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# NEW SCLERACTINIAN CORALS (ANTHOZOA: SCLERACTINIA) FROM THE SPERMONDE ARCHIPELAGO, SOUTH SULAWESI, INDONESIA

by

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and

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Six new species of Scleractinia are described according to the characteristics of the skeleton. Affinities with congeneric species are discussed.
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## INTRODUCTION

During a fieldwork period of about 18 months in the Spermonde Archipelago, Indonesia (see fig. 13), more than 250 species of coral were collected (Moll, 1984). Six species thereof will be described for the first time in this paper. As sampling was extensive and more than 600 transects of 10 metres were taken, species of which only one or two specimens are available should be regarded as extremely rare.

Regarding the descriptions of the material studied, the codes stand for: RMNH — Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands; AIMS — Australian Institute of Marine Science, Townsville, Australia.

## DESCRIPTION OF THE SPECIES

### **Favia veroni** spec. nov.
(figs. 1–3)

*Favia* sp. 2, Veron et al., 1977: 49-50, fig. 81.

Material studied. — Holotype: Kudingareng Keke, east side, 100 m off-shore, depth 2 m, 21.ix.1979 (RMNH 15209).

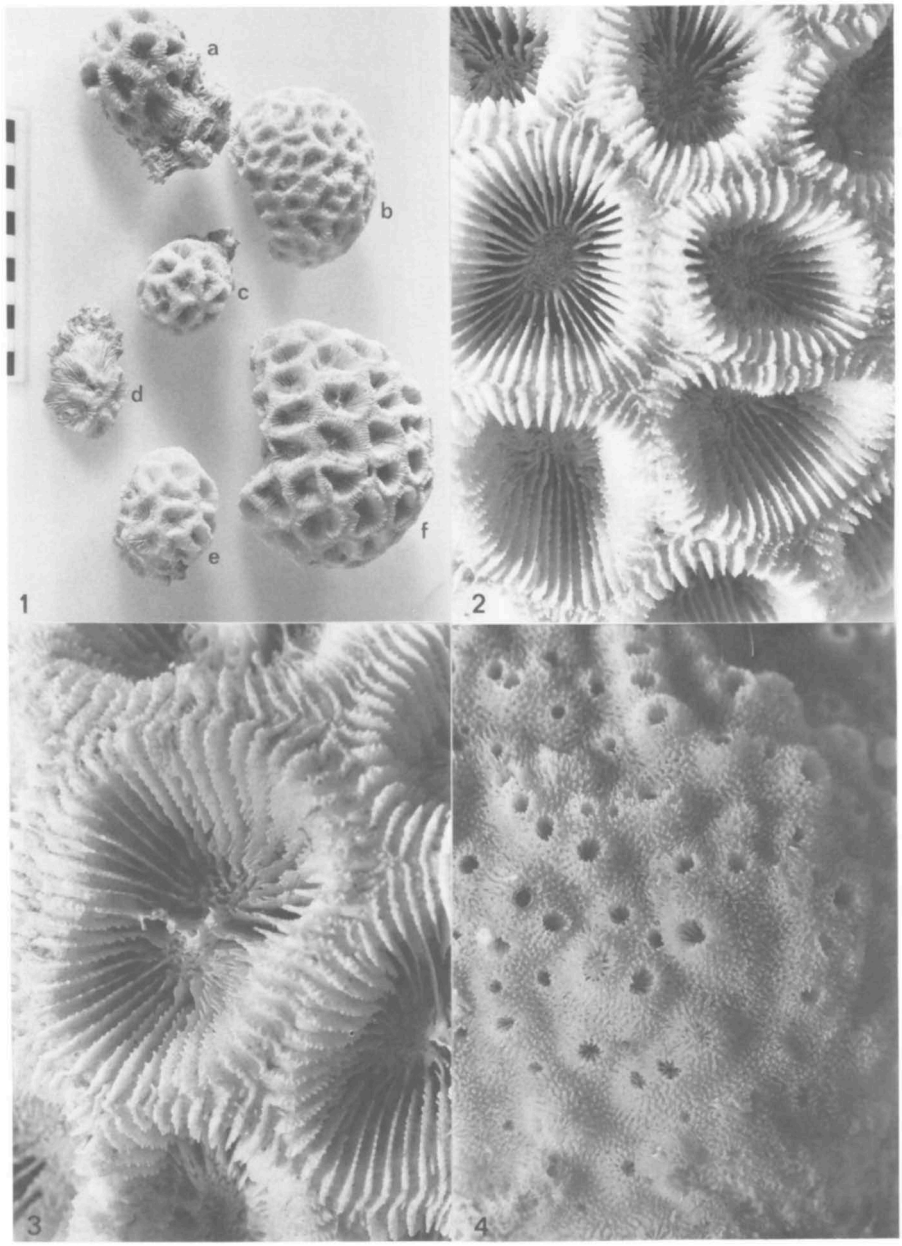
Paratypes: Darnley Island, station 31 (AIMS 6429); Lai Lai Keke, north-east side, 50 m off-shore, depth 1 m, 11.vii.1980 (RMNH 15210); Barang Lompo, south side, 521 m off-shore, depth 7.5 m, 16.v.1980 (RMNH 15211); Samalona, west side, 180 m off-shore, depth 0.9 m, 15.xi.1979 (RMNH 15212); Langkai, west side, 280 m off-shore, depth 1 m, 11.vi.1980 (RMNH 15213); Barang Baringang, south-west side, depth 2.5 m, 5.vi.1980 (RMNH 15214); Sarappo, west side, 600 m off-shore, depth 8 m, 10.v.1980 (RMNH 15215).

Characters. — Massive with very large corallites (up to 30 mm), sub-plocoid. The maximum size of the corallites is usually 20–25 mm, but in RMNH 15210 and 15212 it is slightly smaller: 17–21 mm. They are closely compacted and irregular in outline. Many of the corallites with a diameter of over 15 mm are in the process of intratentacular budding, usually through the centre of the calyx. Budding is mono- to tri-stomodaeal. The depth of the calyx is about 10 mm or slightly more.

The septa are mostly equal and evenly exsert above the theca (1.5–2.0 mm). While descending down into the calyx, they stay close to the endotheca, extending inward only 1–2 mm, and thus give the corallites a very open appearance. The septa are irregularly serrated. At the bottom of the calyx, the septa usually give rise to projections, perpendicular to the endotheca, which may intermingle with the trabecular columella. The septal sides are covered with granulations arranged in rows perpendicular to the endotheca and corresponding to the septal dentations which are also heavily granulated. Very often rudimentary paliform lobes are apparent (especially in RMNH 15210 and 15212), sometimes also serrated and set with the same granulations as found on the septal sides. The columella is well developed and formed by a clock-wise rotated group of projections rising up from the depth of the calyx. The theca is thick. Septa usually not joining or irregularly joining over the theca. Sometimes the endotheca extends further upwards than the theca, giving a ring-like structure at the top of the calyx. The intertentacular ridge mentioned by Veron et al. (1977) was not found regularly.

Recorderd from depths of 1–8 metres, also from areas with heavy sedimentation (RMNH 15214).

Affinities. — This is a species with very large corallites like *Favia maxima* Veron et al., 1977. However, corallites of *F. veroni* are closer compressed,




Figs 1-3. *Favia veroni*. 1a, RMNH 15211, 1b, RMNH 15210, 1c, RMNH 15214, 1d, RMNH RMNH 15215, 1e, RMNH 15213, 1 f, RMNH 15209 (× 0.25); 2, RMNH 15209 (× 1.5); 3, RMNH 15209 (× 2). Fig. 4. *Astreopora lambertsi*, RMNH 15274 (× 2).

more ceroid, deeper, more angular, and have less conspicuous paliform lobes. Some coralla of *Favia pallida* (Dana, 1846) with closed compressed, deep corallites resemble the specimens of this species with smaller corallites. However, in *F. pallida* the columella is much less developed and the septa are more unequal. In general, *F. pallida* is much smaller than *F. veroni*.

Etymology. — Named after Dr. J. E. N. Veron, coral specialist at AIMS, Townsville, Australia.

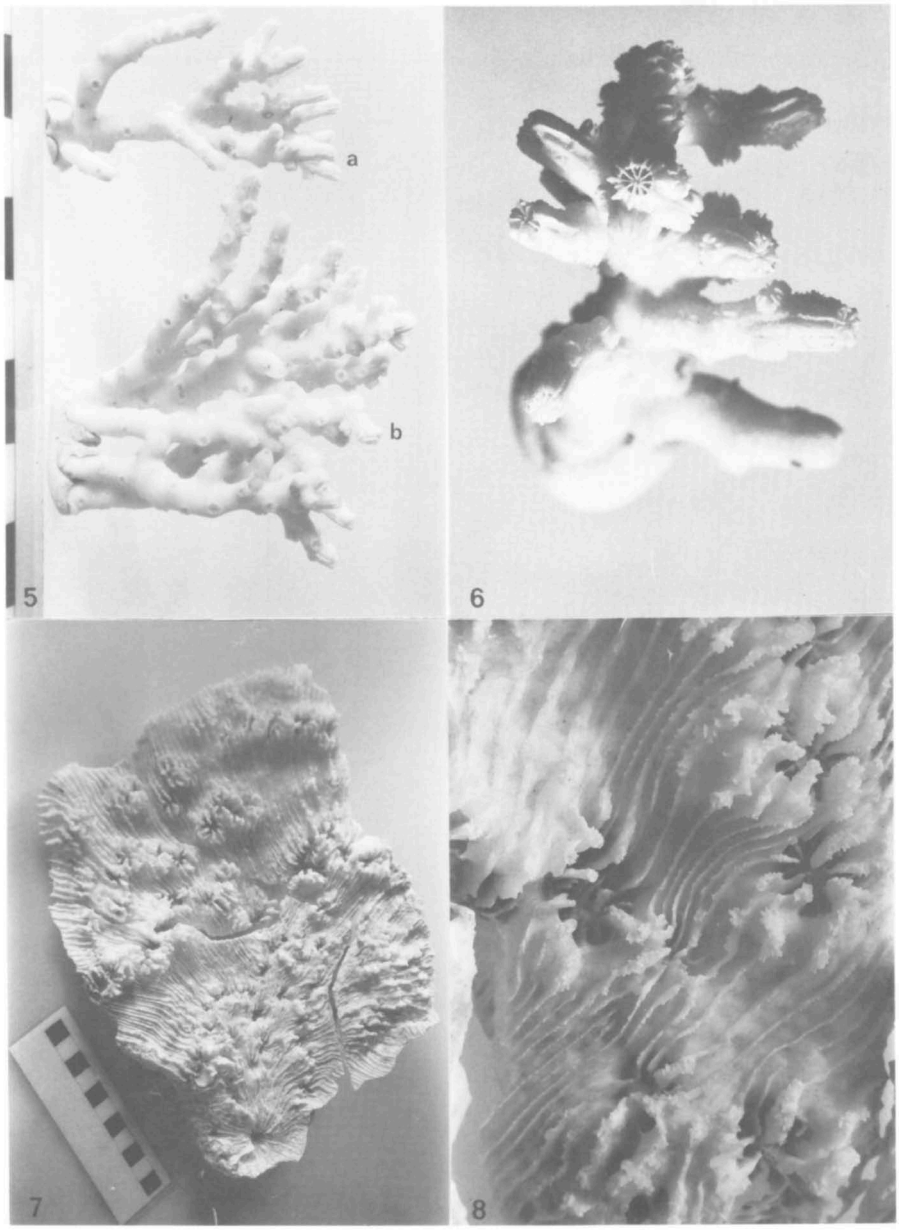
**Cyphastrea decadia** spec. nov.
(figs. 5–6)

Material studied. — Holotype: Pajenekang, north side, 111 m off-shore, depth 8 m, 27.v.1980 (RMNH 15271).
Paratypes: idem (RMNH 15272–15273).

Characters. — Like *Cyphastrea japonica* Yabe & Sugiyama, 1932, this species is also branching. The other three species of the genus are massive and do not have branching growth-forms. Three specimens are available. They were found at only one place in the whole archipelago.

The diameter of the branches is 3–4 mm. Branching is upright, giving rise to closely set branches in a more or less hemispherical corallum. The corallites (both apical and on the branches) have a diameter of about 1.5 mm. The tips of the branches with no radial corallites are 4–5 mm long. At the tips, radial corallites are up to 2 mm exsert above the branches; further down the branches they are less exsert until they are almost flush with the branches. Radial corallites are set wide apart; the distance between radial corallites is twice or three times their own diameter.

The apical corallites have only ten large, equal septa. These septa descend almost vertically down into the calyx and sometimes fuse to form a central ring. The radial ones also have an order of ten large septa and often also a second order of ten smaller septa. The large septa of the apical corallites are usually more exsert than the septa of the radial corallites. The septal margin above the theca is entire, but in the calyx of the radial corallites it can become quite jagged, giving rise to paliform projections that tend to intermingle with the feeble columella. The septal sides in the radial corallites are roughly granulated or set with well-developed spines; in apical corallites they are much less granulated. The columella is absent from the apical corallites and only weekly developed in the others. The costae of the apical corallites are very well developed and extend down the branches, loosing their height above the theca, until they become undiscernable at about 5–6 mm from the tips. At the




Figs 5-6. *Cyphastrea decadia*. 5a, RMNH 15273, 5b, RMNH 15272 (× 1); 6, RMNH 15273 (× 3.5). Figs. 7-8. *Echinophyllia maxima*. 7, RMNH 15267 (× 0.25), 8, RMNH 15267 (× 1).

tips of the branches, costal margins are almost entire. Further down the branches they become irregularly serrated. Costae are less developed on the radial

coralites and do not extend down the branches at all. The costal sides and the surface of the branches is smooth or only very irregularly and finely granulated.

Recorded from a depth of 8 m.

Affinities. — This species only resembles *C. japonica*, both in size and growth-form. In *C. japonica* corallites are packed closer together, septa are always in orders of 12, costae are more irregular and less developed. The branches of that species are also more heavily granulated than in *C. decadia.*

Etymology. — The name is derived from the tree *Decadia* Loureiro, 1790, with flowers which appear to have ten petals; it thus expresses the arborescent growth-form and the decameral plan of the septa of this coral species. The combination of these two characteristics readily distinguishes this coral from the other *Cyphastrea* species.

**Astreopora lambertsi** spec. nov.
(fig. 4)

Material studied. — Holotype: Barang Keke, north side, 10 m off-shore, depth 0.2 m, 11.xi.1979 (RMNH 15274).

Characters. — This species has a glomerate growth-form. The surface is papillate, with the papillae directed outward. The diameter of the corallites is 1.2–1.5 mm; they are often arranged in rows.

There are 12 almost equal septa. The six primary septa are only distinguishable deeper down the calyx. Sometimes there are a few additional small septa of another order. Septal margins are usually entire in the upper part of the calyx; deeper in the calyx the six secondary septa are visible as rows of spiny projections from the theca. Septal sides are hardly granulated and appear smooth.

Like in all other species of this genus, there is no columella. The wall is synapticulo-thecate. Pseudo-costae are obscure. The coenosteum is reticular and closely set with flaky echinulations with spiny tips.

Recorded from a depth of 10 m.

Affinities. — *Astreopora myriophthalma* (Lamarck, 1816) has larger corallites and usually a more clearly distinguishable order of six larger septa and an order of six smaller ones. In calicular diameter *A. lambertsi* resembles *Astreopora gracilis* Bernard, 1896, but in the latter the papillae are markedly „tilted towards the colony surface in a helter-skelter pattern . . ." (Lamberts, 1982). *Astreopora suggesta* Wells, 1954 also has about the same diameter but its cali-

cular openings are set atop mounds that are 5–8 mm across the base (Lamberts, 1982); furthermore its corallites are wider spaced and not arranged in series like in *A. lambertsi.*

Etymology. — Named after Dr. A. Lamberts for his contribution to the coral systematics of this genus.

**Acanthastrea minuta** spec. nov.
(fig. 12)

Material studied. — Holotype: Bone Tambung, north side, 370 m off-shore, depth 7 m, 3.v.1980 (RMNH 15275).

Characters. — There is only one specimen in the present collection, however, as in the species described above, the differences with existing species are so striking that a larger collection is only required to establish variation margins.

Massive growth-form, with small, circular and shallow corallites. The diameter of the corallites is 5–6 mm, smaller than in any other species of *Acanthastrea.*

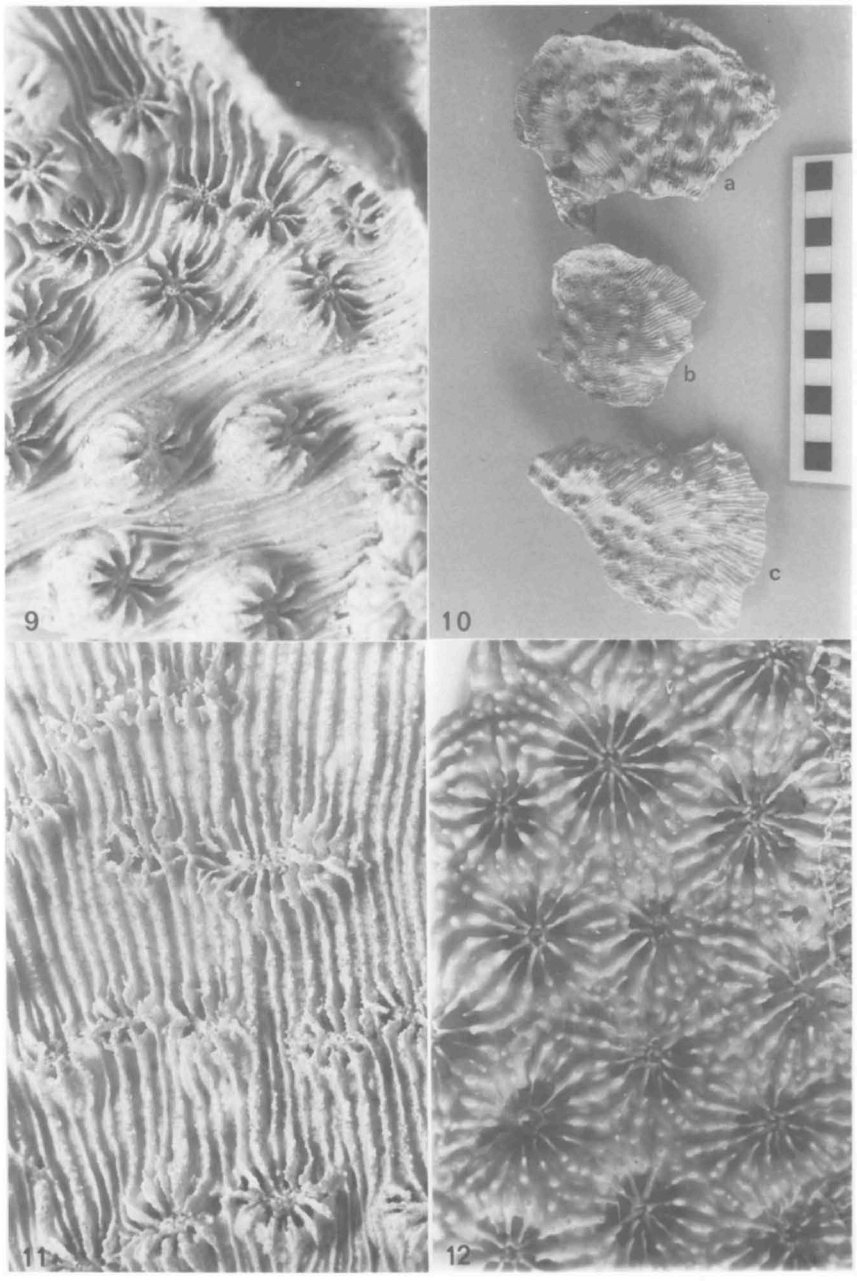
There are 12 to 20 almost equal septa, fewer than in the other *Acanthastrea.* They are low ridges with the typical mussid dentations which may fuse with the columella. The septal sides are diffusely covered with small granulations or low, short spines.

The columella is very feeble and exists of only a few twisted projections from the bottom of the calyx. The theca is very thick and with mostly adjoining septa. The costae are moderately well developed but bear large, heavy spines of up to 1.5 mm in height. The costal sides and spines are quite smooth or with some small granulations. The coenosteum is also rather smooth and devoid of large granulations.

Recorded from a depth of 7 m.

Affinities. — Due to its size, this species stands well apart from the others in this genus.

Etymology. — The difference in size of the corallite between this species and the others is the genus is expressed by the name "*minuta*".




Figs. 9-10a. *Mycedium elephantotus.* 9, RMNH 15276 (× 2.5), 10a, RMNH 15276 (× 0,25). Figs. 10b-10c-11. *Mycedium robokaki.* 10b, RMNH 15269, 10c, RMNH 15270 (× 0.25); 11, RMNH 15268 (× 2.5). Fig. 12 *Acanthastrea minuta*, RMNH 15275 (× 4).

**Echinophyllia maxima** spec. nov.
(figs. 7–8)

Material studied. — Holotype: Langkai, west side, 480 m off-shore, depth 9 m, 11.vi.1980 (RMNH 15267).

Characters. — Only one specimen is available of this species. Its size and characteristics are so exceptional, however, that its description as a new species is warranted.

Unificial plate with a clear central corallite. Other corallites not inclined on the surface and very shallow; 8–16 mm in diameter at the perifery, somewhat smaller near the centre of the corallum. Corallites sometimes arranged in series parallel to the circumference of the plate.

The septa are usually in two orders (three orders in the central corallite) of varying sizes, most of which reach the columella. The primary septa are extremely exsert above the coenosteum, up to 11 mm. Their top margin is undulating and set with groups of more or less blunt spines arranged in tufts, pointing in all directions. The vertical margins of the primary septa are entire, sometimes granulated. The second order of septa is much less exsert, their vertical margins are sometimes dentated. In many corallites these dentations, arranged as vertical rows of projections, are the only evidence of this order of septa. The septal sides are rather smooth at their top and become finely granulated or set with small spines deeper in the calyx.

The columella is well developed and formed of intertwined and fused trabecular projections rising up to almost the level of the coenosteum. Costae are well developed over the entire plate. They have the same ornamentation as the primary septa and their tufted elevations can reach heights of 5–8 mm at various places along their radial path. There are two clear orders of costae, 7–10 per cm. The under surface of the plate also bears two orders of costae, with some simple spines at irregular intervals; here there are 7–15 per cm. The endotheca and exotheca give rise to a "blistered" coenosteum. The under surface is for a large part covered by the epitheca.

Recorded from a depth of 9 m.

Affinities. — This species is readily distinguished from *Echinophyllia aspera* (Ellis & Solander, 1786) by its larger corallites, its fewer but more exsert septa, and the absence of alveoli. By size alone it stands apart from the other *Echinophyllia*.

Etymology. — The name of this species emphasizes the size difference with other species of this genus.

## **Mycedium robokaki** spec. nov.
(figs. 10 b, c–11)

Material studied. — Holotype: Lumu Lumu, north side, 150 m off-shore, depth 8 m, 3.vii.1980 (RMNH 15270).

Paratypes: Badi, west side, 418 m off-shore, depth 19 m, 26.v.1980 (RMNH 15268); Pajenekang, east side, 135 m off-shore, depth 11 m, 28.v.1980 (RMNH 15269).

Characters. — Three specimens are available for the description of this species. They are from three different localities, all of these in deeper water. Variation between the coralla is small.

Unifacial plates with many corallites inclined on the surface, though more periferally they appear more upright. The corallite diameter is 4–5 mm.

Septa are usually in two, sometimes in three orders. Almost all primary septa extend up to 12 mm above the theca. Septal margins richly ornamented with coarse trabecular projections pointing in all directions. Sides of the septa and costae are diffusely granulated or set with small spines.

Since lower order septa usually do not have corresponding costae, there are mostly only two orders of costae, all ornamented like the large septa, sometimes with dentations (only on primary costae). There are 10–14 costae per cm. One specimen (RMNH 15269) has two or more rows of granulations atop the primary costae. In the other specimens the arrangement of granulations is more haphazard. The undersurface bears many costae of widely varying size (12–19 per cm); they are finely granulated or serrated. Occassionally their dentations are more developed and flaky.

In most corallites the columella is feeble.

In the live specimens the stomodaea are of a bright pink colour whereas the rest of the tissue is drab-brown.

Found at depths between 8 and 19 metres.

Affinities. — Amongst the corals of the genus *Mycedium* found in the archipelago, there are two groups with no overlap in characters. There are those with small corallites and pink stomodaea: *M. robokaki*, and the specimens with much larger corallites and usually green or brown oral discs: *Mycedium elephantotus* (Pallas, 1766). In comparison to the latter, *M. robokaki* has furthermore a much more pronounced ornamentation of the septo-costae, whereas the costal ornamentation on the under surface is much finer to almost smooth. Some specimens of *M. elephantotus* have a similar corallite size, but still the septo-costal ornamentations are distinct (compare figs. 9 and 11).

This species shows some affinities with the genus *Echinophyllia*. Wells 1954: 468) concludes that "the only difference between *Echinophyllia* and *Mycedium* is in the attitude of the calicular centres: parallel in the former and

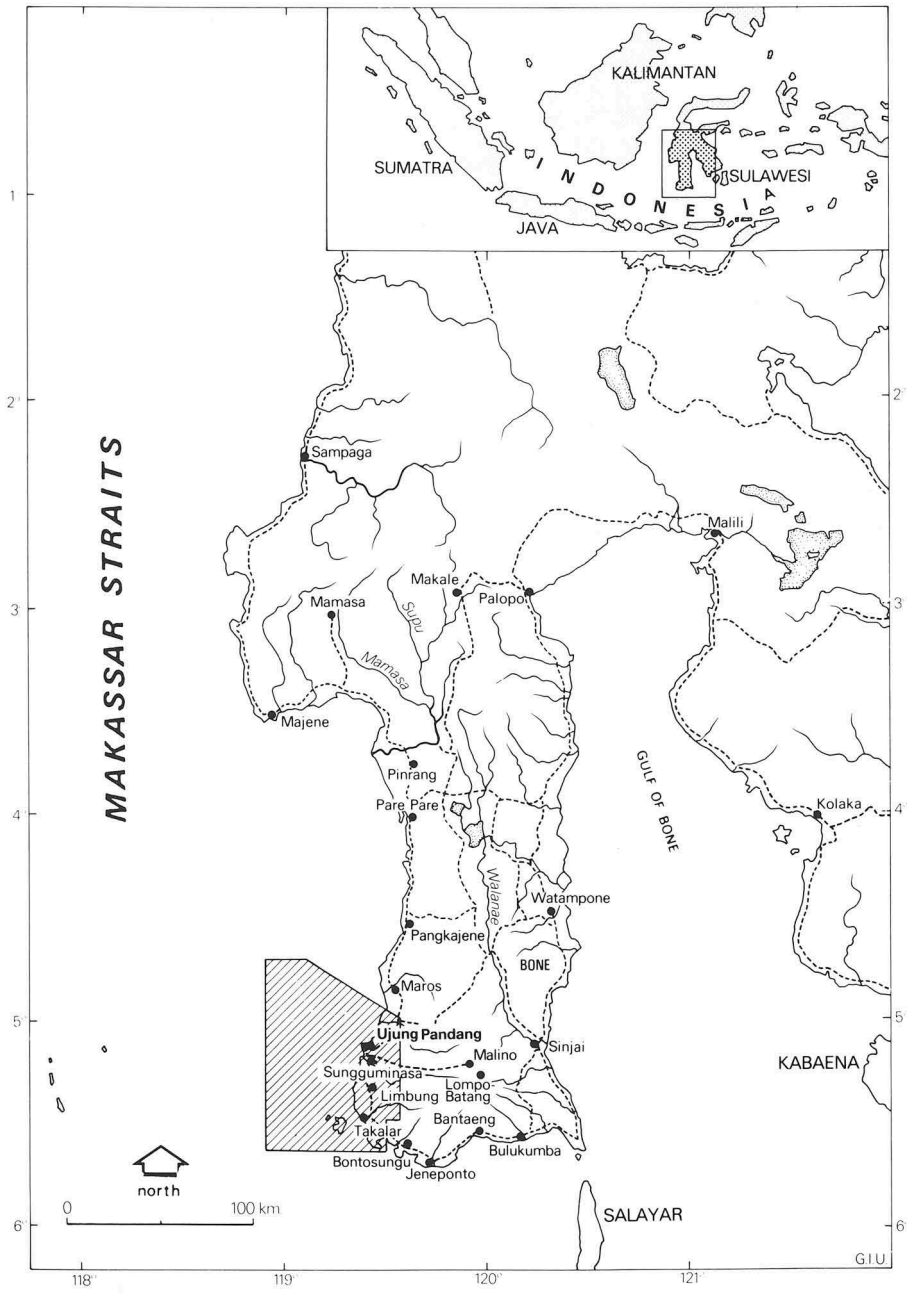



Fig. 13. The research area. Hatched: the Spermonde Archipelago.

inclined peripherally in the latter . . ." and also: "Further study is needed to clarify the status of these clearly allied if not identical genera." *M. robokaki* resembles *Echinophyllia echinoporoides* Veron & Pichon, 1980 in size, but has more inclined corallites and less dentated septo-costae. The inclination of the corallites often varies; they are inclined centrally and parallel-peripherally in *M. robokaki*, whereas parallel centrally and somewhat inclined peripherally in *Echinophyllia* species.

Etymology. — The very characteristic colour of the live coral furnished the etymological background. In the local Buginese language pink is called "robokaki".

## ACKNOWLEDGEMENTS

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