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MARINE DEMOSPONGIAE OF RAS IWATINE (KENYA)

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ABSTRACT

A systematic account of 10 species of marine Demospongiae, belonging to 9 genera under 9 families, collected as hosts of shrimps and prawns from Ras Iwatine, Kenya is presented in this paper.

INTRODUCTION

In this paper ten species of marine Demospongiae collected from Ras Iwatine (04° 1.5'S-39° 43.8'E) Mombasa, Kenya (Fig. 1) are described. They are all hand

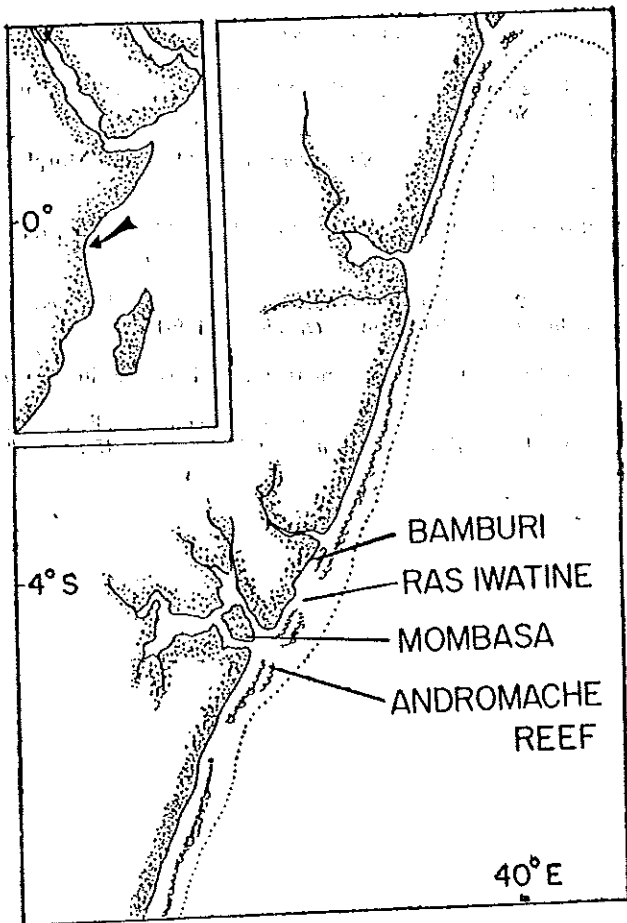


Fig. 1. Map showing collection sites.

collected from inside area of fringing reefs and are intertidal in habitat. These specimens are collected by Dr. A. J. Bruce, East African Marine Fisheries

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Research Organisation, Mombasa in connection with his studies on shrimps and prawns associated with sponges.

I am thankful to Dr. S. Z. Qasim, Director, Central Marine Fisheries Research Institute, Cochin, India and to Dr. R. E. Morris, Director, East African Marine Fisheries Research Organisation, Mombasa, Kenya for permitting me to publish this account. I am also indebted to Dr. A. J. Bruce, B.A.M.F.R.O., for giving me the opportunity to study this material.

Phyllospongia foliascens (Pallas) (Fig. 2 a, a₁)

Spongia foliascens Pallas, 1766, p. 395.

Phyllospongia foliascens Lendenfeld, 1889, p. 196, pl. 5, fig. 3, pl. 6, figs. 1, 3, 4, 10; pl. 7, fig. 11, pl. 14, fig. 2, pl. 24, fig. 6. (Synonymy) Bergquist, 1965, p. 131, figs. 3a, 3b, Thomas, 1968 (Unpublished).

Material : One specimen.

Description : Body foliaceous and cut into two lobes at the growing tip; thickness 2-3 mm. Inner and outer surfaces ornamented with thin ridges and grooves and covered externally by transparent dermal membrane which is reinforced by fine sand grains (Fig. 2 a₁).

Oscules situated at the inner side of the specimen; average diameter 0.8 mm.

The systematic position of this species is given by Bergquist (1965) and anatomy by Lendenfeld (1889).

Distribution : Red Sea, Indian Ocean, Australian region, Pacific Ocean.

Dysidea herbacea (Keller) (Fig. 2 b)

Spongella herbacea Keller, 1889, p. 336, pl. 20, fig. 1.

Dysidea herbacea Burton, 1934, p. 593. Bergquist, 1965, p. 140, fig. 7a, 7b 7c (Synonymy); Thomas, 1968 (Unpublished).

Material : One specimen.

Description : Sponge consisting of flat upright branches arising from a common basal encrustation; height of branch 8 mm, thickness 2-3 mm. *Colour* : Pale grey. *Consistency* : Fragile.

Oscules and pores not seen, surface conulose, conules 0.5-1 mm high and 0.5-1 mm apart.

Skeleton composed of a close reticulation of spongin fibres charged with arenaceous objects. Primaries and connectives not separable from each other in the

interior, whereas, towards the surface they can be well recognised. Diameter of fibres varies from 0.05 mm to 0.1 mm.

Distribution: Red Sea, Indian Ocean, Australian region, Pacific Ocean.

***Iotrochota purpurea* (Bowerbank) (Fig. 2 c)**

Hallechondria purpurea Bowerbank, 1875 p. 293.

Iotrochota purpurea Ridley, 1884, p. 434, pl. 33, fig. L., pl. 42, fig. e, Burton, 1934, p. 553 (Synonymy); Thomas, 1973 p. 19, pl. 1, fig. 8, pl. 7, fig. 9.

Material: One specimen.

Description: Sponge thickly encrusting; thickness 17 mm. Size 40 × 17 × 17 mm. *Colour*: Black. *Consistency*: Hard and incompressible.

Surface conulose, conules 1-1.2 mm high. Oscules scattered irregularly, 1.5-2 mm in diameter.

Dermal skeleton consists of tangentially arranged styles and main skeleton composed of well developed fibres of 0.07-0.09 mm diameter. Meshes polygonal, size 0.381 mm. Primaries and connectives well defined towards the outer part. Spongin pale yellow in colour.

Spicules: (1) Styles (Dermal) (Fig. 2 c₂) slightly curved and sharply pointed rarely blunt (5%); size 0.211-0.271 (0.243 mm) × 0.002-0.006 mm (0.004 mm). (2) Main styles (Fig. 2 c₁) size 0.121-0.178 mm (0.164 mm) × 0.003-0.008 mm (0.005 mm). (3) Birotulates (Fig. 2 c₃) chord length 0.012-0.016 mm.

Distribution: Indo-Pacific.

***Sigmatocia fibulata* (Schmidt) (Fig. 2 d)**

Reniera fibulata Schmidt, 1862, p. 73.

Gellus fibulatus Ridley, 1884, p. 424.

Sigmatocia fibulata Thomas, 1968 (in press); Thomas, 1973, p. 21, pl. 1, fig. 9.

Material: One specimen.

Description: Sponge bushy, branches 5-8 mm in diameter. Oscules marginal, 2 mm in diameter. Symbiotic alga *Ceratodictyon spongiosum* (Zarlard) present and its filaments ornament the growing tips. *Colour*: Dark brown.

Consistency: Slightly compressible with poor resiliency. Surface smooth except at the growing tips.

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A well developed dermal skeleton of tangentially placed oxeas and microscleres present; thickness 0.016 mm. Main skeleton consists of spicular bands running to the surface. Outline of these bands illdefined and composed of 2-5 spicules in cross section. Spongin sparsely visible. Secondary meshes are triangular, each side composed of one spicule cemented together at the corners by spongin.

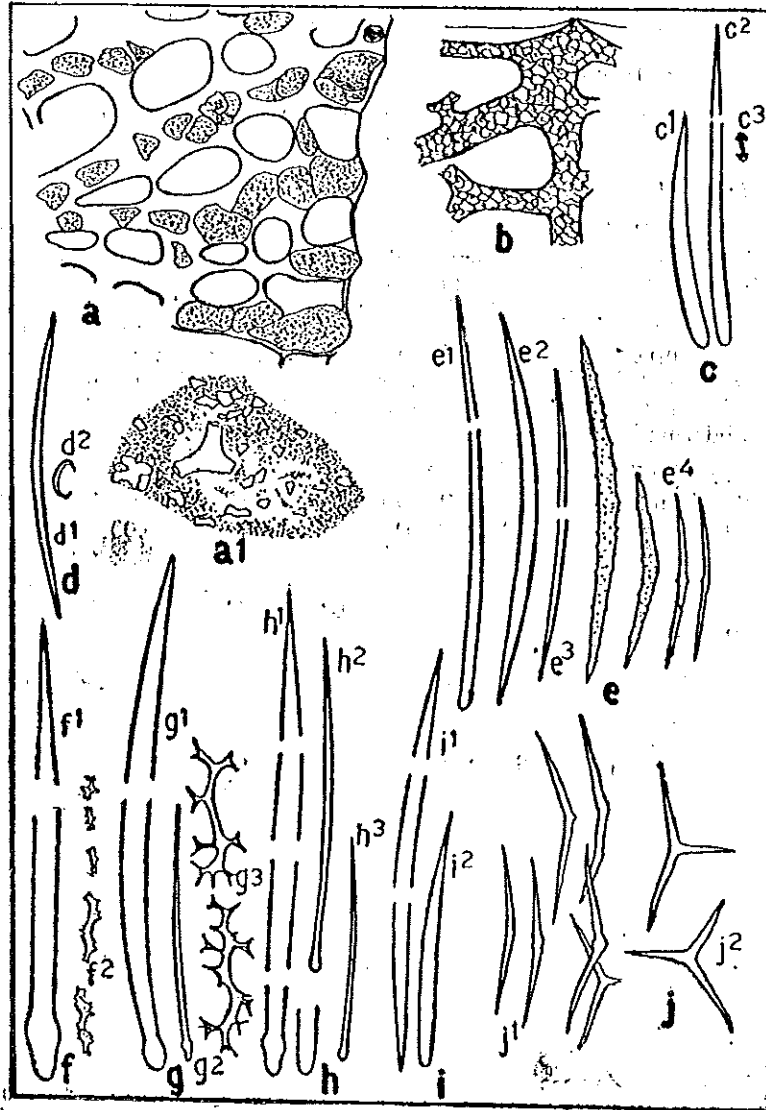


Fig. 2.

Spicules: (1) Oxeas (Fig. 2 d₁) slightly curved and sharply pointed, size 0.141-0.211 mm (0.172 mm) × 0.004-0.008 mm (0.006 mm); (2) Sigmas (Fig. 2 d₂) 'C' shaped with a notch at the centre, size 0.015-0.022 (0.018 mm).

Remarks: This species is well known for its association with *Ceratodictyon spongiatum* (Zanard).

Distribution: North Atlantic Ocean, Mediterranean Sea, Indian Ocean, Australian region.

Higginsia mixta (Hentschel) (Fig. 2 e)

Dendropsis mixta Hentschel, 1912, p. 415, pl. 21, fig. 54.

Higginsia mixta Hallman, 1917, p. 656, Bergquist, 1965, p. 176, fig. 26. Thomas, 1968 (Unpublished)

Material: One specimen.

Description: Body lamellar; height 45 mm; thickness 15 mm. The basal part was buried in sand. *Colour:* Pale yellow. *Consistency:* Hard and incompressible. Surface conulose. Oscules and pores not traceable.

Skeleton composed of irregular ascending tracts along the central part, which are partly or completely fused in older parts. Extra-axial fibres originate from the axial part by actual division of the former and run towards the surface. In axial part oxeas dominate, whereas, in extra axials styles dominate. Acanthoxeas are met with subdermally.

Spicules: (1) Stout oxeas (Fig. 2 e₁) centrally angulated and sharply pointed; size 0.511-0.951 mm (0.612 mm) × 0.007-0.032 mm (0.021 mm). (2) Slender oxeas (Fig. 2 e₂) size 0.62-1.01 mm (0.721 mm) × 0.003-0.008 mm (0.005 mm). (3) Long styles (Fig. 2 e₃) rare; size 1.812-3.128 mm (2.13 mm) × 0.002-0.014 mm (0.011 mm). (4) Acanthoxeas (Fig. 2 e₄) with central flexure and central belt of long spines; smooth occasionally; size 0.041-0.172 mm (0.122 mm) × 0.002-0.009 mm (0.004 mm).

Distribution: Indian Ocean, Australian region and Western Pacific.

Spirastrella inconstans (Dendy) (Fig. 2 f)

Suberites inconstans Dendy, 1887, p. 154, pl. 9, fig. 10.

var. *globosa*

var. *moendrina*

var. *digitata* Dendy, 1887, p. 155-157, pls. 9, 10.

Spirastrella inconstans Thiele, 1899, p. 10, pl. 1, fig. 3, pl. 5, fig. 4. Thomas, 1968 (Unpublished).

Material: One specimen.

Description: This specimen resembles var. *moendrina* in general growth form. Oscules large 3-5 mm. Basal portion buried deep in sand. *Colour:* Pale yellow. *Consistency:* Hard.

A definite cortex wanting; spirasters abundant in the surface. Endosome cavernous.

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Spicules: (1) Tylostyles (Fig. 2 f₁) slightly curved and sharply pointed; small spicules present in dermal brushes; size 131-0.622 mm (0.524 mm) × 0.003-0.024 mm (0.017 mm). (2) Spirasters (Fig. 2 f₂) slender with 2-5 bends; occasionally straight; spines pointed or blunt; size 0.006-0.032 mm, width about 0.002 mm.

Remarks: *Balanus longirostrum* Hock is seen in association with this species.

Distribution: Red Sea, Indian Ocean, Australian region and Pacific Ocean.

Spirastrella aurivilli Lindgren (Fig. 2 g)

Spirastrella aurivilli Lindgren, 1897, p. 484. Bergquist, 1965, p. 182. Thomas, 1972 p. 340, pl. 1, figs. 4A-C.

Cliona aurivilli de Laubenfels, 1936, p. 154.

Material: Two papillae removed from the substratum.

Description: Diameter of the papillae 10 and 12 mm respectively. Both papillae provided with terminal opening which in dry state is closed. *Colour*: Pink. *Consistency*: Hard and brittle when dry. The skeletal arrangement tallies well with that of the type.

Spicules: Two types of tylostyles seen (1) Large type (Fig. 2 g₁) head spherical or trilobed; shaft slightly curved; size 0.521-0.682 mm (0.621 mm) × 0.012-0.038 mm (0.027 mm). (2) Smaller type (Fig. 2 g₂) dermal; straight or slightly curved; size 0.3 × 0.012 mm average. (3) Spirasters (Fig. 2 g₃) large with long, bifid spines; size up to 0.06 × 0.002 mm.

Distribution: Indian Ocean, Australian region and Pacific Ocean.

Polymastia sp. (Fig. 2 h)

Material: One specimen.

Description: Sponge encrusting with papillae all over the body. Papillae blunt, height 10-12 mm and diameter 2 mm at the base. *Colour*: Pale yellow. *Consistency*: Leathery.

Oscules and pores not seen. Surface microscopically hispid. Skeletal arrangement, in typical *Polymastia* pattern.

Spicules: (1) Large tylostyles (Fig. 2 h₁) usually seen in the interior; head developed in varying degrees or even stronglyloxeote; size up to 0.94 × 0.012 mm. (2) Intermediate type of tylostyles (Fig. 2 h₂) slightly curved, head prominent in most; size 0.415 × 0.006 mm. (3) Dermal tylostyles (Fig. 2 h₃) slightly curved, head prominent; size up to 0.132 × 0.004 mm.

Prostylyssa foetida (Dendy) (Fig. 2 i)

Prostylyssa foetida Burton 1937, p. 37, pl. 7, fig. 45, (synonymy); Thomas 1968 (Unpublished).

Material: Two specimens.

Description: Both thickly encrusting with tubular oscule bearing projections arising from the upper part. Size of largest specimen 35 × 20 × 25 mm. **Colour:** Pale grey when dry. **Consistency:** Hard and fragile.

Oscules on papillae 1-2 mm diameter; compound. Subdermal canals prominent around oscular vicinity.

Surface microscopically hispid. Dermal skeleton composed of large oxeas in bands ornamented by styles. Meshes polygonal and bear pores of 0.025 mm diameter.

Main skeleton composed of oxeas arranged in bands with negligible amount of spongin. Large oxeas may project out of the surface giving some hispidity to the latter.

Spicules: (1) Oxeas (Fig. 2 i₁) slightly curved and sharply pointed; size 0.25-1.01 mm (0.631 mm) × 0.004-0.024 mm (0.013 mm). (2) Styles (Fig. 2 i₂) slightly curved and sharply pointed; central portion wider than the rest; size 0.112-0.163 mm (0.152 mm) × 0.003-0.006 mm (0.005 mm).

Distribution: Indian Ocean and Australian region.

Plakortis simplex Schulze (Fig. 2 j)

Plakortis simplex Schulze 1880, pp. 430, 449, pl. 21, figs. 14-16.

Plakortis simplex Topsent 1896, p. 556, pl. 21; fig. 7, Babic, 1922, p. 292, fig. 2.

Material: One specimen.

Description: Body massively encrusting, thickness 10 mm, size 40 × 20 × 10 mm. Margin curved in. **Colour:** Pale brown. **Consistency:** Hard and incompressible. Surface uneven hispid microscopically; oscules and pores not traceable.

Skeletal arrangement tallies well with that of the type.

Spicules: (1) Oxeas (Fig. 2 j₁) with swollen central portion bearing rudimentary rays; size 0.082-0.125 mm (0.105 mm) × 0.002-0.004 mm (0.003 mm). (2) Triods (Fig. 2 j₂) rays subequal; rays about 0.028-0.04 × 0.001-0.003 mm.

Distribution: Circum equatorial.

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