirit clean white, with violet spots probably caused by the epibiont gastropods.

Distribution: - a euryhaline and praelute cosmopolitan species.

Order Spiriferida

Family Tretillidae Solias 1886

*Tealia capitata* Levi 1967

Material examined: 1 specimen (B-4). Station BP-55.

Description: Pseudophyloclerid specimen, flattened at the base, covered by bundles of long spicules projecting tangentially from the upper sponge surface and obliquely from the rest of the surface, with an osculum 5mm in diameter, into which flew three excurrent canals, 2mm wide. No differentiated cortex, Surface incrustated with a considerable amount of mud. The colour, in spirit, grey-blue.

Spicules (Fig. 1b)

- Characterized by large megaceles more than 6000 μm in length, generally broken on the macroscopic slides.
- Protomes (occasionally prodactyla): with straight cladl forming an acute angle. The rhombo, at first uniform and straight, narrows slightly and becomes variable curved. Size: ckl, 150-260 μm x 7-12 μm, rhomboid, up to 2900 μm x 10-18 μm.
- Oostreae with a characteristic rhomboid narrowing suddenly at the base, widening again immediately, and then slowly tapering. Size: 6500 μm maximum in length, 18-20 μm in diameter at the base.
- Oostrea: Straight and highly asymmetrical, one end thick and rather blunt, the other thin and sharp. Size: 2500 μm x 45-65 μm.

Signimaspes: Somewhat rough, maximum diameter 11-17 μm.

Skeletal arrangement: Skeleton radial or slightly spiral. The oostrea, ornamentae and protomes produce pronounced extrastrial hiapsulation. Signimaspes scattered and extraordinarily abundant.


Order Hadromerida

Family Subbriedesbachi Schmidt 1870

Pseudobriedes hylinda (Riley & Denys 1887)

Synonymy: *Hymenactis (7) hylinda* Riley & Denys 1887

Material examined: 1 specimen (B-4) incrusted with calcareous debris. Oostrea not evident. Ectosomal differentiated and partially detachable with its own skeleton. The colour, in spirit, is dirty white.

Spicules (Fig. 2a)

- Tylostyles: rather fusiform, with a distinct head, measuring 210-630 μm x 8-26 μm; it is not possible to divide them into two size categories.
- Skelatal arrangement: Main skeleton consisting of irregular bundles of spicules supporting the ectosome. Ectosomal Skeleton made up of tangentially arranged tylostyles.


Pseudospongia sp. 1

Material examined: 1 specimen (B-32) growing on a polychaete tube. Station BP-58.

This specimen shows a skeletal arrangement typical of the genus *Pseudobriedes*, its spicules being more related to shape in those of the family *Polymastidae* (small tylostyles and large strongyles, fig. 20). More specimens would be needed in order to describe the species properly.

Pseudobriedes epiphyllum (Lamarr 1816)

Synonymy: *Alcyoniopsis epiphyllum* Lamarr 1816

Subspecies subulata Gray, Topsom 1889

Material examined: 1 specimen (B-36) on an Alcyonium. Station BP-58.

Description: Small crust, 2 cm across and 1.5 mm thick, easily detachable from the substrate. Aquiferous openings not apparent and ectosome undifferentiated. Firm consistencty and hispid surface. The colour, in spirit, is yellowish beige.
Fig. 1 – a) Proames spherae: (1) oxoate, (2) diactinaene, (3) microxene, b) Tetilla capillo-rosea: (4) anulitaes, (5) probriaenes, (6) asymmetric ends of an oxoate (7) sigmaspines.

Fig. 2 – a) Pseudonabertites hyalinus: tylostyles, b) Pseudonabertites sp.: tylostyle and strongylooxote, c) Protuberites epiphyllum: tylostyles.
Spicules (Fig. 2c).

Tylostyles: With a pronounced head slightly flattened at the top, and either a straight or a curved shaft with no differentiated neck. Separable into two size categories, 100-170 μm x 5-5.5 μm and 350-440 μm x 7-10 μm.

Skeletal arrangement: Skeleton consisting of short, plumose bundles of tylostyles whose ends project through the sponge surface, causing external impingement.

Distribution: – North Atlantic and Mediterranean Sea (very common), Gulf of Mexico and eastern coast of Australia.

Remarks: The markedly characteristic spicule shape of P. epiphyllum made it possible to identify this specimen from Nanibúa, despite the skeleton made up of short columns, typical of the genus Loxoconchus. Nevertheless, Topsent (1909) described this type of skeletal arrangement for thick specimens of P. epiphyllum. This feature, as Topsent himself pointed out, calls into question whether inclusion of Lamarck’s species in the genus Probalanoglossa is correct.

*Ficalula fluviata* Linne 1757

(Synonymy: *Acyphalema fluviata* Linne 1757)

(For complete synonymy see Topsent, 1909)

Material examined: 1 specimen (B-62) carried on the back of *Ecadorina major* (Machler, Instituto de Investigaciones Pesqueras, Barceloneta, pers. comm.). Station BP-5.

This orange-colored, massive, flattened specimen has spicules similar to those of North Atlantic and Mediterranean specimens.

Distribution: – North Atlantic (to Senegal), Mediterranean Sea, North Pacific, and Bering Sea.

Order Porifera

Family Mycaleidae

*Lamprobalanoglossa* Lambeck 1905

*Mycale massae* (Schmidt 1862) oceanica Topsent 1924

Material examined: 1 specimen (B-25) wrapped around a tube of a polychaete, along with bryozoa, colonial ascidians, and other sponges. Station BP-58.

Description: Massive specimen, 5 x 3 x 2 cm in size. The surface is uniformly papillated, velvety to the touch, incrusted with mud. Consistency compact but brittle. Thick, detachable ecosphere trailing some spicule bundles from the main skeleton. The color, in spirit, is yellowish brown.

Spicules (Fig. 3c).

Subtylostyles: Fusiform, with a slightly swollen base and a straight or slightly curved shaft tapering to a blunt point; some transformed into asymmetrical excor with a blunt point. Size: 520-810 μm x 15-24 μm.

Antiochus 1: Very large (95-120 μm in length and 15 μm in shaft diameter) arranged in rosettes in the ecosphere.

Antiochus II: Scattered in the choanosome and in the ecosphere, measuring 34-42 μm in length; a few irregular or malformed.

Antiochus III: Characterized by its small size, 18-25 μm in length, and the sparsely shaped interior palatium.

Signata: Typically shaped, separable into two size categories, 28-45 μm and 13-14 μm.

Raphides: Generally scattered, occasionally arranged in trichoradigmata, linear, 55-80 μm in length.

Skeletal arrangement: Mass skeleton made up of an irregular network of spicule bundles perpendicular to the sponge surface in the outer layer. μm scattered single spicules. Peripheral bundles protruding through the ecosphere, causing external impingement.

Ectosomal skeleton comprising a tangential layer of scattered single or irregularly arranged bundles of subtylostyles.

Microclerids generally scattered, but the largest antiochus form rosettes in the ecosphere.

Distribution: – The species inhabit the North Atlantic Ocean and the Mediterranean Sea. The majority occur in the more common specimen recorded from the White Sea and the Azorean Archipelago (Topsent 1924).

Remarks: The Nanibúa specimen conforms perfectly to the variety oceanica, which differs from the typical species in the narrower base of the subtylostyles and larger size of the antiochus. This specimen has, along with the subtylostyles, a number of oxea as a result of the progressive narrowing of the base of the subtylostyles. This feature approaches it to the Antarctic species *Mycale acerosa* Kirkpatrick 1907.

*Poreopera atlantica* Stephens 1917.

Material examined: 2 specimens (V-2a and V-2b) encrusting on the sponge *Pachastrella montifera*. Station VP-7.

Description: Small crusts, 1.5 cm and 2 cm across, respectively, with no apparent ecosphere. Surface smooth and glabrous. Ecosphere partially detachable from the choanosome. The colour, in spirit, is pinkish.

Spicules (Fig. 3a).

Subtylostyles: Straight or slightly curved, measuring 320-400 μm x 6-10 μm. Thickness somewhat irregular along the shaft, with a slight

![Fig. 3](image-url) – a) *Poreopera atlantica*: (1) subtylostyle, (2) sigma, (3) toxa, (4) antiochus of two categories, (5) big antiochus arranged in rosettes. b) *Poreopera teri*: (6) subtylostyles of two categories, (7) antiochus, (8) sigma, (9) *Mycale massae* oceanica: (9) subtylostyle and strongly glucoside, (10) raphide, (11) signata of two sizes, (12) isochelis of three sizes.
construction just under the base. Two size categories not distinguishable.

Anomoea I: With a long upper palette making up 2/3 of the spicle length, very short shaft and general contour rounded. Size: 22-30 μm in length.

Anomoea II: Similar in shape, but smaller and less abundant than anomoea I, 11-15 μm in length.

Signata: Open C or S-shaped, measuring 70-110 μm. Often presenting one normally curved end, with the other sharply bent and twisted around by 90°. Minute atrium present on the outer edge between the ends.

Toxa: Linear, gently curved, 45-50 μm in length (only three such spicles found).

Skeletal arrangement: Skeleton consisting of an irregular network of subtelostyle bundles along with scattered spicles, either in the chonosoma or in the ecotosome. Signata more abundant in the chonosomal layer, where the anomoea I are arranged in rosettes. The three toxas were found in the chonosoma.

Distribution: – North Atlantic, coast of Ireland (Stephens 1917)

Remarks: Three specimens conform very closely to the species found by Stephens (1917) on the Irish coast. The size and shape of their spicles make them closely resemble those of this North Atlantic species than those of any described from the Indian Ocean or from the South Atlantic.

The apparently unusual distribution of this species (1 recorded from the North Atlantic; 2 recorded from the South Atlantic) does not seem to them to be any reason to consider the South Atlantic specimens to be a new species. There are already many species of this genus (P. serpentinum, P. curvatum, P. repus) that are not markedly differentiated.

Parepurella levii n. commun.

Synonymy: P. atlantica Levi 1963 (not P. atlantica Stephens 1917)

Material examined: 2 specimens growing among the rhizoids of Ecklonia maxima in infra-litoral zone of Waikiki Bay.

Description: Encrusting specimens, 3 mm thick and 2.5 cm in length and 1.5 cm across, respectively, easily detached from the substrate. Ecotosome and oscula not apparent. Consistency brittle. The colour, in spirit, is pale orange. Spicles (Fig. 35).

The spicles closely match those of the South African species (Levi 1963).

Subtelostyles: With a poorly developed head

Separable into two size categories, 300-410 μm x 9.12-μm and 165-220 μm x 4.6 μm.

Anomoea: 23-19 μm in length.

Signata: With a thick shaft, measuring 85-100 μm x 4.6 μm.

Skeletal arrangement: Typical of the genus Parepurella (see description for P. atlantica).


Remarks: The main difference between this and the other Parepurella species without toxas is, as Levi (1963) pointed out, the differentiation of the subtelostyles into two size categories. The species was called P. atlantica by Levi, but this name had been used before (Stephens 1917) to designate a North Atlantic species and so the author proposes a new name, P. levii, for the South African species.

Family Hapacanthellidae Gray 1872

Haemacantha esperidoides (Ridley & Denny 1886)

Synonymy: Vomerina esperidoides Ridley & Denny 1886

Material examined: 1 specimen (B-23) wrapped around a colony of polythete tubes. Station BP.58.

Description: Branching, worm-shaped specimens 20 cm long and 2 cm wide. Consistency firm and compact, rather leathery. Surface clean, very rough to the touch and minutely hispid. Costae-like ecotomes 0.2-1.5 mm thick. Cribiform pore areas described by Ridley & Denny (1887) were not conspicuous because of the contraction caused by this specimen; nevertheless, it exhibited small constrictions (250 μm across) distributed in a regular pattern that surely correspond to these pore areas. The oscula are also scattered along the branches, on the top of conical protruberances. The colour, in spirit, is yellowish-brown, excepting the protruberances, which are brown.

Spicles (Fig. 40)

Oxas: Straight, fusiform, tapering to robust, blunt points (especially blunt in the thick spicles) 300-520 μm x 14-30 μm in size. There is a negative correlation between thickness and length.

Hiocelae: Acicular and tridentate, with the central tooth shorter than the other two lateral teeth, 14-18 μm in length. Subtelostyle: Slightly curved, 100-225 μm x 7-12 μm in size. Smaller ones with thicker spines.

Skeletal arrangement: Main skeletal made up of branched spicle fibres with an either lingual or divergent orientation, ending in dense spicle bundles perpendicular to the sponge surface. Some single oxas and hiocelae are scattered.


Remarks: This specimen was tentatively classed in the genus Desmacodium because of its peculiar skeletal arrangement (Ridley & Denny 1887), very different from the usual broad definition of this genus given by Bowden (1864) makes it possible to maintain D. esperidoides.

Family Myxillaidea Topsor 1928

Myxilla resaca Liebichkühn 1859

Synonymy: Halicinctidae resaca Liebichkühn 1859

Material examined: 2 specimens (B-32 and B-34) on a tube of polychete. Station BP.58.

Description: Typical encrusting specimens, white coloured, in spirit.

Spicles (Fig. 54).

The species are similar to those of boreal species.

Ecotosomal terebrata: Asymmetrical with spiny ends, 160-180 μm x 6-8 μm.

Acanthostyles: With few spines along the tube, 210-260 μm x 9-14 μm in size.

Signata: C and S-shaped, measuring 16-28 μm x 1-2.5 μm.

Stratiformis hiocelae: 15-44 μm in length.

Distribution: – North Atlantic, Mediterranean Sea (very common) and Arctic.

Myxilla simplex Bury 1895

Material examined: 1 specimen (B-14) wrapped around small tubes of polychetes and some fragments of Hydrozoa. Station BP.58.

Description: Corall 1 x 2 cm across and 3 mm thick. Surface glabrous to the naked eye, but minutely hispid through a birefringent microscopic. Distinct and partially detachable ecotomes. Oscula and ostia not visible. Consistency brittle. The colour, in spirit, whitish beige.

Spicles (Fig. 50).

Ecotosomal terebrata: Straight and fusiform, 145-170 μm x 6-7 μm in size.

Acanthostyles: Slightly curved, 100-225 μm x 7-12 μm in size. Smaller ones with thicker spines.

Signata: Sparable into two size categories, 32-40 μm x 2-3 μm and 8-12 μm x 1-5 μm.

Oxas: 25-32 μm in length.

Skeletal arrangement: Main skeletal consisting of a subtelostyle network of acanthostyles with one or two spicles per side. Ecotosomal skeleton composed of tangential terebrata. Scattered signata and hiocelae.


Remarks: The spicles of this specimen are stronger than those of the littoral species described by Levi (1963).

Celleamysilla chironis (Thiele 1905)

Synonymy: Myxilla chironis Thiele 1905

Material examined: 1 specimen (B-30) on Gelilia ferd. Station BP.58.

Description: Small crust 0.5 cm across,
Fig. 4 - a) *Hamaticus espinolae*; (1) style, (2) diancister I, (3) diancister II, (4) sigmas, (5) ectosomal cribopodial area showing the spicule bundles echinated by the diancister I. b) *Dromacanthus nanous*: (6) oxea, (7) acute isochelae.

Fig. 5 - a) *Myxilla rosea*: (1) acanthostyle, (2) tomatus with spiny ends, (3) spatulate isorhiza, (4) sigmata. b) *Myxilla simplex*: (5) acanthostyles, (6) tomata, (7) sigmata, (8) isorhiza.
Surface smooth and glabrous. Neither oscula nor ostia distinct. Ectosome detachable from the choanosome with its own skeleton. The colour, in spirit, is whitish.

Scales (Fig. 6a). Main acanthostyles: Straight or slightly curved, with a poorly distinguishable head and spines all along the shaft. Size: 190-295 μm x 7-11 μm.

Ectosomal acanthostyles: Slightly curved bearing spines all along the shaft, measuring 100-180 μm x 4-7 μm.

Tormota: Straight, with short and occasionally lancolate points, measuring 200-250 μm x 5-6 μm.

Sigmas: Asymmetrical, with one broadly curved end and the other end abruptly bent, chordal length, 25-45 μm.

Icochlea: Accurate, separated into two size categories, 19-30 μm and 12-15 μm in length.

Skeletal arrangement: Main skeleton formed by a subossicles network of acanthostyles with one or two spicles making up the sides. Ectosomal skeleton consisting of a dense layer of tangential acanthostyles supported by bunches of tormota. Scattered icochlea and sigmas.

Distribution: Widespread distributed in the southern hemisphere: Antarctic, Kerguelen Island, Falkland Island, New Zealand, Chile, and Brazil.

Remarks: The genus Cyllorella Dendy 1924 is typified by a dense ectosomal skeleton composed of acanthostyles and acanthozae and a myxilla like main skeleton. It is clearly distinguishable from the genus Ectyosynxilla Landbeck, in which both types of acanthostyles form part of the main skeleton only. The author agrees with Bouys-Enaux & Van Beveren (1982) in maintaining the two genera separate.

Placunomus deciduus Topset 1927

Material examined: 2 specimens (B-17 and B-18) on a Lophothoe skeleton and a brown rock, respectively. Station BP-58.

Description: Small crista, easily detachable from the substrata. Surface uneven and very hirsute. Ectosome and aqueous openings not apparent. The colour, in spirit, dark brown.

Spicules (Fig. 6b).

Ectosomal tormota: Straight, asymmetrical, with one end somewhat broader than the other. Size: 290-230 μm x 2.5-4 μm (specimen B-18) and 250-290 μm x 4-5 μm (specimen B-17).

Acanthostyles: Very stout, curved, with spines all along the shaft, without widened heads. Size: 135-200 μm x 12-20 μm (specimen B-18) and 170-220 μm x 18-20 μm (specimen B-17).

Acanthostyles: Conical, with short spines decreasing in number towards the completely smooth point. Smaller ones are frequently spinulose. Size: 360-610 μm x 15-20 μm (specimen B-18) and 310-600 μm x 21-40 μm (specimen B-17).

Isomeres: Slender, with a curved shaft, and five to nine teeth. They were separable in specimen B-18 into two categories, 63-70 μm in length with five teeth and 30-42 μm in length with seven teeth. All sizes between 35 μm and 55 μm in length were present in specimens B-17, the number of teeth varying between five and nine.

Skeletal arrangement: Main skeleton made up of a basal nodisected network of acanthostyles, in the nodes of which are inserted acanthostyles perpendicularly, reaching through the ectosome, causing external hirsutisation of the sponge. Ectosomal skeleton composed of tormota scattered or in bunches, and numerous icochlea.

Distribution: North Atlantic: Azores and Morocco, at more than 1500 m in depth (Topset 1928). The species seemingly exhibits an Atlantic distribution, confined to colder waters.

Remarks: These specimens conform closely to P. deciduus Topset, differing only in the thicker acanthostyles and in lacking the two categories of acanthostyles. It might be thought that they are young specimens of the genus Ectyosynxilla, described by Livi (1963) as including massive sponges with the same types of spicules as Placunomus. Nevertheless, they differ markedly from the closest species of this genus in respect of spicule size.

Placunomus microsaccus Ridley 1881

Synonymy: Placunomus microsaccus Ridley 1881

Material examined: 2 specimens (B-3, B-35 and B-43) and numerous fragments. Station BP-58.

Description: Massive, irregularly shaped with an anticorona, uneven and hirsute surface. Consistency soft and breakable. Ectosome apparent but not detachable from the choanosome. Orally, 1.5-2 mm in diameter, clustered in poorly defined areas. The colour, in spirit, dark brown.

Spicules (Fig. 6c).

Acanthostyles: Straight or somewhat curved, with spines all along the shaft, more apparent at both ends, which end in a short point. Size: 250-280 μm x 14-18 μm (specimen B-17).

Acanthozae: Pustular, nearly straight, with spine-bearing ends and some irregularity along the shaft. Size: 220-285 μm x 7-8 μm.

Fig. 6 - a: Cyllorella chilensis: (1) main acanthostyle, (2) ectosomal acanthostyle, (3) sigmas, (4) accrate icochlea of two sizes, (5) tormota; b: Placunomus deciduus: (6) acanthostyle, (7) acanthostylar, (8) ectosomal tormota, (9) pluridentate isomere. c: Placunomus microsaccus: (10) acanthostyle, (11) acanthozae, (12) circular-shaped and unconnected bipoceli, (13) classical bipoceils, (14) icochlea of two sizes.
Broader ends in specimen B-35.
Antiochelae: With a stag-shaped prolongation of the lower palettes, 18–28 μm in length. Separable, though not distinctly, into two size categories (11-15 μm and 20-28 μm).
Bipocillia typically shaped, abundant, 10-14 μm in length.
Skeletal arrangement: Main skeleton consisting of a musculiform network of acanthostyles with one or two spicules per side. Ectosomal skeleton composed of tangential acanthostyles either scattered or grouped in bundles. Large antiochelae arranged in rosettes, preferentially in the choanosome. Small antiochelae and bipocillia scattered singly.
Remarks: This species shows great variation in spicule-size. The Namibian specimens have larger spicules similar to those of Antarctic specimens (Koltun 1964).
Some authors consider this species synonymous with *I. chilensis*. Moreover, the features cited by Bousquet-Enault & Van Beveren (1982) to distinguish these two species are readily apparent in the Namibian specimens.

*Bopher chilensis* Ridley & Dendy 1886
Material examined: 1 specimen (B-33) covering some branches of *Hydroida*, Station BP-58.
Description: Crust 1 cm across, surface uneven, haphazard, and incrusted with mud. Ectosome only detachable in certain areas. Oscula inconspicuous. The colour, in spirit, pale orange. Spicules (Fig. 46)
Acanthostyles: Slightly curved, the base narrower than maximum shaft diameter, blunt points, and few spines except at the base and point. Size: 260-320 μm x 15-20 μm.
Acanthostyle: Straight, with spine-bearing asymmetrical ends, 260-270 μm x 6-8 μm; some are polytyloita.
Antiochelae: With a stag-shaped prolongation of the lower palettes, separable into two size categories of 24-33 μm and 11-15 μm in length.
Bipocillia: 1: Small, exhibiting the typical calotte shape, 10-12 μm in length.
Bipocillia B: Irregular or clover-shaped, some bearing spines on the shaft, 14-18 μm in length, very abundant.
Skeletal arrangement: Main skeleton made up of a musculiform network of acanthostyles with three or four spicules per side. Ectosomal skeleton composed of tangential and irregularly placed acanthostyles. Antiochelae and bipocillia scattered throughout the sponge.
Distribution: Sub-Antarctic region and Vancouver, South Africa: Cape of Good Hope (Ridley & Dendy 1887).
Remarks: In this species the clover-shaped bipocillia are smaller than those in specimens from Kerguelen (Bousquet-Enault & Van Beveren 1982). Moreover there are other bipocillia with spiny shafts.

**Hymedesmia aurantiaca** Levi 1963
Material examined: 2 specimens (B-13 and B-16) on a gastropod and a brachiopod, respectively, Station BP-58.
Description: Small crusts less than 2 cm across. Even, slightly hispid surface. Ectosome relatively thick, difficult to separate from the choanosome. The colour, in spirit, pale orange. Spicules (Fig. 70)
Ectosomal tornota: Straight and faniform, slightly curved at the basal portion, measuring 260-310 μm x 5-7 μm.
Main acanthostyles: Somewhat conical, slightly curved near the base, with no distinctly visible heads. Spines decreasing in number from the head to the point, which is completely smooth. Size: 250-350 μm x 11-15 μm.
Accessory acanthostyles: Straight, conical, with a more or less conspicuous head, bearing spines along the full shaft, the spines oriented towards the spicle base. Size: 80-115 μm x 6-9 μm.
Iodochele: Very acute, with short teeth, measuring 23-35 μm in length and 3-5 μm in shaft diameter.
Skeletal arrangement: Hymedesmioid skeleton composed of tangential tornota, scattered or arranged in bundles, in addition to abundant iodochele. Ectosomal pore areas characterized by a higher density of iodochele to the detriment of the tornota.
Remarks: There are several species of the genus *Hymedesmia* whose spicules are related to those in the Namibian specimens, which have been classified under *Levi* 's species on the basis of the relatively thick, orange ectosome and spicle size. The difference is depth (18m for Levi's specimen and 260-269 m for those from Namibia.

Fig. 7 – a) *I. proximum*: (1) acanthostyle, (2) acanthostyle, (3) big antiochela, (4) bipocillia, (5) small antiochela, (6) main skeletal arrangement. b) *Hymedesmia aurantiaca*: (7) main acanthostyle, (8) ectosomal tornota, (9) accessory acanthostyle, (10) acute iodochele.
is not so strange bearing in mind the cold tem-
perature of the surface water in this region.

Family Clathridiidae Westholt 1923

Microciona cf. spinous Carter & Hope 1889

Material examined: 1 specimen (B-6) on a
polychaete tube. Station BP58.

Description: Haploid, encrusting specimen,
with neither vent nor ectosome differentiated.
The colour in spirit is light brown.

Specios (Fig. 8a)

Main acanthostyles: Slightly curved, with a
spines-bearing head and some scattered spines along
the shaft, measuring 200-320 µm x 10-15 µm.

Accessory acanthostyles: Conical, straight,
with spines along the full length, measuring 80-
150 µm x 6-10 µm.

Ectosomal subtylostyles: Straight, with
some rudimentary spines at the base, measuring
220-270 µm x 2-5 µm.

Toxas: With spines on the ends, curvature
quite pronounced, measuring 80-300 µm x 3-4 µm.

Palmate isochals: Infrequent, only two
found, 9 and 10 µm long.

Skeletal arrangement: Main skeleton consist-
ing of short, phalmo columns of main acanth-
ostyles embedded by the accessory acanthostyles.

Ectosomal skeleton comprising a layer of tangen-
tial, irregularly located subtylostyles. Scattered
microscleres.

Distribution: Common species in the North
Atlantic Ocean. The Mediterranean species M.
australis is probably synonymous.

Remarks: The spicules of this species led
the author to include it in this North Atlantic
species but with some reservations, since only
two isochals could be found in it. Lüwi (1960)
stated that these spicules were sometimes scarce.

Microciona sp.

Material examined: 1 specimen (B-26)
on a valve of Terebelliduch. Station BP58.

This small encrusting specimen does not
allow the author to classify it. Its spicules, typical
of Clathridiidae, are represented in fig. 8b. The
skeletal arrangement can be classed between that
of Leptogylaxia and Microciona.

Order Haplosclerida

Family Haliotidae Lamarck 1819

Haliotis tumidus (Thiele 1905)

Synonymy: Remora tumidus Thiele 1905

Material examined: 2 specimens (B-21 and
B-22) among the rhizoids of Ekkleona maxima.
Infrafiltral zone of Walvis Bay.

Description: Encrusting, 5 cm thick
specimen. Slightly hispid surface. Consistency
brittle and crumbly. Ectosome not detachable
from the choanosome. The colour, in spirit, is
whitish on the bottom half and brownish violet
on top.

Spicules (Fig. 9a)

Oxas: Straight or slightly curved, relativ-
ely thick, 110-135 µm x 5-10 µm, some trans-
formed into styles.

Skeletal arrangement: Skeleton consisting
of an irregular network with paucispicular sides.
Spongula limited to the junctions between
spicules. No differentiated ectosomal skeleton.

Distribution: Antarctic, sub-Antarctic
region, Chile, and Argentina.

Haliotis cf. delicata (Sars 1978)

Synonymy: Remora delicata Sars 1978

Material examined: 1 specimen (B-20)
among the rhizoids of Ekkleona maxima, together
with Haliotis tumidus. Infrafiltral zone of Walvis Bay.

Description: Cushion-shaped specimen, 2
cm in diameter. Slightly hispid surface. Consis-
tency brittle. Oxas not apparent and ectosome
not detachable. The colour, in spirit, is pinkish
white.

Spicules (Fig. 9b)

Oxas: Slightly curved and regular in size,
measuring 100-117 µm x 6-7 µm.

Skeletal arrangement: Regular network with
paucispicular sides and spongulae at the nodes. No
differentiated ectosomal skeleton.

Distribution: sub-Antarctic region: Tierra
del Fuego.

Remarks: This specimen differs from
H. tumidus, with which it lives in its more de-
licate appearance and its spicule size. It seems to
be conspecific with Sars's species, and more
properly a Haliotis because of the lack of a
differentiated ectosomal skeleton.

Family Gellidiidae Ridley & Dendy 1887

Gellius jacksoni Ridley & Dendy 1887

Synonymy: (?) Gellius taugeboblus

Schmidt 1870

Material examined: 1 specimen (B-19).
Station BP58.

Description: Massive, hard yet friable
specimen. Surface rough to the touch but not
hispid. Ectosome evident, with a tangential
skeleton. Aquiferous openings not distinct. The
colour, in spirit, yellowish beige.

Spicules (Fig. 9d),

![Fig. 8 — a) Microciona cf. spinous: (1) main acanthostyle, (2) accessory acanthostyle, (3) ectosomal subtylostyle, (4) toxas with spiny ends, (5) isochalae, b) Micro-
ciona sp.: (6) base of a main acanthostyle, (7) accessory acanthostyle, (8) ectosomal subtylostyle, (9) toxas of different sizes, (10) palmate isochalae.](image-url)
Order Dictyocerata
Family Dictyoceratidae Gray 1867

Dicyoceras fragilis (Montagu 1818)
Synonymy: Spongella fragilis Montagu 1818
Material examined: 1 specimen (B-28).
Station BP-58.
Description: Dome-shaped specimen with three branches measuring 7 cm, 4 cm and 2 cm in length and a maximum of 0.8 cm thick, partially anastomosed. Ectosome highly incrusted with calcareous debris and mud. The colour, in spirit, greyish beige. Skeleton made up of typical fibres to a great extent filled with foreign debris.
Distribution: Cosmopolitan species.
Order Dendroceratida
Family Dendroceratidae

Halioceras johnstoni Johnston 1885
Material examined: 1 specimen (B-28) on a horny tube of polychaete. Station BP-58.
Description: Encrusting specimen with an even surface and indistinct oscules. Elongate flagellated chambers, 100-150 μm x 20-35 μm.
Distribution: North Atlantic, Mediterranean Sea, Antarctic and sub-Antarctic region.

Discussion
This small collection of species from Namibia, consisting of 59 specimens belonging to 27 species in a contribution to the knowledge of the sponge fauna in this region. The only South Atlantic coasts of Africa studied before, and only partially (Burrowes, 1967; Burton, 1925, 1929, 1936; Kuklinski, 1902; Lendenfeld, 1906; Ridley & Dendy 1887; Sollos 1888; Stephens 1915, Leiv 1963, 1967, 1969) were those of South Africa.

The order Pocillosteraid is the most highly represented, with twelve genera and fourteen species, followed by Haplophora (four species) and Haploschera. Only the species H. exoetephor and H. procerus appears to be abundant in the area sampled. Nevertheless, this species list represents only poorly the sponge fauna of Namibia which seems to exhibit, on the basis of samples collected later on a great diversity of species.

With regard to the taxonomy employed, the author wishes to point out that the two new species described in this paper could be classified under the genus Spongiafaux Ludwif, based on their dural skeleton. It is not clear whether this genus should be placed in the family...
Adocia, as per Bergquist & Warne (1980), in the Halichonidae sensu Van Soest (1980), in the Renieridae sensu Lévi (1973) or in the Gelidae as proposed by Bouey-Emault & Van Beveren (1982). For this reason, and since a review of all these families is needed by the author has provisionally maintained the old name, particularly as the species described are readily recognizable under the generic name Galaia.

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