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**Corals of the South-west Indian Ocean V. *Leptophyton benayahui*
gen. nov. & spec. nov. (Cnidaria, Alcyonacea) from
deep reefs off Durban and on the KwaZulu-Natal
south coast, South Africa**

by

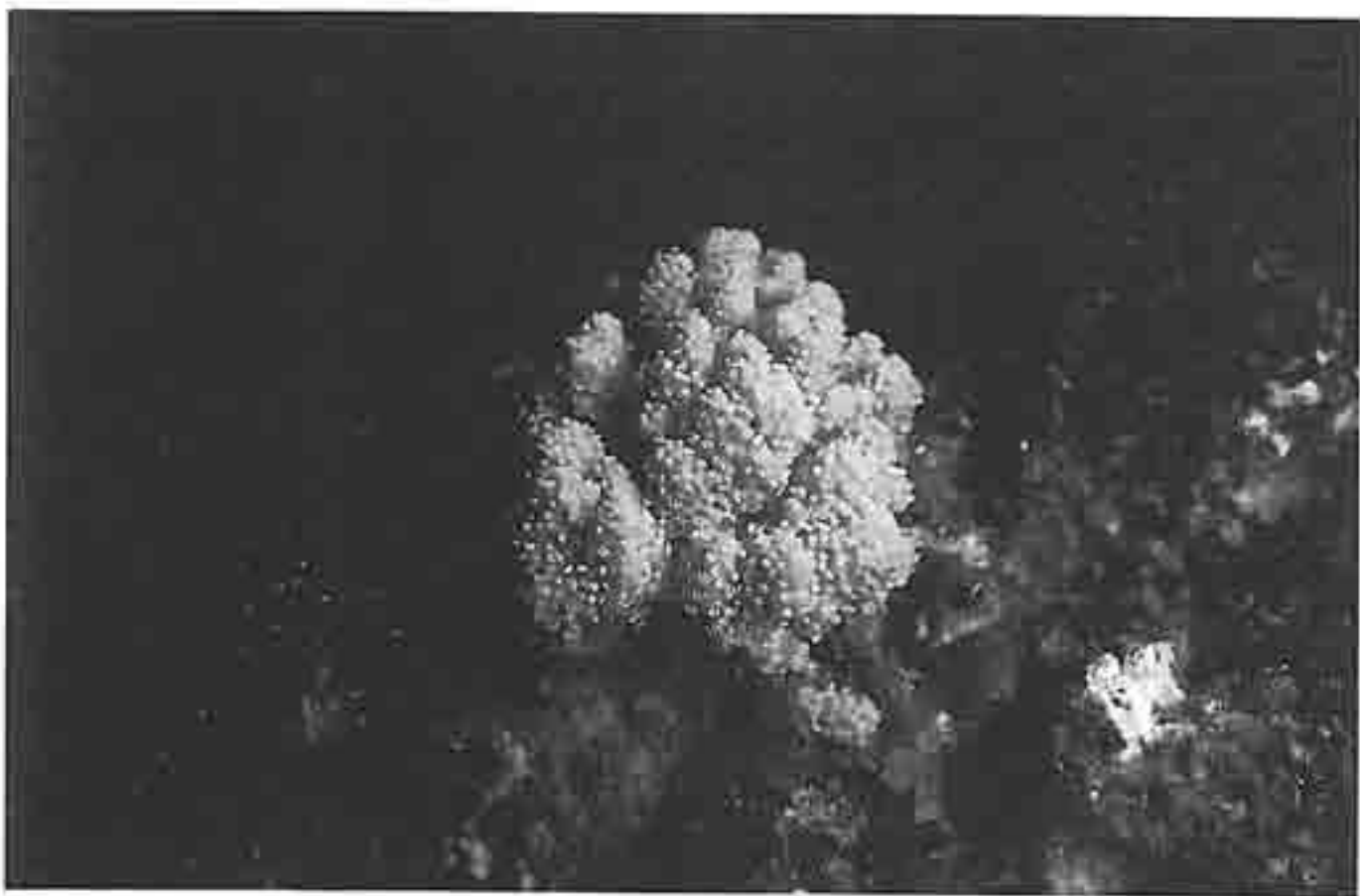
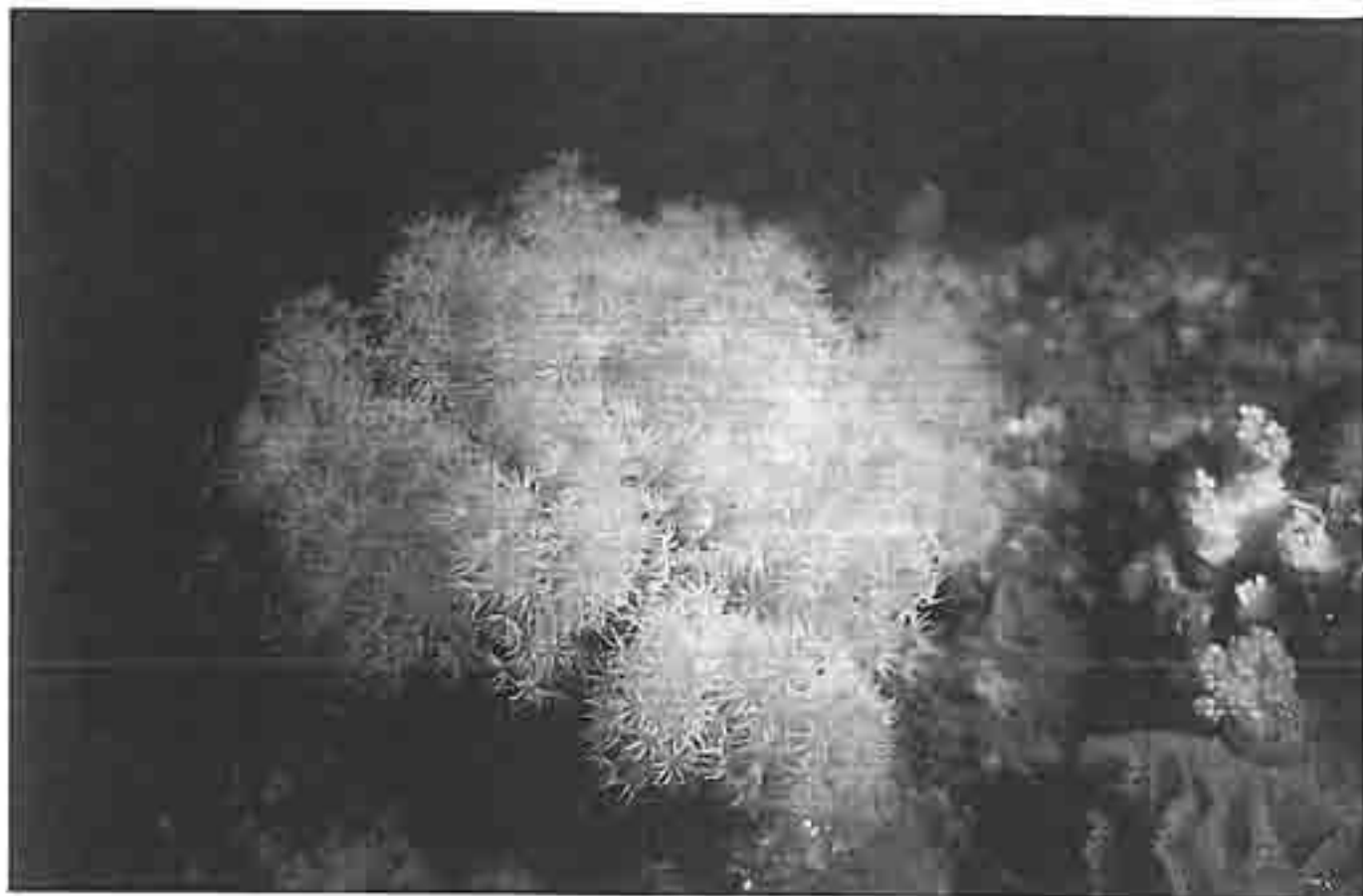
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Frontispiece.

Colonies of *Leptophyton benayahui* gen. nov. & spec. nov. with polyps expanded (top) and retracted (bottom).

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ABSTRACT

Leptophyton benayahui gen. nov. & spec. nov. is a new genus and species (family Nephtheidae) described from material collected off Durban and on Aliwal Shoal. The genus is compared with other genera of the family that possess similar sclerites or colony morphology.

Key words: *Leptophyton benayahui*, Cnidaria, Alcyonacea, Nephtheidae, Durban, KwaZulu-Natal, South Africa.

INTRODUCTION

The alcyonacean fauna of southern Africa has been described by Williams (1992). The tropical coastal area of KwaZulu-Natal has been investigated by Benayahu (1993) and Benayahu and Schleyer (1995). A new genus and species found off Durban Harbour and on the KwaZulu-Natal south coast (Fig.1) is described and illustrated in this report.

MATERIAL AND METHODS

The material was collected by SCUBA divers, fixed in 4% buffered formalin in seawater, rinsed in freshwater after 24 hours, and then transferred to 70% ethyl alcohol. Sclerites were obtained by dissolving the organic tissues with sodium hypochlorite. Sclerites for scanning electron microscopy were carefully rinsed with

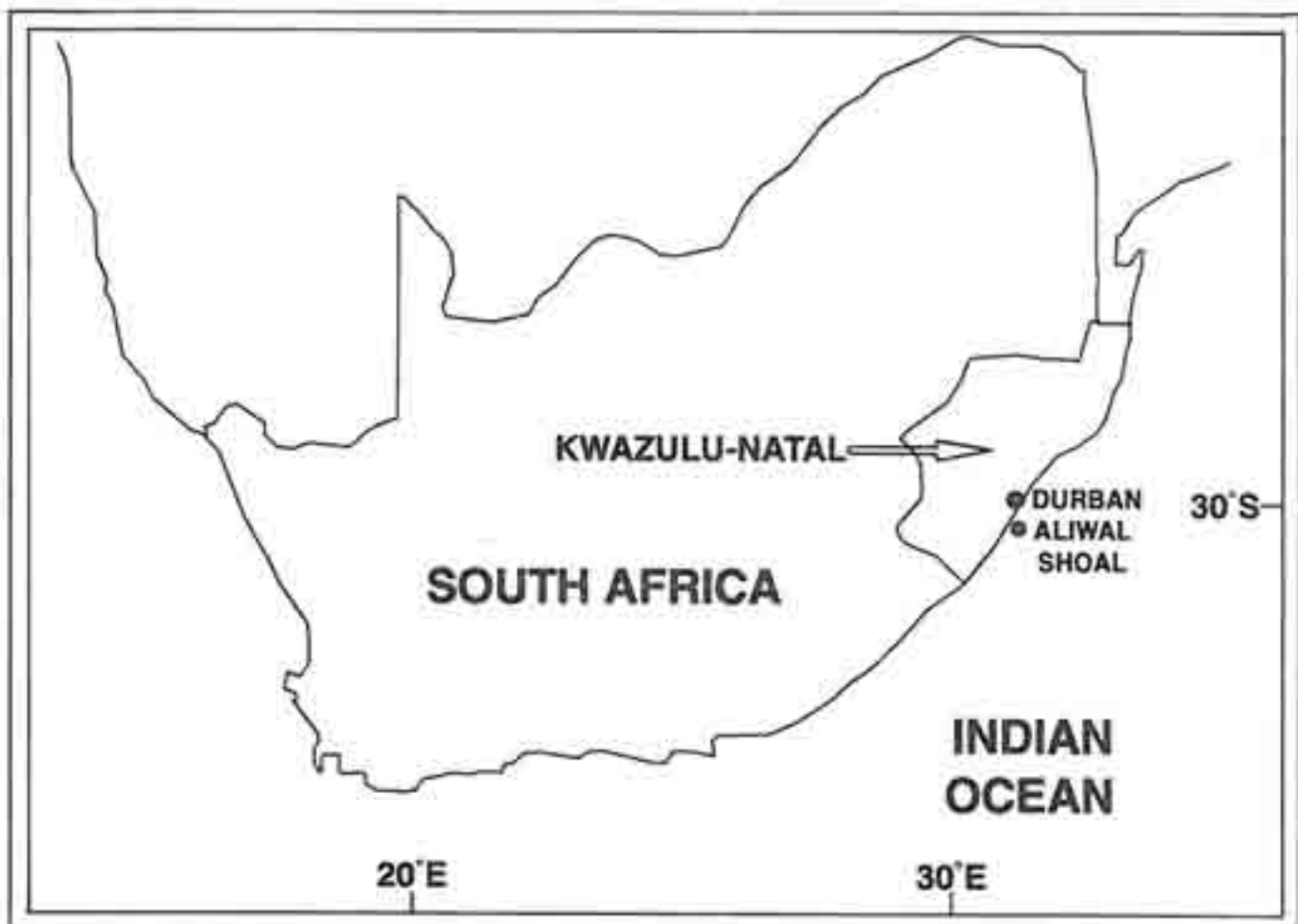


Figure 1. Map of the study area with collecting sites of *Leptophyton benayahui* gen. nov. & spec. nov.

double distilled water, dried at room temperature, coated with gold and then examined with a scanning electron microscope. A Hitachi S520 and Jeol JSM 840A were used for the electron microscopy at 8 and 25 kV respectively.

Family Nephtheidae Gray, 1862

Genus *Leptophyton* gen. nov.

Diagnosis

Nephtheidae with stems arising from a common base or short stalk. Stems repeatedly branched, forming bush-like colonies. Polyps retractile. Sclerites are rods which are spiny in the surface of the base and smooth in other parts of the colony. The canal walls, proximal region of many polyps and distal region of all polyps are devoid of sclerites.

Etymology

The generic name (*leptos* (Gr) = delicate; *phyton* (Gr) = plant) refers to the delicate nature of the living colonies, which were difficult to collect intact, and their bushy, plant-like growth.

Leptophyton benayahui: spec. nov.
(Frontispiece, Figs 2-6)

Material

Holotype (RMNH Coel. 23935) and two paratypes (RMNH Coel. 23936; ORI) from Aliwal Shoal, 30°15'36" S; 30°49'36" E, depth 20-25 m, 23 April 1996, coll. M. Schleyer; two paratypes (RMNH Coel. 23937) from the Durban outer anchorage, 29°50'44" S; 31°06'05" E, depth 23 m, 29 June 1995, coll. M. Schleyer.

Description

The holotype is a very flabby colony, 7.5 x 6.5 cm in maximum cross-section (Fig. 2). Several stems arise from its common base. These stems branch repeatedly, forming a bush-like colony. The stems and branches are not upright but radiate out in all directions from the base. The polyps are located on the common base and around the main stems and branches, but are most abundant on the ends of the branches.

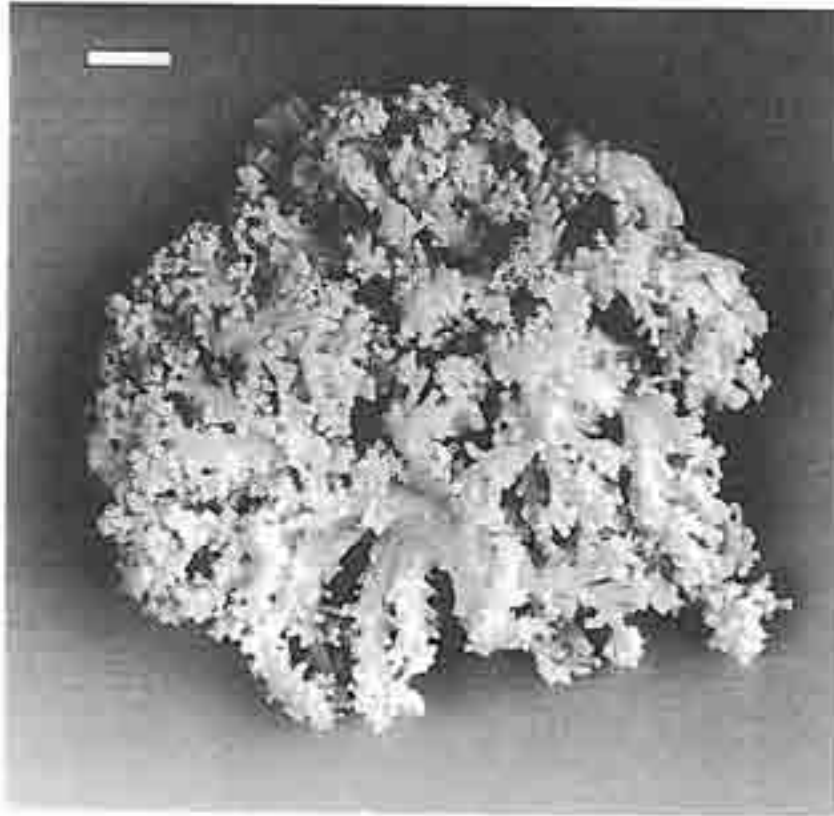


Figure 2. *Leptophyton benayahui* gen. nov. & spec. nov., holotype (RMNH Coel. 23935); view from above. Scale 1 cm.

The polyps are monomorphic and retractile. Most are extended with expanded tentacles and are up to 2 mm long and 1 mm wide. The tentacles are up to 0.70 mm in length, with two rows of 8-10 pinnules which are about 0.10 mm long and 0.05 mm wide.

The surface of the common base has numerous sclerites, mostly rods with spines and simple tubercles (Figs 3 & 4), but some crosses and capstan-like sclerites are also present (Fig. 3a, b). A few smooth rods are present in the surface layer of the stems and branches, similar to those in the common base but without spines and tubercles.

There are many sclerites in the proximal region of polyps located on the common base. These are arranged longitudinally in eight groups (Fig. 5a) and the sclerites become less ornamented distally in the groups. Sclerites are few or absent in the proximal region of polyps (Fig. 5b, c) on the stems and branches and are always smooth rods. The distal region of all polyps is devoid of sclerites.

The sclerites are up to 0.15 mm long.

The canal walls are devoid of sclerites.

The paratypes (Fig. 6) are similar to the holotype; one of the paratypes has a short stalk (Fig. 6b).

Colour

Living colonies are white or salmon pink (Frontispiece). Preserved colonies are white.

Etymology

The species is named after Dr Yehuda Benayahu of the Zoology Department, Tel Aviv University, a fellow soft coral taxonomist and valued friend.

Distribution and habitat

Leptophyton benayahui gen. nov. & spec. nov. is found on the edge of ridges, on vertical sides and under shallow overhangs on the reefs mentioned above. It is also found on the shipwrecks and smaller reefs associated with Aliwal Shoal, particularly Lander's Reef 6 km further south. The depth range at which it has been collected is 18 to 30 m.

Leptophyton benayahui gen. nov. & spec. appears to be endemic and is found among sparse and marginal coral growth. It frequently occurs with *Eleutherobia aurea* Benayahu & Schleyer, 1995, a more common endemic which has a slightly wider distribution. Schleyer (submitted) suggested that the narrow distribution of *Leptophyton benayahui* gen. nov. & spec. nov. illustrates the marginal and specialised conditions in the area for coral growth.

Discussion

We have assigned this species to the family Nephtheidae because of the following characteristics: it has a dendritic growth form, the polyps are arranged most densely on the terminal branches, and there are wide canals in the main stems. Moreover, one of the paratypes has a short stalk.

We have established a new genus because the colonies have a common base, while the sclerites are of distinctive shape and are scarce in the stems and branches.

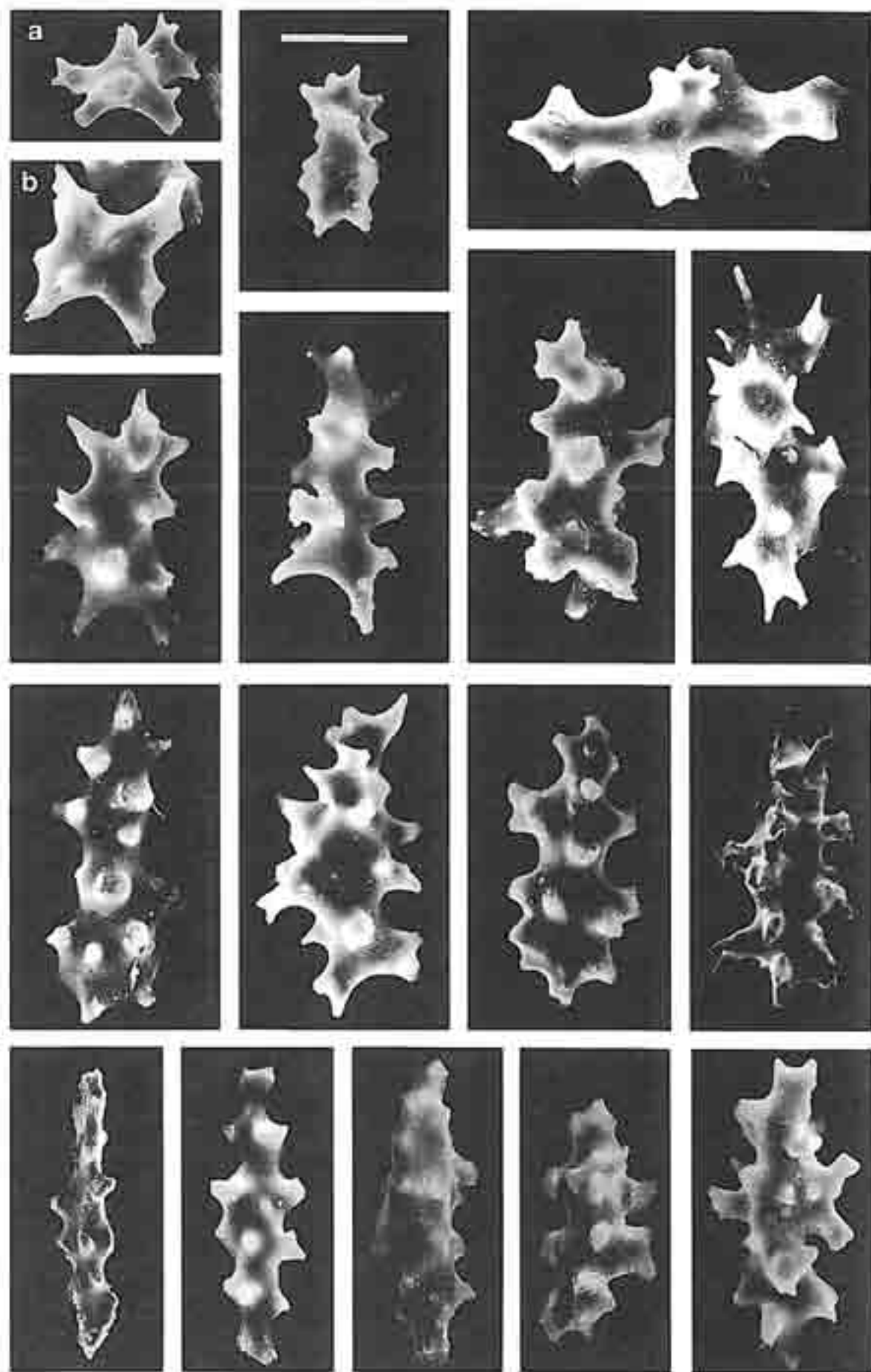


Figure 3. *Leptophyton benayahui* gen. nov. & spec. nov.; sclerites from common base; a, capstan; b, cross; all others rods. Scale 40 μ m.

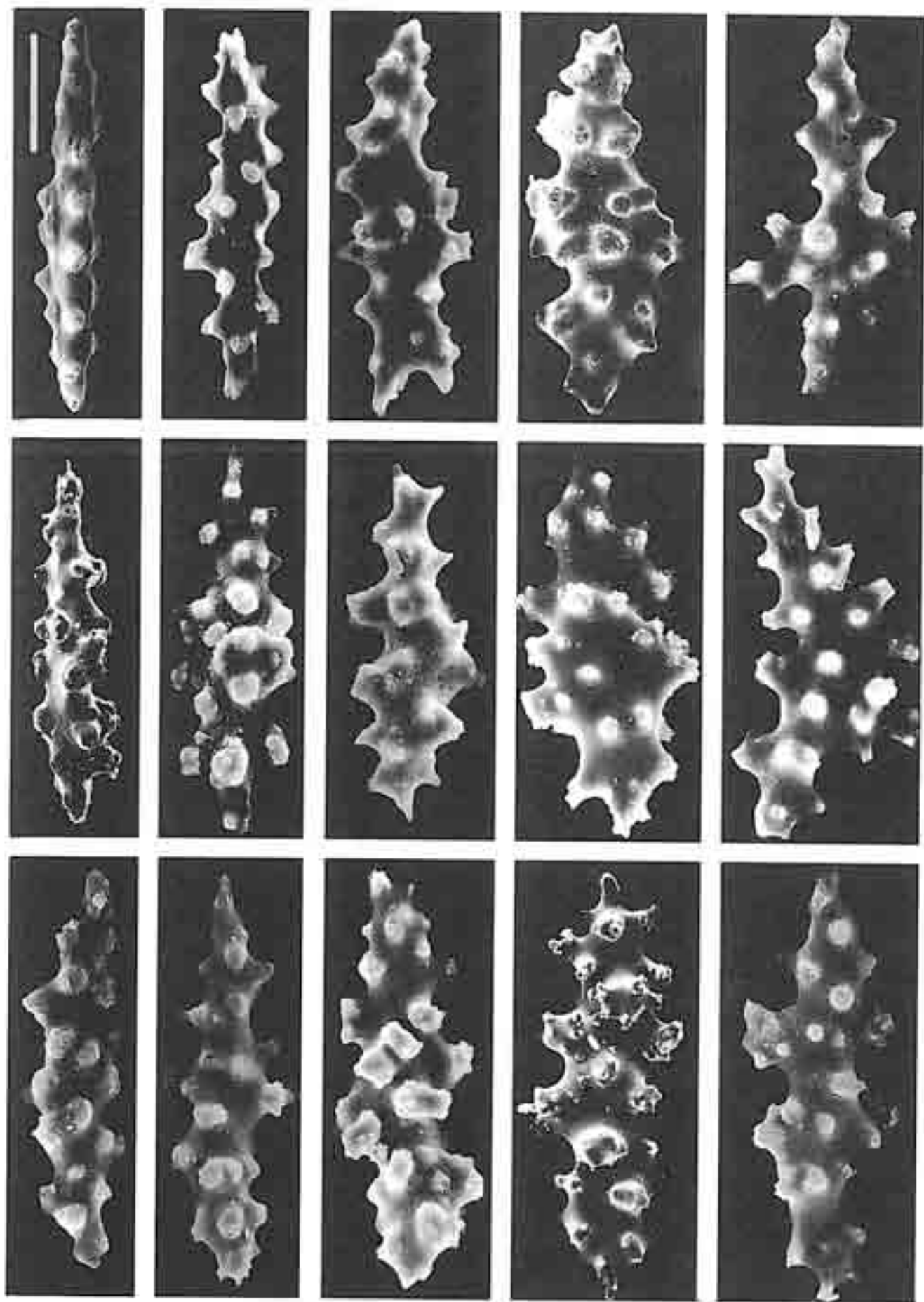


Figure 4. *Leptophyton benayahui* gen. nov. & spec. nov.; rods from common base. Scale 40 μ m.

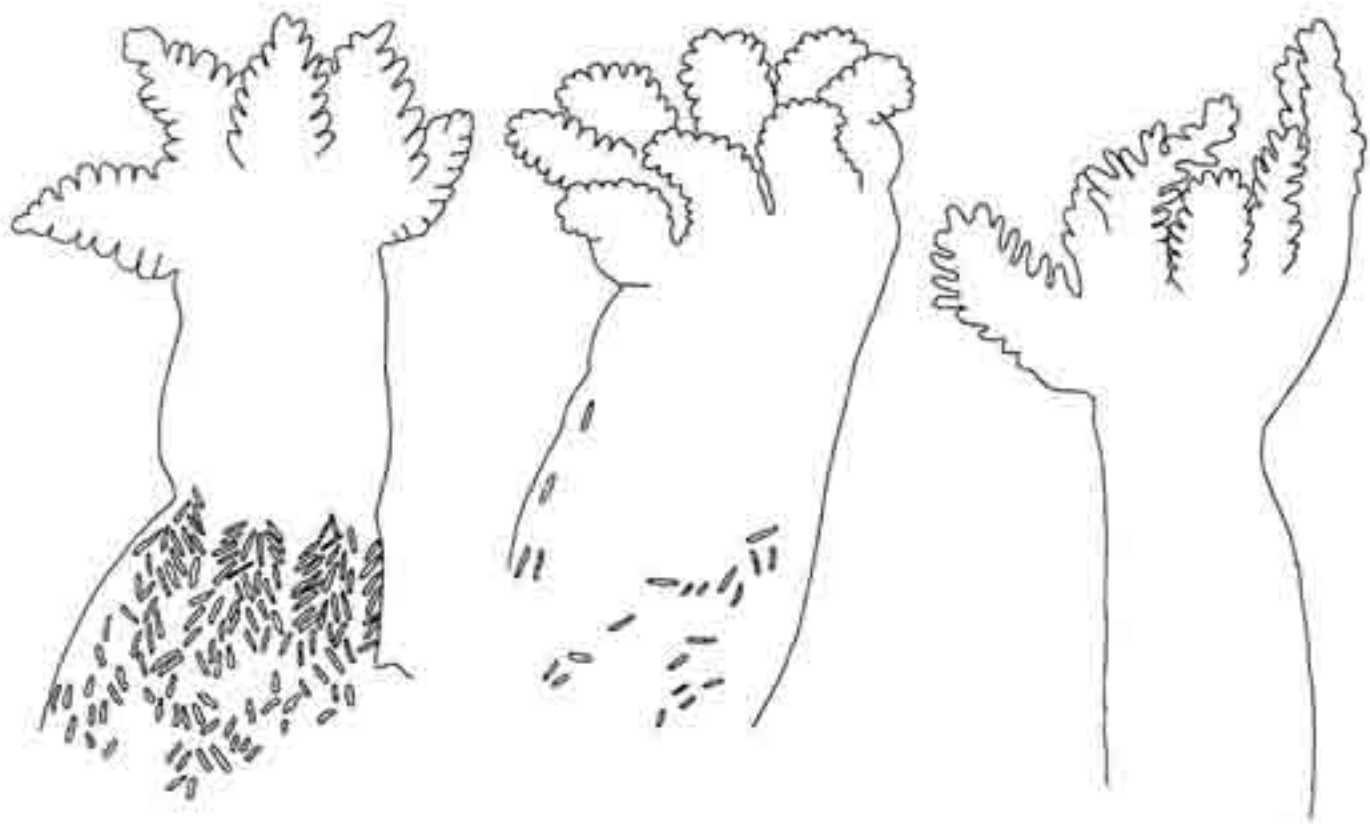


Figure 5. *Leptophyton benayahui* gen. nov. & spec. nov., polyps; a, from common base; b, c, from branches.

In fact, the smooth rods in *Leptophyton benayahui* gen.nov. & spec.nov. bear a striking resemblance to the eroded sclerites found in material stored in formalin, which was certainly not the case with the present material. Species growing under unfavourable conditions sometimes also contain such sclerites, a characteristic often found in Arctic and Antarctic octocorals. This is the first time we have observed this feature in a tropical alcyonacean.

In the family Nephtheidae, the colony morphology in the genus *Daniela* von Koch, 1891, is somewhat similar, viz. its branches radiate outward from a short stalk (Stiasny, 1942: Fig. 11). However, although the sclerites of the genus *Daniela* are not well known, the polyps of that genus possess a crown and points (von Koch, 1891: 670).

Some species of the genera *Stereonephthya* Kükenthal, 1905, and *Scleronephthya* Studer, 1887, also resemble the present species, but both these genera possess big spindles among their sclerites. However, the sclerites of the genera *Duva* Koren & Daniëlssen, 1883, *Gersemia* Von Marenzeller, 1877, and *Litophyton* Forskål, 1775, are comparable with those of *Leptophyton benayahui* gen. nov. & spec. nov.

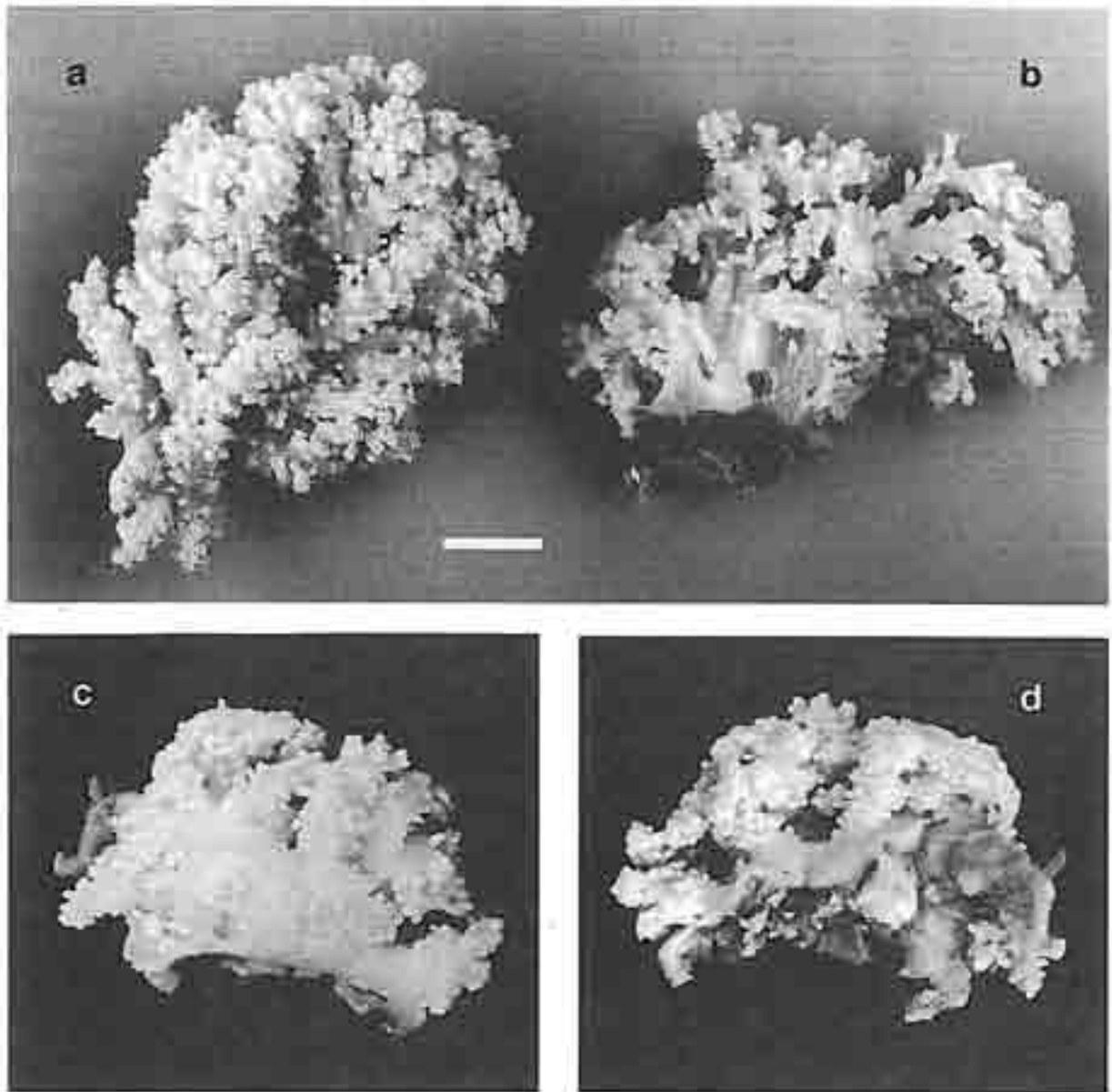


Figure 6. *Leptophyton benayahui* gen. nov. & spec. nov., paratypes; a, ORI, view from above; b, RMNH Coel. 23936, side-view; c, RMNH Coel. 23937, side-view; d, the same colony seen from the other side. Scale 1 cm.

The genus *Duva* has some characteristics in common with the present genus. Utinomi (1961) provided the following information in his diagnosis of the genus:

"Nephtheids of upright growth, umbellate or subumbellate. Polyps somewhat contractile, but not retractile, cylindrical in shape, rather weakly armed with eight converging double rows of rods symmetrical disposed continually from anthostele, blending downwards. Spicules of polyps mostly tuberculate or spinose rods. Cortex of stem naked or weakly armed with small rods, rollers, spindles or capstans, variable between species."

This genus thus also has few sclerites in the stem (and branches). However, the sclerites of the anthostele (flattened spiny rods) are different to those in the stem (small rods; see Utinomi, Fig. 4). Moreover, the colony of *Duva* is umbellate or sub-umbellate according to Utinomi, and the polyps are not retractile, characteristics which are not found in the present material.

The genus *Gersemia* is diagnosed as follows (also Utinomi, 1961):

"Nephtheids of dendritic growth. Polyps retractile, crowded on branches or branchlets, armed with eight converging double rows of spindle-like spicules symmetrical arranged in anthocodiae and those transversely arranged in anthosteles. Cortex of stem and branches armed with a few numbers of mostly rods and rollers. Coenenchyma less- or non-spiculated."

This genus resembles *Leptophyton* nov. gen. even more closely. However, the polyps in *Gersemia* have sclerites in the distal region and most sclerites in the surface layer of the base are capstans or derivatives thereof. The polyps in *Leptophyton* nov. gen. have no sclerites in the distal region and most sclerites in the surface of the common base are rods.

Finally, a comparison must be made with *Litophyton liltvedi* Verseveldt & Williams, 1988, described from material collected on the Cape south coast of South Africa. This material has capstans and rods and can be included in the genus *Litophyton* based on its present diagnosis. However, an ongoing revision of the genus by van Ofwegen (in prep.) has revealed that all species belonging to *Litophyton* have spindles in their stalk. *Litophyton liltvedi* does not and is not a member of the genus *Litophyton* but probably a member of the afore-mentioned *Gersemia*. Its characteristics differ markedly from those of *Leptophyton benayahui* nov. gen. & spec. nov. described above.

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