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Volume 11

NEW SPECIES DESCRIBED IN

CORALS OF THE WORLD

by

J.E.N. VERON

AUSTRALIAN INSTITUTE
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Science Communication
PMB No 3, Townsville MC Qld 4810
Telephone (07) 4753 4444
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New species described in Corals of the World (Veron, 2000)

J.E.N. Veron

Corals of the World Veron (2000) contains summary descriptions and illustrations of 794 species of zooxanthellate Scleractinia which have been studied to the point where they can be reliably distinguished from other species in both the field and laboratory. Of these 794 species, 101 required new names and 2 required re-naming. This volume contains taxonomic details of these new species. Emphasis is given to skeletal characteristics to meet taxonomic requirements rather than field characteristics to meet identification requirements. *Corals of the World* has the reverse emphasis. *Coral ID* (Veron and Stafford-Smith, 2002) contains both field and skeletal characters and is specifically designed to support the needs of combined field and laboratory identification.

Studies which underpin all species included in *Corals of the World* have been undertaken in all major reef regions of the world over the past 25 years. As a result, information about most species, including the new species included in this volume, has been obtained from more than one country or biogeographic region. Although most laboratory work on these species was undertaken at the Australian Institute of Marine Science, which houses a central reference collection, much has also been undertaken in other countries. A high proportion of specimens included in this study remain in, or have been returned to, their country of origin. Movement of specimens has, for many countries at different times, been constrained by the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES) regulations. The country of origin of holotypes, and the institution in which they have been deposited, are indicated in Table 1.

Species	**Type locality**	**Holotype Number**
Acanthastrea faviaformis	Northern Red Sea coast of Saudi Arabia.	G55832
Acanthastrea regularis	Milne Bay, eastern Papua New Guinea.	G55818
Acanthastrea subechinata	Calamian Islands, Palawan, Philippines.	MSI-3001-CO
Acropora cylindrica	Milne Bay, eastern Papua New Guinea.	G55819
Acropora elizabethensis	Elizabeth Reef, south east Australia.	G55778
Acropora fenneri	Calamian Islands, Palawan, Philippines.	MSI-3002-CO
Acropora filiformis	Calamian Islands, Palawan, Philippines.	MSI-3003-CO
Acropora gomezi	Flores, Indonesia.	G55800
Acropora japonica	Honshu, Japan	IGPS 108946
Acropora lamarcki	Zanzibar, Tanzania.	G55855
Acropora maryae	Sharm al-Sheikh, Sinai Peninsula, Egypt	G55785
Acropora minuta	Bali, Indonesia.	G55796
Acropora navini	Milne Bay, eastern Papua New Guinea.	G55820
Acropora parahemprichii	Bali, Indonesia.	G55797
Acropora parapharaonis	Sharm al-Sheikh, Sinai Peninsula, Egypt.	G55786
Acropora pectinatus	Flores, Indonesia.	G55801
Acropora proximalis	Flores, Indonesia.	G55802
Acropora rufus	Sharm al-Sheikh, Sinai Peninsula, Egypt.	G55787
Acropora torresiana	Torres Strait, Great Barrier Reef, Australia.	G55780
Alveopora minuta	Bali, Indonesia.	G55798
Anacropora pillai	Milne Bay, eastern Papua New Guinea.	G55821
Anacropora spumosa	Northern Red Sea coast of Saudi Arabia.	G55833

Species	Type locality	Holotype Number
Cycloseris colini	Palau.	G55817
Cyphastrea hexasepta	Northern Red Sea coast of Saudi Arabia.	G55834
Echinophyllia costata	Sulawesi, Indonesia.	G55809
Echinophyllia pectinata	Calamian Islands, Palawan, Philippines.	MSI-3004-CO
Echinopora irregularis	Northern Red Sea coast of Saudi Arabia.	G55835
Echinopora robusta	Southern Sri Lanka.	G55849
Echinopora taylorae	Calamian Islands, Palawan, Philippines.	MSI-3005-CO
Echinopora tiranensis	Northern Red Sea coast of Saudi Arabia.	G55843
Favia albidus	Sharm al-Sheikh, Sinai Peninsula, Egypt.	G55788
Favia lacuna	Northern Red Sea coast of Saudi Arabia.	G55836
Favia marshae	Ashomore Reef, north-west Australia.	WAM Z12910
Favia rosaria	Milne Bay, eastern Papua New Guinea.	G55822
Favia truncatus	Milne Bay, eastern Papua New Guinea.	G55823
Favia vietnamensis	Nha Trang, Vietnam.	G55859
Favites besate	Southern New Caledonia.	ZMA Coel. 5831
Favites micropentagona	Calamian Islands, Palawan, Philippines.	MSI-3006-CO
Favites paraflexuosa	Houtman Abrolhos Islands, south-western Australia.	WAM Z12911
Fungia puishani	Socotra. G55846	
Galaxea acrhelia	Milne Bay, eastern Papua New Guinea.	G55824
Galaxea cryptoramosa	Sulawesi, Indonesia.	G55810
Galaxea longisepta	Sulawesi, Indonesia.	G55807
Goniastrea minuta	Milne Bay, eastern Papua New Guinea.	G55825
Goniastrea ramosa	Flores, Indonesia.	G55803
Goniastrea thecata	Northern Red Sea coast of Saudi Arabia.	G55837
Goniopora albiconis	Southern Sri Lanka.	G55850
Goniopora ciliatus	Sharm al-Sheikh, Sinai Peninsula, Egypt.	G55789
Goniopora pearsoni	Sharm al-Sheikh, Sinai Peninsula, Egypt.	G55790
Goniopora sultani	Northern Red Sea coast of Saudi Arabia.	G55838
Halomitra meierae	Bali, Indonesia.	G55799
Leptastrea aequalis	Cocos (Keeling) Atoll, eastern Indian Ocean, Australia.	WAM Z12912
Leptoseris striata	Scott Reef, north-west Australia.	WAM Z12913
Lobophyllia dentatus	Milne Bay, eastern Papua New Guinea.	G55826
Lobophyllia flabelliformis	Milne Bay, eastern Papua New Guinea.	G55827
Lobophyllia serratus	Calamian Islands, Palawan, Philippines.	MSI-3007-CO
Micromussa diminuta	Southern Sri Lanka.	G55851
Montastrea colemani	Calamian Islands, Palawan, Philippines.	MSI-3008-CO
Montastrea serageldini	Mahé, Seychelles.	G55844
Montipora aspergillus	Northern Red Sea coast of Saudi Arabia.	G55839
Montipora cryptus	Sharm al-Sheikh, Sinai Peninsula, Egypt.	G55791
Montipora delicatula	Raja Ampat Islands, Irian Jaya, Indonesia.	G55805
Montipora echinata	Northern Red Sea coast of Saudi Arabia.	G55840
Montipora hemispherica	Eastern Sinai Peninsula, Egypt.	G55782
Montipora hodgsoni	Calamian Islands, Palawan, Philippines.	MSI-3012-CO
Montipora kellyi	Tuléar, south-west Madagascar.	G55813
Montipora niugini	Milne Bay, eastern Papua New Guinea.	G55828
Montipora pachytuberculata	Northern Red Sea coast of Saudi Arabia.	G55841
Montipora palawanensis	Calamian Islands, Palawan, Philippines.	MSI-3009-CO
Montipora porites	Calamian Islands, Palawan, Philippines.	MSI-3010-CO
Montipora saudii	Northern Red Sea coast of Saudi Arabia.	G55842
Montipora taiwanensis	South-east Taiwan.	G55854
Montipora verruculosus	Raja Ampat Islands, Irian Jaya, Indonesia.	G55806
Montipora vietnamensis	Nha Trang Vietnam.	G55858
Mycedium steeni	Calamian Islands, Palawan, Philippines.	MSI-3011-CO
Mycedium umbra	Eastern Sinai Peninsula, Egypt.	G55783
Oxypora convoluta	Sharm al-Sheikh, Sinai Peninsula, Egypt.	G55792
Oxypora egyptensis	Eastern Sinai Peninsula, Egypt.	G55784
Parasimplastrea sheppardi	Sharm al-Sheikh, Sinai Peninsula, Egypt.	G55860
Pectinia africanus	Zanzibar, Tanzania.	G55856
Pectinia pygmaeus	Milne Bay, eastern Papua New Guinea.	G55829
Platygyra acuta	Mahé, Seychelles.	G55845
Platygyra carnosus	Hong Kong.	G55795

Species	Type locality	Holotype Number
Plerogyra discus	Calamian Islands, Palawan, Philippines.	MSI-3013-CO
Plesiastrea devantieri	Socotra.	G55847
Pocillopora effusus	Far eastern Pacific.	G55781
Pocillopora fungiformis	Tuléar, south-west Madagascar.	G55816
Pocillopora indiania	North-west Madagascar.	G55812
Pocillopora kelleheri	Great Barrier Reef, north-east Australia.	G55779
Pocillopora zelli	Puka Rua, Tuamotu Group, French Polynesia.	G55794
Podabacia lankaensis	Southern Sri Lanka.	G55852
Podabacia sinai	Sharm al-Sheikh, Sinai Peninsula, Egypt.	G55793
Porites desilveri	Southern Sri Lanka.	G55853
Porites flavus	Milne Bay, eastern Papua New Guinea.	G55830
Porites harrisoni	Kuwait.	G55811
Porites napopora	Ashmore Reef, north-west Australia.	WAM Z12914
Porites rugosa	Sulawesi, Indonesia.	G55808
Porites tuberculosa	Flores, Indonesia.	G55804
Poritipora paliformis	Zanzibar, Tanzania.	G55857
Sandalolitha africana	Socotra.	G55848
Seriatopora dendritica	Milne Bay, eastern Papua New Guinea.	G55831
Seriatopora guttatus	Tuléar, south-west Madagascar.	G55814
Stylophora madagascarensis	Tuléar, south-west Madagascar.	G55815

Table 1 Place of origin and registration numbers of holotypes. Abbreviations are as follows:
G = Museum of Tropical Queensland, Townsville, Australia.
IGPS = Institute of Geology and Paleontology, Tohoku University, Sendai Japan.
MSI = Marine Science Institute, University of the Philippines, Manilla, Philippines.
WAM = Western Australian Museum, Perth, Australia.
ZMA = Zoologisch Museum, University of Amsterdam, Amsterdam, Netherlands.

Terminology used in this publication follows earlier taxonomic publications of the author. It should be noted that a simplified terminology was used in *Corals of the World* and alternative terms were used in *Coral ID* where there is a requirement for consistency across all taxa. Terminology of the latter publications is explained in their respective glossaries.

The global geographic basis of this study has repeatedly created biogeographic issues for which the author has found no acceptable solution. The majority of Indo-Pacific species included in *Corals of the World*, and therefore this volume, are part of, or are inclusive of, wide biogeographic variations in most diagnostic characters. As a result, these species do not occur as taxonomic units that remain reliably distinguishable from other taxonomic units over great geographic distance. This creates taxonomic issues that do not arise in studies confined to a single biogeographic region other than when integrating taxonomic studies in different regions or when creating synonymies. For many individual species or species groups, geographic variation frequently makes some taxonomic decisions (as to what is, or is not, a species) uncertain or arbitrary. This may occur when species are sympartic or not. They also create biogeographic variation in the reliability of some characters to indicate distinctions between species. Thus, distinctions between one species and another or between a species and a subspecies may be clear in some regions and merge in others. The issues that may arise are summarised in Veron (in press).

Family Acroporidae Verrill,1902

Genus *Montipora* Blainville, 1830

Montipora delicatula Veron, 2000

Original description: Veron (2000) Volume 1, pages 70-1.

> **Characters:** Colonies are composed of very thin unifacial laminae which are usually contorted. Corallites are inconspicuous, in rows between coenosteum ridges. Coenosteum ridges are irregular. **Colour:** Pale brown, becoming paler towards colony margins. Coenosteum ridges are usually pale. **Similar species:** *Montipora florida*. See also *M. hodgsoni*. **Habitat:** Restricted to shallow reef edges. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, pages 70-1, figures 1-4, colour photographs of living coral and page 70, drawing of coral skeleton.

Synonymy:
Montipora pulcherrima Bernard, 1897: Nemenzo (1976), not Bernard (1897)
Montipora sp. 2: Veron and Hodgson (1989)
Montipora delicatula Veron, 2000: Veron (2002), Fenner (2002)

Montipora pulcherrima Bernard, 1897 is a junior synonym of *Montipora foliosa* (Pallas, 1766), as is a wide range of other nominal species of Bernard (1897) from the South China Sea and Crossland (1952) from the Great Barrier Reef (Veron and Wallace, 1984).

Skeletal detail:
Colonies are whorls or, uncommonly, in irregularly tiers of thin plates. Plates are often irregularly folded or dissected. They are unifacial. Plate margins are not serrated or otherwise ornamented. Corallites are inconspicuous, immersed, approximately 0.5 mm diameter. Septa are in a single order, arranged in comb-rows, made up of tapered irregular dentations averaging 0.5 R. Thecae are developed, inconspicuous. Corallites are restricted between coenosteum ridges and may thus be in irregular rows. Coenosteum ridges are irregular but conspicuous. The coenosteum is very coarse, especially between ridges. Costae are irregular but have coarse spines with elaborated tips.

Affinities:
Montipora foliosa has thicker fronds, larger corallites and relatively contorted coenosteum ridges. *Montipora hodgsoni* forms smaller, more irregular laminae and has smaller corallites. Coenosteum ridges are less wall-like, had tend to be rows of partly linked tuberculae. These species also tend to have serrated or otherwise ornamented plate margins while those of *M. delicatula* are mostly smooth. These differences are small making all three species difficult to distinguish unless seen together or collected from very similar habitats. *Montipora florida* has much less development of coenosteum ridges.

The name:
So named because of the delicate appearance of this coral in the field.

Holotype:
Specimen G55805. The specimen is 110 mm maximum dimension. Collected by the author from low tide level, Raja Ampat Islands, Irian Jaya, Indonesia.

Abundance:
Uncommon.

Habitat:
Shallow reef edges protected from wave action and where the water is clear.

Distribution:
The Indonesian-Philippines archipelago.

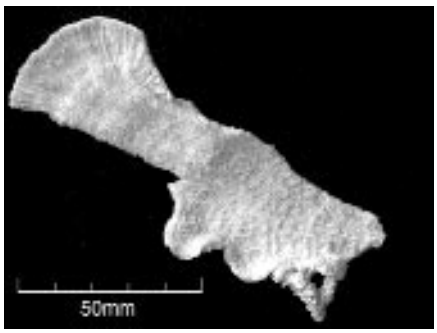

Figure 1. *Montipora delicatula,* holotype (G55805). From the Raja Ampat Islands, Irian Jaya, Indonesia. A piece of one lamina, upper surface.

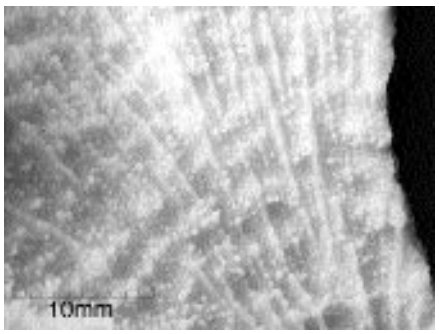

Figure 2. *Montipora delicatula,* holotype. Frond upper surface showing coenosteum ridges and corallite distribution.

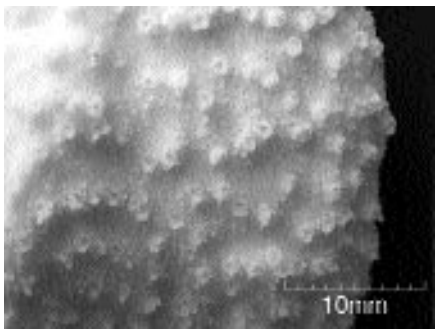

Figure 3. *Montipora delicatula,* holotype. Showing corallites near the base of a frond.

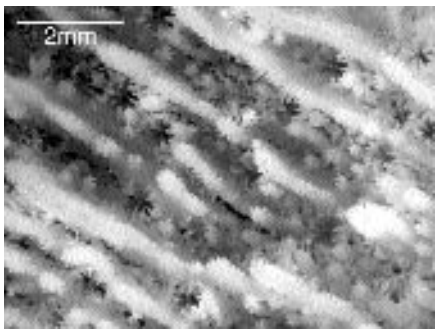

Figure 4. *Montipora delicatula,* holotype. Corallite and coenosteum detail.

Montipora hodgsoni Veron, 2000

Original description: Veron (2000) Volume 1, page 72.

> **Characters:** Colonies are composed of small, thin, highly dissected unifacial laminae sometimes forming tiers or whorls. Corallites are barely visible among coenosteum ridges which are short and irregular and usually perpendicular to the colony margin. **Colour:** Uniform grey-brown. Polyps are blue (which may photograph purple) or white. **Similar species:** *Montipora foliosa*, and *M. delicatula*, both of which form larger, less irregular plates and have larger corallites. See also *M. friabilis*. **Habitat:** Protected upper reef slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 72, figures 1-4, colour photographs of living coral and drawing coral skeleton.

Synonymy:
Montipora hodgsoni Veron, 2000: Veron and Fenner (2000), Veron (2002)

Skeletal detail:
Colonies are whorls or, uncommonly, in irregularly upright thin plates. Plates are often irregularly folded or dissected. They are unifacial when horizontal or bifacial when upright. Plate margins are serrated, the serrations corresponding to the ends of coenosteum ridges. Corallites are not conspicuous,

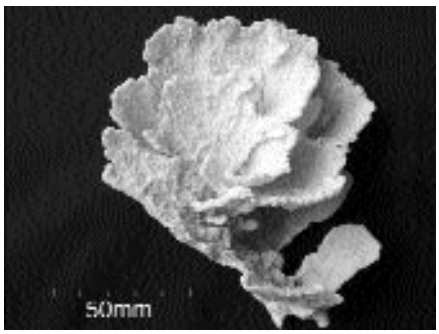

Figure 5. *Montipora hodgsoni,* holotype (MSI-302-CO). From the Calamian Islands, Palawan, Philippines. Part of a tiered colony, upper surface.

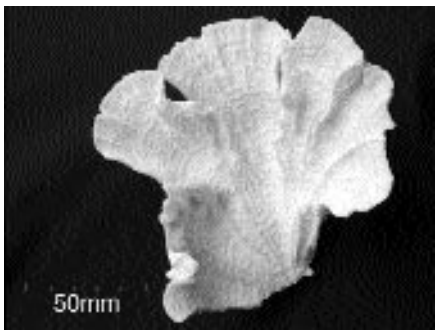

Figure 6. *Montipora hodgsoni,* From the Calamian Islands, Palawan, Philippines. A frond from a colony from a mid reef slope.

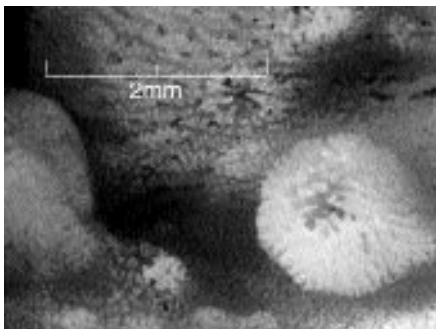

Figure 7. *Montipora hodgsoni,* holotype. Showing corallite and coenosteum detail.

immersed to clearly exsert, approximately 0.3 mm diameter. Septa are in a single order, arranged in comb-rows, made up of tapered irregular dentations averaging 0.5 R. Thecae are inconspicuous or not visible. Corallites are only slightly restricted between coenosteum ridges and are not aligned in rows. Coenosteum ridges are irregular but conspicuous. Tuberculae are distributed between the ridges. The coenosteum is moderately coarse except on ridges where it is fine. Costae are irregular but mostly smooth-edged.

Affinities:
Montipora foliosa forms larger colonies which are less irregular. Corallites are larger and coenosteum ridges are more uniform. *Montipora delicatula* also forms larger, less irregular colonies, with larger corallites. These differences are small making these species difficult to distinguish unless seen together or collected from very similar habitats. *Montipora friabilis* does not have conspicuous coenosteum ridges, but may have a nearly identical growth form. The coenosteum of *M. hodgsoni* is finer than these three species.

The name:
Named after Dr Gregor Hodgson who worked with the author on corals throughout much of the Philippines.

Holotype:
Specimen MSI-3012-CO. The specimen is 128 mm maximum dimension. Collected by the author from 2 m depth, Calamian Islands, Palawan, Philippines.

Abundance:
Generally uncommon, but frequently encountered in preferred habitat.

Habitat:
Upper reef slopes protected from strong wave action where the water is clear and species diversity at least moderately high.

Distribution:
Papua New Guinea and the Indonesian-Philippines archipelago..

Montipora vietnamensis Veron, 2000

Original description: Veron (2000) Volume 1, page 84-5.

> **Characters:** Colonies have an encrusting or laminar base, with closely compacted short upright branches. Coenosteum ridges are mostly vertical but may be irregular. Corallites are large and prominent. **Colour:** Dark brown, usually with white coenosteum ridges and branch tips. **Similar species:** *Montipora confusa* has larger, more prominent coenosteum ridges and smaller corallites. Underwater, colour differences are distinctive. See also *M. undata*. **Habitat:** Shallow reef environments and rocky foreshores. **Abundance:** Uncommon but distinctive.

Previous illustrations:
Veron (2000) Volume 1, page 84-5, figures 1-4, colour photographs of living coral and page 84, drawing of coral skeleton.

Synonymy:
None.

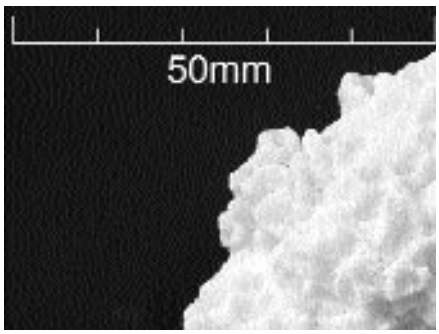

Figure 8. *Montipora vietnamensis,* holotype (G55858). From Nha Trang Vietnam. Piece from a large colony, upper surface.

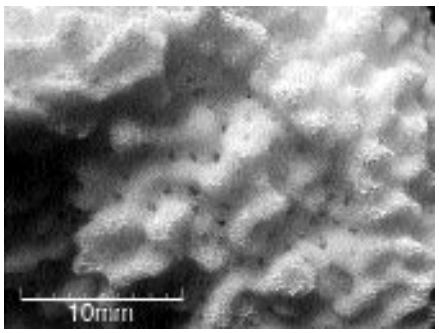

Figure 9. *Montipora vietnamensis,* holotype. Colony surface showing coenosteum ridges and corallite distribution.

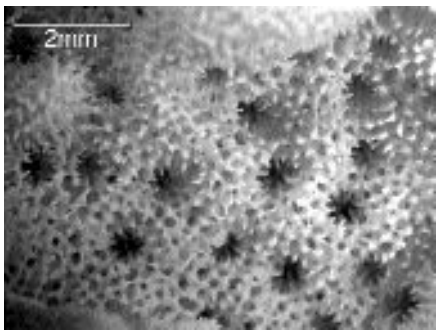

Figure 10. *Montipora vietnamensis,* holotype. Showing corallite and coenosteum detail.

The holotype of *Montipora confusa* Nemenzo, 1967 is atypical of this species (having been collected from a habitat exposed to strong wave action) and is closer to the present species than is usual for coralla of either species collected from their normal habitat. The holotype of *Montipora contorta* Nemenzo and Montecillo, 1981, is an encrusting plate with a single upright branch. It is a junior synonym of *M. confusa*, but closely resembles the present species

Skeletal detail:
Colonies are flat plates with vertical branches. The plates are mostly encrusting or attached but typically have free unifacial margins. They are commonly more than1 meter diameter and sometimes more than 2 metres. Central areas are commonly more than 5 mm thick, margins are thin. Margins frequently form tiers over older parts of the colony. Branches occur centrally in small colonies and are uniformly dispersed over larger colonies. They are usually flattened, tapered, and irregularly divide. Corallites average 0.7 mm diameter. Thecae are weakly developed to absent. Septa are in one irregular order. They consist entirely of inwardly projecting irregular, tapered spines forming comb rows. They are about 0.7 R. Corallites mostly occur between coenosteum ridges. Coenosteum ridges occur on plates perpendicular to the margins and subvertically on branches, the latter interconnected to form rectangular or flame-shaped cells. The coenosteum is uniform and very coarse. Coenosteum spines usually have elaborated tips.

Affinities:
Montipora confusa has larger upright branches, more distinctive coenosteum ridges and smaller corallites. These differences were thought to be geographic differences until the two species were found together in the Philippines. *Montipora undata* is less similar, forming vertical columns rather than spires. Corallites are larger and the coenosteum much finer.

The name:
Named after the country of Vietnam, where this species is most common.

Holotype:
Specimen G55858. The specimen is 84 mm maximum dimension. Collected by the author from approximately 12 m depth, Nha Trang, Vietnam.

Abundance:
Generally uncommon, but sometimes abundant in localised areas.

Habitat:
Shallow reef slopes protected from strong wave action. Found on rocky foreshores in Vietnam.

Distribution:
The Indonesian-Philippines archipelago.and Vietnam.

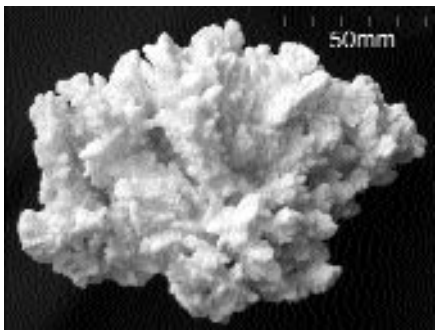

Figure 11. *Montipora saudii,* holotype (G55842). From the northern Red Sea coast of Saudi Arabia. Piece from a large colony, upper surface.

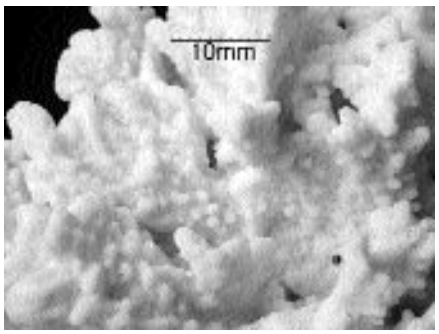

Figure 12. *Montipora saudii,* holotype. Colony surface showing coenosteum tuberculae and corallite distribution.

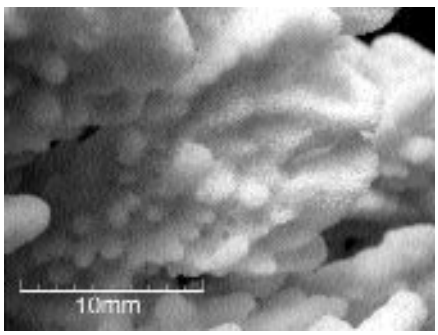

Figure 13. *Montipora saudii,* holotype. Surface detail.

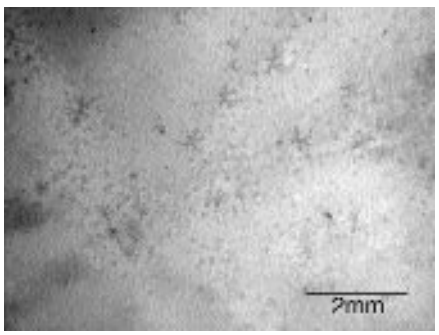

Figure 14. *Montipora saudii,* holotype. Corallite and coenosteum detail.

Montipora saudii Turak, DeVantier and Veron, 2000

Original description: Veron (2000) Volume 1, page 92.

> **Characters:** Colonies are extensive upright to prostrate laminae and may also be encrusting. The colony surface is covered by elongate tuberculae which hide the corallites from view. The tuberculae are upwardly inclined on upright laminae. The coenosteum is coarse. **Colour:** Grey with pale tips to tuberculae. **Similar species:** *Montipora circumvallata*, which has finer branches. **Habitat:** Shallow reef environments. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 1, page 92, figures 1, 2, colour photographs of living coral and drawing of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies may be more than 1 metre diameter and are composed of flat encrusting basal parts which may become submassive. Colonies have irregular upgrowths which may become branch-like. The colony surface is covered with tuberculae averaging approximately 2 mm in diameter and up to 4 mm in length. Tuberculae are irregularly scattered except towards branch-like formations where they may be partly fused or aligned subvertically. Corallites are immersed and hidden between the tuberculae. They are approximately 0.4 mm diameter and have septa of irregular length and thickness. The larger septa reach 0.8 R.

Affinities:
Montipora circumvallata has similar development of tuberculae but these are strongly aligned in ridges down the sides of branches. *Montipora pachytuberculata* and *M. echinata* (see below for both species) have very elongate papillae rather than tuberculae and are less like this species which are similar and appear to be Red Sea endemics.

The name:
Named after the country of Saudi Arabia, the only country where this species has been so far recorded.

Holotype:
Specimen G55842. The specimen is 131 mm maximum dimension. Collected by Emre Turak from approximately 2 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Generally common in preferred habitat.

Habitat:
Upper reef slope exposed to moderate wave action.

Distribution:
Known only from the Red Sea.

Montipora cryptus Veron, 2000

Original description: Veron (2000) Volume 1, page 126.

> **Characters:** Colonies are small irregular plates. Corallites are small, immersed and widely spaced. The coenosteum is covered with tuberculae which may be verrucae-like. These may contain corallites. **Colour:** Brown or mottled. **Similar species:** *Montipora meandrina*, which has larger tuberculae forming verrucae, larger corallites and a coarser coenosteum. See also *M. floweri* which has a coarser coenosteum and less tendency to form verrucae. **Habitat:** Most reef environments. **Abundance:** Uncommon and inconspicuous.

Previous illustrations:
Veron (2000) Volume 1, page 126, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Scheer and Pillai (1983) plate 10, figures 1, 2 as *Montipora monasteriata*.

Synonymy:
Montipora monasteriata (Forskål, 1775): Scheer and Pillai (1983), not *Madrepora monasteriata* Forskål, 1775

Of nominal species, *Motipora lobulata* Bernard (1897) from Diego Garcia and Maritius is most similar to the present species in gross morphology but not in corallite detail.

Skeletal detail:
Colonies are irregularly encrusting to submassive. The surface is irregularly contorted with fused verrucae that have no pattern of distribution and vary in shape from hemispherical to irregular. The coenosteum is uniform in structure and composed densely compacted spines which have elaborated tips of uniform height. Corallites are distributed irregularly. They average 0.6 mm diameter and are completely immersed. Thecae are weakly developed or indistinguishable. Septa are usually in one even order, are evenly spaced and average 0.7 R. An irregular second cycle of short septa may be present. They have strongly dentate to comb-row margins.

Affinities:
Montipora meandrina has much larger verrucae and corallites between rather than in the verrucae. *Montipora floweri* has smaller verrucae with corallites distributed independently of the verrucae. Both these species have a coarser coenosteum.

The name:
So named because this is a nondescript species that is readily overlooked in field studies.

Holotype:
Specimen G55791. The specimen is 54 mm maximum dimension. Collected by the author from approximately 8 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

Abundance:
Generally uncommon, but sometimes abundant in localised areas.

Habitat:
Upper and mid reef slopes.

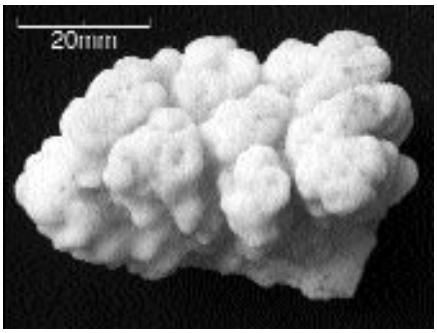

Figure 15. *Montipora cryptus,* holotype (G55791). From Sharm al-Sheikh, Sinai Peninsula, Egypt. Piece from a large colony, upper surface.

Figure 16. *Montipora cryptus,* from Sharm al-Sheikh, Sinai Peninsula, Egypt. Piece from a large colony, upper surface.

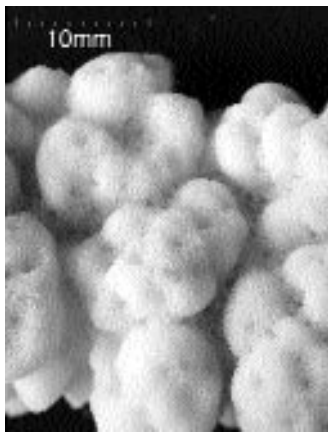

Figure 17. *Montipora cryptus,* holotype. Showing colony surface showing undulations and corallite distribution.

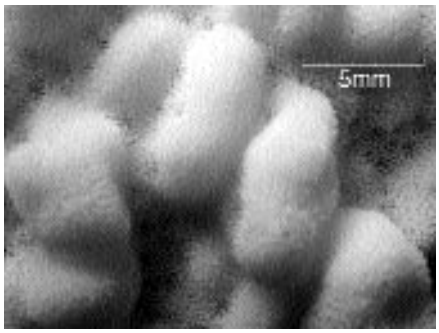

Figure 18. *Montipora cryptus,* same specimen as figure 16. Colony surface showing coenosteum tuberculae and corallite distribution.

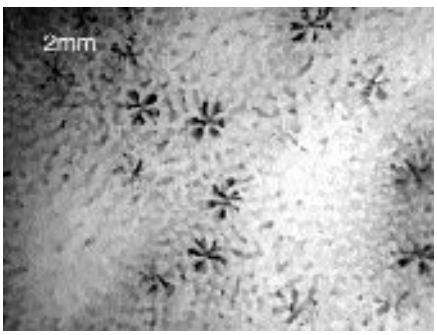

Figure 19. *Montipora cryptus,* holotype. Showing corallite and coenosteum detail.

Distribution:

Known only from the Red Sea.

Montipora taiwanensis Veron, 2000

Original description: Veron (2000) Volume 1, page 132.

> **Characters:** Colonies are robust and conspicuous, encrusting to submassive. The surface is covered with contorted, irregular, large verrucae. These verrucae are not fused into any pattern. Corallites are large and conspicuous. **Colour:** Pale brown or purple. **Similar species:** *Montipora meandrina*, which has smaller corallites and tuberculae. **Habitat:** Shallow water exposed to wave action. **Abundance:** Probably rare.

Previous illustrations:
Veron (2000) Volume 1, page 132, figure 1, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are encrusting to submassive, up to 0.5 metres in diameter. The surface is covered with fused verrucae. These do not form a pattern except where a ridge occurs in which case they may be fused along the ridge edge. Corallites are very large and are slightly foveolate. They average 1 mm at the upper margin of the foveolae, slightly less at the level of the theca. Thecae are inconspicuous. There is some tendency for septa to be arranged in two orders. First order septa average 0.5-0.7 R in length and consist of neat spines in comb-rows. The second order of septa is short or may be absent. The coenosteum is uniform and moderately coarse.

Affinities:
Montipora meandrina, which has smaller corallites and less prominent and less fused verrucae. *Montipora palawanensis* (see below) has rounded verrucae of relatively uniform shape and much smaller corallites. Corallites of *Montipora meandrina* are slightly foveolate but are not as compacted as they are in *M. venosa* and *M. foveolata*, (which are truly foveolate species).

The name:
So named because the holotype is from Taiwan.

Holotype:
Specimen G55854. The specimen is 104 mm maximum dimension. Collected by the author from approximately 2 m depth, south-east Taiwan.
Bolinao, northern Philippines.

Abundance:
Probably rare, but little studied.

Habitat:
Shallow reef flat exposed to moderate wave action.

Distribution:
Philippines and Taiwan, but is likely to be recorded in other countries.

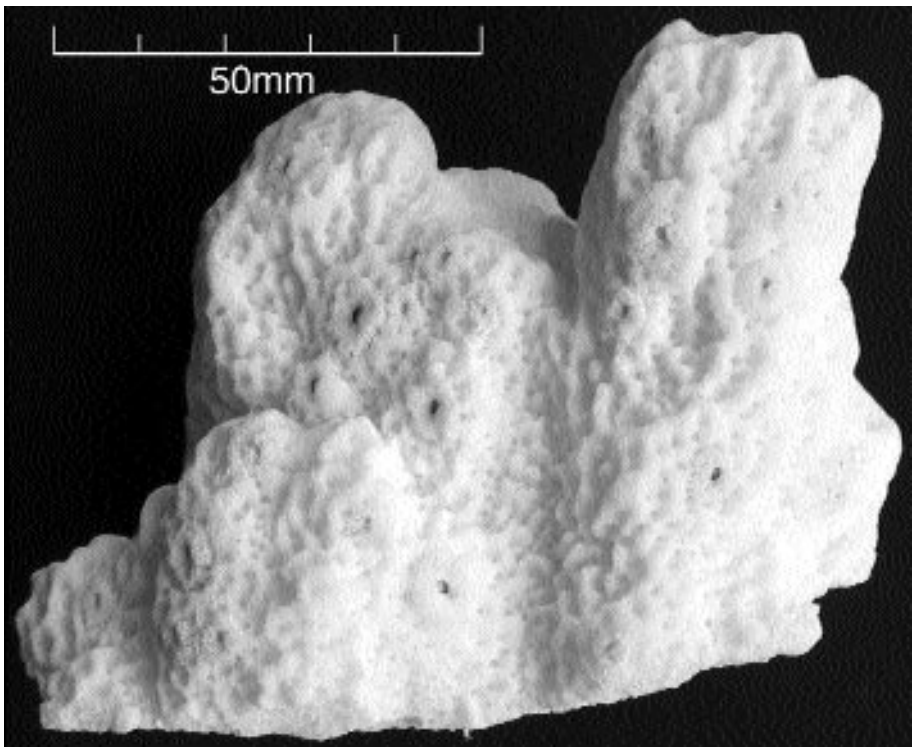

Figure 20. *Montipora taiwanensis,* holotype (G55854). From south-east Taiwan. Colony surface showing coenosteum ridges and corallite distribution.

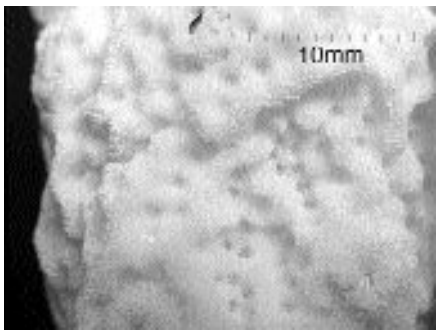

Figure 21. *Montipora taiwanensis,* holotype. Colony surface showing coenosteum ridges and corallite distribution.

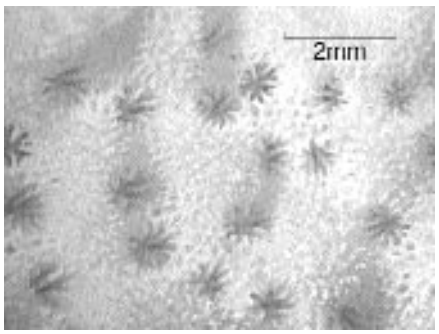

Figure 22. *Montipora taiwanensis,* holotype. Corallite and coenosteum detail.

Montipora palawanensis Veron, 2000

Original description: Veron (2000) Volume 1, page 132.

> **Characters:** Colonies are submassive or laminar. The surface is uniformly covered with very large verrucae which are fused so as to form continuous ridges which form an irregular pattern. Only at plate margins are verrucae aligned in rows. Corallites are immersed deep between the between the ridges. **Colour:** Blue or brown, uniform or mottled. Bright blue or green tentacles are sometimes extended during the day. **Similar species:** *Montipora verrucosa* and *M. danae*, both of which have smaller verrucae which are not fused into ridges. *Montipora meandrina* has more irregular verrucae. **Habitat:** Upper reef slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 132-3, figures 2-4, colour photographs of living coral and page 132, drawing of coral skeleton.

Synonymy:
Montipora palawanensis Veron, 2000: Veron and Fenner (2000), Veron (2002), Fenner (2002)

The type specimen of *Montipora conferta* Nemenzo, 1967 is closest to the present species but has the smaller, more exsert less irregular verrucae of *M. verrucosa*, of which it is a junior synonym.

Skeletal detail:
Colonies are flat explanata plates, either encrusting with horizontal downturned free margins, or centrally attached with horizontal or upturned plates which may be tiered. Large colonies, which may be up to approximately 2 m diameter may be combinations of these growth forms. The colony surface is covered with dome-shaped or irregularly shaped verrucae 2 mm at their narrowest dimension and 8 mm at their longest. Towards plate margins the verrucae become aligned perpendicularly to the margins and within 10 cm of the margins they become little more than ridges. They are low and wide, not exsert. Corallites are immersed and occur irregularly between, never on, the verrucae. Corallites average 0.6 mm diameter, are often irregular in shape and compacted in groups or rows. There is little development of thecae. Septa are irregular in shape, up to 0.8 R in length. The coenosteum is coarse between the verrucae, relatively fine on verrucae.

Affinities:
Montipora verrucosa and *M. danae* both have smaller and more exsert verrucae which are less irregular in shape except near growing edges where they occasionally form coenosteum ridges. Corallites of both these species are larger (averaging 1 mm diameter). *Montipora verruculosus* (see below) has much smaller tuberculae-like verrucae which are part of parallel or radiating ridges over much of the colony surface. *Montipora mactanensis* has still less developed verrucae and stronger development of coenosteum ridges. *Montipora palawanensis* may also resemble *M. meandrina* which has highly contorted fused verrucae which do not form low mounds.

The name:
So named because the holotype is from the Palawan Islands of the Philippines.

Holotype:
Specimen MSI-3009-CO. The specimen is 135 mm maximum dimension. Collected by the author from approximately 12 m depth, Palawan Islands of the Philippines.

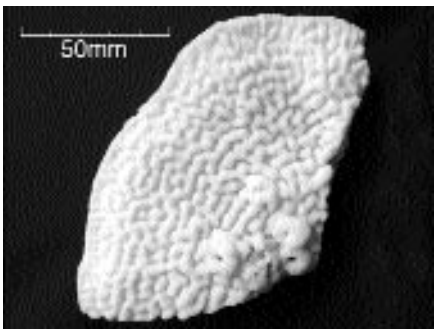

Figure 23. *Montipora palawanensis,* holotype (MSI-3009-CO). From the Calamian Islands, Palawan, Philippines. A piece of one lamina, upper surface.

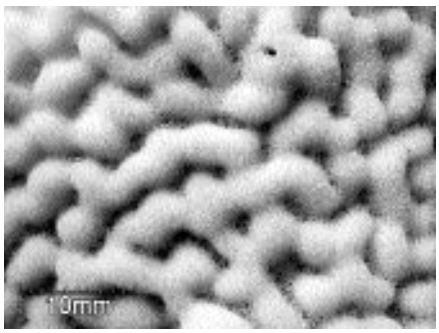

Figure 24. *Montipora palawanensis,* holotype. Part of a lamina showing coenosteum verrucae and corallite distribution.

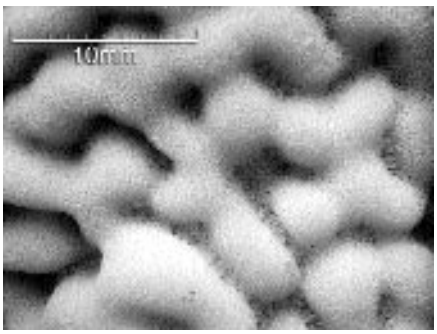

Figure 25. *Montipora palawanensis,* holotype. Colony surface showing coenosteum ridges and corallite distribution.

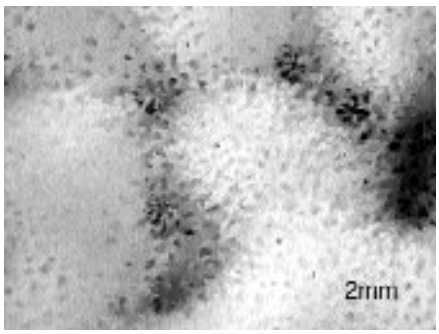

Figure 26. *Montipora palawanensis,* holotype. Showing corallite and coenosteum detail.

Abundance:
Usually uncommon except, as far as is known, in some localised areas of the Philippines.

Habitat:
Upper reef slopes that are protected from wave action and where species diversity is high. Also found in shallow lagoons.

Distribution:
Eastern Papua New Guinea and the Indonesian-Philippines archipelago.

Montipora verruculosus Veron, 2000

Original description: Veron (2000) Volume 1, page 136.

> **Characters:** Colonies are thick, flat, usually horizontal plates up to 2 metres across. Plates are covered with dome-shaped verrucae which are of very uniform size and are uniformly spaced. Verrucae are not aligned as radiating ridges except within 50 mm of plate margins. Corallites are small, immersed and crowded between the verrucae. **Colour:** Grey. **Similar species:** *Montipora danae*, which has larger, less evenly spaced verrucae and larger corallites. **Habitat:** Upper reef slopes and lagoons. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 136, figures 1-3, colour photographs of living coral and drawing of coral skeleton.

Synonymy:
Montipora verruculosus Veron, 2000: Veron and Fenner (2000), Veron (2002), Fenner (2002)

Skeletal detail:
Colonies typically encrusting or centrally attached plates up to 2 metres diameter. Plate margins are usually free and unifacial. Occasionally parts of free plates overlap other parts of the colony. The colony surface is covered with dome-shaped or pillar-like verrucae that are uniform in size and approximately circular or elliptical when viewed from above. Verrucae are uniformly spaced and do not fuse except towards plate margins. The latter become coenosteum ridges within 50 mm of plate margins. Corallites are immersed and occur irregularly between, never on, the verrucae. Corallites average 0.7 mm diameter, and are usually at least one corallite diameter apart. There is little development of thecae. Septa are irregular in shape, up to 0.7 R in length. The coenosteum is coarse between and on the verrucae.

Affinities:
Montipora danae has larger, more irregular and less evenly spaced verrucae which are not as clearly arranged in rows perpendicular to plate margins and has substantially larger corallites. *Montipora verrucose* has still larger corallites and larger corallites. *Montipora palawanensis* has much wider, flatter and more irregularly shaped verrucae which are also not as clearly arranged in rows perpendicular to plate margins. These species may be difficult to separate unless seen in similar habitats.

The name:
So named because of the close resemblance this species has with the well known *M. verrucosa*.

Holotype:
Specimen G55806. The specimen is 127 mm maximum dimension. Collected by the author from approximately 6 m depth, Raja Ampat Islands, Irian Jaya, Indonesia.

Abundance:
Uncommon except in restricted habitats at the Raja Ampat Islands, Indonesia.

Habitat:
Upper reef slopes that are protected from wave action and where species diversity is high. Also found in shallow lagoons.

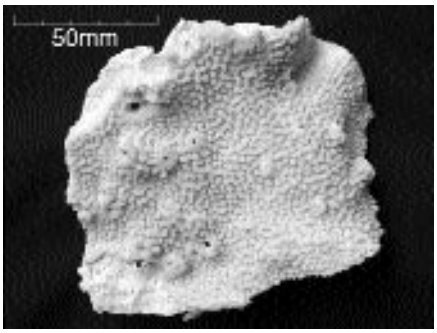

Figure 27. *Montipora verruculosus,* holotype (G55806). From the Raja Ampat Islands, Irian Jaya, Indonesia. From a partly exposed habitat. Colony surface showing coenosteum verrucae, corallite distribution and some coenosteum ridges.

Figure 28. *Montipora verruculosus* from the Calamian Islands, Palawan, Philippines. From a habitat protected from wave action. Colony surface showing coenosteum verrucae, corallite distribution and well developed coenosteum ridges.

Figure 29. *Montipora verruculosus,* from a very protected habitat in the Raja Ampat Islands, Irian Jaya, Indonesia. A colony surface showing coenosteum verrucae, corallite distribution and well developed coenosteum ridges.

Figure 30. *Montipora verruculosus,* from the Raja Ampat Islands, Irian Jaya, Indonesia. Colony surface showing coenosteum ridges and corallite distribution.

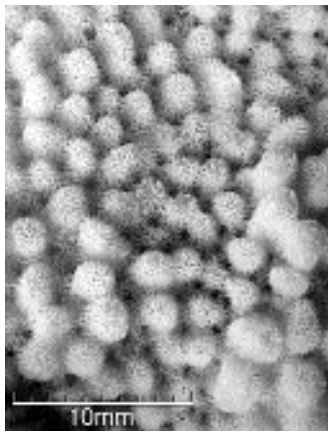

Figure 31. *Montipora verruculosus,* holotype. Colony surface showing coenosteum ridges and corallite distribution.

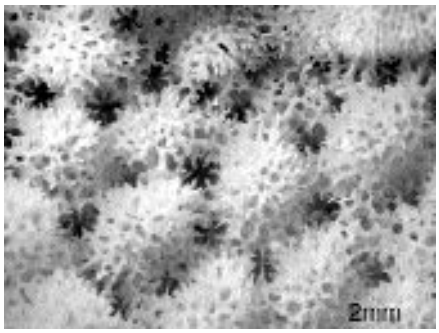

Figure 32. *Montipora verruculosus,* holotype. Corallite and coenosteum detail.

Distribution:
The Indonesian-Philippines archipelago.and northern and eastern Papua New Guinea.

Montipora hemispherica Veron, 2000

Original description: Veron (2000) Volume 1, page 147.

> **Characters:** Colonies are usually encrusting but may be hemispherical. Flattened, contorted branches usually occur near the centre of the laminae and cover the surface of large colonies. Corallites are immersed. Papillae, grading into tuberculae, are most prominent on laminae; on branches they may be fused into short ridges. The coenosteum is coarse. **Colour:** Grey or pale brown. **Similar species:** *Montipora setosa*, which has finer branches, smaller corallites and more development of verrucae. See also *Montipora spongiosa*. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 147, figures 3, 4, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are usually encrusting but may become dome shaped and up to 2 metres in diameter and I metre high. The characteristics of the species are hardly developed in small colonies. Larger colonies consist of a mass of short irregular branches up to approximately 10 mm thick. These are fused basally to each other or to a basal plate. Branches have short irregular off-shoots. Growing ends are verrucae-like and are mostly devoid of corallites or have only small corallites. Elsewhere, the surface of branches is covered with large fused tuberculae or verrucae-like tuberculae which contain corallites. Corallites are approximately 1 mm diameter, irregularly distributed on and between tubercular and are widely spaced. Corallites are immersed, with circular openings and little or no development of thecae. Septa are in a single order and form well developed comb rows with spines reaching inwards approximately 0.8 R. The coenosteum is uniformly coarse.

Affinities:
Montipora niugini (see below) also has widely spaced, immersed corallites and no coenosteum ornamentation, but does not have distinct branches and fused tuberculae.

The name:
So named because mature colonies form very conspicuous hemispherical mounds.

Holotype:
Specimen G55782. The specimen (the whole colony photographed in Veron (2000) volume 1, page 147, figure 3) is 80 mm maximum dimension. Collected by the author from approximately 9 m depth, eastern Sinai Peninsula, Egypt.

Abundance:
Uncommon, but maybe rare.

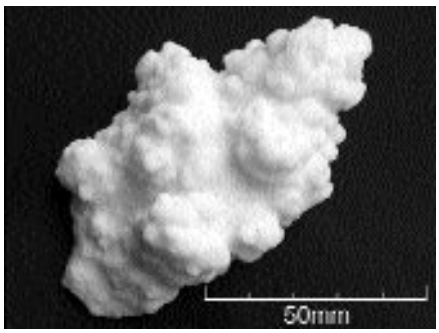

Figure 33. *Montipora hemispherica,* holotype (G55782). From 9 m depth, eastern Sinai Peninsula, Egypt. From a shallow fringing reef protected from strong wave action.

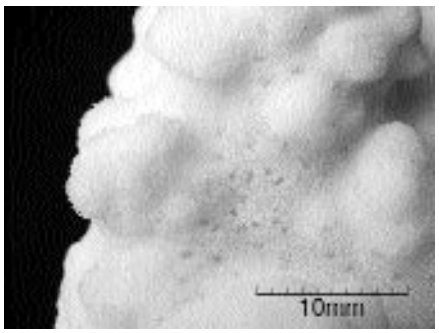

Figure 34. *Montipora hemispherica,* holotype. Showing the knobby surface and corallite distribution.

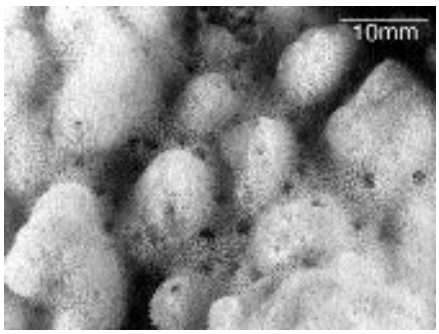

Figure 35. *Montipora hemispherica,* from east Sinai Peninsula, Egypt. Showing a branch side with irregular verrucae-like mounds containing corallites.

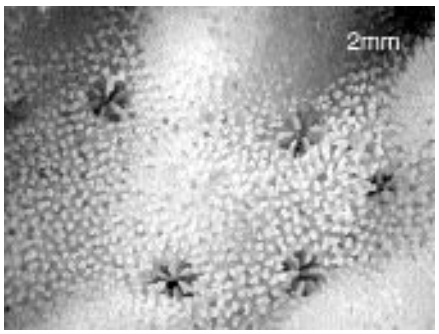

Figure 36. *Montipora hemispherica,* holotype. Corallite and coenosteum detail.

Habitat:
Shallow embayments where species diversity is high or shallow reef slopes protected from strong wave action.

Distribution:
Known only from the Red Sea.

Montipora niugini Veron, 2000

Original description: Veron (2000) Volume 1, page 158.

> **Characters:** Colonies are up to 0.3 metres across, although larger clusters of colonies formed by fragmentation occur together. Colonies have submassive bases and small irregular branches. The colony surface is completely smooth. Corallites are small, immersed and indistinct. The coenosteum is very fine and devoid of ornamentation. **Colour:** Pale cream, mauve or blue. **Similar species:** Resembles branching *Psammocora* (Siderastreidae) underwater more than other *Montipora*. **Habitat:** Shallow environments protected from wave action. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 158, figures 1-3, colour photographs of living coral and drawing of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are clumps of irregularly formed upgrowths with encrusting to submassive bases. Much of the basal region is commonly dead. Upgrowths have no general shape although they do become branch-like, the branches being short, up to 20 mm diameter, with rounded ends. Corallites are approximately 10 mm apart, 0.8-1.0 mm diameter. They are completely immersed, circular and have weakly developed thecae. Septa are in one slightly irregular order, have the shape of comb rows with septal spines approximately 0.7 R. The coenosteum is very uniform and is fine, without any ornamentation.

Affinities:
Montipora hemispherica (see above) also has widely spaced, immersed corallites and no coenosteum ornamentation, but has distinct branches and fused tuberculae. *Montipora spongodes* also has widely spaced, immersed corallites, but has column-like upgrowths, more crowded corallites and a coarse coenosteum.

The name:
So named because the holotype is from Papua New Guinea.

Holotype:
Specimen G55828. The specimen is 132 mm maximum dimension including dead basal branches. Collected by the author from approximately 14 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Uncommon, but is inconspicuous and may readily be overlooked.

Habitat:
Shallow coral communities protected from wave action.

Distribution:
Eastern Papua New Guinea and the Indonesian-Philippines archipelago.

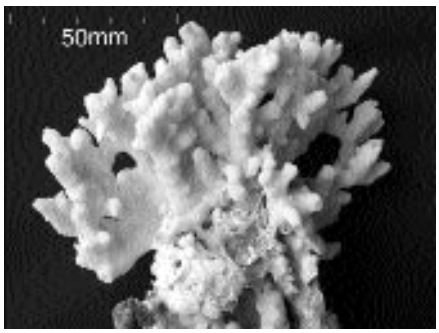

Figure 37. *Montipora niugini,* holotype (G55828). From Milne Bay, eastern Papua New Guinea. From a shallow fringing reef protected from strong wave action.

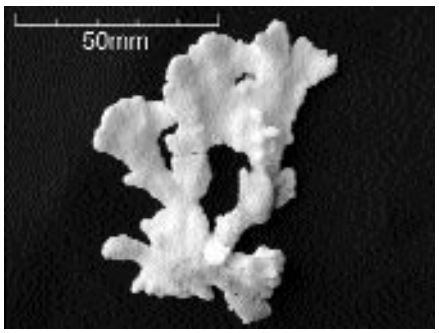

Figure 38. *Montipora niugini,* from Milne Bay, eastern Papua New Guinea. Colony from a protected mid-reef slope.

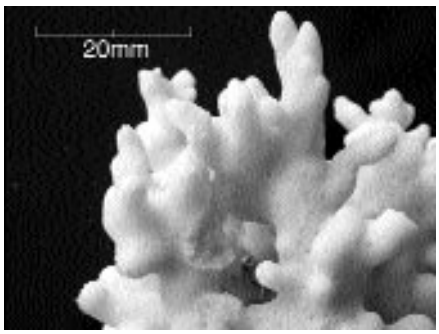

Figure 39. *Montipora niugini,* from Milne Bay, eastern Papua New Guinea. Showing distal branches.

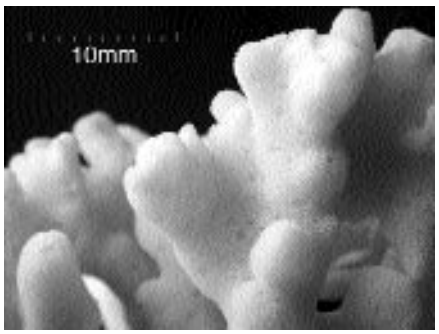

Figure 40. *Montipora niugini,* holotype. Showing smooth branch ends devoid of corallites.

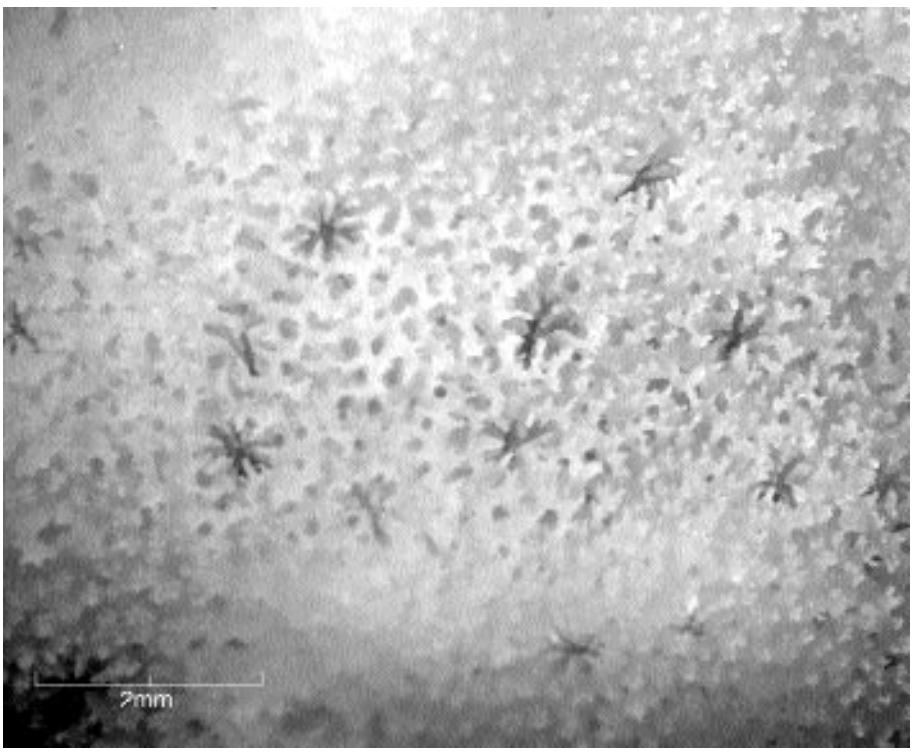

Figure 41. *Montipora niugini,* holotype. Showing corallite and coenosteum detail.

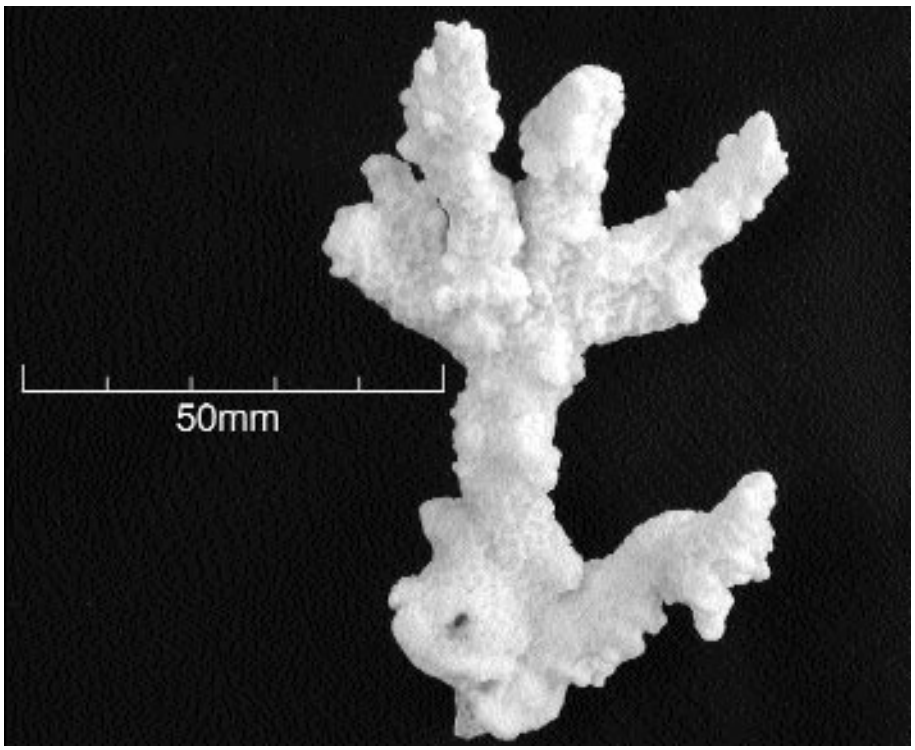

Figure 42. *Montipora porites,* holotype (MSI-3010-CO). From the Calamian Islands, Palawan, Philippines. From a shallow reef.

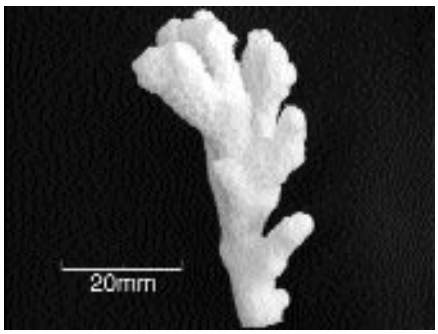

Figure 43. *Montipora porites,* from the Calamian Islands, Palawan, Philippines. Showing deeply excavated corallites.

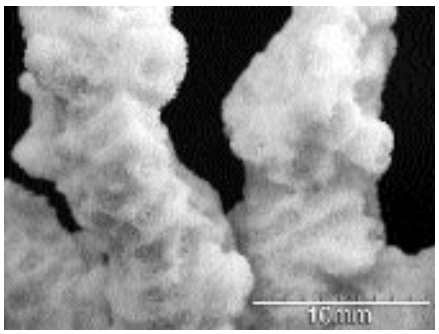

Figure 44. *Montipora porites,* holotype. Showing surface detail of branches.

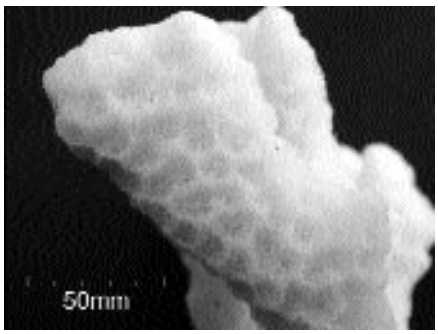

Figure 45. *Montipora porites,* same specimen as figure 43. Showing a branch end.

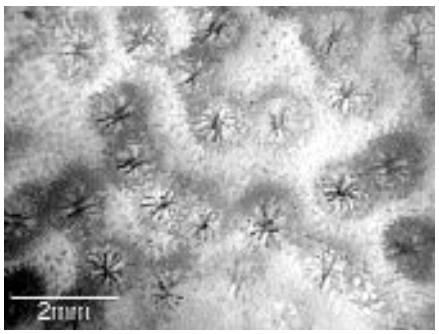

Figure 46. *Montipora porites,* holotype. Showing corallite and coenosteum detail.

Montipora porites Veron, 2000

Original description: Veron (2000) Volume 1, page 162.

> **Characters:** Colonies have encrusting bases and irregular branches which seldom fuse. Branching may be open or compact. Coenosteum ridges are very prominent and form a sinuous pattern over branch surfaces. Corallites are deeply embedded between the ridges. The skeletal structure of the corallites is *Porites*-like, with very elongate septa which occasionally fuse. **Colour:** Grey or green with pale coenosteum ridges. **Similar species:** *Montipora setosa* and *M. vietnamensis*, both of which may have a similar growth-form but both have relatively superficial corallites without well developed coenosteum ridges. Resembles the poritid *Porites negrosensis* underwater and corallites of skeletons are unusually *Porites*-like. **Habitat:** Shallow protected embayments. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 1, page 162, figures 1-4, colour photographs of living coral and drawing of coral skeleton.

Synonymy:
Montipora porites Veron, 2000: Veron and Fenner (2000), Veron (2002)

Skeletal detail:
Colonies have encrusting bases with compact branches. Branches are irregularly shaped, are sometimes flattened, occasionally anastomose and irregularly divide. Branches have a conspicuously rough surface caused by irregular fusion of coenosteum ridges. The outcome is an interlocking network of short or sinuous valleys. Corallites are immersed, approximately 1 mm diameter, have weakly formed thecae. Septa are in a single order, forming comb-rows averaging 0.8 R. Septal spines sometimes fuse. The coenosteum is very coarse, especially on ridges.

Affinities:
Montipora altasepta has similar branches and coenosteum development but these are on a much finer scale and corallites do not have well developed septa. *Montipora setosa* has irregular upgrowths but the coenosteum forms verrucae rather than fused ridges. *Montipora vietnamensis* has coenosteum forming ridges, but these are primarily vertical on branches and colonies have more basal plate development.

The name:
So named because this species is readily mistaken for *Porites* underwater.

Holotype:
Specimen MSI-3010-CO. The specimen is 83 mm maximum dimension. Collected by the author from approximately 17 m depth, Palawan Islands, Philippines.

Abundance:
Rare except in very restricted pockets.

Habitat:
Any shallow coral community where the water is moderately clear and at least partly protected from wave action.

Distribution:
Eastern Papua New Guinea, the Indonesian-Philippines archipelago and the Ryukyu Islands of Japan.

Montipora kellyi Veron, 2000

Original description: Veron (2000) Volume 1, page 164.

Characters: Colonies are clumps of highly contorted branches which do not fuse. Corallites are large and crowded. The coenosteum is very coarse. There is no development of papillae or other ornamentation. **Colour:** Tan or brown, with white polyps. **Similar species:** *Montipora spongiosa.* **Habitat:** Shallow reef environments. **Abundance:** Common.

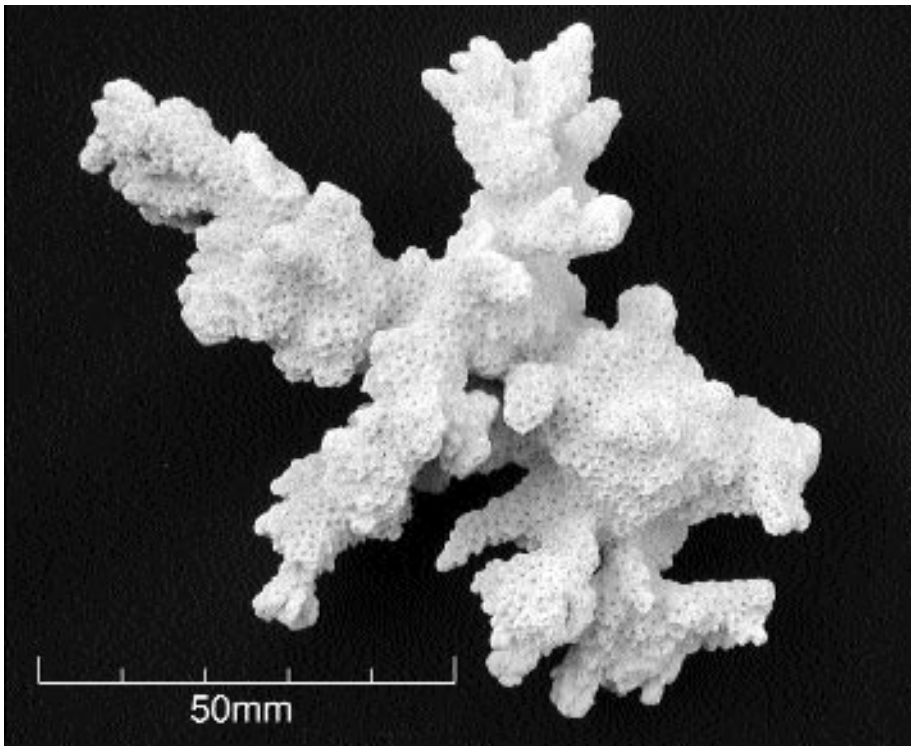

Figure 47. *Montipora kellyi,* holotype (G55813). From Tuléar, south-west Madagascar. From the outer margin of a fringing reef lagoon.

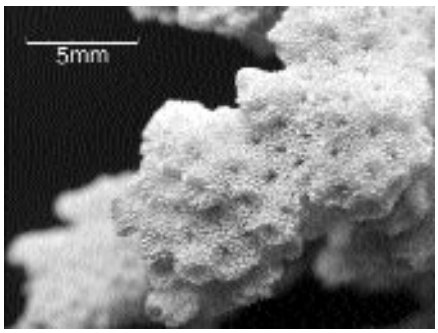

Figure 48. *Montipora kellyi,* holotype. A branch tip.

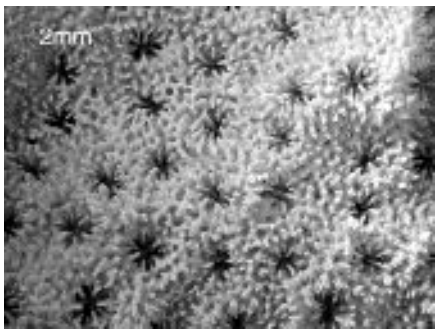

Figure 49. *Montipora kellyi,* holotype. Showing corallite and coenosteum detail.

Previous illustrations:
Veron (2000) Volume 1, page 164, figures 1-3, colour photographs of living coral and drawings of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are irregular clumps of branches. Branches do not anastomose and have no determinate shape. There are no papillae, tuberculae or coenosteum ridges. Corallites are up to 0.7 mm diameter but are of irregular shape and size. Thecae are weakly developed or absent in most corallites. Septa are highly irregular, mostly less than 0.5 R. The coenosteum is irregularly coarse.

Affinities:
Montipora spongiosa can have a similar growth form but has corallites which have a lower lip of coenosteum. No other *Montipora* with a similar growth form, including *M. pachytuberculata*, *M. echinata* and *M. aspergillus* (see below for the last three species) are without any coenosteum ornamentation.

The name:
Named after Russel Kelly, the artist who made many drawings of *Montipora* and other corals for *Corals of the World* and *Coral ID* (Veron and Stafford-Smith, 2002.).

Holotype:
Specimen G55813. The specimen is 96 mm maximum dimension. Collected by the author from approximately 8 m depth, Tuléar, south-west Madagascar.

Abundance:
Locally common.

Habitat:
Protected back reef margins of fringing reefs and lagoons.

Distribution:
Known only from southern Madagascar.

Montipora pachytuberculata Veron, DeVantier and Turak, 2000

Original description: Veron (2000) Volume 1, page 166.

> **Characters:** Colonies are clumps of irregularly fused branches. Corallites are small with well defined thecae. The coenosteum is covered with highly ornamented papillae which may be fused into short irregular ridges near the branch tips. **Colour:** Pale brown with whitish branch tips. **Similar species:** Closest to the other species of this group. **Habitat:** Shallow, semi-sheltered reef slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 166, figure 1, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are clumps of irregularly fused branches becoming column-like and forming large clumps. Corallites are 0.6 mm diameter, circular or slightly irregular, with well defined thecae. Septa are of very variable thickness and number. Most are approximately 0.5 R in length and all form comb rows. The coenosteum is covered with elongate, thick, coenosteum papillae. Papillae may be fused into short irregular ridges near branch tips. The coenosteum between papillae is very coarse, consisting of rods and expanses of flattened plates commonly over 0.5 mm wide. Papillae are finely structured and have spines with elaborated tips.

Affinities:
Closely resembles *Montipora echinata* (see below) which has nodular rather than columnar branches and finer, more elongate coenosteum papillae. These species have been found growing together and are readily distinguished underwater. *Montipora aspergillus* (see below) has a similar growth form but less development of coenosteum papillae giving branches a relatively smooth appearance.

The name:
Pachy- from the Greek ‘thick’ or ‘stout’. This species is characterised by its thick tuberculae.

Holotype:
Specimen G55814. The specimen is 86 mm maximum dimension. Collected by Lyndon DeVantier from 1 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Uncommon

Habitat:
Shallow, semi-sheltered reef slopes.

Distribution:
Known only from the Red Sea.

Figure 50. *Montipora pachytuberculata,* holotype (G55841). From the northern Red Sea coast of Saudi Arabia. From a shallow water coral community.

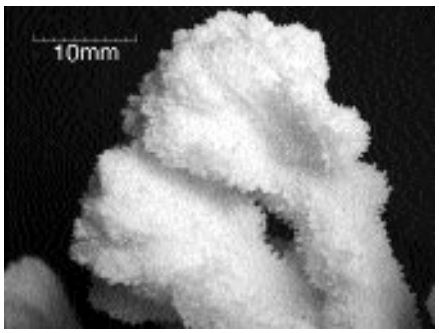

Figure 51. *Montipora pachytuberculata,* holotype. Showing a branch end with coenosteum ridges and elongate tuberculae.

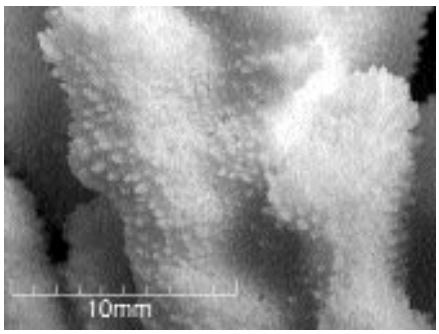

Figure 52. *Montipora pachytuberculata,* holotype. Showing the side of a branch.

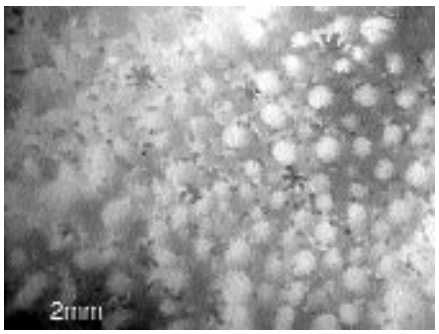

Figure 53. *Montipora pachytuberculata,* holotype. Showing corallite and coenosteum detail.

Montipora echinata Veron, DeVantier and Turak, 2000

Original description: Veron (2000) Volume 1, page 166.

> **Characters:** Colonies are clumps of irregularly fused branches. Corallites are small, irregularly spaced and immersed in the coenosteum, which coarse. Coenosteum papillae are large and very elaborate, giving colonies a spiny appearance. **Colour:** Creamy-brown. **Similar species:** Skeletal detail is close to that of *Montipora crassituberculata*, otherwise it resembles the other species of this group. **Habitat:** Shallow semi-sheltered reef slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 166, figure 2, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None

Skeletal detail:
Colonies are basically irregularly fused nodular branches. Corallites are approximately 1 mm diameter, circular or slightly irregular, with indistinguishable to well defined thecae. Septa are in two indistinct orders. Primary septa are at least 0.5 R in length. Secondary septa are thinner and shorter and all form comb rows. The coenosteum is covered with papillae up to 2 mm long near branch tips.

The coenosteum between papillae is very coarse, consisting of rods and flattened plates. Papillae are finely structured and have spines with elaborated tips.

Affinities:
Montipora pachytuberculata (see above) has coenosteum papillae fused into short irregular ridges near branch tips and papillae are thicker. Branches are columnar rather than nodular. These species have been found growing together and are readily distinguished underwater. *Montipora aspergillus* (see below) has both thecal and coenosteum papillae and more branch development.

The name:
From the Latin 'echinatus', meaning covered with spiny projections.

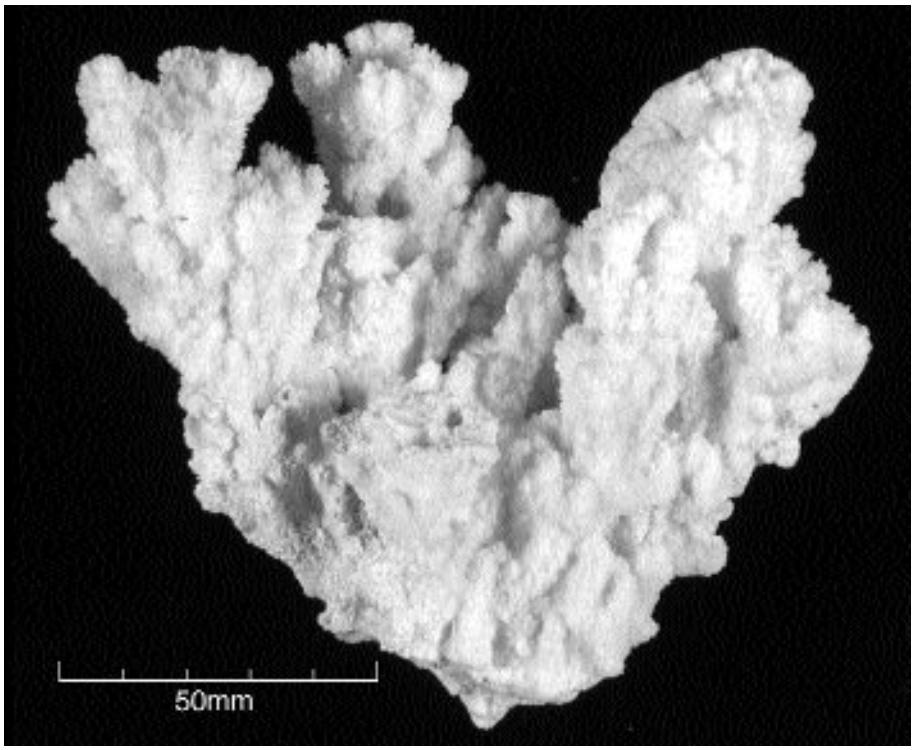

Figure 54. *Montipora echinata,* holotype (G55840). From the northern Red Sea coast of Saudi Arabia.

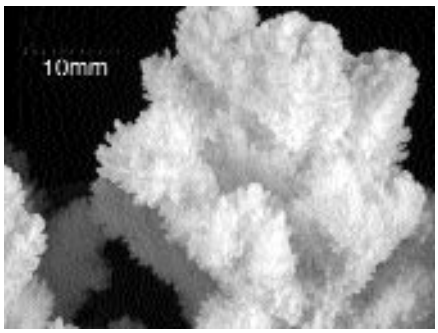

Figure 55. *Montipora echinata,* holotype. Showing branch ends.

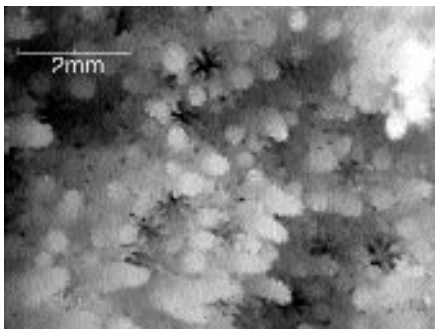

Figure 56. *Montipora echinata,* holotype. Showing corallite and coenosteum detail.

Holotype:
Specimen G55840. The specimen is 118 mm maximum dimension. Collected by Lyndon DeVantier from 1 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Uncommon as far as is known.

Habitat:
Shallow, semi-sheltered reef slopes.

Distribution:
Known only from the Red Sea.

Montipora aspergillus Veron, DeVantier and Turak 2000

Original description: Veron (2000) Volume 1, page 167.

> **Characters:** Colonies are clumps of highly contorted, irregularly fused branches. Corallites are of medium size and are clearly visible. The coenosteum is covered with fine papillae. Septa are in distinct two cycles. **Colour:** Creamy-brown. **Similar species:** Skeletal detail is close to that of *Montipora informis*, otherwise it resembles the other species of this group. **Habitat:** Shallow semi-sheltered reef slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 167, figure 3, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are clumps of irregularly fused branches forming large clumps. Corallites are approximately 1.2 mm diameter, circular or slightly irregular, with well defined thecae. Septa are mostly in two alternating orders. Primary septa are at least 0.5 R in length and form comb rows. Second cycle septa are thinner but only slightly shorter. The surface is covered with papillae which are both thecal and coenostial. Thecal papillae, of which 3 to 8 surround each corallite, are slightly larger than coenosteum papillae. The latter are scattered irregularly, but are of a uniform length of less than 1 mm. The coenosteum between papillae is very coarse. Papillae are finely structured and have spines with elaborated tips.

Affinities:
Montipora spongiosa has an almost identical growth form but in having coenosteum lips to corallites and no papillae. *Montipora pachytuberculata* and *M. echinata* (see above) both have extensive development of papillae, but these are not divided into coenosteum papillae and thecal papillae. Unlike these species, the papillae of *M. aspergillus* are uniform in length over the whole corallum surface.

The name:
From the Latin ‘aspergilliformis’, meaning brush-shaped.

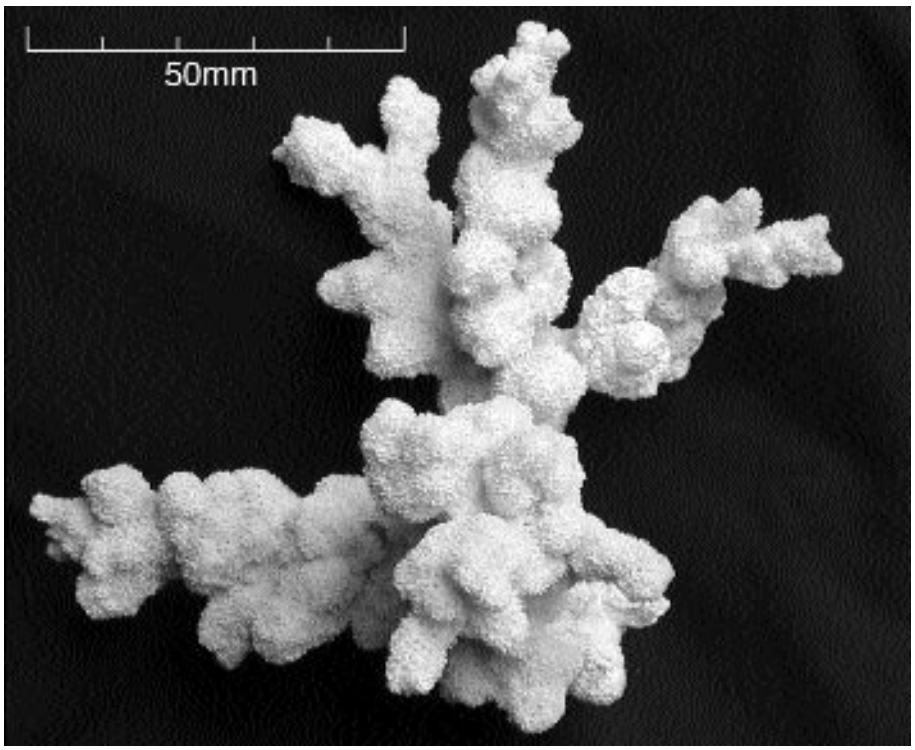

Figure 57. *Montipora aspergillus,* holotype (G55839). From the northern Red Sea coast of Saudi Arabia. From a shallow water coral community.

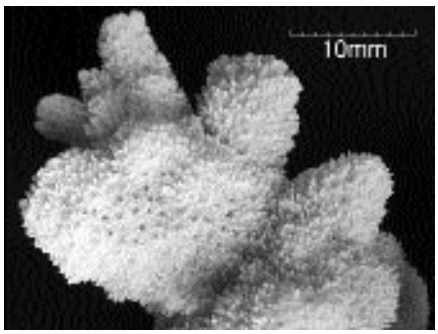

Figure 58. *Montipora aspergillus,* holotype. Showing a branch end.

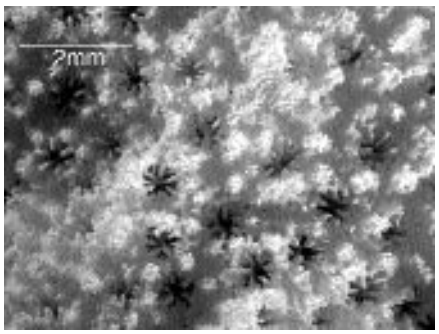

Figure 59. *Montipora aspergillus,* holotype. Showing corallite and coenosteum detail.

Holotype:
Specimen G55839. The specimen is 114 mm maximum dimension. Collected by Lyndon DeVantier from 1 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Uncommon.

Habitat:
Shallow semi-sheltered reef slopes.

Distribution:
Known only from the Red Sea.

Genus *Anacropora* Ridley, 1884

Anacropora spumosa Veron, Turak and DeVantier, 2000

Original description: Veron (2000) Volume 1, page 171.

Characters: Branches are widely spaced, up to 16 millimetres thick and tapered, with blunt tips. The coenosteum is very coarse (visible underwater) and uniform, without forming a pattern. Corallites have a slightly protuberant lower lip and are irregularly arranged. **Colour:** Pale brown with pale branch tips. **Similar species:** *Anacropora reticulata*, which has a patterned coenosteum and more protuberant coralites. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

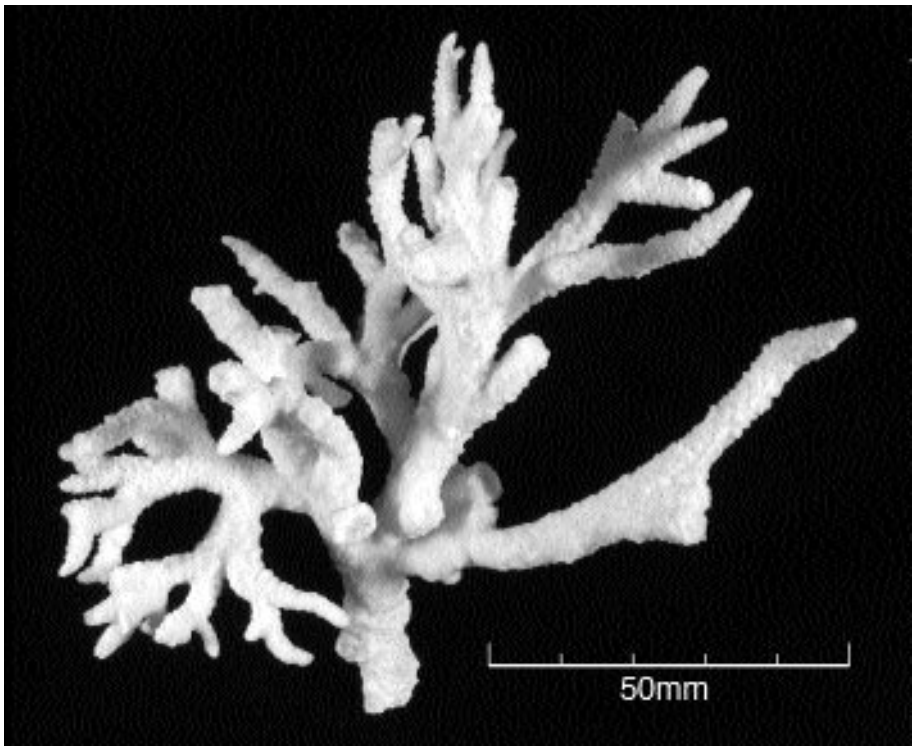

Figure 60. *Anacropora spumosa,* holotype (G55833). From the northern Red Sea coast of Saudi Arabia.

Figure 61. *Anacropora spumosa,* holotype. Showing distal branches.

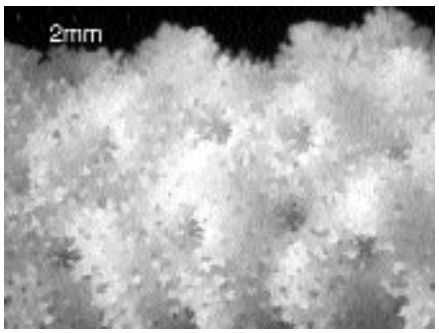

Figure 62. *Anacropora spumosa,* holotype. Showing branch and corallite detail.

Previous illustrations:
Veron (2000) Volume 1, page 171, figure 5, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies have widely spaced branches, which have tapered ends. Branches are up to 13 mm thick and taper to points. Sub-branches may be equal or slightly unequal and form at irregular intervals. Corallites are widely spaced and are immersed to slightly exert due to the formation of a lower lip. They are approximately 0.8 mm diameter. There is little or no development of a spine but the lower corallite wall is slightly exsert giving corallites a nariform shape. Septa are usually in one cycle with a second incomplete cycle sometimes present. They all form comb-like rows. Branch tips are devoid of corallites. Corallite walls and the coenosteum between the corallites are very coarse.

Affinities:
Anacropora reticulata has a distinctive reticulated pattern to the coenosteum and more protuberant coralites.

The name:
So named because of the very coarse structure of the coenosteum.

Holotype:
Specimen G55833. The specimen is 159 mm maximum dimension. Collected by Emre Turak from approximately 7 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Uncommon.

Habitat:
Shallow reef environments.

Distribution:
Known only from the Red Sea.

Anacropora pillai Veron, 2000

Original description: Veron (2000) Volume 1, page 175.

> **Characters:** Colonies sprawl over the substrate and have dead bases so that they fall apart if disturbed. This is the smallest *Anacropora*, with most branches less than 3 mm thick. They are always contorted and tapered. Sometimes they are irregularly fused. Sub-branches form by equal division. Corallites are conical and project up to 1.5 mm from the branch surface. Corallites seldom form spines. **Colour:** Cream or pale blue. **Similar species:** *Anacropora matthai* is similar in size; all other *Anacropora* are much bigger. **Habitat:** May cover extensive areas on lower reef slopes, especially in turbid water. **Abundance:** Locally common.

Previous illustrations:
Veron (2000) Volume 1, page 175, figures 3-5, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Anacropora pillai Veron, 2000: Veron and Fenner (2000)

Skeletal detail:
Colonies form extensive masses of irregularly contorted branches, most of which usually have dead bases. Branches are 3-5 mm thick and taper to points. Sub-branches are mostly equal and form at irregular intervals. Corallites are widely spaced and are up to 1.5 mm exert. They are approximately 1 mm diameter, with calices 0.5 mm diameter. There is little or no development of a corallite spine. Septa are irregular, but two cycles can be seen in mature corallites, the second usually being incomplete. Branch tips are devoid of corallites. Corallite walls are slightly costate as is the coenosteum. All coenosteum structures are fine.

Affinities:
This species and *Anacropora matthai* are the smallest *Anacropora*. They differ markedly in *A. matthai* having mostly terete branches and less exsert corallites. Other *Anacropora* species have development of corallites spines lips and/or have much larger branches and corallites.

The name:
Named after Dr G.S. Gopinadha Pillai, who made a major contribution to *Anacropora* taxonomy.

Holotype:
Specimen G55821. The specimen is 33 mm maximum dimension. Collected by the author from approximately 42 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Forms extensive thickets and may be a dominant species in some areas.

Habitat:
Found mostly on lower reef slopes where there is no wave action and little or no current. Usually found on muddy substrates and where the water is often turbid.

Distribution:
Known only from the Red Sea.

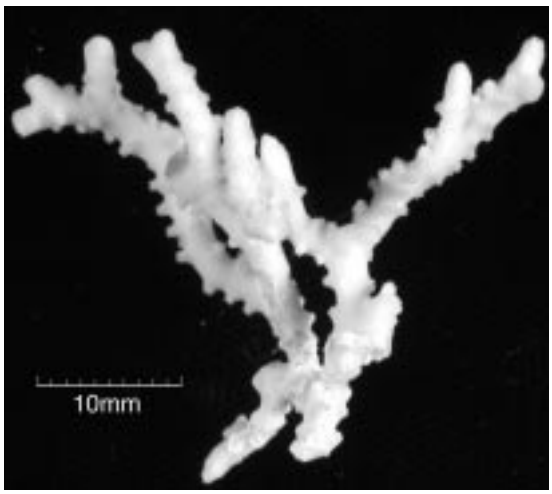

Figure 63. *Anacropora pillai,* holotype (G55821). From Milne Bay, eastern Papua New Guinea.

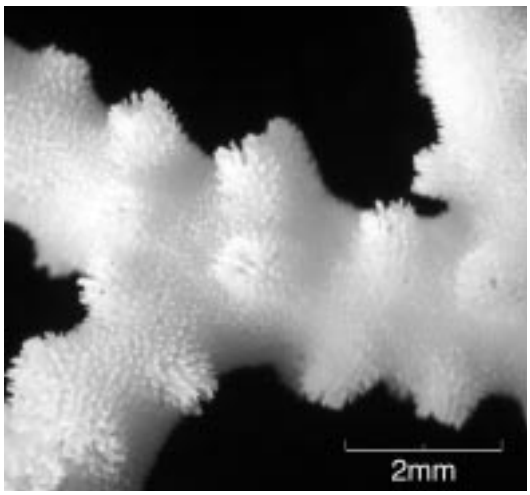

Figure 64. *Anacropora pillai,* holotype, showing branch and corallite detail.

Genus *Acropora* Oken, 1815

Acropora elizabethensis Veron, 2000

Original description: Veron (2000) Volume 1, page 188-9.

> **Characters:** Colonies are columnar or consist of thick irregular upright branches. Branches divide at infrequent intervals and sometimes fuse. One or more poorly defined axial corallites are formed at branch ends. Incipient axial corallites form along ridges. Radial corallites are tubular and irregular in length, giving branch surfaces a rough texture. The coenosteum is composed of fine spinules with elaborated tips. **Colour:** Pale to dark brown. **Similar species:** *Acropora palifera*, which does not have fused branches and has a smooth surface without irregularly exsert corallites. See also *A. brueggemanni*, which does not form thick branches and has well defined axial corallites. **Habitat:** Shallow reef environments and rocky foreshores. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 1, page 188-9, figures 1-4, colour photographs of living coral and monochrome photograph of coral skeleton.

Veron and Wallace (1984) figure 356

Synonymy:
None.

The nearest nominal species to *A. elizabethensis* is *A. labrosa* (Dana, 1846) which Brook (1893), Veron and Wallace (1984) and Wallace (1999) all consider a junior synonym of *A. palifera* (Lamarck, 1816), an opinion supported by the present study.

Skeletal detail:
Colonies are usually compact upright branches which tend to be columnar. Branches divide at infrequent intervals and may anastomose. Multiple axial corallites are usually found at branch ends and are only slightly differentiated from radial corallites. Axial corallites may be absent or clearly distinguished on branch ends. Branches commonly have multiple axials. Septa are in two subequal cycles and are very short. Radial corallites tend to have a nariform shape. Septa very short and are almost indistinguishable in most radial corallites; in some they are in two indistinct cycles. The coenosteum is compact, with elaborated spine ends.

Affinities:
Colonies attributed to this species were considered by Veron and Wallace (1984) to be a growth form of *Acropora palifera* (Lamarck, 1816) restricted to turbid water. However, specimens of both species have been collected in clear water lagoons at Elizabeth and Middleton reefs. It is not known if the present species is restricted to Elizabeth and Middleton reefs, or if colonies with a similar growth form in the tropics are this species, or if all these colonies are a single species. *Acropora elizabethensis* is distinguished from *A. palifera* by having irregular rather than columnar branches, by having axial corallites (which also occur, rarely, in *A. palifera*) and by having slightly more exert radial corallites. The relationship between *A. elizabethensis* and *A. cuneata* has not been determined. All these species have elaborated coenosteum spines, which historically places them in the subgenus *Isopora* Studer, 1878.

The name:
So named because the holotype is from Elizabeth Reef, north of Lord Howe Island, south-east Australia.

Holotype:
Specimen G55778. The specimen is 388 mm maximum dimension. Collected by the author from approximately 7 m depth, Elizabeth Reef, south-east Australia.

Abundance:
Common in lagoons.

Habitat:
Found only in lagoons.

Distribution:
Elizabeth and Middleton Reef, north of Lord Howe Island, south-east Australia, but may have a wider distribution (see 'Affinities' above).

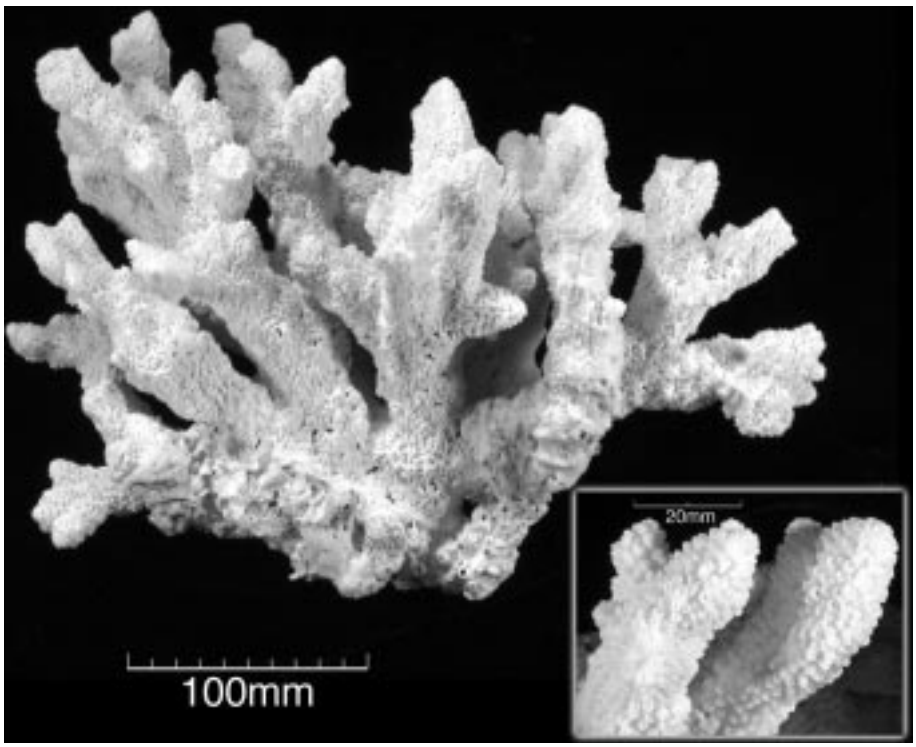

Figure 65. *Acropora elizabethensis,* holotype (G55778). From Elizabeth Reef, south east Australia.

Figure 66. *Acropora elizabethensis,* holotype. Showing a branch end.

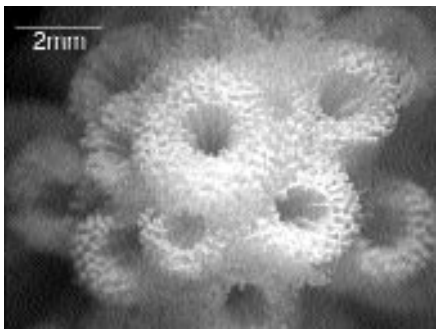

Figure 67. *Acropora elizabethensis,* holotype. Showing an axial corallite.

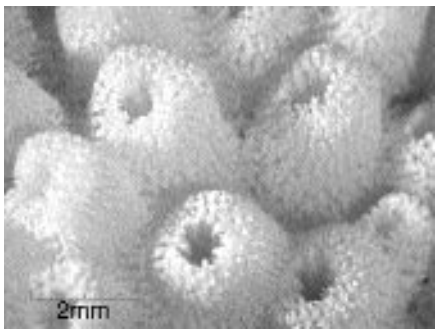

Figure 68. *Acropora elizabethensis,* holotype. Showing radial corallites and coenosteum detail.

Acropora cylindrica Veron and Fenner (2000)

Original description: Veron (2000) Volume 1, page 193.

> **Characters:** Colonies have thick sturdy branches which are circular in cross section and form clumps that may be several metres across. Branches slightly taper and have a single dome-shaped axial corallite. Radial corallites are small and immersed. The coenosteum is smooth. **Colour:** Dark brown with white branch ends. **Similar species:** *Acropora togianensis*, which is almost indistinguishable underwater but which has less compact branches and has coenosteum tuberculae. See also *Acropora brueggemanni*. **Habitat:** Shallow water, especially exposed upper reef slopes and flats. **Abundance:** Common in Papua New Guinea, uncommon elsewhere.

Previous illustrations:
Veron (2000) Volume 1, page 193, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies form thick clumps commonly over 1 metre diameter and are 50-80 cm tall in shallow water. Branching occurs at irregular intervals and branches are mostly cylindrical, approximately 20 mm diameter, tapering only near the tips. Axial corallites are large, dome-shaped, with very thick walls and are approximately 6 mm diameter. Calices are tiny, 1.0-1.4 mm diameter or are oval. Septa are in two cycles, respectively approximately 0.7 and 0.5 R. Radial corallites are widely spaced, cone-shaped to immersed, uniform in size, 1.8-2.0 mm diameter. Calices are 0.6- 0.8 mm diameter. Septa are usually in one complete cycle and are over 0.5 R in length except for the dorsal directive which may meet the columella and the ventral directive which may be present. A second cycle of septa may be just distinguishable. The coenosteum is compact, and covered with spinules which have elaborated ends.

Affinities:
Acropora togianensis has slightly more open branches for the same habitat conditions and radial corallites are slightly more exsert, but otherwise is virtually indistinguishable from *A. cylindrica*. The coenosteum of *A. togianensis* is raised into *Montipora*-like tuberculae, a character not found in any other *Acropora*. These species have not been observed together.

The name:
So named because branches have a distinctively cylindrical shape.

Holotype:
Specimen G55819. The specimen is 152 mm maximum dimension. Collected by the author from approximately 12 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Common in eastern Papua New Guinea but rare elsewhere.

Habitat:
Shallow upper reef flats partly exposed to wave action and where the water is clear.

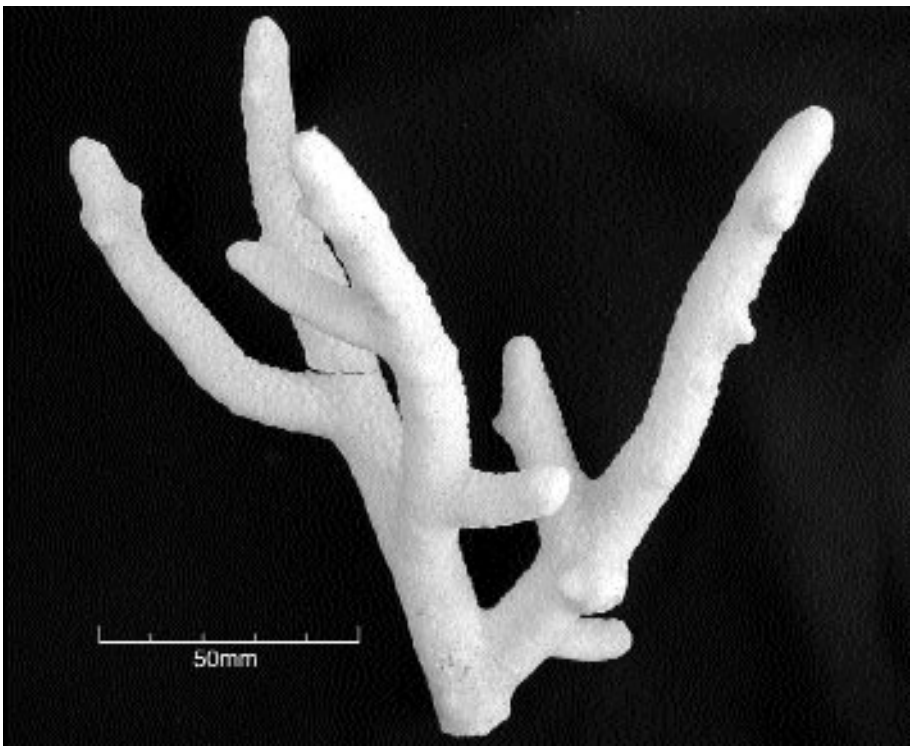

Figure 69. *Acropora cylindrica,* holotype (G55819). From Milne Bay, eastern Papua New Guinea. From a shallow water coral community.

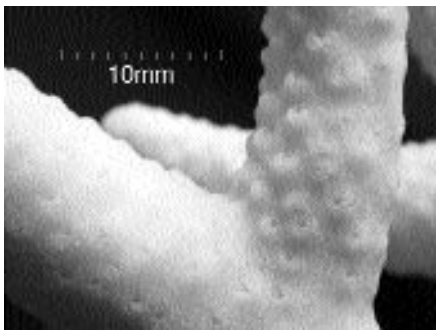

Figure 70. *Acropora cylindrica,* holotype. Showing a branch side.

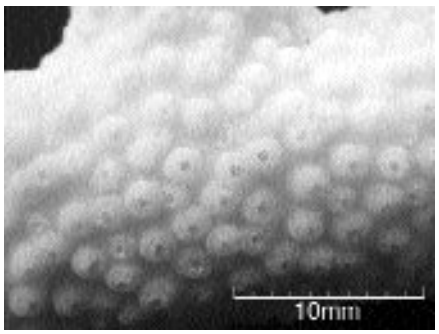

Figure 71. *Acropora cylindrica,* from Sulawesi, Indonesia. Corallites on the side of a branch.

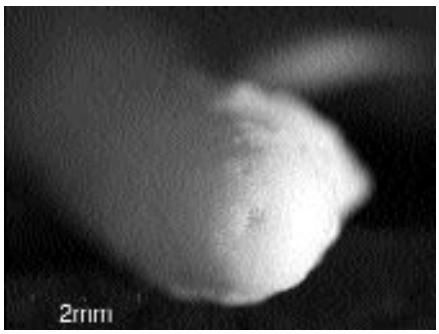

Figure 72. *Acropora cylindrica,* holotype. Showing an axial corallite.

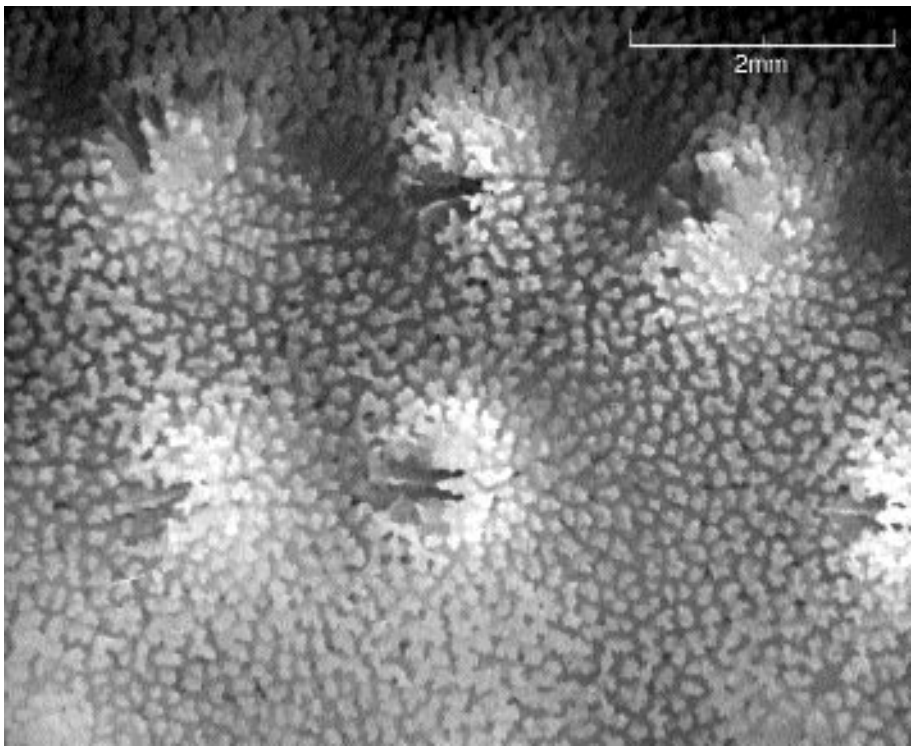

Figure 73. *Acropora cylindrica,* holotype. Showing radial corallite and coenosteum detail.

Distribution:
Eastern Papua New Guinea and the Indonesian-Philippines archipelago.

Acropora minuta Veron, 2000

Original description: Veron (2000) Volume 1, page 210.

> **Characters:** Colonies are encrusting and are devoid of any tendency to form branches. All corallites are rasp-like and are very small (averaging 1 mm diameter). **Colour:** Bright green, sometimes brown. **Similar species:** *Acropora palmerae*, which has some tendency to form branches and has larger corallites. See *also A. crateriformis*. This species looks like an encrusting *Montipora* underwater. **Habitat:** Reef flats exposed to strong wave action or currents. **Abundance:** Common but inconspicuous.

Previous illustrations:
Veron (2000) Volume 1, page 210, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are completely encrusting, without any tendency to form branches. They are completely indeterminate in size and shape, but may be over 2 metres diameter. Corallites are compacted so that

they almost touch. They are labellate with tapered lips giving a rasp-like appearance. Two directive septa are better developed than other septa, which are abortive. Thecae are distinctive. Walls are slightly costate. The coenosteum is very coarse.

Affinities:
Small colonies or fragment resemble encrusting basal parts of *A. palmerae* and *A. pinguis* colonies although corallites are distinctive in being smaller and labellate rather than appressed. *Acropora crateriformis* has a similar growth form but has larger and less appressed corallites. These species may occur in the same habitat.

The name:
So named because corallites are among the smallest for *Acropora*.

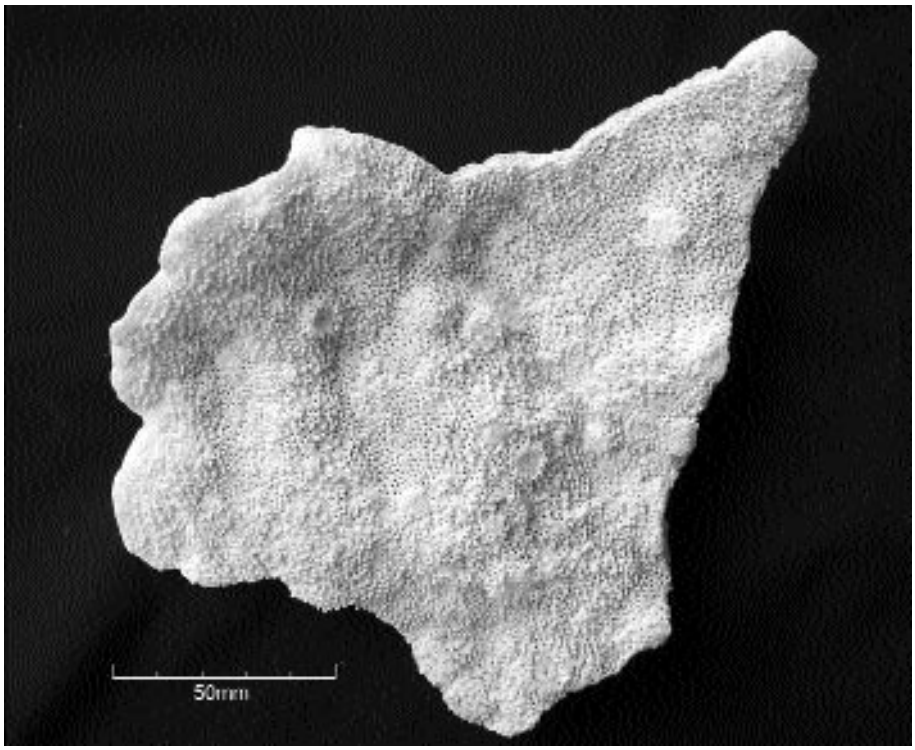

Figure 74. *Acropora minuta,* holotype (G55796). From Bali, Indonesia. From very shallow water exposed to strong wave action.

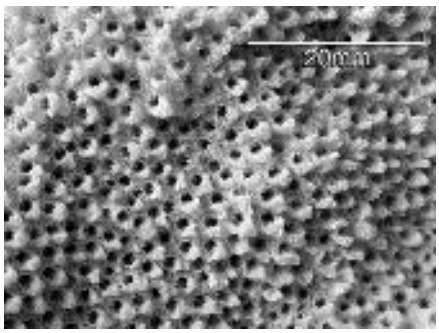

Figure 75. *Acropora minuta,* holotype. Surface of a plate.

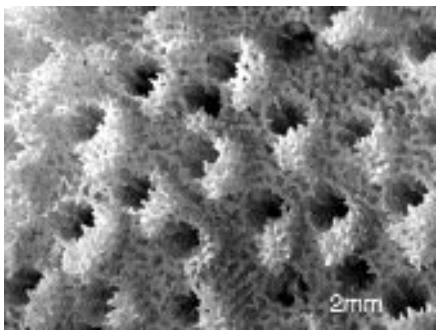

Figure 76. *Acropora minuta,* holotype. Showing corallite and coenosteum detail.

Holotype:
Specimen G55796. The specimen is 191 mm maximum dimension. Collected by the author from approximately 2 m depth, Bali, Indonesia.

Abundance:
May be a dominant species in shallow water where wave action is very strong.

Habitat:
Shallow wave-washed habitats, especially close to rocky foreshores.

Distribution:
Recorded only from Indonesia but is likely to also occur in the Philippines. Is readily mistaken for *Montipora* and may be much more widespread than recorded to date.

Acropora pectinatus Veron, 2000

Original description: Veron (2000) Volume 1, page 264.

> **Characters:** Colonies consist of dense thickets usually less than one metre across. Branches are short and cylindrical and divide at frequent intervals. Axial corallites are small, tubular and not exsert. Radial corallites are irregular on the sides of thicker branches, becoming uniform in size and shape towards branch tips. The latter are long and curved and are aligned in comb-like rows down branch sides. **Colour:** Pale brown with white branch tips. **Similar species:**
>
> *Acropora exquisita*, which has thinner branches and radial corallites which are not conspicuously in rows. See also *A. yongei*, which forms larger branches and has less exsert radial corallites. **Habitat:** Shallow reef flats and upper slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 264, figures 1-4, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Acropora pectinatus Veron, 2000: Veron (2002)

Skeletal detail:
Colonies are dense thickets, usually less than one metre across. Branches are straight or slightly curved and divide at frequent intervals. They have a uniform diameter of approximately 15 mm, except towards the tips where they taper. They do not anastomose. Axial corallites are distinctive, tubular, averaging 2.6 mm diameter with calices of approximately 1 mm diameter. Septa are in two cycles of 0.7 R and 0.3 R respectively. Radial corallites are tubular, elongate, project perpendicularly from branches, are of uniform length and tend to be aligned in rows down the branch. They have rounded or elliptical openings, thin walls and average 1.8 mm diameter. The corallite walls and coenosteum are uniformly moderately costate.

Affinities:
Acropora exquisita, *A. kirstyae* and *A. parilis* form similarly dense thickets but have finer branches and radial corallites which do not project perpendicularly from branches. *Acropora yongei* and *A. haimei* both have strongly projecting radial corallites but both branches and corallites are larger, are not aligned in rows and are not of uniform length.

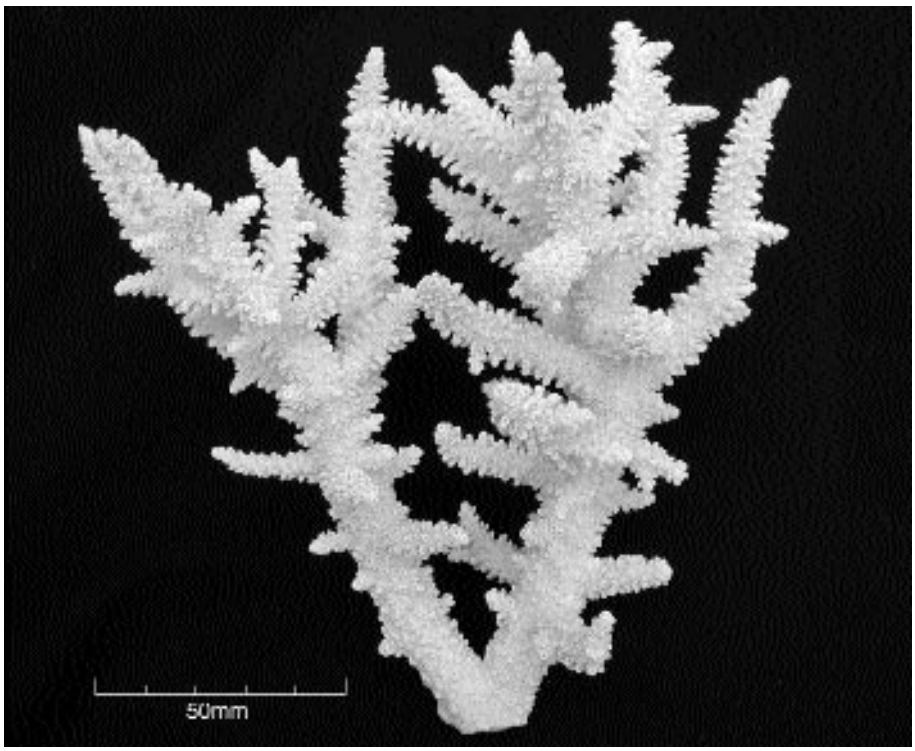

Figure 77. *Acropora pectinatus,* holotype (G55801). From Flores, Indonesia. From an upper reef slope.

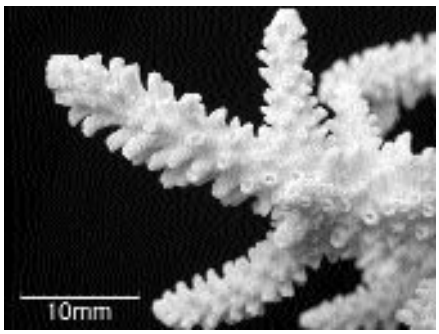

Figure 78. *Acropora pectinatus,* holotype. Showing a branch side.

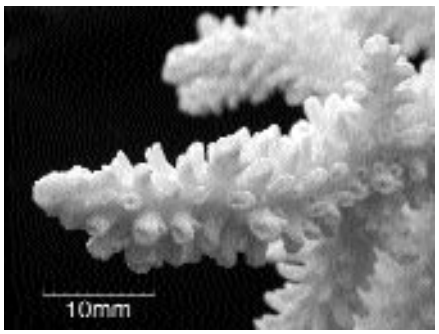

Figure 79. *Acropora pectinatus,* holotype. Showing a branch tip and the characteristic shape of the corallites.

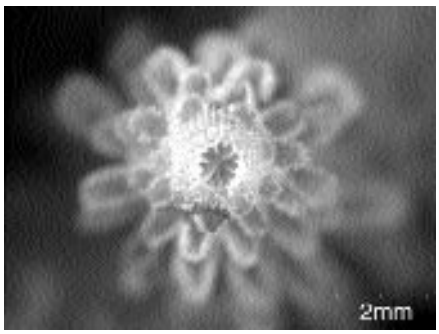

Figure 80. *Acropora pectinatus,* holotype. Showing an axial corallite.

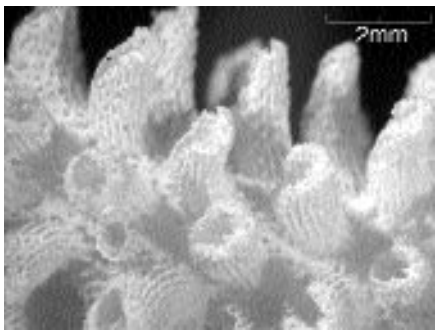

Figure 81. *Acropora pectinatus,* holotype. Showing corallite and coenosteum detail.

The name:
From the Latin 'pectinatus', meaning comb-like. Radial corallites of this species form comb-like rows down the sides of branches.

Holotype:
Specimen G55801. The specimen is 148 mm maximum dimension. Collected by the author from approximately 8 m depth, Flores, Indonesia.

Abundance:
Uncommon but distinctive.

Habitat:
Shallow reef flats and upper slopes where the water is clear and species diversity moderately high.

Distribution:
The Indonesian-Philippines archipelago.

Acropora rufus Veron, 2000

Original description: Veron (2000) Volume 1, page 269.

> **Characters:** Colonies have widely spaced, tapered upright branches with irregular side branches projecting almost perpendicularly. Axial corallites are dome-shaped and prominent. Incipient axial corallites occur irregularly and are long and tapered. These intergrade with radial corallites which are also widely spaced and tapered. All corallite openings are small and have weakly developed septa. The coenosteum is fine, giving branches a smooth appearance. **Colour:** Reddish-brown. **Similar species:** *Acropora vaughani*, which has compact branches and less widely spaced and less conical radial corallites. See also *A. tortuosa.* **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 269, figure 5, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are small upright thickets with straight or slightly curved branches. Sub-branches occur infrequently and are widely spaced and almost perpendicular to main branches. They do not anastomose. Axial corallites are up to 10 mm diameter, dome shaped and conspicuous. They have small calices 1.0-1.5 mm diameter and septa in two complete cycles of 0.7 R and 0.5 R respectively. Radial corallites are tapered tubes approximately 4 mm diameter at the base, with round calices averaging 0.8 mm diameter and septa in two cycles, the first over 0.5 R, the second abortive. Incipient axial corallites are common. The coenosteum is fine, giving branches a smooth appearance.

Affinities:
Acropora vaughani is smaller in all respects; it has a similar growth form except when forming corymbose plates. *Acropora vaughani* also has more compact, less exsert radial corallites and smaller, less dome-shaped axial corallites. These species have not been observed together: *A. vaughani* has not

been observed by the author in the Red Sea and the western Indian Ocean, but has been recorded from the Red Sea by Wallace (1999).

The name:
So named because all colonies observed underwater have a reddish colour.

Holotype:
Specimen G55787. The specimen is 158 mm maximum dimension. Collected by the author from approximately 5 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

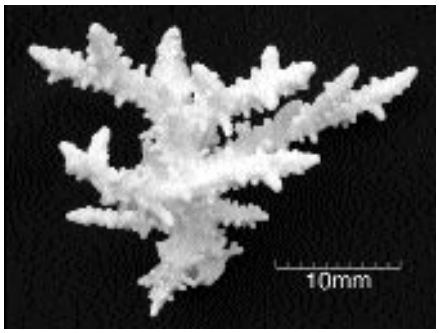

Figure 82. *Acropora rufus,* holotype (G55787). From Sharm al-Sheikh, Sinai Peninsula, Egypt. From an upper reef slope.

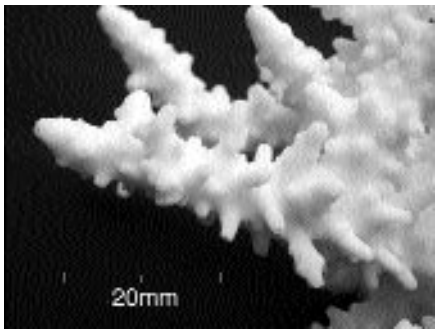

Figure 83. *Acropora rufus,* holotype. Showing branches with very exsert radial corallites.

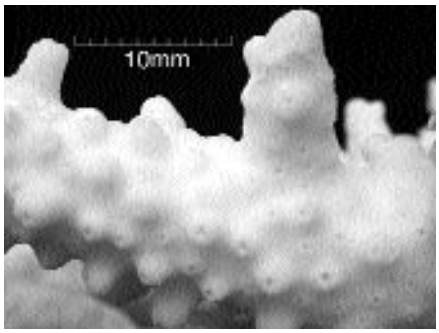

Figure 84. *Acropora rufus,* from Sharm al-Sheikh, Sinai Peninsula, Egypt. Showing the side of a branch where radial corallites have conical shapes.

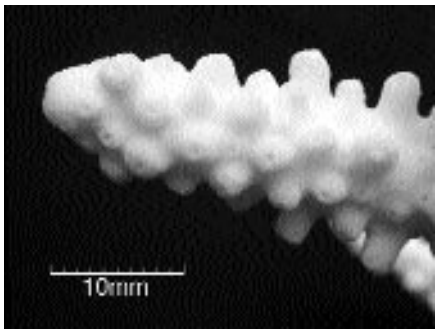

Figure 85. *Acropora rufus,* from Sharm al-Sheikh, Sinai Peninsula, Egypt. A branch end showing a large axial corallite.

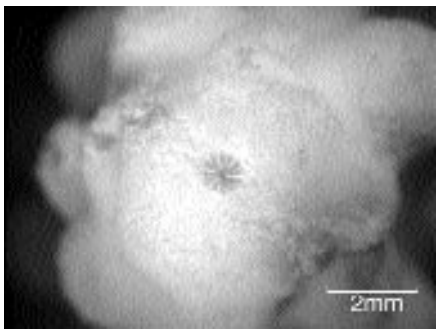

Figure 86. *Acropora rufus,* holotype. Showing an axial corallite.

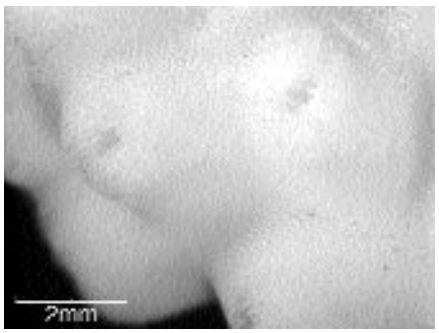

Figure 87. *Acropora rufus,* holotype. Showing radial corallites and coenosteum detail.

Abundance:
Uncommon but conspicuous.

Habitat:
Shallow reef flats and upper slopes.

Distribution:
Recorded only in the Red Sea.

Acropora parahemprichii Veron, 2000

Original description: Veron (2000) Volume 1, page 274-5.

> **Characters:** Colonies may be large (over 4 metres across) and form dense thickets of frequently dividing branches. Branches are 7-9 mm thick and slightly tapered. Axial corallites are prominent. Radial corallites are rounded, tubular and appressed except towards branch tips, and are arranged in rows. **Colour:** Grey-brown, usually with pale yellow corallite tips. **Similar species:** *Acropora hemprichii*, which has larger radial corallites and does not form colonies with such compact branches. See also *A. striata*, *A. verweyi* and *A. tumida*. **Habitat:** Mid reef slopes exposed to strong currents. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 274-5, figures 1-5, colour photographs of living coral and page 275, monochrome photograph of coral skeleton.

Synonymy:
Acropora parahemprichii Veron, 2000: Veron (2002), Fenner (2002)

Skeletal detail:
Colonies form large stands (over 4 metres across) of short, tightly compacted branches. Branches divide at frequent intervals, but do not anastomose. They are 7-9 mm thick and slightly tapered. Axial corallites are prominent, tubular, approximately 4 mm diameter. Septa are in two complete cycles of 0.8 R and O.3 R. Radial corallites are of mixed sizes and shapes ranging from immersed to tubular appressed and commonly form rows near branch tips. Tubular corallites are approximately 3 mm diameter and mostly have one cycle of septa of 0.5 R. The coenosteum is moderately coarse and is similar on and between corallites. Costae are fine.

Affinities:
Acropora hemprichii has longer, sturdier branches, larger radial corallites and dome-shaped axial corallites. *Acropora striata* has a similar growth form but substantially finer branches and smaller radial corallites.

The name:
So named because this species resembles the relatively well know *Acropora hemprichii*.

Holotype:
Specimen G55797. The specimen is 252 mm maximum dimension. Collected by the author from approximately 5 m depth, Bali, Indonesia.

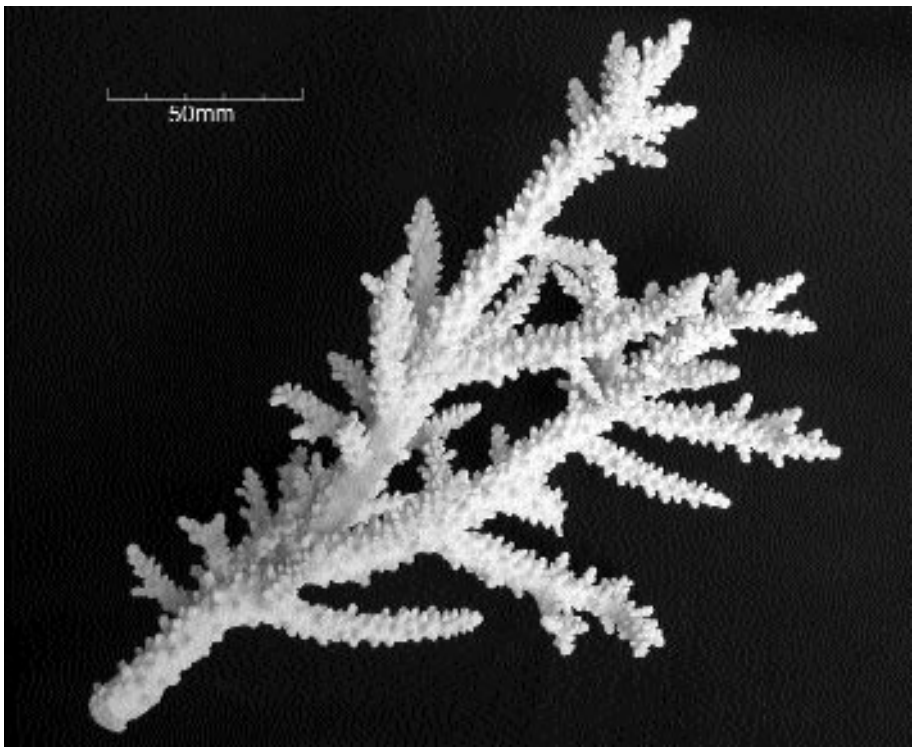

Figure 88. *Acropora parahemprichii,* holotype (G55797). From Bali, Indonesia. From a rock face exposed to strong currents.

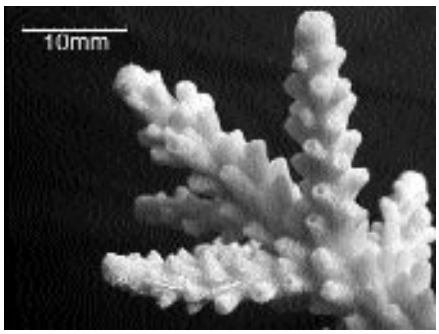

Figure 89. *Acropora parahemprichii,* holotype. Showing branch tips.

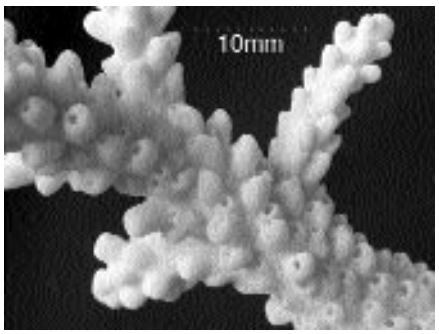

Figure 90. *Acropora parahemprichii,* from Bali, Indonesia. Showing branch sides.

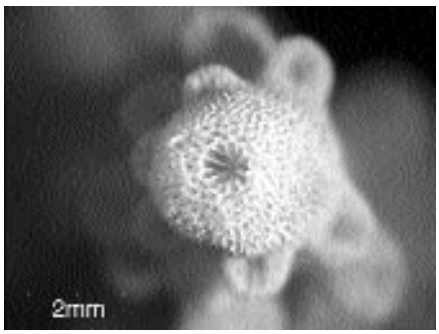

Figure 91. *Acropora parahemprichii,* holotype. Showing an axial corallite.

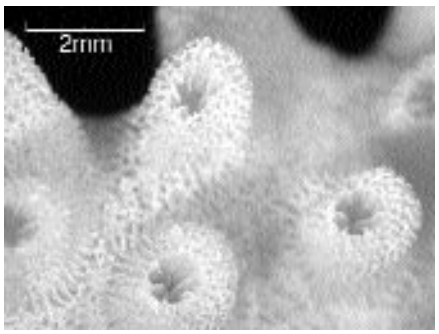

Figure 92. *Acropora parahemprichii,* holotype. Showing radial corallites and coenosteum detail.

Abundance:
Locally common but probably uncommon to rare in other locations.

Habitat:
Found only on shallow- to mid-reef habitats exposed to currents.

Distribution:
Recorded only from Bali, Indonesia.

Acropora proximalis Veron, 2000

Original description: Veron (2000) Volume 1, page 278-9.

> **Characters:** Colonies branch irregularly forming compact thickets. Branches are fine (less than 3 mm diameter near tips) and mostly straight. They may be upright or prostrate. They may have no corallites on the undersurface. Axial corallites are small. Radial corallites are elongate and strongly appressed. **Colour:** Grey or brown. **Similar species:** *Acropora inermis*, which has thicker interlocking (caespitose) branches. See also *A. parilis* and *A. insignis*. **Habitat:** Shallow reef environments. **Abundance:** Common and may be a dominant species.

Previous illustrations:
Veron (2000) Volume 1, page 278-9, figures 1-6, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Acropora proximalis Veron, 2000: Veron (2002)

Skeletal detail:
Colonies form compact thickets of fine straight branches which are mostly upright but become prostrate at colony edges. Branch thickness is uniform except where tapered towards tips and varies from approximately 8 mm in shallow habitats to 5 mm in deeper habitats. Branches divide frequently at acute angles and do not anastomose. Axial corallites are small, tubular, approximately 2 mm diameter, with calices 1 mm diameter. Septa are in one cycle of 0.5 R except for directive septa which may be longer. Radial corallites are tubular, appressed except towards branch tips, with septa similar to those of axial corallites. Branches may have no radial corallites on undersurfaces. Corallite walls are finely costate, with costae slightly more developed between corallites.

Affinities:
Acropora inermis and *A. insignis* both have thicker branches that anastomose to give a caespitose or caespito-corymbose growth form. *Acropora parilis* has similar straight branches but has radial corallites which project perpendicularly from branches and are not appressed.

The name:
From the Latin ‘proximalis’ meaning proximal or to the axis. The strongly appressed corallites is a conspicuous characteristic of this species.

Holotype:
Specimen G55802. The specimen is 201 mm maximum dimension. Collected by the author from approximately 13 m depth, Flores, Indonesia.

Figure 93. *Acropora proximalis,* holotype (G55802). From Flores, Indonesia. From a rock face exposed to strong currents.

Figure 94. *Acropora proximalis,* from Milne Bay, eastern Papua New Guinea. A small colony with compact branches.

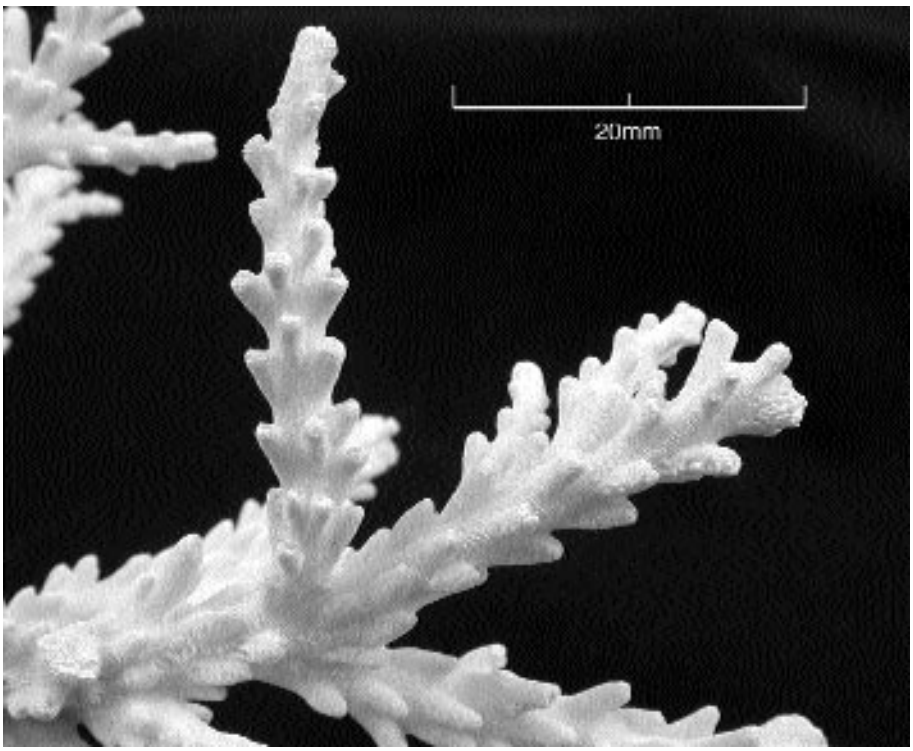

Figure 95. *Acropora proximalis,* holotype. Branch side showing the shape and distribution of radial corallites.

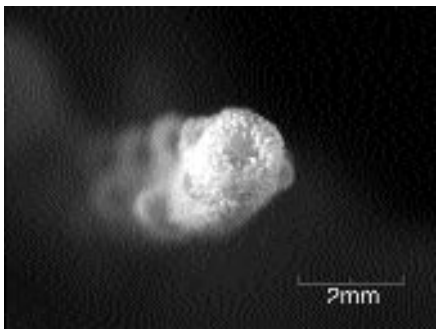

Figure 96. *Acropora proximalis,* holotype. Showing axial corallite.

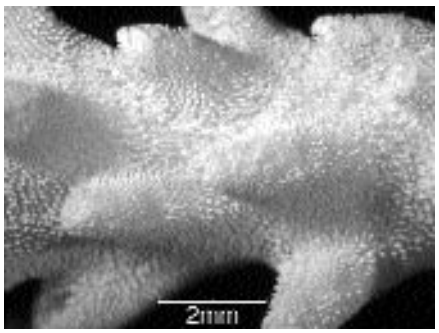

Figure 97. *Acropora proximalis,* holotype. Showing radial corallites and coenosteum detail.

Abundance:
Common and may be a dominant species in shallow habitats where species diversity is high.

Habitat:
Upper to mid reef slopes.

Distribution:
The Indonesian-Philippines archipelago.

Acropora torresiana Veron, 2000

Original description: Veron (2000) Volume 1, page 316.

> **Characters:** Colonies are digitate. Branches are of uniform thickness and straight or slightly curved. Sub-branches are only formed near the base of main branches. Axial corallites are well defined. Radial corallites are short and tubular, of uniform size and are neatly arranged in rows down the sides of branches. **Colour:** Pale brown with white corallite openings. **Similar species:** *Acropora humilis*, which has tapered branches, larger axial corallites and larger, more widely spaced radial corallites. **Habitat:** Exposed upper reef slopes and flats. **Abundance:** Rare.
>
> **Taxonomic reference:** Veron and Wallace (1984, as *Acropora* sp. 1).

Previous illustrations:
Veron and Wallace (1984) (as *Acropora* sp. 1) page 176-7, figures 408-413.

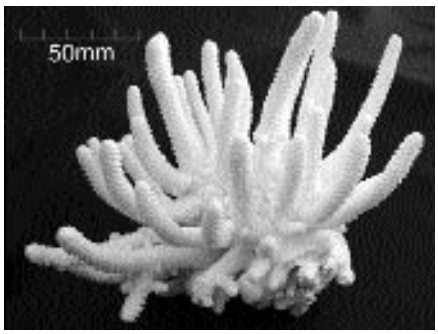

Figure 98. *Acropora torresiana,* holotype G55780). From Torres Strait, Great Barrier Reef, Australia. From a rock face exposed to strong currents.

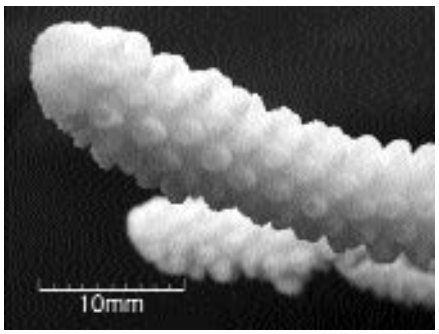

Figure 99. *Acropora torresiana,* holotype. Showing branch end and very regular arrangement of radial corallites.

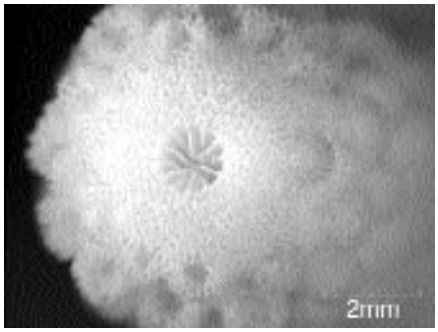

Figure 100. *Acropora torresiana,* holotype. Showing axial corallite.

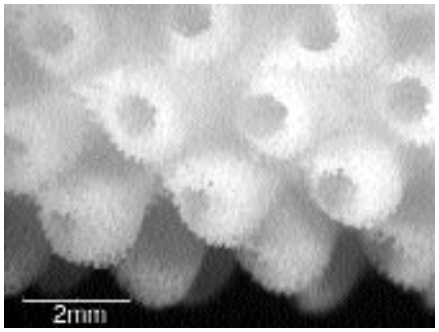

Figure 101. *Acropora torresiana,* holotype. Showing radial corallites and coenosteum detail.

Veron (2000) Volume 1, page 316, figure 1, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
Acropora sp. 1: Veron and Wallace (1984)

Skeletal detail:
Colonies are digitate clumps with long terete branches that are irregularly spaced. Outer branches typically curve and do not anastomose. Axial corallites are dome-shaped, inconspicuous, up to 6.2 mm diameter with calices 1.3 mm diameter. Septa are in two complete cycles of 0.7 R and 0.5 R. Incipient axial corallites are developed towards the base of branches, otherwise radial corallites are uniform in size and shape and are arranged in neat rows. Radial corallites are short, appressed, <2.3 mm diameter, with calices 0.9 mm diameter. Directive septa are well developed, the remaining primary septa are <0.3 R and secondary septa are absent. The coenosteum is uniform on and between corallites and is medium-course with laterally flattened spines forming lines or costae on some branches.

Affinities:
Acropora humilis, which has tapered branches, larger axial corallites and larger, more widely spaced radial corallites.

The name:
So named because the holotype is from Torres Strait, at the northern limit of the Great Barrier Reef of Australia.

Holotype:
Specimen G55780. The specimen is 177 mm maximum dimension. Collected by the author from approximately 10 m depth, Torres Strait, Great Barrier Reef.

Abundance:
Rare.

Habitat:
Shallow semi-protected reef environments.

Distribution:
The Great Barrier Reef of north-east Australia.

Acropora japonica Veron, 2000

Original description: Veron (2000) Volume 1, page 330.

> **Characters:** Colonies are flat plates, or tiers of plates with short digitate branchlets. Small colonies exposed to wave action have extensive encrusting bases and widely spaced branchlets. In most colonies branches are tightly compacted. Axial corallites are small. Radial corallites are tubular, uniform in size down branch sides and usually have slightly flaring lips. **Colour:** Uniform green or brown. **Similar species:** *Acropora digitifera*, which has thinner branches which are not conical. *Acropora monticulosa* has larger branches and much larger radial corallites. See also *A. seriata*. **Habitat:** Shallow rocky foreshores. **Abundance:** Common, and may be a dominant species.

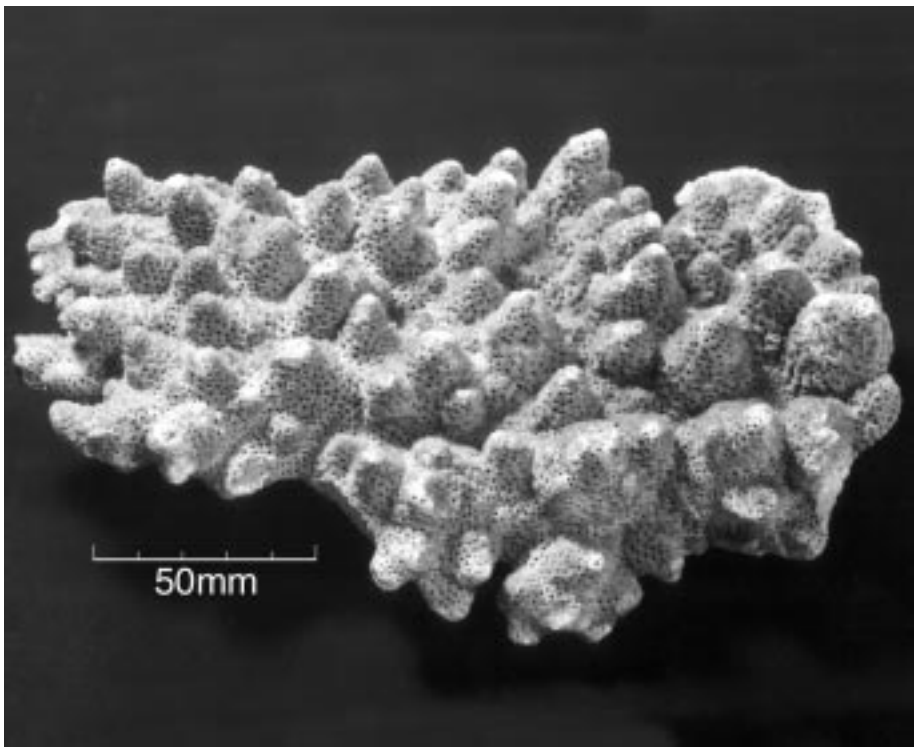

Figure 102. *Acropora japonica,* holotype (IGPS 108946). From southern Honshu, Japan. From a shallow rocky foreshore.

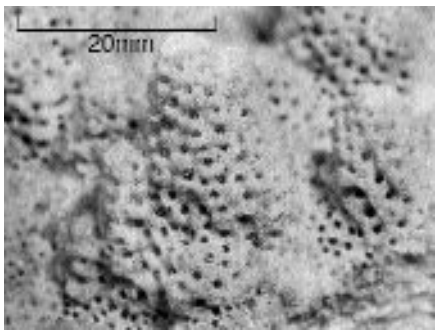

Figure 103. *Acropora japonica,* holotype. Side view of a branchlet.

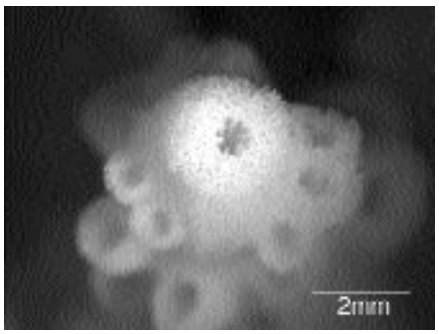

Figure 104. *Acropora japonica,* from Kushimoto, southern Honshu, Japan. Branch tip seen from above showing an axial corallite.

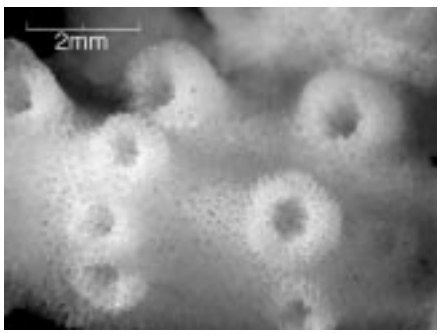

Figure 105. *Acropora japonica,* same specimen as figure 104. Radial corallites on the side of a branch.

Identification guide:
Nishihira and Veron (1995, as *Acropora digitifera* from mainland Japan).

Previous illustrations:
Veron (2000) Volume 1, page 330, figures 1-4, colour photographs of living coral and monochrome photograph of coral skeleton.

Nishihira and Veron (1995) page 95, top figure (as *Acropora digitifera*).

Synonymy:
Acropora digitifera (Dana, 1846): Nishihira and Veron (1995, in part), not *Madrepora digitifera* Dana, 1846.

Skeletal detail:
Colonies are flat corymbose plates. sometimes arranged in whorls and commonly in tiers. Plates have unperforated or mostly unperforated bases and short uniformly spaced, uniformly tapered branchlets which are upright towards plate centres and inclined towards plate margins. Branches are approximately 10 mm thick with small axial corallites 3-5.5 mm diameter and calices 1 mm diameter. Septa are highly variable but consist of a maximum of two cycles of 0.5 and 0.1 R. Radial corallites are tubular appressed, slightly nariform, uniform in size down branch sides and may have slightly flaring lips. They are 1.5-2.0 mm diameter, with thick rounded walls and septa in two cycles, similar to those of axial corallites. Radial corallites are finely costate. Corallites between branchlets are immersed, with a similar septation. The coenosteum between corallites is moderately coarse.

Affinities:
Acropora japonica was formerly thought to be a high-latitude form of *A. digitifera*. It is distinguished from *A. digitifera* by having larger, thicker branches that do not taper and more appressed radial corallites. *Acropora dendrum* has thinner, more widely spaced branches and less exsert radial corallites. Other similar species include, *A. humilis* and *A. monticulosa* which have substantially larger branches and corallites. *Acropora japonica* and *A. digitifera* have not been found together, suggesting substantial genetic exchange between the two species.

The name:
So named because the holotype is from mainland Japan.

Holotype:
Specimen IGPS 108946 The specimen is 290 mm maximum dimension. Collected from an unknown depth, southern Honshu, Japan. Specimen G55861, also from an unknown depth, southern Honshu, Japan, is a designated paratype.

Abundance:
Locally common, and may be a dominant species.

Habitat:
Shallow rock foreshores exposed to wave action. Occurs in abundance in areas exposed to low temperatures.

Distribution:
South coast of mainland Japan.

Acropora parapharaonis Veron, 2000, new name

Original description: Veron (2000) Volume 1, page 367.

Characters: Colonies are large horizontal corymbose plates, usually with well defined margins. Branches are closely compact and have short branchlets which are vertical at the colony centre and prostrate at the colony margins. Branchlets have indistinct multiple axial corallites and incipient axial corallites. Radial corallites are appressed and compact, with rounded lips. **Colour:** Grey-brown or pinkish-brown. **Similar species:** *Acropora pharaonis*, which has larger, more open branches and spiky radial corallites. See also *A. desalwii*. **Habitat:** Upper reef slopes. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 1, page 367, figures 6-10, colour photographs of living coral and monochrome photograph of coral skeleton.

Scheer and Pillai (1983) as *Acropora corymbosa*, plate 7 figure 2

Sheppard and Sheppard (1991) as *Acropora hyacinthus*, plates 20, 21

Figure 106. *Acropora parapharaonis,* holotype (G55786). From Sharm al-Sheikh, Sinai Peninsula, Egypt. From an upper reef slope.

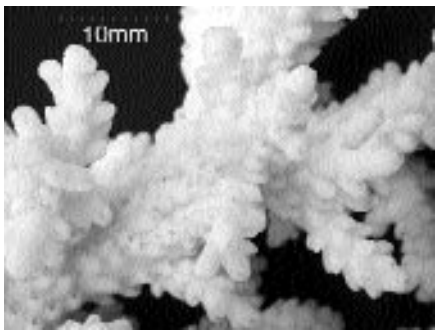

Figure 107. *Acropora parapharaonis,* holotype. Showing branch side and branching pattern.

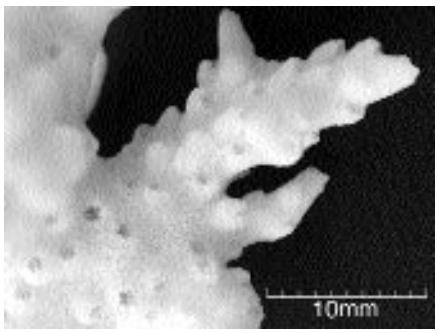

Figure 108. *Acropora parapharaonis,* holotype. Showing branch tips and axial corallites.

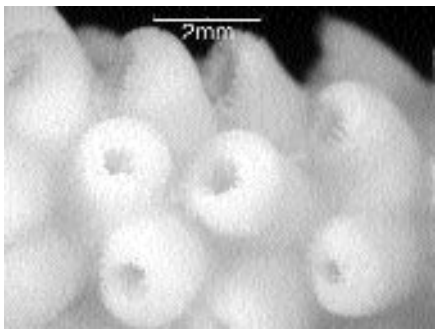

Figure 109. *Acropora parapharaonis,* holotype. Showing corallite and coenosteum detail.

Synonymy:
Madrepora corymbosa Lamarck, 1816: ?Klunzinger (1879)

Acropora corymbosa (Lamarck, 1816): von Marenzeller, 1906 (in part), Scheer and Pillai (1983), not *Madrepora corymbosa* Lamarck (1816)

Madrepora cytherea Dana, 1846: Klunzinger, 1879, not Dana (1846)

Acropora hyacinthus (Dana, 1846): Sheppard and Sheppard, 1991, not *Madrepora hyacinthus* Dana, 1846

This is a new name for what has commonly been called *Acropora corymbosa* Lamarck in the Red Sea. Lamarck's type specimen (from Mauritius) is missing, but is likely to be *Acropora lamarcki* (Veron, 2000) (see below). See discussion of Scheer and Pillai (1983) who compare Red Sea '*A. corymbosa* (which is this species) with their *A. hyacinthus*, (which is *A. lamarcki*). See Klunzinger (1879) and Brook (1893) for historical discussion on these species. See also Wallace (1999) who concludes that *Madrepora corymbosa* Lamarck is highly likely to be *Acropora cytherea* Dana, 1846 (from Tahiti). Veron and Wallace (1984) trace these discussions in relation to *A. cytherea, A. hyacinthus, A. microclados* and *A. anthocercis*. The geographic variation in these and several other nominal species is such that any taxonomic opinion is arbitrary. There are three well-defined species in this group in the Red Sea: *A. parapharaonis*, *A. lamarcki* and *A. microclados* (Veron, 2000). *Acropora anthocercis* is recorded with doubt as there are substantial differences between Red Sea occurrences (illustrated by Sheppard and Sheppard, 1991, plate 23, as *A. cytherea*). There are many records of *A. hyacinthus* in the Red Sea, all of which appear attributable to *parapharaonis*, *A. lamarcki* or *A. cytherea*.

Skeletal detail:
Colonies are large horizontal corymbose plates, usually with well defined margins. Branches are closely compact although plates are perforated except towards the centre of large colonies. Branchlets are short, slightly irregular in length and are vertical at the colony centre, becoming inclined then horizontal towards the colony margins. Branchlets have indistinct multiple axial corallites and incipient axial corallites. These are tubular, approximately 3 mm diameter, with calices approximately 1 mm diameter. Radial corallites are approximately 2 mm diameter, are appressed, with dimidiate openings and rounded lips. Septa are in one cycle of approximately 0.3 R, except for one or both directive septa which may be longer. The coenosteum is uniformly smooth on and between corallites.

Affinities:
Acropora pharaonis has larger, more open branches and irregular sharp-edged exert radial corallites and very coarse coenosteum. *Acropora desalwii* form plates of similar shape but radial corallites are tubular with nariform openings and not as appressed.

The name:
So named because this species most closely resembles the well known *Acropora pharaonis* underwater.

Holotype:
Specimen G55786. The specimen is 125 mm maximum dimension. Collected by the author from approximately 12 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

Abundance:
Common.

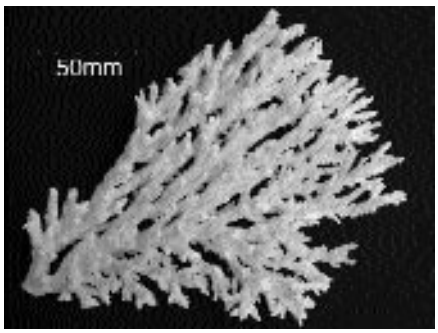

Figure 110. *Acropora lamarcki,* holotype (G55855). From Zanzibar, Tanzania. From an upper reef slope.

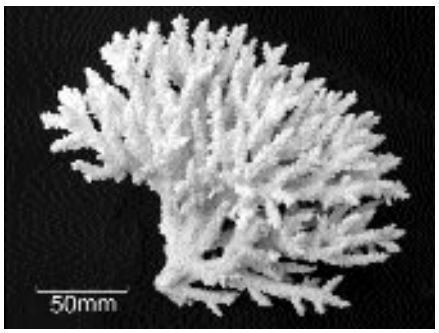

Figure 111. *Acropora lamarcki,* from Zanzibar, Tanzania. Showing a small compact colony.

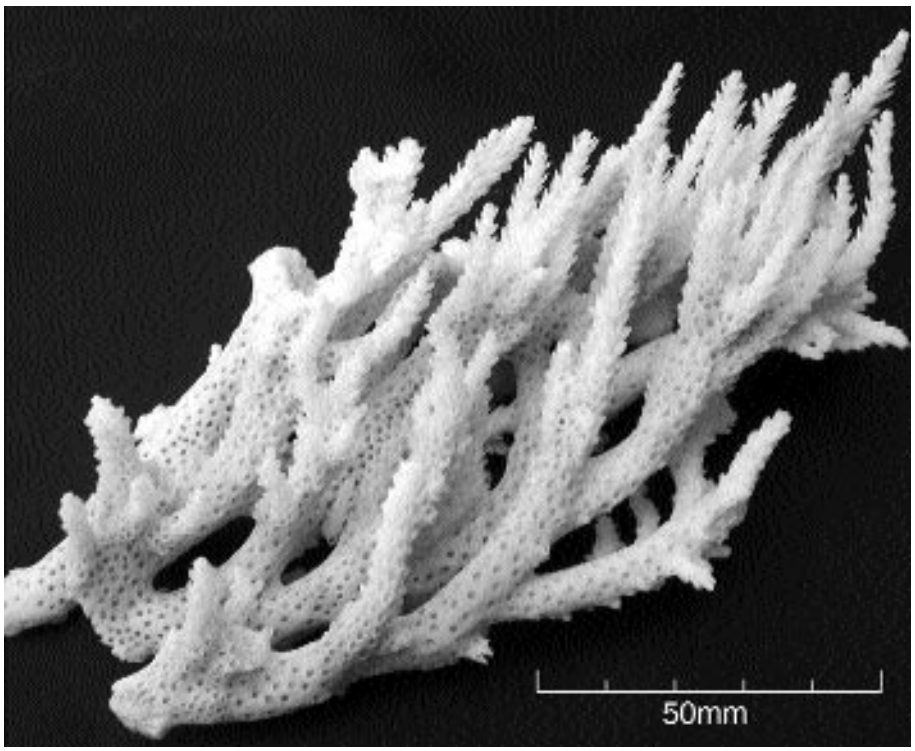

Figure 112. *Acropora lamarcki,* from Zanzibar, Tanzania. Showing side view of branchlets and variation in radial corallites along them.

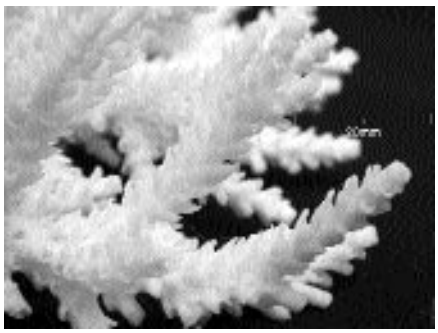

Figure 113. *Acropora lamarcki,* holotype. Showing branchlet tips and extremely dimidiate radial corallites.

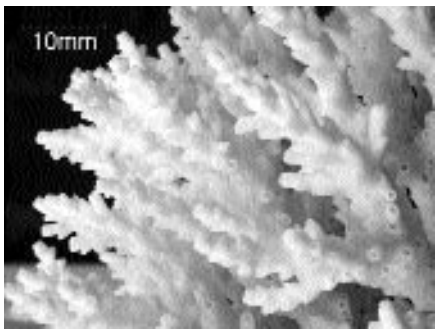

Figure 114. *Acropora lamarcki,* same colony as figure 111. Showing relatively tubular corallites in colonies exposed to wave action.

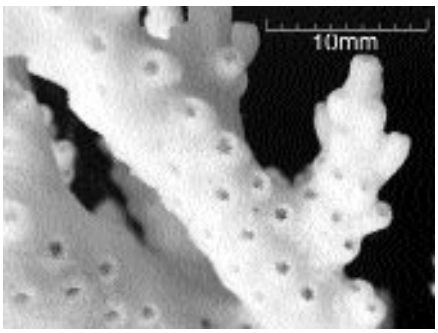

Figure 115. *Acropora lamarcki,* same colony as figure 111. Showing corallite and coenosteum detail of proximal branchlets.

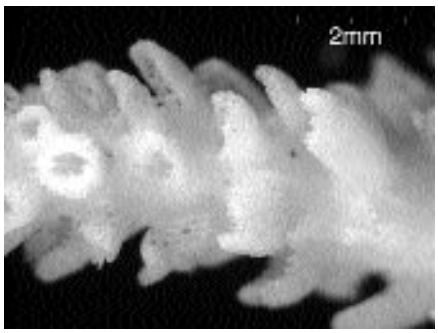

Figure 116. *Acropora lamarcki,* holotype. Showing corallite and coenosteum detail.

Habitat:
Upper reef slopes.

Distribution:
Recorded only from the Red Sea.

Acropora lamarcki Veron, 2000

Original description: Veron (2000) Volume 1, page 376-7.

> **Characters:** Colonies are corymbose plates that may be over 2 metres across, or irregular cushion-like plates. Plates have short upright branchlets, which are commonly more elongate towards the colony margins. The latter may divide and all branches are up to 15 mm thick and taper towards axial corallites, which are slightly exsert, tubular and conspicuous. Radial corallites are appressed with flaring outer lips. They usually form irregular rosettes. **Colour:** Uniform brown. **Similar species:** *Acropora hyacinthus*, which has more distinct axial corallites and smaller branchlets which do not divide and which are not inclined on the colony surface and *A. cytherea*, which has finer branches and more exsert axial corallites. See also *A. massawensis* and *A. microclados*. **Habitat:** Upper reef slopes. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 1, page 376-7, figures 1-6, colour photographs of living coral and page 377, monochrome photograph of coral skeleton.

Synonymy:
Madrepora hyacinthus Dana, 1846: Scheer and Pillai, 1983, not Dana, 1846

This is a new name for what may have been *Acropora corymbosa* Lamarck (1816). Lamarck's (1816) type specimen (from Mauritius) is missing and the name is not useable. The name *A. corymbosa* has been applied to many species including *A. hyacinthus*, *A. cytherea*, *A. microclados* and *A. anthocercis* (Veron and Wallace, 1984). Scheer and Pillai (1983) compare the Red Sea '*A. corymbosa*' (which is *A. parapharaonis*) and '*A. hyacinthus*' (which is this species). Much of Scheer and Pillai's (1983) discussion of the synonymy of *A. hyacinthus* results from their understandable inability to separate *A. hyacinthus* from *A. cytherea* in the Red Sea. This distinction is unambiguous on the Great Barrier Reef, as originally noted by Wallace (1978), also much of the western Pacific, but is not at all clear in

the central and western Indian Ocean. There are many records of *A. hyacinthus* in the Red Sea, all of which appear attributable to *parapharaonis*, *A. lamarcki* or *A. cytherea*. See discussion of *A. parapharaonis* (above).

Taxonomic reference: See
Acropora lamarcki Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies are corymbose plates that may be over 2 metres across, or are irregular cushion-like overlapping plates. Plates are mostly perforated, but may be solid towards the centre. They have short branchlets that are upright at the centre of colonies and increasingly inclined and elongate towards the margins. Branchlets and basal branches alike are up to 15 mm thick. Branchlets taper towards axial corallites, which are slightly exsert, tubular and conspicuous. Axial corallites are approximately 2 mm diameter, with calices approximately 1 mm diamter, with two cycles of short septa, the second being abortive. Radial corallites are appressed, dimidiate with flaring outer lips and are usually arranged in irregular rosettes. They are approximately 1.5 mm diameter, with calices approximately 1 mm diameter. Septa are irregular, in a single cycle and may have extreme development of directive septa forming a plate traversing the calice. Corallite walls are finely costate and the coenosteum between the corallites is moderately coarse.

Affinities:
Acropora hyacinthus has more distinct axial corallites and smaller branchlets which do not divide and which are not inclined on the colony surface. *Acropora cytherea* has finer branches and more exsert axial corallites. *Acropora massawensis* has longer branchlets, larger axial corallites and more exsert radial corallites.

The name:
So named because to the taxonomic history of the species noted above.

Holotype:
Specimen G55855. The specimen is 218 mm maximum dimension. Collected by the author from approximately 5 m depth, Zanzibar, Tanzania.

Abundance:
Common and may be a dominant species.

Habitat:
Upper reef slopes exposed to moderate or strong wave action.

Distribution:
Western Indian Ocean and Red Sea.

Acropora maryae Veron, 2000

Original description: Veron (2000) Volume 1, page 392-3.

> **Characters:** Colonies are usually upright compact bushes, but may form thick plates. Branches are short and sub-branches are frequent. Axial and incipient axial corallites are large and dome-shaped, with thick walls. They may become long and tubular. Radial corallites are small and inconspicuous. All corallites are smooth and rounded. The coenosteum is smooth. **Colour:** Usually uniform blue (which may photograph pink) or cream. **Similar species:** *Acropora*

Figure 117. *Acropora maryae,* holotype (G55785). From Sharm al-Sheikh, Sinai Peninsula, Egypt. From a shallow reef flat exposed to moderate wave action.

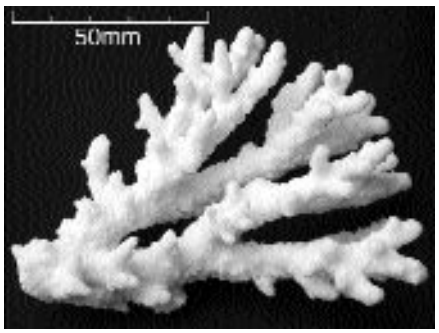

Figure 118. *Acropora maryae,* from Sharm al-Sheikh, Sinai Peninsula, Egypt. Piece from the side of a hemispherical colony.Figure

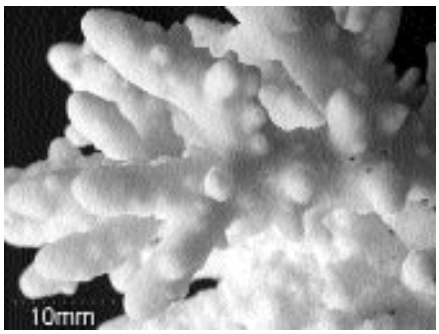

Figure 119. *Acropora maryae,* holotype. Showing upper branches.

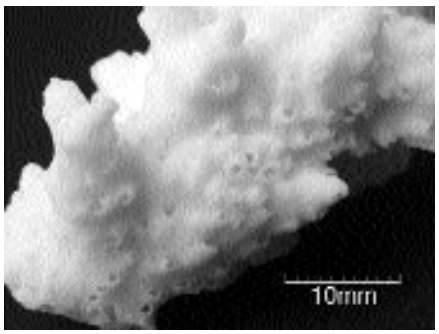

Figure 120. *Acropora maryae,* same colony as figure 118. Showing a proximal branch side with partly immersed corallites.

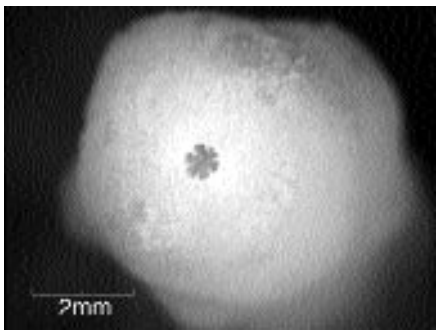

Figure 121. *Acropora maryae,* holotype. Showing an axial corallite.

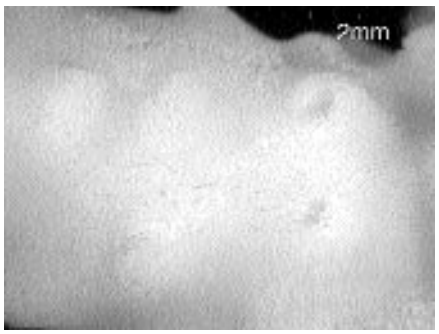

Figure 122. *Acropora maryae,* holotype. Showing radial corallites and coenosteum detail.

loripes, which has more exsert (pocket-like) radial corallites and is not uniformly coloured. See also *A. rosaria* and *A. squarrosa*. **Habitat:** Upper reef slopes. **Abundance:** Common.

Previous illustrations:

Veron (2000) Volume 1, page 392-3, figures 1-6, colour photographs of living coral and page 392, monochrome photograph of coral skeleton.

Sheppard and Sheppard (1991) figure 41, plate 31, as *A. granulosa.*

Synonymy:
Acropora granulosa (Milne Edwards and Haime, 1860): Scheer and Pillai (1983), Sheppard and Sheppard (1991) not *Madrepora granulosa* Milne Edwards and Haime (1860)

This species is distinct from *Acropora granulosa*, which is unlikely to occur in the Red Sea.

Skeletal detail:
Colonies are usually upright compact hemispherical bushes, but may form thick corymbose or sub-corymbose plates. Branches are short, taper only towards tips, 6–12 mm diameter except proximally where they become thick and highly fused. Sub-branches form irregularly and frequently. Branches, incipient axial corallites and axial corallites all intergrade.

Axial corallites are dome-shaped, approximately 6 mm diameter with calices approximately 1.2 mm diameter. Septa are in a single cycle and are dentate plates.

Depending on the formation of radial corallites, axial corallites may be tubular.

Radial corallites are small and inconspicuous, especially at the base of axial corallites, in which they are immersed. Radial corallites are conical on branch sides, approximately 2.5 mm diameter at their base, with calices up to 1 mm wide. Septa are either in one cycle or are irregular. The coenosteum is equally smooth on and around corallites and is composed of uniform spinules.

Affinities:
Acropora squarrosa and *A. loripes* both have thicker branches that are more compact in the case of *A. squarrosa* and both have prominent radial corallites on branch sides.

The name:
Named after Dr Mary Stafford-Smith, Scientific Editor and Producer of *Corals of the World* and co-author of *Coral ID*.

Holotype:
Specimen G55785. The specimen is 102 mm maximum dimension. Collected by the author from approximately 7 depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

Abundance:
Common in the northern Red Sea.

Habitat:
Reef flats, lagoons and upper reef slopes which are protected from strong wave action.

Distribution:
Known only from the Red Sea.

Acropora gomezi Veron, 2000

Original description: Veron (2000) Volume 1, page 408.

Characters: Colonies are arborescent with straight tapered branches forming thickets. Sub-branches form at obtuse angles. Axial corallites are prominent and tubular. Radial corallites are small and curved near branch tips, becoming tubular further down branches where they project perpendicularly and are only slightly curved. These become incipient axial corallites which have small pocket-shaped radial corallites around their bases. All corallites have thick walls with rounded openings. **Colour:** Pale brown with white axial corallites. **Similar species:** *Acropora parilis* and *A. exquisita*, both of which have finer branches and smaller corallites. See also *A. pectinatus*. **Habitat:** Upper reef slopes. **Abundance:** Usually uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 408, figures 1, 2, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Acropora gomezi Veron, 2000: Veron and Fenner (2000), Veron (2002).

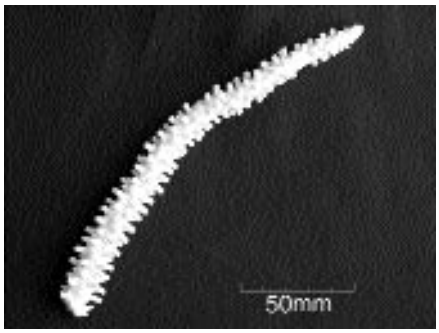

Figure 123. *Acropora gomezi,* holotype (G55800). From Flores, Indonesia. From a shallow upper reef slope exposed to moderate wave action.

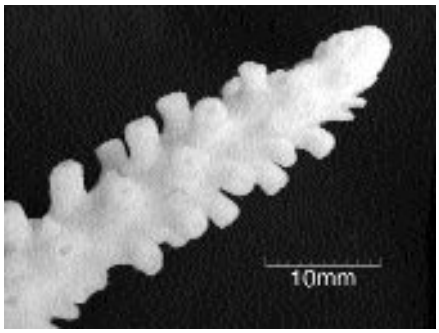

Figure 124. *Acropora gomezi,* holotype. Branch tip, showing axial corallite.

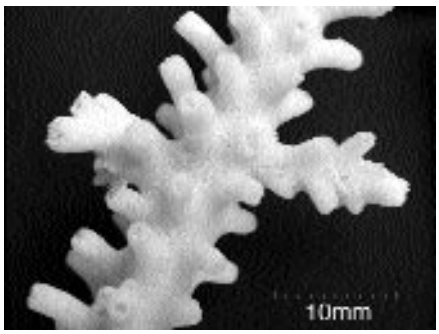

Figure 125. *Acropora gomezi,* from Flores, Indonesia. Showing the formation of side branches and the very elongate radial corallites of axial branches.

Figure 126. *Acropora gomezi,* holotype. Showing corallite and coenosteum detail.

Skeletal detail:
Colonies are arborescent with straight or slightly curved, tapered, branches forming loose thickets. Sub-branches form at obtuse angles. Axial corallites are prominent, tubular, approximately 4 mm diameter with calices 1.5 mm diameter. Septa are mostly in a single cycle and are plate like, reaching 0.7 R. Radial corallites are small and curved near branch tips, becoming tubular further down branches where they project perpendicularly and are only slightly curved. They are of mixed sizes and intergrade with incipient axial corallites which have small pocket-shaped radial corallites around their bases. Radial corallites are approximately 2.5 mm diameter, with circular calices 1.0-1.3 mm diameter. Septa are irregular, but a single cycle is distinguishable in most corallites where they have the form of dentate plates reaching 0.4 R. Corallites are finely costate. The coenosteum on the walls is fine, that between the corallites is slightly coarser.

Affinities:
Acropora parilis and *A. exquisita* and *A. kirstyae* all have finer branches and smaller corallites. *Acropora pectinatus* has branches of similar size but has finer, more tubular radial corallites projecting perpendicularly and arranged in rows.

The name:
Named after Dr Edgaro D. Gomez, former Director of the Philippines Institute of Marine Science, conservationist and promoter of marine science in the Philippines.

Holotype:
Specimen G55800. The specimen is 171 mm maximum dimension. Collected by the author from approximately 4 m depth, Flores, Indonesia.

Abundance:
Uncommon but may be common in some communities.

Habitat:
Upper reef slopes including those exposed to moderate wave action.

Distribution:
The Indonesian-Philippines archipelago.

Acropora fenneri Veron, 2000

Original description: Veron (2000) Volume 1, page 416-7.

> **Characters:** Colonies may be over one metre across and consist of irregular but mostly upright tangles of branches. Branches divide irregularly and form short branchlets from incipient axial corallites. Axial and incipient axial corallites are identical; the latter usually have several tubular appressed radial corallites. The coenosteum is smooth. **Colour:** Pale brown. **Similar species:** None of the other finely branched *Acropora* have similar irregular branchlets. **Habitat:** Shallow reef environments protected from strong wave action. *Acropora fenneri*, *A. derawanensis* and *A. filiformis* may occur together in the same habitat. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 416-7, figures 1-6, colour photographs of living coral and page 416, monochrome photograph of coral skeleton.

Figure 127. *Acropora fenneri,* holotype (MSI-3002-CO)). From the Calamian Islands, Palawan, Philippines. From a shallow very protected coral community adjacent to a mangrove forest.

Figure 128. *Acropora fenneri,* holotype. Showing grouping of axial and radial corallites.

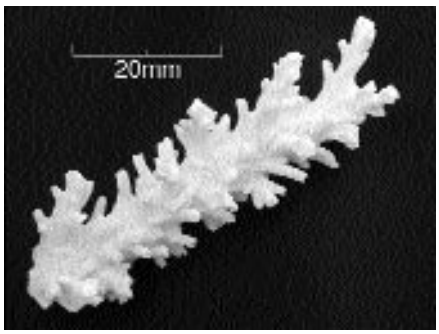

Figure 129. *Acropora fenneri,* from the Calamian Islands, Palawan, Philippines. A branch end.

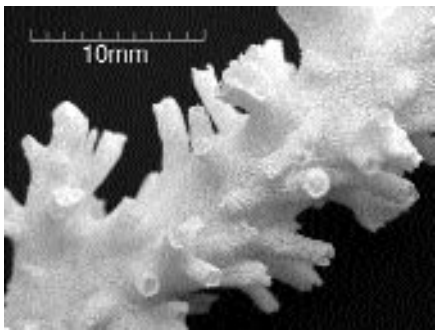

Figure 130. *Acropora fenneri,* same colony as figure 129. Showing a branch side and the shape of radial corallites.

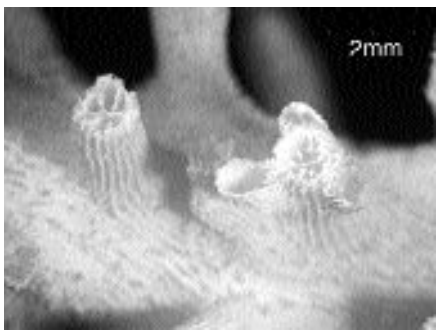

Figure 131. *Acropora fenneri,* from the Calamian Islands, Palawan, Philippines. Showing corallite and coenosteum detail.

Synonymy:

Acropora fenneri Veron, 2000: Veron and Fenner (2000), Veron (2002)

Skeletal detail:

Colonies occur as clusters of long, irregularly twisted and intertwined, gradually tapering irregular branches up to 1.5 m high. Branches subdivide frequently according to the formation of incipient

radial corallites. Basal parts of branches may be dead. There is continuous intergradation between axial, incipient axial and radial corallites. Axial corallites at branch tips are tubular, 1.2-1.4 mm diameter. Calices are circular. Septa are sub-equal, averaging 0.7 R. Incipient axial corallites tend to occur in clusters, a characteristic of this species not found in other *Acropora*. Incipient axial corallites are tubular, 1.0-1.2 mm diameter. These intergrade with radial corallites which are tubular and appressed to varying degrees. Calices are sub-circular, averaging 0.8 mm diameter. Septa are weakly developed, less than 0.3 R. Radial corallites on branch bases are 5-8 mm apart, sub-immersed, point in variable directions and have equal septa up to 0.5 R. Corallite walls and the coenosteum between corallites is strongly costate. The costae have elongate spines. Costae on basal branches become highly fused.

Affinities:
No other *Acropora* has incipient radial corallites arranged in clusters. Branches are more robust than *A. filiformis* Veron, 2000. Colonies have some resemblance to *A. kirstyae* Veron and Wallace, 1984.

The name:
Named after Dr Douglas Fenner who worked with the author on corals in the Philippines and Indonesia.

Holotype:
Specimen MSI-3002-CO. The specimen is 375 mm maximum dimension. Collected by the author from approximately 7 m depth, Calamian Islands, Palawan, Philippines.

Abundance:
Generally uncommon.

Habitat:
Shallow, well protected coral communities where the water is clear and circulation good.

Distribution:
The Indonesian-Philippines archipelago.

Acropora filiformis Veron, 2000

Original description: Veron (2000) Volume 1, page 418.

> **Characters:** Colonies may be several metres across and consist of upright or prostrate tangles of mostly straight branches. Branches are exceptionally thin and delicate. They divide infrequently. Axial corallites are long and tubular. Radial corallites are mostly small and tubular to pocket-shaped, with sharp edges. **Colour:** Pale brown. **Similar species:** *Acropora kirstyae*, which has thicker branches and corallites with rounded edges and *A. derawanensis*, which has more irregular branches. Readily mistaken for *Anacropora* underwater. **Habitat:** With *A. derawanensis* in shallow reef environments protected from wave action. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 1, page 418, figures 1, 2, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Acropora filiformis Veron, 2000: Veron and Fenner (2000)

Figure 132. *Acropora filiformis,* holotype. From the Calamian Islands, Palawan, Philippines. From a mid reef slope in a habitat protected from all wave action.

Figure 133. *Acropora filiformis,* holotype. Showing branch ends.

Figure 134. *Acropora filiformis,* from the Calamian Islands, Palawan, Philippines. Showing a branch side, showing the small radial corallites which may face different directions.

Figure 135. *Acropora filiformis,* from the Calamian Islands, Palawan, Philippines. Showing corallite and coenosteum detail.

Skeletal detail:

Colonies occur as clusters of long, straight or irregularly twisted, terete, straw-like branches up to 1.5 m high. Branches subdivide very infrequently. Basal parts of branches are commonly dead. Axial corallites are tubular, 1-1.2 mm diameter. Calices are circular. Septa are sub-equal, averaging 0.8 R. Radial corallites are tubular, 0.8-1.0 mm diameter, appressed, thin-walled. Most face towards the distal branch end, but some face the proximal end. Calices are sub-circular. Radial corallites on branch bases are sub-immersed with openings more than 0.5 mm diameter. Septal cycles are equal, averaging 0.5 R. Radial corallites are widely separated, averaging 2-3 mm apart 100 mm from the tips. Corallite walls and the coenosteum between corallites is strongly costate. The costae have elongate spines. Costae on basal branches become highly fused, forming smooth patches.

Affinities:

This is by far the most delicate of all Acropora and does not closely resemble any other species. In situ is resembles *Anacropora puertogalerae* Nemenzo, 1964 which has a similar growth-form. Most closely resembles *Acropora derawanensis* Wallace, 1997 which also has very long and thin branches but which has well developed elongate radial and incipient axial corallites. More distantly resembles *Acropora fenneri* Veron, 2000 which has thicker branches and much more proliferous radial corallites.

The name:
Named from the Latin 'filiformis', meaning thread-like.

Holotype:
Specimen MSI-3003-CO. The specimen is 340 mm maximum dimension. Collected by the author from approximately 12 m depth, Calamian Islands, Palawan, Philippines.

Abundance:
Seldom found, but may be a dominant species where it does occur.

Habitat:
Reef slopes to 10 m depth which are totally protected from any wave action.

Distribution:
Recorded only from the Calamian Islands, Palawan, Philippines.

Acropora navini Veron, 2000

Original description: Veron (2000) Volume 1, page 431.

> **Characters:** Colonies are bushy or have thick bottlebrush-like branches. Branchlets and sub-branchlets are compact and of uniform shape. Axial and incipient axial corallites intergrade with radial corallites and are distinctively tubular, with truncated ends. Small radial corallites are pocket-shaped. **Colour:** Grey-brown. **Similar species:** *Acropora longicyathus*, which has shorter corallites which are not truncated. See also *A. elseyi*, which does not have branchlets of uniform length and truncated corallites. **Habitat:** Shallow reef slopes and fringing reefs. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 1, page 431, figures 5-7, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are bushy or have thick, curving, hispidose branches. Branchlets and sub-branchlets are compact and of uniform shape and spacing. Axial and incipient axial corallites intergrade with radial corallites and are distinctively tubular, with truncated ends. Where clearly defined, axial corallites are approximately 4 mm diameter, with calices approximately 1 mm diameter. Septa are in two neatly arranged cycles of 0.7 and 0.4 R. Small radial corallites are pocket-shaped, up to 2 mm diameter near branch or branchlet tips and immersed proximaly. Septa are short and are in a single irregular cycle. The coenosteum is moderately smooth on and between corallites.

Affinities:
Acropora longicyathus is very similar and these two species may be difficult to separate unless they occur together. They are best distinguished by the calice openings which are rounded in *A. longicyathus* and conspicuously squared (truncated) in *A. navini*.

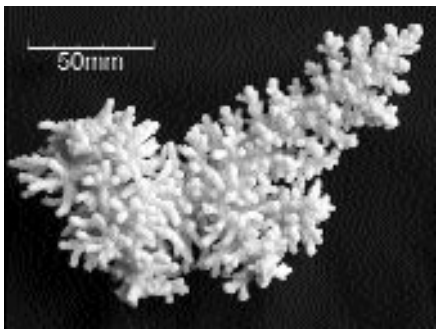

Figure 136. *Acropora navini,* holotype (G55820). From Milne Bay, eastern Papua New Guinea. From a shallow fringing reef protected from strong wave action.

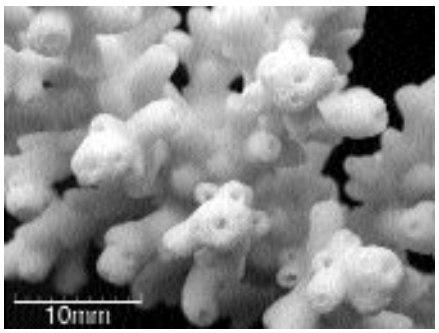

Figure 137. *Acropora navini,* holotype. Showing the wide variation in incipient axial, axial and radial corallites.

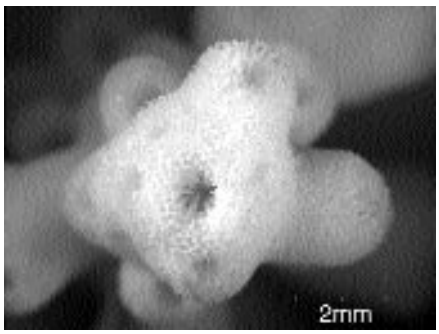

Figure 138. *Acropora navini,* holotype. Showing an axial corallite.

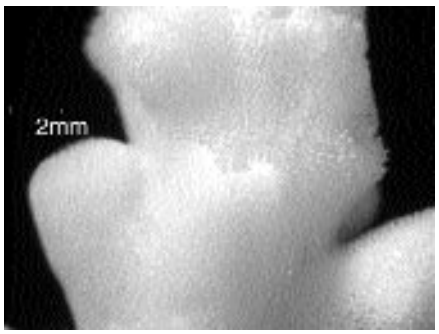

Figure 139. *Acropora navini,* holotype. Showing radial corallites and coenosteum detail.

The name:
Named after Mr Kim Navin, former assistant of the author's at AIMS.

Holotype:
Specimen G55820. The specimen is 165 mm maximum dimension. Collected by the author from approximately 2 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Common in very shallow habitats, uncommon elsewhere.

Habitat:
Reef flats and lagoon rims.

Distribution:
Known only from eastern Papua New Guinea.

Family Pocilloporidae Gray, 1842

Genus *Pocillopora* Lamarck, 1816

Pocillopora kelleheri Veron, 2000

Original description: Veron (2000) Volume 2, page 32.

> **Characters:** Colonies form wide plates with prostrate branches that are usually evenly spaced. Colonies are usually attached on one side and do not form clumps. Verrucae are uniform in size and are not crowded. **Colour:** Light brown, rarely purple or green. **Similar species:** *Pocillopora eydouxi*, which has larger branches and *P. verrucosa*, which has less flattened branches. See also *P. woodjonesi*, which has irregularly spaced branches. **Habitat:** Shallow exposed reef environments. **Abundance:** Usually uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 32, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Pocillopora kelleheri Veron, 2000: Veron (2002), Veron and Turak (in prep.)

Skeletal detail:
Colonies mostly have prostrate branches that are evenly spaced and mostly circular in cross section. If growing space is limiting, branches may be more upright. Branches may anastomose but do so infrequently. Colonies are usually attached at one side and do not form compact clumps. Verrucae are uniform in size, widely spaced, rounded, approximately 3 mm wide and up to 7 mm high. Corallites are 1.0–1.2 mm diameter. They are closely compacted on verrucae and on branch ends and are up to 3 mm apart towards branch bases. Septa are mostly reduced to irregular spines which do not form a particular pattern. Columellae are solid ridges traversing the floor of corallites. Corallites are therefore very open. They are surrounded by a palisade of spinules around the rim. The coenosteum between corallites is smooth and solid, with sparce spinules.

Affinities:
Pocillopora eydouxi P. verrucosa, *P. indiania* and *P. woodjonesi* all have relatively upright branches. *Pocillopora eydouxi*, *P. indiania* and *P. woodjonesi* have larger branches. *Pocillopora verrucosa* and *P. ankeli* have much shorter and more rounded branches. There are a range of corallite differences separating these species from similar environments and geographic locations, but as these characters vary with environment and location they are not generally useful.

The name:
Named after Graham Kelleher, who established the Great Barrier Reef Marine Park Aurthority of Australia.

Holotype:
Specimen G55779. The specimen is 345 mm maximum dimension. Collected by the author from approximately 8 m depth, Great Detached Reef, Great Barrier Reef, north-east Australia.

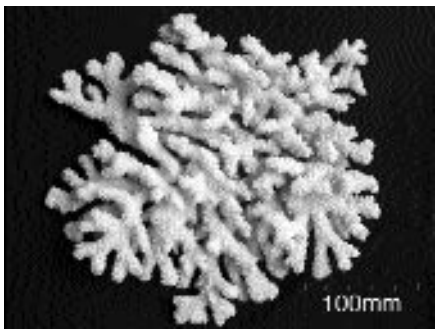

Figure 140. *Pocillopora kelleheri,* holotype (G55779). From Great Detached Reef, Great Barrier Reef, north-east Australia. From a shallow fringing reef exposed to modrate wave action.

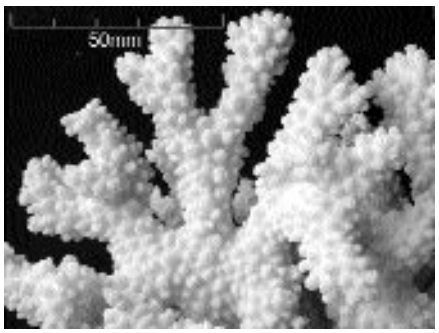

Figure 141. *Pocillopora kelleheri,* holotype. Showing anastomosing branches.

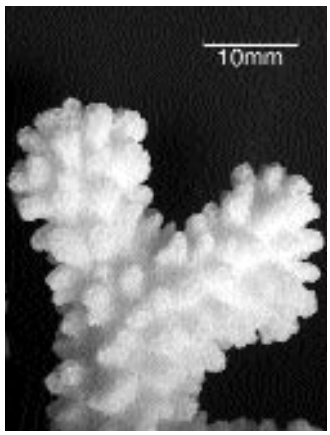

Figure 142. *Pocillopora kelleheri,* holotype. Showing a branch end.

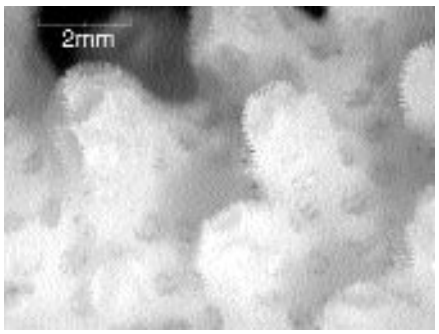

Figure 143. *Pocillopora kelleheri,* holotype. Showing detail of verrucae and corallites near a branch end.

Abundance:
Uncommon, but may be common in individual habitats.

Habitat:
Shallow reef environments exposed to weak to moderate wave action.

Distribution:
Ryukyu Islands of Japan to the Great Barrier Reef of north-east Australia.

Pocillopora zelli Veron, 2000

Original description: Veron (2000) Volume 2, page 36.

Characters: Colonies form hemispherical mounds or are openly branched. Branches are tall and upright, almost cylindrical in section, becoming flattened towards the tip. Verrucae are widely spaced, short and uniform. Outer branches of colonies may be fused. **Colour:** Brown with white branch tips. **Similar species:** *Pocillopora capitata*, which has irregular branches and longer, more irregular verrucae. See also *P. verrucosa*. At a distance, this species may

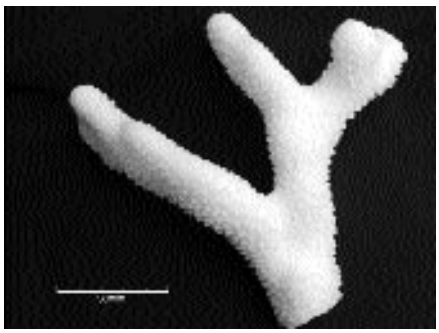

Figure 144. *Pocillopora zelli,* holotype (G55794). From Puka Rua, Tuamotu Group, French Polynesia. Showing a branch end from an exposed shallow habitat.

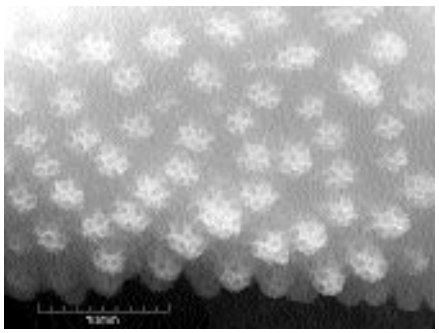

Figure 145. *Pocillopora zelli,* from Puka Rua, Tuamotu Group, French Polynesia. Showing the side of a branch.

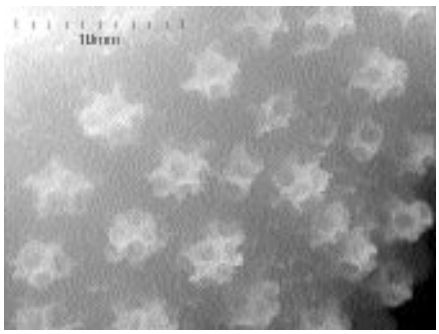

Figure 146. *Pocillopora zelli,* holotype. Showing detail of verrucae.

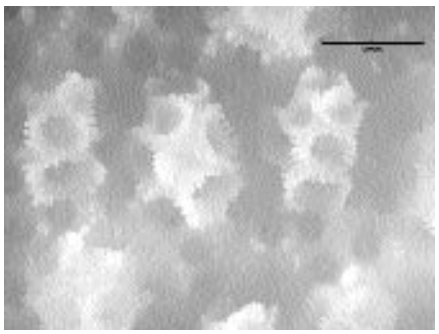

Figure 147. *Pocillopora zelli,* holotype. Showing corallite and coenosteum detail.

resemble the non-scleractinian coral *Heliopora*. **Habitat:** Shallow reef environments and rocky foreshores. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 36, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies mostly have upright branches that are circular in cross section proximally and laterally flattened distally. Branches are irregularly spaced except where growing space is limiting. The outermost branches of colonies are commonly closely spaced and flattened in the same plane to form a wall-like structure. Branches may anastomose but do so infrequently. Colonies are usually centrally attached. Verrucae are widely spaced, short and uniform. They are approximately 4 mm wide and 3-4 mm high. Corallites are approximately 1 mm diameter. They are closely and uniformly spaced both on verrucae and on branch sides. On branch ends they take the form of closely compacted honeycomb-like cells. Septa form a single rudimentary cycle on older corallites except for one directive (less commonly both directives) which may be prominent. Septa are not formed in corallites near branch ends. Columellae of corallites on branch sides are low bosses and are absent in corallites near branch ends. Elaborated coenosteum spinules form a palisade around corallite openings. Elsewhere, the coenosteum is smooth or has irregular spinules.

Affinities:
Pocillopora eydouxi P. verrucosa, *P. indiania* and *P. woodjonesi* all have larger branches. *Pocillopora capitata* has irregular branches and longer, more irregular verrucae. *Pocillopora verrucosa* has shorter, more irregular branches. As with *Pocillopora kelleheri*, there are a range of corallite differences separating these species from similar environments and geographic locations, but as these characters vary with environment and location they are not generally useful.

The name:
Named after Mr Len Zell, former assistant of the author's at AIMS and who collected and photographed this species.

Holotype:
Specimen G55794. The specimen is 157 mm maximum dimension, collected by Len Zell from approximately 6 m depth, Puka Rua, Tuamotu Group, French Polynesia.

Abundance:
Uncommon, but may be the dominant species in limited habitats.

Habitat:
Shallow reef environments and rocky foreshores.

Distribution:
Most records of this species are doubtful. Specimens studied are all from French Polynesia

Pocillopora indiania Veron, 2000

Original description: Veron (2000) Volume 2, page 37.

> **Characters:** Colonies are commonly over one metre across and are hemispherical in shape. They are composed of straight radiating cylindrical branches which divide infrequently. Branches are usually compact. Verrucae are elongate and project outwardly or upwards. **Colour:** Brown with pale tips. **Similar species:** *Pocillopora capitata*, which has irregular branches. See also *P. eydouxi* which has flattened awl-shaped branches. **Habitat:** Shallow reef environments. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 2, page 37, figures 4-7, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Pocillopora indiania Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies mostly have straight upright branches up to 450 mm high that are evenly spaced and mostly circular in cross section. Branches do not anastomose. Colonies are usually centrally attached with branches radiating from the point of attachment. It is common for broken branches to develop into new colonies. Verrucae are uniform in size, widely spaced, elongate and circular cross section. They are commonly inclined on branches to point towards the branch tips, and are approximately 4 mm wide and up to 8 mm high. Corallites have calices 0.7–1.0 mm diameter. They are equally spaced on

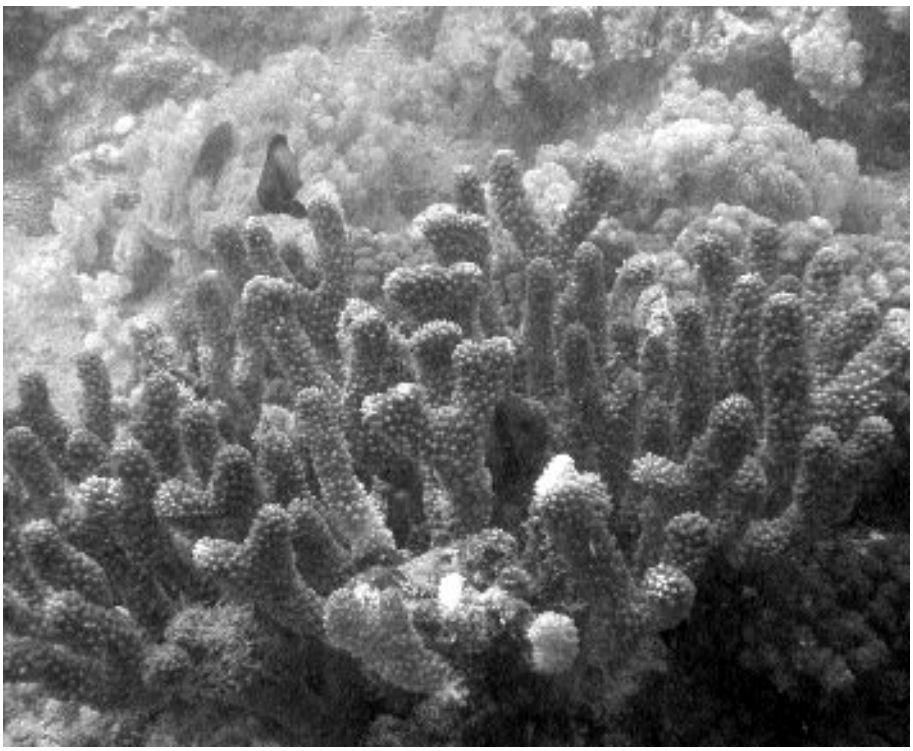

Figure 148. *Pocillopora indiania,* holotype (G55812. From north-west Madagascar. Showing the whole colony in situ in a shallow turbid reef habitat.

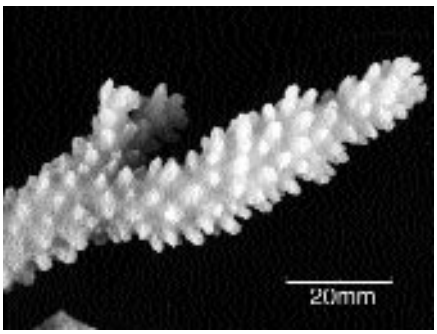

Figure 149. *Pocillopora indiania,* holotype. Showing the side of a branch.

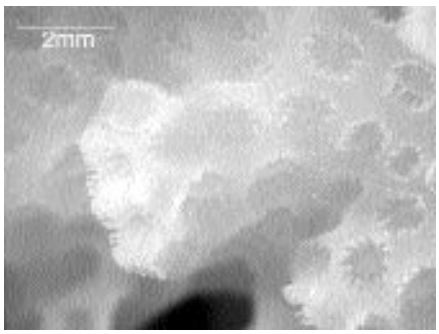

Figure 150. *Pocillopora indiania,* holotype. Showing detail of verrucae and corallites.

verrucae and branch ends alike and are up to 2 mm apart towards branch bases. Septa of all corallites are in two equal or subequal cycles and are very short. Directive septa may be distinguishable. Columellae are low bosses or absent. There is a palisade of spinules around the rim of corallites on verrucae. The coenosteum between corallites is smooth or finely frosted.

Affinities:
This species has few characters which distinguish it from similar *Pocillopora* unless it is seen or collected with these species. *Pocillopora eydouxi* has larger, flattened branches; *P. capitata* has shorter, irregular branches.

The name:
So named because this species has only been recorded in the Indian Ocean.

Holotype:
Specimen G55812. The specimen is 190 mm maximum dimension. Collected by the author from approximately 15 m depth, north-west Madagascar.

Abundance:
Common in the Seychelles, uncommon elsewhere.

Habitat:
Shallow reef environments.

Distribution:
Central and south-west Indian Ocean, south to Madagascar.

Pocillopora effusus Veron, 2000

Original description: Veron (2000) Volume 2, page 39.

> **Characters:** Colonies are commonly more than 2 metres across and are composed of prostrate flattened branches which fuse. Verrucae vary greatly in size from one colony to a neighbouring colony. **Colour:** Greenish-brown or tan. **Similar species:** *Pocillopora fungiformis*. See also *P. danae*, which forms smaller colonies with relatively uniform branches. **Habitat:** Shallow reef environments and rocky foreshores exposed to strong wave action. **Abundance:** Common at Clipperton Atoll and rocky foreshores of western Mexico.

Previous illustrations:
Veron (2000) Volume 2, page 39, figures 5-7, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are commonly more than 2 metres across and are composed of prostrate flattened branches which are highly fuse. Some colonies or parts of colonies are encrusting, some submassive, some branching. Branches are highly irregular. Verrucae likewise vary greatly in shape and size both within and between colonies. They are mostly short, commonly 4 mm wide and 2 mm high. (There are almost no verrucae on the holotype.) Corallites may be very compacted on basal parts of colonies and are more separated on other parts. Corallites have calices of variable size, mostly 1.0-1.2 mm diameter. There is little or no development of septa or columellae except for some corallites which have a style-like columella. There is a palisade of spinules around the rim of most corallites. There is seldom any coenosteum between corallites.

Affinities:
Pocillopora fungiformis has more branch development and a greater distinction between branches and basal colony parts. *Pocillopora danae* forms smaller colonies with relatively uniform branches. *Pocillopora inflata* forms clusters of small rounded nodule-like branches with very little development of verrucae.

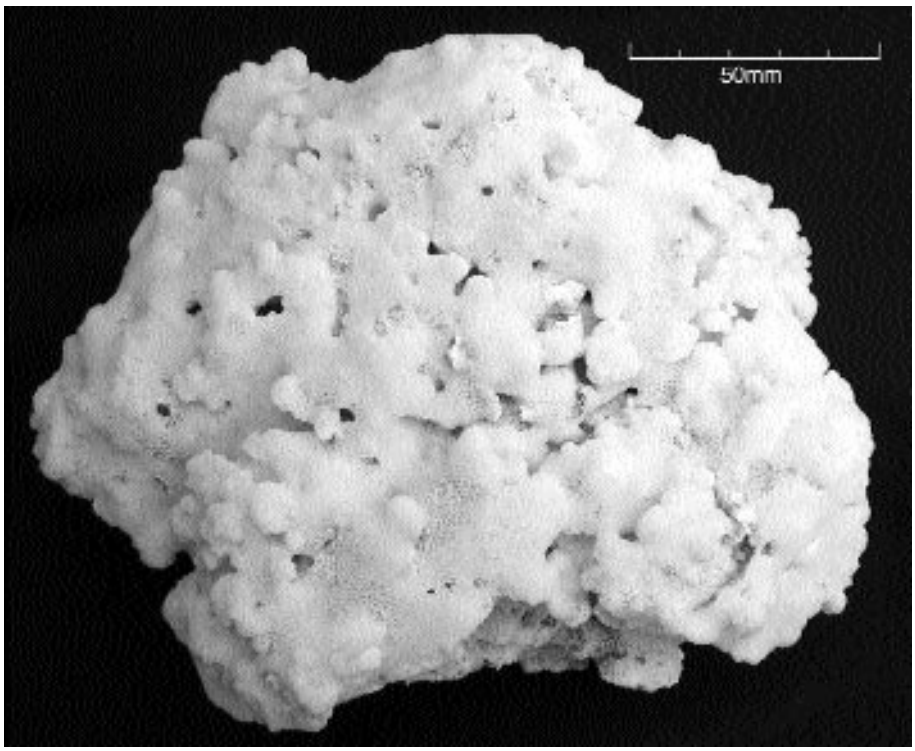

Figure 151. *Pocillopora effusus,* holotype (G55781). From Clipperton Atoll, far eastern Pacific. A colony from shallow water exposed to very stong wave action.

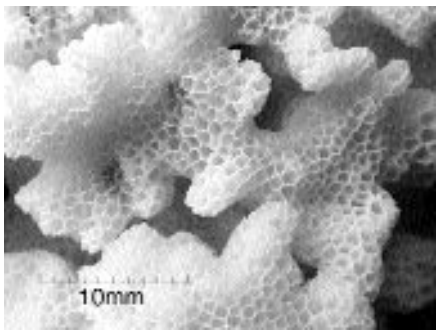

Figure 152. *Pocillopora effusus,* holotype. Showing surface detail.

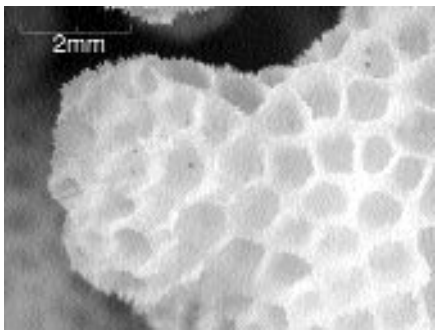

Figure 153. *Pocillopora effusus,* holotype. Showing detail of corallites.

The name:
From the Latin 'effusus' referring to a spead out, indeterminate or straggling growth form.

Holotype:
Specimen G55781. The specimen is 168 mm maximum dimension. Collected by the author from approximately 3 m depth, Clipperton Atoll, far eastern Pacific.

Abundance:
Common.

Habitat:
Reef flats, upper reef slopes, and rocky foreshores exposed to strong wave action.

Distribution:
Far eastern Pacific.

Pocillopora fungiformis Veron, 2000

Original description: Veron (2000) Volume 2, page 40.

> **Characters:** Colonies are up to 2 metres across and are primarily encrusting. Large colonies have upright or inclined bifurcating branches up to 0.2 metres long. They mostly have flattened ends. Verrucae are irregular. On inclined branches these are better developed on upper surfaces. Branches are tall and upright, almost cylindrical in section, becoming flattened towards the tip. Verrucae are elongate but have irregular sizes and are irregularly distributed on branches. Corallites are closely compacted and cellular, with one septum more developed than the others. **Colour:** Greenish-brown. **Similar species:** *Pocillopora effusus*, which has less development of branches and has larger, less crowded corallites. See also *P. woodjonesi*, which has substantially larger, less compact, branches. **Habitat:** Shallow reef environments exposed to strong wave action. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 40, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Pocillopora fungiformis Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies are up to 2 metres diameter and are primarily encrusting. Large colonies have upright or inclined bifurcating branches up to 0.2 metres long. They are almost cylindrical, becoming flattened towards the tip. Verrucae are irregular in size and are irregularly distributed on branches, those on the upper surfaces of inclined branches being more developed than those on lower surfaces. At maximum development they are 7 wide and 6 mm high. Corallites are closely compacted and cellular and approximately 1.2 diameter. Septa are in two subequal cycles and are short. A directive septum may be developed. Columellae are boss-like and are usually fused with the directive septum. The coenosteum between the corallites is covered with fine spinules.

Affinities:
This is a very distinctive species. *Pocillopora effusus* has less development of branches and has larger, less crowded corallites. *Pocillopora woodjonesi* has substantially larger, less compact, branches.

The name:
From the Latin ‘fungiformis’, meaning mushroom-shaped and referring to the flattened ends of stunted branches.

Holotype:
Specimen G55816. The specimen is 128 mm maximum dimension. Collected by the author from approximately 8 m depth, Tuléar, south-west Madagascar.

Abundance:
Uncommon.

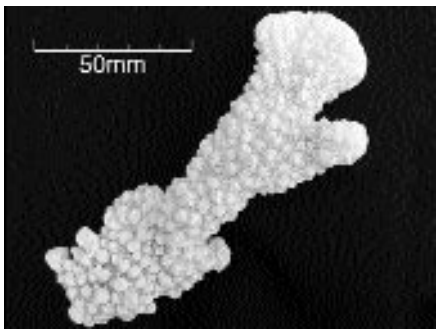

Figure 154. *Pocillopora fungiformis,* holotype (G55816). From Tuléar, south-west Madagascar. A branch of a colony from shallow water exposed to very stong wave action. The whole colony is illustrated in Veron (2000, volume 2, page 40, Figure 1).

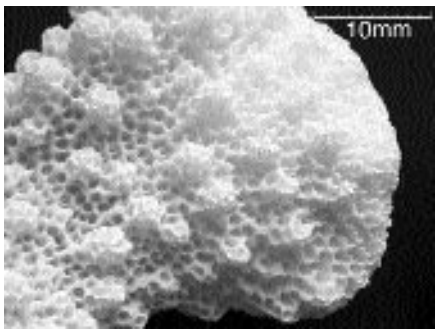

Figure 155. *Pocillopora fungiformis,* holotype. Showing the branch end.

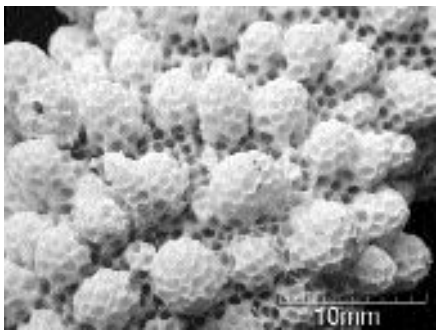

Figure 156. *Pocillopora fungiformis,* holotype. Showing veccucae on the branch side.

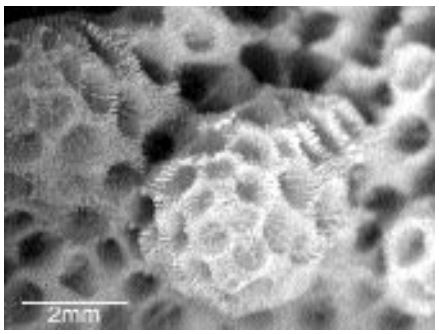

Figure 157. *Pocillopora fungiformis,* holotype. Showing detail of verrucae and corallites.

Habitat:
Shallow reef environments exposed to strong wave action.

Distribution:
Recorded only from south-west Madagascar.

Genus Seriatopora Lamarck, 1816

Seriatopora dendritica Veron, 2000

Original description: Veron (2000) Volume 2, page 46-7.

> **Characters:** Branches are thin and tapered to a point, hence they have a needle-like appearance. Branches are widely spaced, less than 100 mm long, and usually fuse in an irregular manner. They are very fine and delicate, so that colonies fall apart if disturbed. Corallites are arranged in neat rows along branches. Tentacles are extended only at night. **Colour:** Pink or cream. **Similar species:** *Seriatopora hystrix*, which has much larger branches. **Habitat:** Protected reef environments. **Abundance:** Usually uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 47, figures 2-5, colour photographs of living coral and page 46, monochrome photograph of coral skeleton.

Synonymy:
Seriatopora dendritica Veron, 2000: Veron (2002)

Skeletal detail:
Branches are a maximum of 5 mm diameter, less than 100 mm long and taper to a sharp point. They are irregularly twisted and variable in all dimensions and occasionally anastomosed. Colonies are delicate and break if disturbed. Corallites are arranged in neat rows along branches. They are slightly exsert, rounded, approximately 1 mm diameter. There is no development of hoods. Septa are plate like, approximately 0.5 R, with serrated margins and are in one neatly arranged cycle with one or both directive septa larger than the others. Columellae are laterally flattened in line with the directive septa. The theca has a palisade of spinules and the coenosteum is covered with fine spinules.

Affinities:
Closest to *Seriatopora hystrix*, which has much larger branches but mostly smaller corallites.

The name:
From the prefix ‘dendr-’ meaning composed of fine branches as in a dendritic cell.

Holotype:
Specimen G55831. The specimen is 108 mm maximum dimension. Collected by the author from approximately 28 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Uncommon, but may be a dominant species in very limited habitats.

Habitat:
Mid-reef slopes totally protected from wave action and currents where the substrate is at least moderately sloping.

Distribution:
Papua New Guinea and Indonesia.

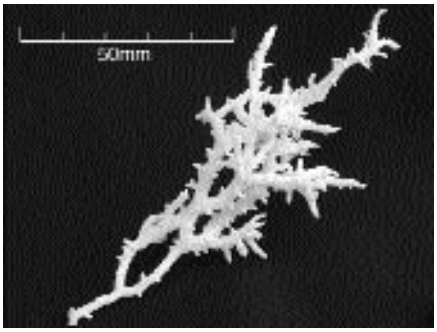

Figure 158. *Seriatopora dendritica,* holotype (G55831). From Milne Bay, eastern Papua New Guinea. A part of a colony from a very sheltered mid reef slope.

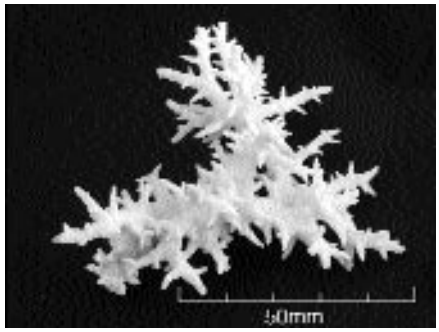

Figure 159. *Seriatopora dendritica,* part of a colony from Milne Bay, eastern Papua New Guinea, from a reef slope exposed to mild wave action.

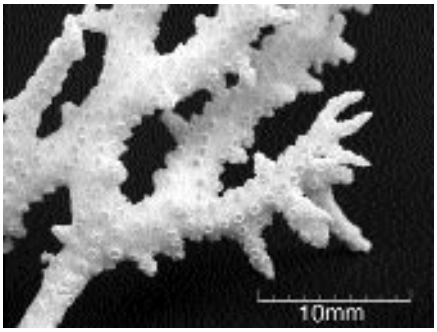

Figure 160. *Seriatopora dendritica,* holotype. Side view of branches.

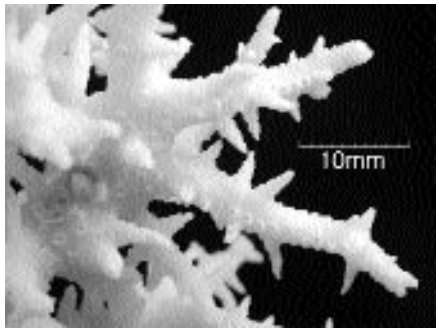

Figure 161. *Seriatopora dendritica,* same colony as figure 159.

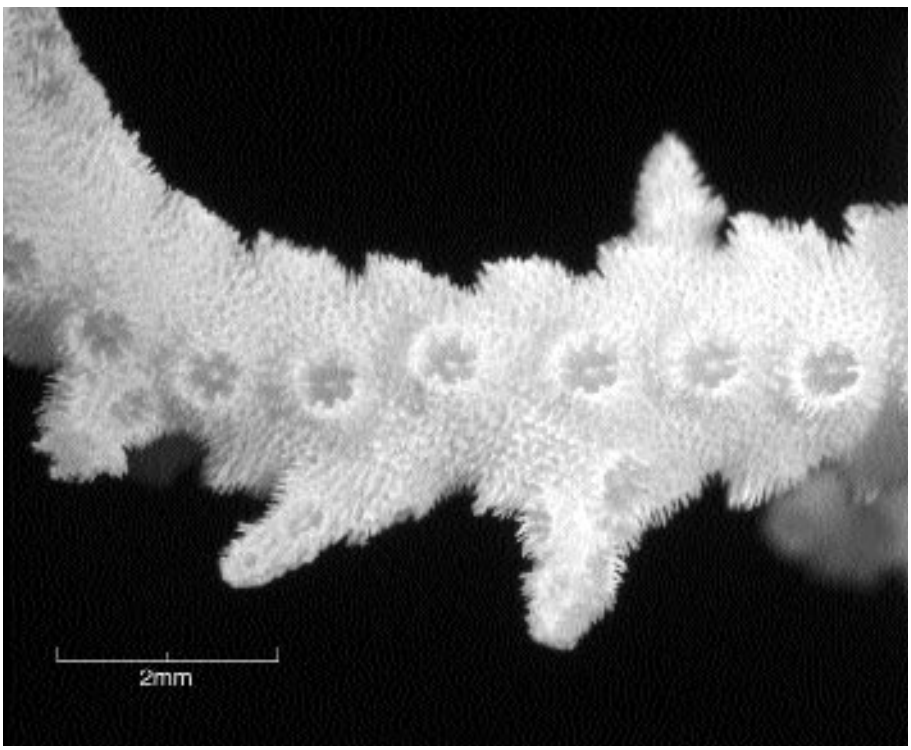

Figure 162. *Seriatopora dendritica,* holotype. Showing detail of corallites.

Seriatopora guttatus Veron, 2000

Original description: Veron (2000) Volume 2, page 50-1.

> **Characters:** Colonies are up to 0.3 metres across and are usually prostrate. Branches are irregularly fused. They are not tapered and do not have sharp points. Corallites are arranged irregularly or in indistinct rows. They have a well defined rim, but do not have hoods. Polyps are extended day and night. **Colour:** A wide range of colours, with polyps and branches of contrasting colours. **Similar species:** *Seriatopora hystrix*, which has pointed branches and corallites not extended during the day. See also *S. aculeata*, which has short, tapered branches, and *S. caliendrum*. **Habitat:** Shallow reef environments especially where protected from strong wave action including vertical walls and beneath overhangs. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 2, page 50-1, figures 1-6, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Seriatopora guttatus Veron, 2000: Veron (2002), Veron and Turak (in prep.)

Skeletal detail:
Colonies are up to 0.3 metres across and are usually prostrate in sheltered habitats, but may form compact clumps in habitats exposed to wave action. Branches are up to 5 mm diameter. They are generally uniform in diameter within a particular colony, tapering only towards tips, which are blunt. Corallites are arranged irregularly or in indistinct rows. They are slightly exsert, rounded, approximately 0.8 mm diameter. Hoods are usually weakly developed. Septa are reduced to a single indistinct cycle of fine ridges except for one or both directives which are well developed and are fused with the columella. Columellae are flattened in line with the directive septa. The coenosteum is covered with fine spinules.

Affinities:
Seriatopora hystrix has less compact, longer, pointed branches. *Seriatopora aculeata* has short, more compact and tapered branches. *Seriatopora caliendrum* has much larger branches. There may be points of skeletal detail separating these species from similar environments and geographic locations, but as these characters vary with environment and location they are not generally useful.

The name:
From the noun ‘gutta’, meaning small spot of colour.

Holotype:
Specimen G55814. The specimen is 105 mm maximum dimension. Collected by the author from approximately 12 m depth, Tuléar, south-west Madagascar.

Abundance:
Common over a large area and in a wide range of habitats but is probably not abundant in any one habitat.

Habitat:
Shallow reef environments especially where protected from strong wave action including vertical walls and beneath overhangs.

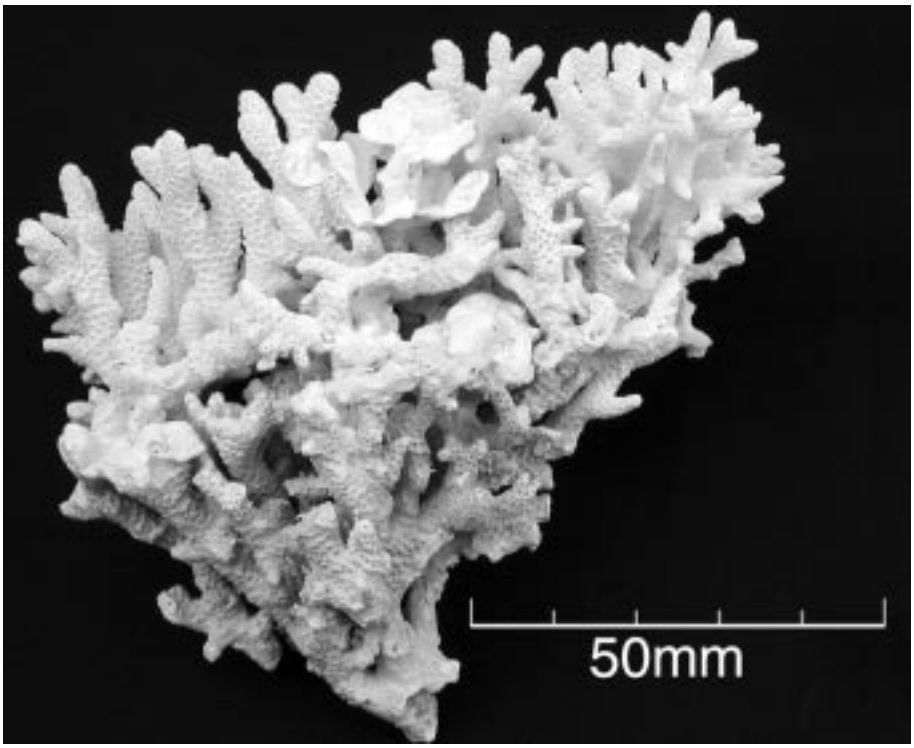

Figure 163. *Seriatopora guttatus,* holotype (G55814). From Tuléar, south-west Madagascar. From a sandy substrate. The lower part of the colony was dead and buried in the substrate.

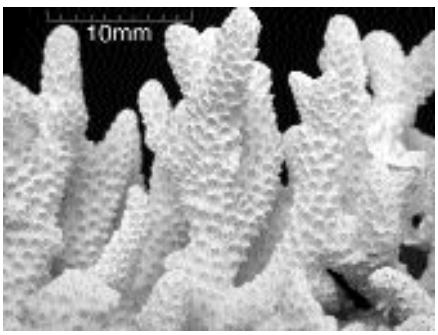

Figure 164. *Seriatopora guttatus,* holotype. Showing branch sides.

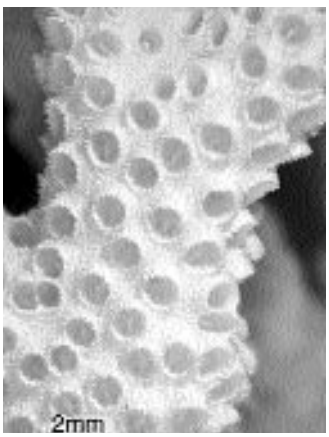

Figure 165. *Seriatopora guttatus,* holotype. Showing detail of corallites.

Distribution:

From eastern Papua New Guinea to the south-western Indian Ocean.

Genus Stylophora Schweigger, 1819

Stylophora madagascarensis Veron, 2000

Original description: Veron (2000) Volume 2, page 57.

> **Characters:** Colonies have thin (up to 5 mm diameter), straight compact branches. Corallites are crowded and uniformly spaced on branch sides and ends. They have a slight development of hoods towards branch ends. They have small style-like columellae and six primary septa which are fused with the columellae. The coenosteum is covered by fine spinules. Tentacles are not extended during the day. **Colour:** Uniform tan, sometimes with pinkish branch bases. **Similar species:** *Stylophora subseriata*, which does not have closely compact branches and has less crowded corallites. See also *S. pistillata*, which has thicker, less compact branches. **Habitat:** Shallow reef environments exposed to some wave action and sheltered lagoons. **Abundance:** Locally common.

Previous illustrations:
Veron (2000) Volume 2, page 57, figures 3-6, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Stylophora madagascarensis Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies form compact clumps, commonly hemispherical in shape, up to 20 cm diameter. Branches are up to 60 mm in length and 5 mm diameter, are straight and are closely and uniformly spaced. Corallites are 1.8-2.2 mm diameter and are uniformly spaced on branch sides and ends. They may have a slight development of hoods, especially those towards branch ends. They have small style-like columellae and six primary septa that are fused with the columellae. Both septa and columellae are relatively well developed in corallites on branch tips and poorly developed in proximal corallites. The coenosteum is covered by fine spinules.

Affinities:
Stylophora subseriata and *S. kuehlmanni* both have thinner, less compact branches and less crowded corallites. *Stylophora pistillata* has thicker branches that are usually less compact and less uniform.

The name:
So named because the holotype is from Madagascar.

Holotype:
Specimen G55815. The specimen is 83 mm maximum dimension. Collected by the author from approximately 4 m depth, Tuléar, south-west Madagascar.

Abundance:
Common in some shallow lagoons but uncommon elsewhere.

Habitat:
Recorded only from shallow reef environments exposed to some wave action and, in south-west Madagascar, in shallow sheltered lagoons.

Distribution:
Recorded only from Madagascar.

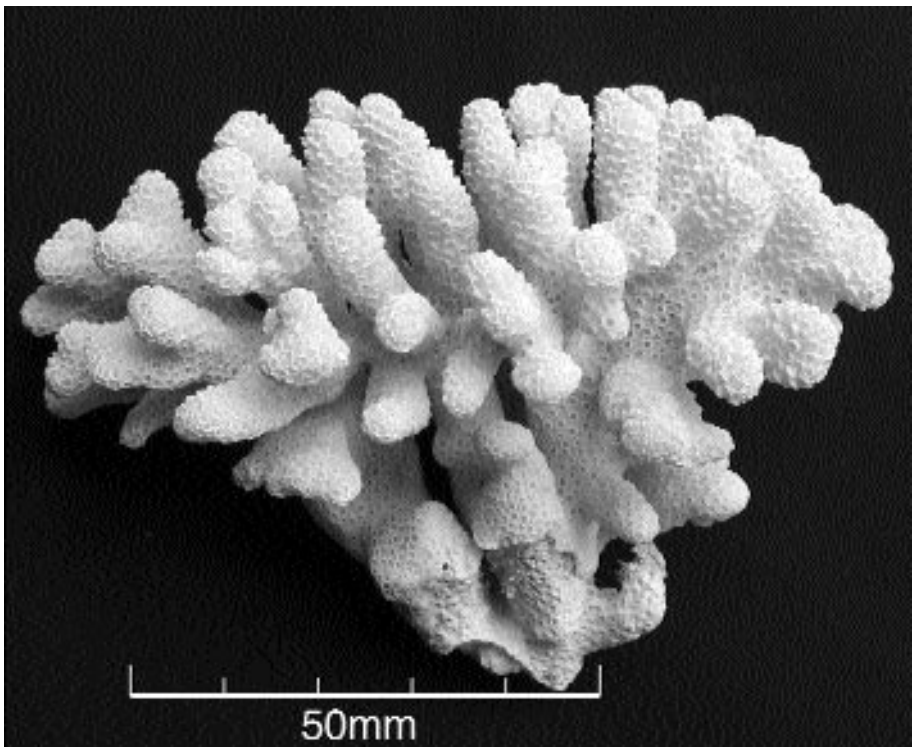

Figure 166. *Stylophora madagascarensis,* holotype (G55815). From Tuléar, south-west Madagascar. From a shallow substrate exposed to moderate wave action.

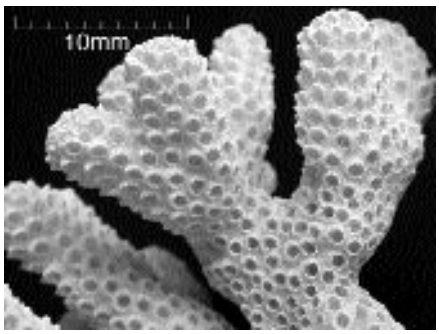

Figure 167. *Stylophora madagascarensis,* holotype. Showing branch sides.

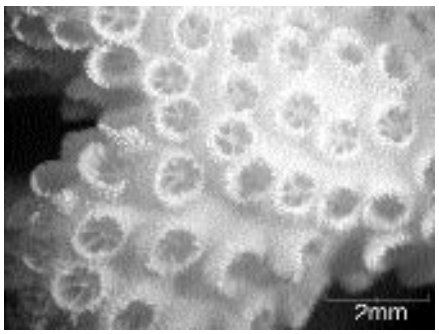

Figure 168. *Stylophora madagascarensis,* holotype. Showing detail of corallites.

Family Euphylliidae Veron, 2000

Genus *Plerogyra* Milne Edwards and Haime, 1848

Plerogyra discus Veron and Fenner (2000)

Original description: Veron (2000) Volume 2, page 86.

> **Characters:** Colonies are flabello-meandroid with valleys completely separated. Sometimes living parts of colonies are separated by dead basal parts. Valleys are approximately 20 mm wide and divide infrequently. Primary septa are approximately 10 mm exsert and are rounded in shape. They plunge steeply within the valleys and do not form columellae. Polyps have mantles up to 50 mm wide which obscure the underlying septa. These mantles have elongate vesicles which vary greatly in degree of inflation. **Colour:** Grey, usually with vesicles darker than mantles. **Similar species:** *Nemenzophyllia turbida*, which has smaller but otherwise almost identical polyp mantles. Skeletal characters are distinctive, with *N. turbida* lacking exsert septa and having smaller valleys with a central columella wall. *Plerogyra sinuosa* has similar although much larger and more exsert septa. These distinctions require verification. **Habitat:** Lower protected reef slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 86-7, figures 2-5, colour photographs of living coral and page 87, monochrome photograph of coral skeleton.

Synonymy:
Plerogyra discus Veron and Fenner, 2000: Veron and Fenner (2000)

Skeletal detail:
Colonies are small, 10-30 cm diameter. They are flabello-meandroid with valleys completely separated. Sometimes living parts of colonies are separated by dead basal parts. Living parts are up to 6 cm in depth. Valleys are approximately 20 mm wide and divide infrequently.

Septa are not clearly arranged in orders. In some colonies or parts of colonies, three orders may be distinguishable. More commonly there is some alternation of two orders or septa are irregular. The larger septa are approximately 9 mm exsert. They are smooth-edged, are rounded in shape and plunge steeply within the valleys. There is no development of columellae. The coenosteum between septa is smooth and blistery. On the outer surface has exsert costal ribs in one or two orders, corresponding with the orders of septa. The coenosteum between the costae is blistered.

Affinities:
Distinctions between *Plerogyra discus* and *Nemenzophyllia turbida* Hodgson and Ross, 1981 have not been adequately resolved. Living polyps are virtually identical. Skeletal characters are distinctive, with *N. turbida* lacking exsert septa and having smaller valleys with a central columella wall. *Nemenzophyllia* has smaller and more widely spaced costae and the corallum is less calcified. *Nemenzophyllia* also forms much larger colonies on soft substrates. *Plerogyra sinuosa* has similar although much larger and more exsert septa. These species have not been seen together.

Plerogyra discus, P. sinuosa and *Nemenzophyllia turbida* are the second example in the Euphyllidae of a complex of species in which a few discrete soft tissue and a few discrete skeletal morphologies

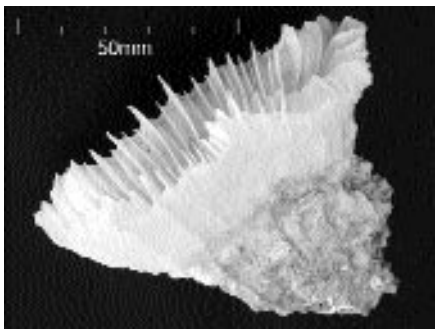

Figure 169. *Plerogyra discus,* holotype (MSI-3013-CO). From the Calamian Islands, Palawan, Philippines. From a mid reef slope protected from wave action.

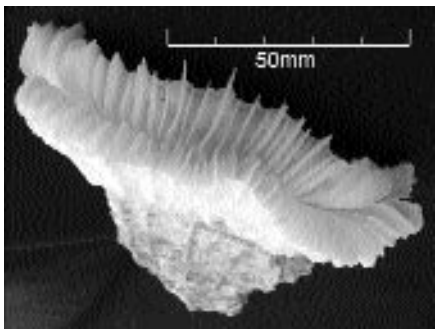

Figure 170. *Plerogyra discus,* holotype. Showing weak development of costae.

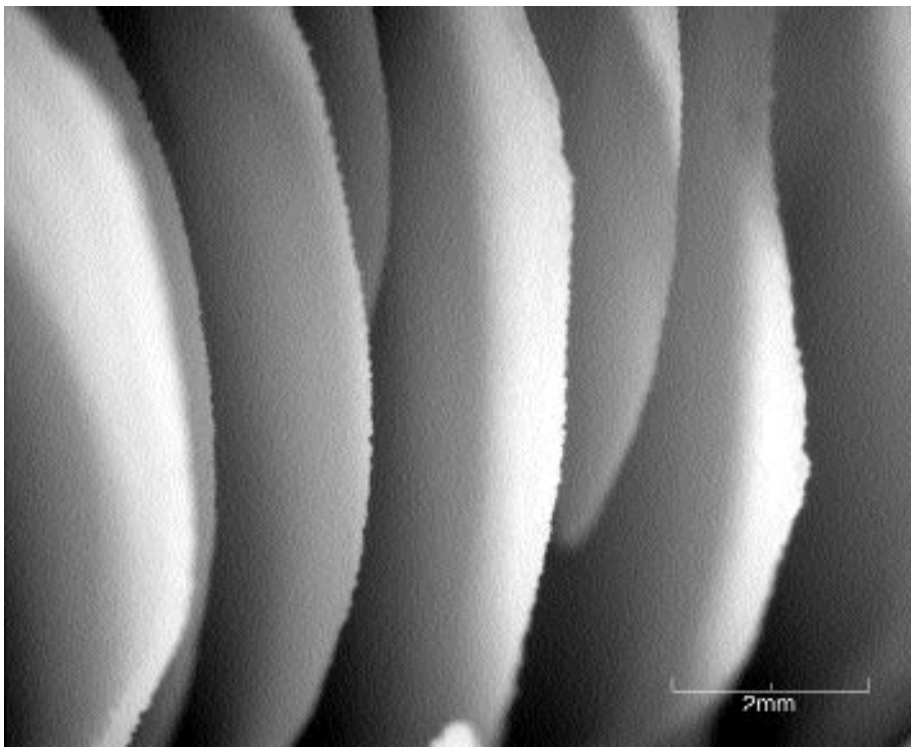

Figure 171. *Plerogyra discus,* holotype. Showing detail of septal margin and sides.

occur in different combinations in different species. The other example is the species of *Euphyllia* where similar to identical soft tissue morphologies occur with markedly different skeletal morphologies.

The name:
So named because of the disc-like fleshy mantles of living colonies.

Holotype:
Specimen MSI-3013-CO. The specimen is 87 mm maximum dimension. Collected by the author from approximately 37 m depth, Calamian Islands, Palawan, Philippines.

Abundance:
Several colonies have been found within 100 m of each other but this is rare.

Habitat:
Lower reef slopes which are completely protected from wave action and where species diversity is low.

Distribution:
Eastern Papua New Guinea and the Indonesian-Philippines archipelago.

Family Oculinidae Gray, 1847

Genus *Galaxea* Oken 1815

Galaxea cryptoramosa Fenner and Veron, 2000

Original description: Veron (2000) Volume 2, page 114.

> **Characters:** Colonies are up to 30 cm across and consist of irregular branches composed of irregularly fused corallites which vary in size. Larger corallites have three cycles of septa. Primary septa almost reach the corallite centre where they plunge vertically. Third cycle septa are short. Septa are not as exsert as in other *Galaxea* species. There is no columella. Two subequal cycles of costae extend down the outer wall of all corallites, becoming submerged in the coenosteum. The surface of main branches is composed of smooth coenosteum. Tentacles are extended day and night. **Colour:** Pale brown with white tentacle tips. **Similar species:** *Galaxea astreata*, which is never arborescent and has smaller corallites (which are sometimes exsert and may have lateral daughter corallites). See also *G. acrhelia* which has smaller corallites, is more distinctly branching, and has very exsert septa. **Habitat:** Shallow protected reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 114, figures 1, 2, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Galaxea cryptoramosa Fenner and Veron, 2000: Veron (2002)

Skeletal detail:
Colonies are small mounds of irregular branches that are highly fused with branching occurring at acute angles. Branches are mostly irregularly fused corallites of very variable size intergrading with with branches 4-20 mm, but mostly approximately 8 mm, thick. Living tissues extends 5-10 cm deep within the colony. Branch ends usually have a cluster of corallites. Corallites are up to 4-6 mm diameter and 6 mm long and are 5-10 mm apart. Small irregular corallites are common. Larger corallites have three cycles of septa. Primary septa almost reach the corallite centre where they plunge vertically. Third cycle septa are short. Septa are mostly less than 3mm exsert, less than in other *Galaxea* species. They have finely granulated sides and smooth margins. There is no columella. Two subequal cycles of costae extend down the outer wall of all corallites, becoming submerged in the coenosteum. The surface of main branches is composed of smooth blistered coenosteum. Tentacles are extended day and night.

Affinities:
Septa of *G. cryptoramosa* are shorter than those of other branching *Galaxea* and the pattern of branching and corallite formation is distinct.

The name:
So named because the branching pattern of colonies is well hidden.

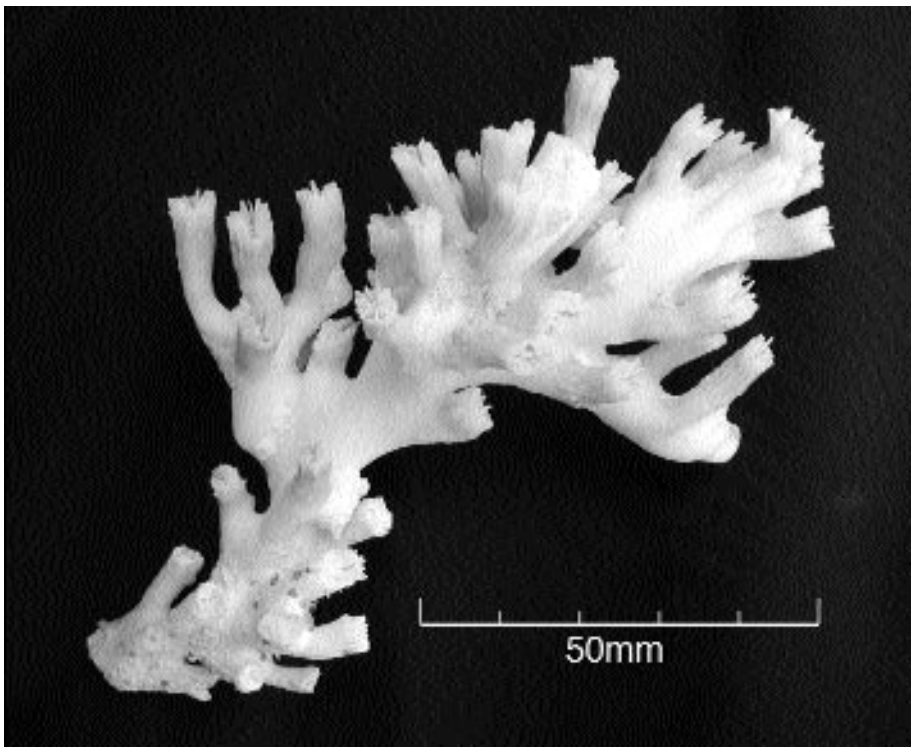

Figure 172. *Galaxea cryptoramosa,* holotype (G55810). From Sulawesi, Indonesia. From a mid reef slope protected from wave action. Showing the highly irregular branching pattern.

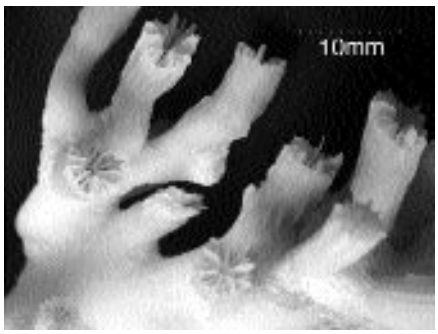

Figure 173. *Galaxea cryptoramosa,* holotype. Showing a side view of branching corallites.

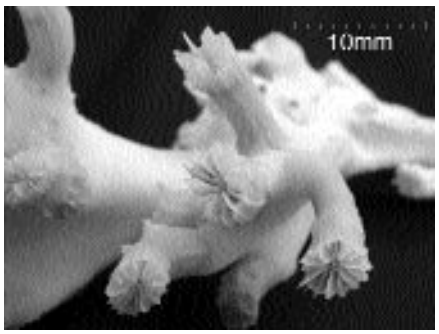

Figure 174. *Galaxea cryptoramosa,* holotype. Showing corallite detail.

Holotype:
Specimen G55810. The specimen is 118 mm maximum dimension. Collected by Doug Fenner from approximately 5 m depth, Bangai Island, Sulawesi, Indonesia.

Abundance:
Uncommon except in very restricted habitats.

Habitat:
Shallow protected reef environments with rubble substrates.

Distribution:
The Indonesian-Philippines archipelago and Sabah, Malaysia.

Galaxea acrhelia Veron, 2000

Original description: Veron (2000) Volume 2, page 115.

Characters: Colonies are composed of short irregular lobe-like or truncated branches. They may be several metres across, but are usually less than 0.5 metres. Corallites are tubular, thin walled with flaring rims. Small corallites branch off larger corallites. Columellae are absent. Septa are very exsert and are commonly irregular in length. The coenosteum is soft and blistery. The whole skeleton is very fragile. Tentacles are usually extended only at night. **Colour:** Pale brown or grey with white branch ends. **Similar species:** *Galaxea fascicularis*, which does not branch and *Galaxea horrescens*, which has well defined branches. **Habitat:**

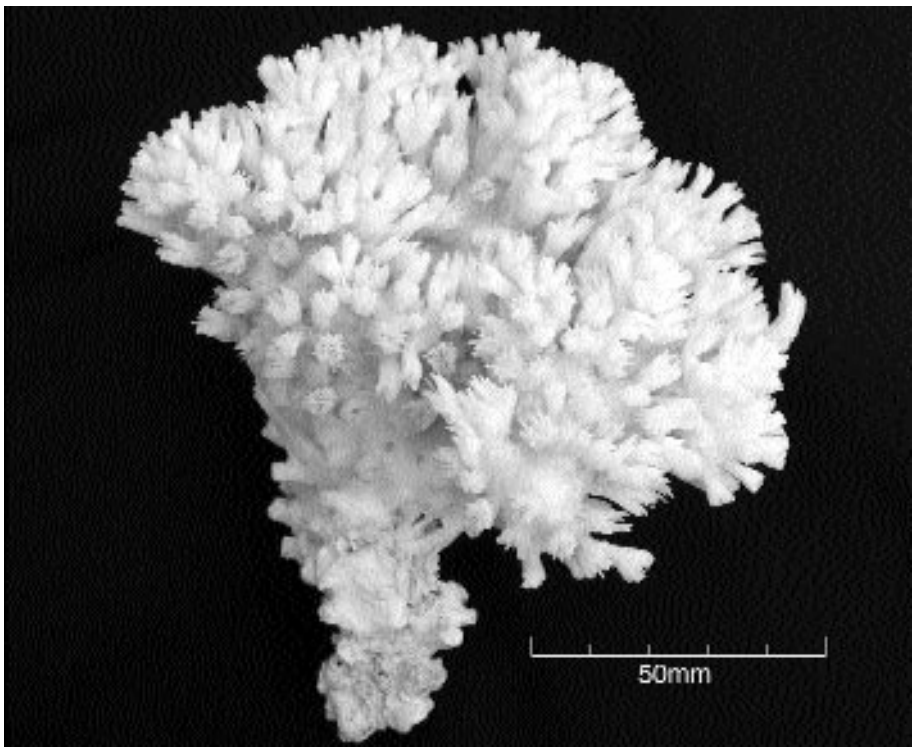

Figure 175. *Galaxea acrhelia,* holotype (G55824). From Milne Bay, eastern Papua New Guinea. From a mid reef slope protected from wave action. Showing the compact nature of branches.

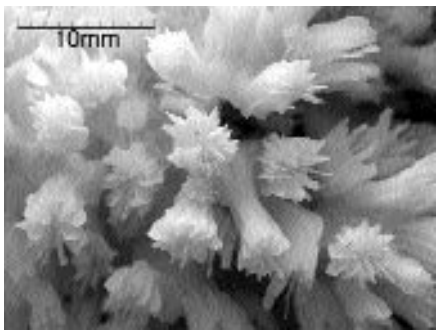

Figure 176. *Galaxea acrhelia,* holotype. Colony surface.

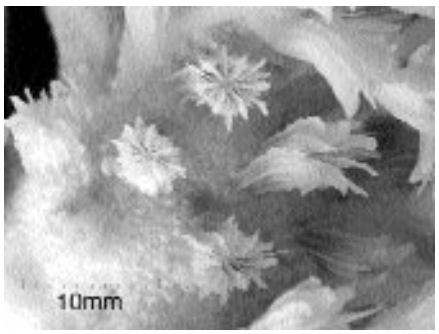

Figure 177. *Galaxea acrhelia,* holotype. Showing corallite and coenosteum detail.

Usually found in reef areas with good water circulation and light availability. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 115, figures 3-5, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are up to 2 m across and consist of short irregular intertwined branches that are highly fused. Branching occurs at any angle although most branches tend to be upright and are mostly distinct from branches formed of individual corallites. Corallites are up to 3.5 mm diameter. Larger corallites have two orders of 12 septa each. Primary septa reach the corallite centre where they fuse to produce a plug-like columella. Second order septa are short. Primary septa only are exsert. Two subequal orders of costae extend down the outer wall of all corallites, becoming submerged in coenosteum. The surface of main branches is composed of smooth coenosteum.

Affinities:
Galaxea acrhelia combines most of the characters of the genus *Galaxea* and the former genus *Acrhelia*. The close similarity of the corallites with those of *Galaxea horrescens* suggest genetic mixing between these species. These species can be reliably distinguished in the field.

The name:
So named because of the similarities between this species and the former genus *Acrhelia*.

Holotype:
Specimen G55824. The specimen is 120 mm maximum dimension. Collected by the author from approximately 15 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Usually uncommon although may be common in shallow clear water where there are tidal currents.

Habitat:
Upper reef slopes and canals where there is good water circulation and where the water is clear.

Distribution:
Coral Sea east to Vanuatu, Great Barrier Reef, eastern Papua New Guinea and the Indonesian-Philippines archipelago.

Galaxea longisepta Fenner and Veron, 2000

Original description: Veron (2000) Volume 2, page 116-7.

Characters: Colonies are small and always encrusting. Branches, if formed at all, are small and inconspicuous. Corallites are up to 4 mm diameter, with larger corallites near the colony centre, smaller ones at the periphery. They are widely separated. Septa are very long and irregular. They form three distinct cycles in larger corallites. Columellae are sometimes visible

deep within the corallite. The coenosteum is blistery. **Colour:** Dark green or brown with white corallite rims. **Similar species:** No other *Galaxea* is encrusting. *Galaxea acrhelia* and *G. horrescens* have similarly long, sabre-like septa. **Habitat:** Vertical rock faces protected from wave action. **Abundance:** Usually rare.

Previous illustrations:
Faulkner and Chesher (1979) Figure 137.

Veron (2000) Volume 2, page 116-7, figures 1-4, colour photographs of living coral and page 116, monochrome photograph of coral skeleton.

Synonymy:
Galaxea longisepta Fenner and Veron (2002): Veron (2002)

Skeletal detail:
Colonies are small (up to approximately 150 mm diameter) and always encrusting. Branches are seldom formed and if they are formed, consist of a few corallites only. Corallites are up to 4 mm diameter and 7-11 mm long. They tend to be trumpet shaped; narrow at the base and wide at the rim. Larger corallites mostly occur on central parts of colonies and are mostly upright, smaller corallites (as little as 2 mm diameter) mostly occur on the periphery where they are outwardly inclined. All are widely separated. Septa are very exsert and irregular in length and shape. They form three distinct cycles in larger corallites. Primary septa are up to 5 mm exsert and are sabre- or knife- shaped.

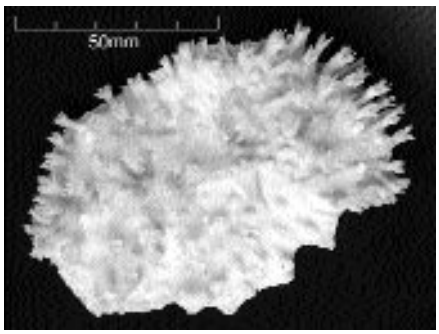

Figure 178. *Galaxea longisepta,* holotype (G55807). From Sulawesi, Indonesia. From a rock face protected from any wave action.

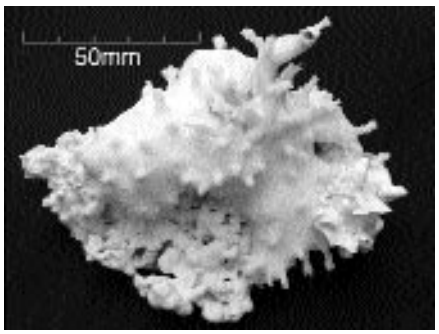

Figure 179. *Galaxea longisepta,* from Iriomote Island, Ryukyu Islands, Japan. From a rock face of a lower reef face where light levels are low. The colony has a large area of coenosteum and space corallites.

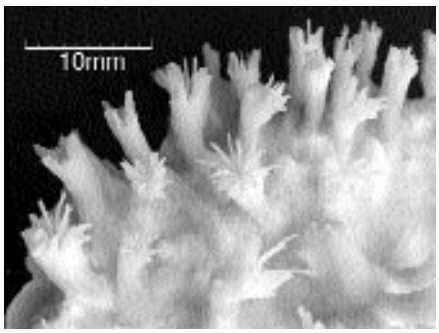

Figure 180. *Galaxea longisepta,* holotype. The edge of the colony showing the very exsert corallites and sabre-like septa.

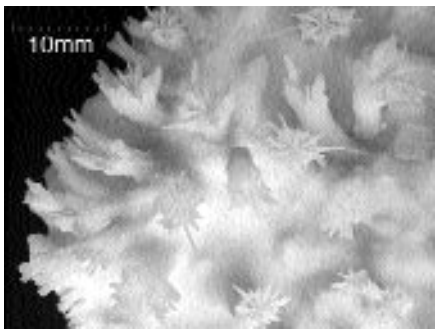

Figure 181. *Galaxea longisepta,* holotype. Showing corallite detail.

Columellae are sometimes visible deep within the corallite. The coenosteum on both the corallite wall and basal plate is blistery. Costae are weakly formed but usually extend the full length of corallites and may link adjacent corallites.

Affinities:
This is the only encrusting *Galaxea*. *Galaxea acrhelia* and *G. horrescens* have similarly long, sabre-like septa.

The name:
So named because this species develops exceptionally long septa.

Holotype:
Specimen G55807. The specimen is 98 mm maximum dimension. Collected by Doug Fenner from approximately 15 m depth, Sulawesi, Indonesia.

Abundance:
Usually rare, but sometimes common under overhangs.

Habitat:
Restricted to vertical or overhung rock faces protected from wave action. Most common at 10-30 m depth.

Distribution:
Great Barrier Reef of north-east Australia, Coral Sea reefs, eastern Papua New Guinea, Palau, the Indonesian-Philippines archipelago and the Ryukyu Islands of Japan.

Family Agariciidae, 1847

Genus *Leptoseris* Milne Edwards, Gray and Haime, 1849

Leptoseris striata Fenner and Veron, 2000

Original description: Veron (2000) Volume 2, page 212.

> **Characters:** Colonies are small (less than 50 mm across), partly encrusting and have one or several conspicuous central corallites. Peripheral corallites are small or may be absent. Peripheral corallites are inclined towards the colony margins and are distributed irregularly. They have small openings. Septo-costae are granulated and strongly alternate. These radiate from the central corallites giving the colony a striped appearance. **Colour:** Brown or yellowish with white margins and white tops to costae. **Similar species:** *Leptoseris scabra*, which has larger peripheral corallites which are not as strongly inclined and have larger openings. See also *L. hawaiiensis*, which also has striped costae but has much larger and better defined corallites. **Habitat:** Deep reef slopes. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 2, page 212, figure 1, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Leptoseris striata Fenner and Veron, 2000: Veron (2002)

There are very few nominal species (or named museum specimens) of *Leptoseris* which have a well developed central corallite(s) and few peripheral corallites. Type specimens of *Domoseris solida* Quelch, 1886, *Domoseris porosa* Quelch, 1886, *Leptoseris scabra* Vaughan, 1907 and *L. paschalensis* Wells, 1972 all have smaller peripheral as opposed to central corallites but not to the extent seen in *L. striata*; all have distinctive raised mounds near or between corallites unlike *L. striata* and all lack the distinctive costae of *L. striata*.

Skeletal detail:
Colonies less than 10 cm across and are thin plates. Central parts of plates are attached, peripheral parts are free or encrusting. Corallites only occur towards the colony centre where one corallite is conspicuous, the remainder less conspicuous or absent. Peripheral corallites if present are small and are inclined towards the colony margins and are distributed irregularly. They have almost no structural characters. Corallites have calices up to 10 mm diameter. There are two orders of septa that reach the columella. First order septa are 9-12 in number and are distinctively exsert. Second order septa alternate with these. Columeae consist of a few interlocking plates. Septo-costae radiate from the corallites to the margins. New septo-costae are inserted irregularly. All septo-costae are interspersed with coenosteum giving an alternating appearance. The radiating septo-costae give colonies a striate appearance.

Affinities:
Leptoseris scabra commonly has a distinctive central corallite (s) but also has raised mounds near or between corallites. An undescribed species occurring in Indonesia is closer to *L. striata* but remains little studied.

The name:
So named because of the costae make conspicuous striae on the fronds of living colonies.

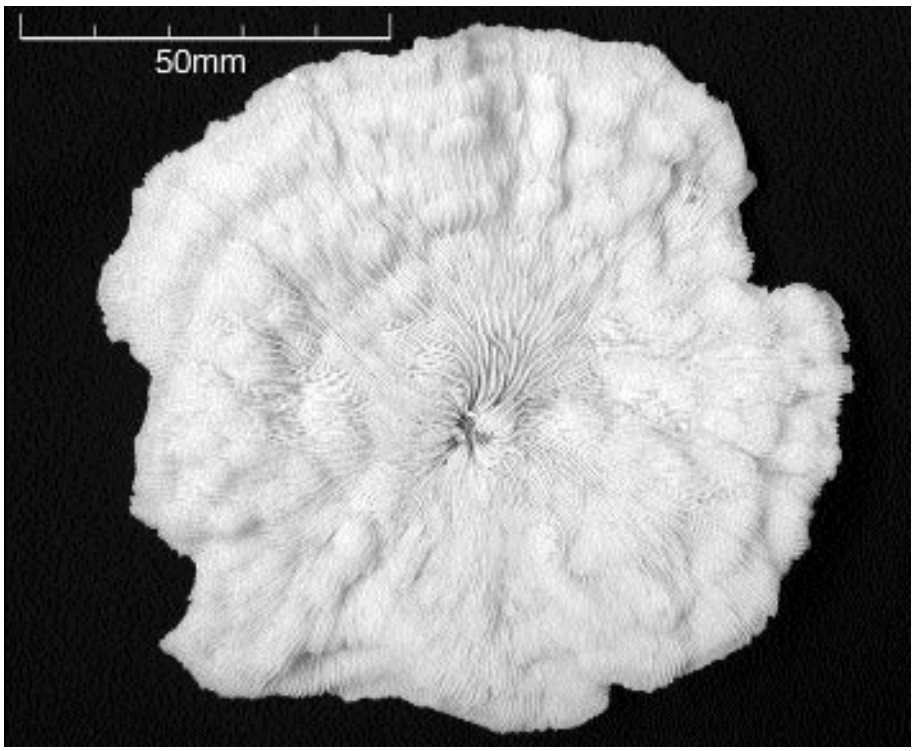

Figure 182. *Leptoseris striata,* holotype (WAM Z12913). From Scott Reef, north-west Australia.

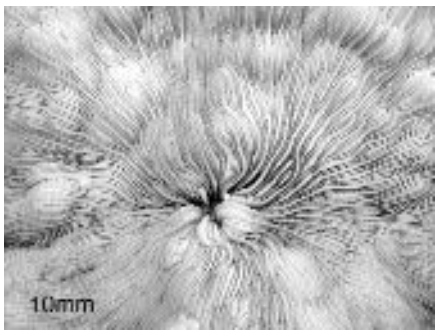

Figure 183. *Leptoseris striata,* holotype. Showing the central corallite.

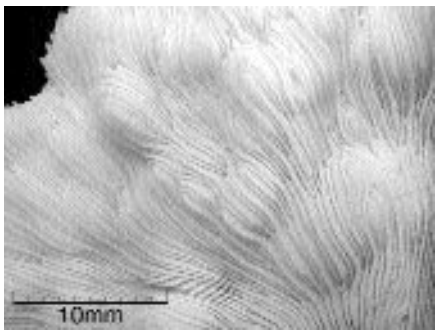

Figure 184. *Leptoseris striata,* holotype. Showing the corallum surface.

Holotype:
Specimen WAM Z12913. The specimen is 97 mm maximum dimension. Collected by the author from approximately 45 m depth, Scott Reef, north-west Australia.

Abundance:
Rare.

Habitat:
Deep reef slopes.

Distribution:
Known distribution is determined from very few specimens, from north-western Australia and eastern Papua New Guinea to the Indonesian-Philippines archipelago.

Family Fungiidae Dana, 1846

Genus *Cycloseris* Milne Edwards and Haime, 1849

Cycloseris colini Veron, 2000

Original description: Veron (2000) Volume 2, page 247.

> **Characters:** Polyps are circular and flat, with a small central dome and upturned margins. Septa are in two or three irregular orders at the central dome and form three indistinct orders at the margins. There is a slight lobe at the commencement of septa. Septal serrations are fine. Costae are very fine and indistinct. **Colour:** Brown. **Similar species:** *Cycloseris vaughani*, which has a smaller, thinner polyp disc without upturned margins. See also *Fungia concinna*. **Habitat:** Lower reef slopes. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 2, page 247, figure 4, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Polyps are circular, up to 250 mm across, thin and flat or with upturned margins. The central dome is small but distinctive. Septa are in two or three irregular orders at the central dome where one order is prominent. Three orders might be distinguished at the margins, but these are usually indistinct. There is a slight lobe at the commencement of septa. Septal serrations are fine. Costae are very fine and indistinct.

Affinities:
Cycloseris vaughani has a smaller, disc without upturned margins. *Fungia concinna* may have a similar disc size with upturned margins, but discs are much thicker and have more exsert septa and much more prominent, dentate, costae. This species combines the characters of *Fungia* and *Cycloseris* irrespective of whether these are considered as genera or subgenera.

The name:
Named after Dr Pat Colin who collected the holotype and contributed spectacular photographs to *Corals of the World*.

Holotype:
Specimen G55817. The specimen is 137 mm maximum dimension. Collected by Patrick Colin from approximately 30 m depth, Palau.

Abundance:
Formerly considered rare but may be common on deep flat substrates.

Habitat:
Lower reef slopes >40 m depth on soft substrates.

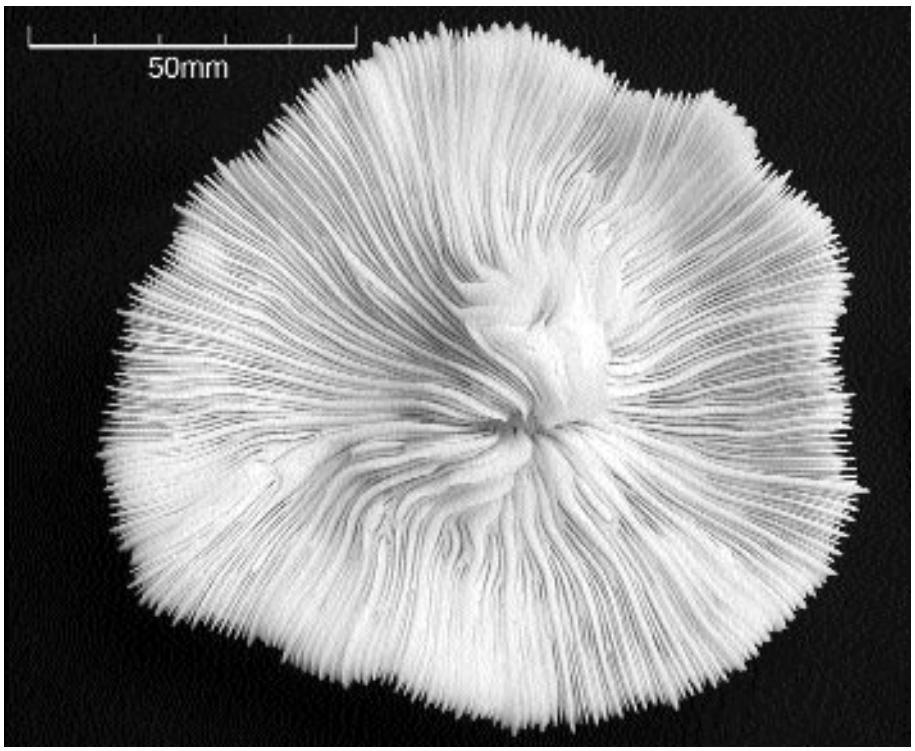

Figure 185. *Cycloseris colini,* holotype (G55817). From Palau.

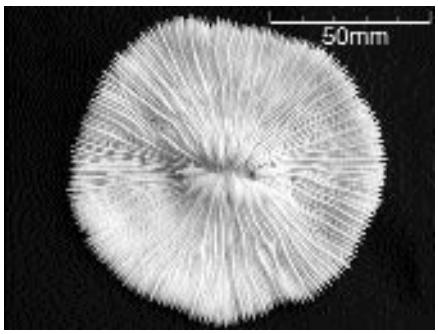

Figure 186. *Cycloseris colini,* from the Raja Ampat Islands, Irian Jaya, Indonesia.

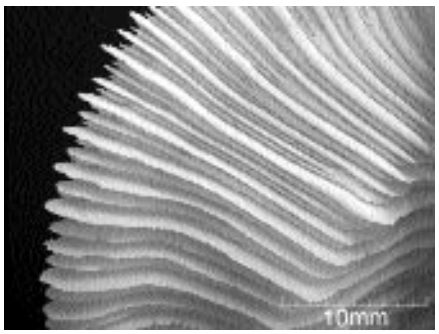

Figure 187. *Cycloseris colini,* from Palau. Showing septal detail.

Figure 188. *Cycloseris colini,* same colony as figure 187. Showing the undersurface.

Distribution:
Palau and eastern Indonesia.

Genus *Fungia* Lamarck, 1801

Fungia puishani Veron and DeVantier, 2000

Original description: Veron (2000) Volume 2, page 277.

Characters: Polyps are circular or oval, up to 125 mm diameter and strongly arched. Septa are densely packed and straight and have small blunt teeth. The axial mouth is well defined and the outer surface is covered with small peripheral mouths separated by septa of variable length. There are no tentacular lobes. **Colour:** Pale brown. **Similar species:** Septa are *Herpolitha*–like, otherwise the species resembles *Fungia scabra*. **Habitat:** Reef slopes and lagoons. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 277, figures 4-5, colour photographs of living coral and monochrome photographs of coral skeleton.

Figure 189. *Fungia puishani,* holotype (G55846). from Hawlaf, Socotra. From a shallow reef slope. Showing the high arched upper surface surface with peripheral mouths.

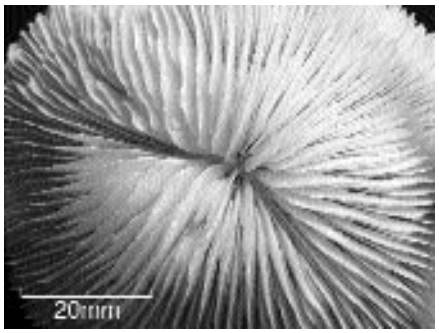

Figure 190. *Fungia puishani,* holotype. Showing the axial mouth.

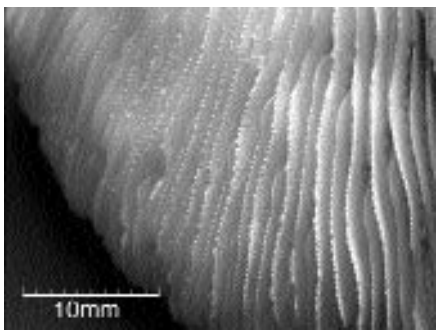

Figure 191. *Fungia puishani,* holotype. Showing detail of septa on the upper surface.

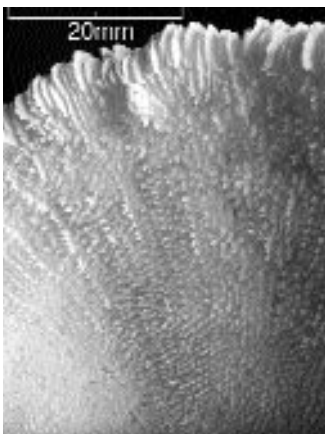

Figure 192. *Fungia puishani,* holotype. Showing detail of costae on the lower surface.

Synonymy:
Fungia puishani Veron and DeVantier, 2000: Veron and Turak (in prep.)
Specimens from Socotra and the Seychelles.

Skeletal detail:
Polyps are circular or oval, up to 125 mm diameter and strongly and uniformly arched forming a dome without a central dome. The under surface is correspondingly concave. Septa are densely packed thin and straight and have fine blunt dentations. The axial mouth is well defined and the outer surface is covered with small peripheral mouths separated by septa of variable length. There are no tentacular lobes. There is a slight alternation of septa on most parts of the upper surface. Costae are equal, finely serrated and extend to the corallum centre.

Affinities:
Closest to *Fungia scabra* which has similar thin septa with fine dentations, but differs in having a high arch and the formation of secondary mouths. Septa are *Herpolitha*–like in structure.

The name:
Named after Catherine Puishan Cheung.

Holotype:
Specimen G55846. The specimen is 103 mm maximum dimension. Collected by Lyndon DeVantier from between 3 and 8 m, Hawlaf, Socotra in the Gulf of Aden.

Abundance:
Common at a few sites along the north coast of Socotra, uncommon in the Seychelles.

Habitat:
Shallow reef slopes and lagoons.

Distribution:
Socotra and the Seychelles.

Genus *Sandalolitha* Quelch, 1884

Sandalolitha africana Veron, 2000

Original description: Veron (2000) Volume 2, page 299.

> **Characters:** Colonies are flat, oval or irregular in shape. Corallites are evenly spaced. Peripheral septa and costae are aligned at right angles to the colony margins while those in the central area are parallel to its long axis. There is no axial furrow. Septa are thin. **Colour:** Brown or greenish-brown. **Similar species:** *Sandalolitha dentata*, which has corallites mostly in the central area and lacks the parallel alignment of central septa. Septa are finer than other *Sandalolitha*. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 299, figures 4, 5, colour photographs of living coral and monochrome photograph of coral skeleton.

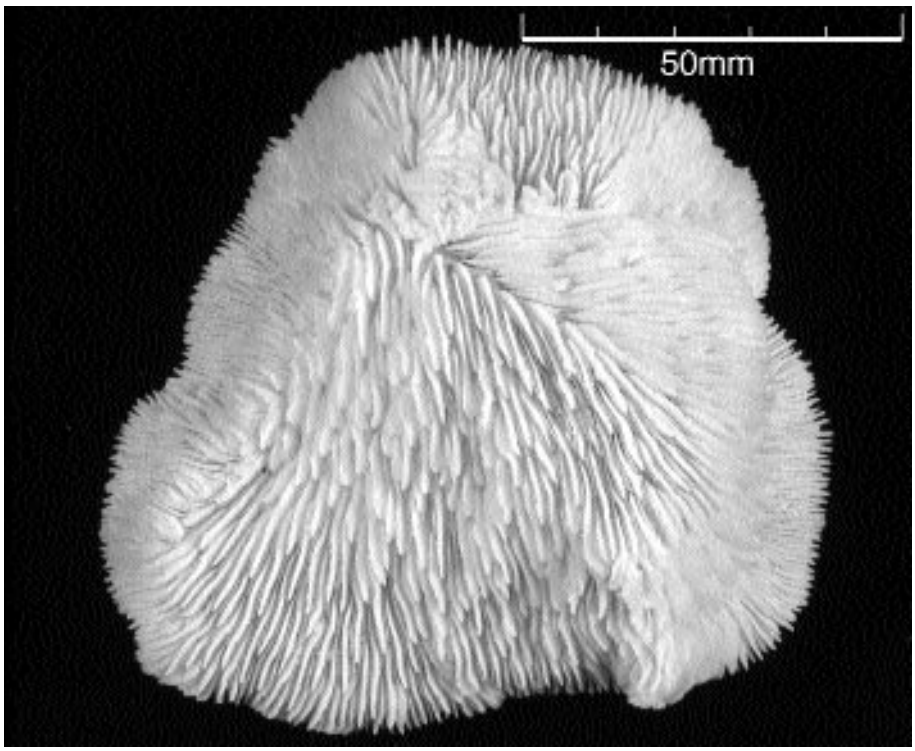

Figure 193. *Sandalolitha africana,* holotype (G55848). From the northern Red Sea coast of Saudi Arabia.

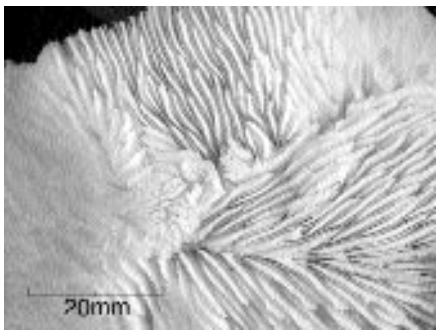

Figure 194. *Sandalolitha africana,* holotype. Surface of corallum.

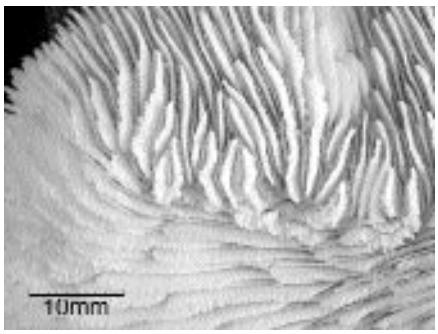

Figure 195. *Sandalolitha africana,* holotype. Detail of septa.

Synonymy:
None.

Skeletal detail:
Colonies are free-living, flat, oval or irregular in plan view, arched in side view. Corallite centres are indistinct and are evenly spaced over the corallum surface. In most colonies, peripheral septa and costae are aligned at right angles to the colony margins while those in the central area are parallel to its long axis. There is no axial furrow. Septa are thin (<1.5 mm thick) and average approximately 1 cm in length. Costae are fine, equal and finely serrated.

Affinities:
Sandalolitha dentata has septa of similar dimensions, but unlike *S. africana*, corallites are concentrated towards the colony centre and are not evenly dispersed. *Sandalolitha robusta* has evenly dispersed corallites like *S. africana* but septa are coarser and the different parallel alignment of septa in central and marginal groups occurs only rarely and only if the parent colony has been broken apart. Similar septal configeration occurs in *Polyphyllia novaehiberniae* and *Halomitra meierae*.

The name:
So named because this species appears restricted to the eastern African region.

Holotype:
Specimen G55848. The specimen is 130 mm maximum dimension. Collected by the author from 6 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Uncommon in all habitats.

Habitat:
Shallow reef environments.

Distribution:
Red Sea and Socotra.

Genus *Halomitra* Dana, 1846

Halomitra meierae Veron and Maragos, 2000

Original description: Veron (2000) Volume 2, page 300.

> **Characters:** Colonies are free-living, circular in outline and are flat or form a central dome. Most colonies are regenerated from fragments and thus have a central area of parallel septo-costae (the original fragment) surrounded by a border of peripheral septo-costae which are perpendicular to the margin. Mouths are distinctive in the central area, but are small or absent in peripheral areas. Septo-costae are in two or three orders. Septal spines are tall with elaborated teeth. **Colour:** Grey-brown. Mouths are not distinctively coloured. **Similar species:** *Halomitra pileus*, which may have a similar growth-form but is distinctly coloured, has more mouths, and has smooth septal spines. See also *Halomitra clavator*, which is relatively fragile, is usually attached, and has distinctive orders of septo-costae. **Habitat:** Sheltered habitats. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 2, page 300, figure 1, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
Halomitra meierae Veron and Maragos, 2000: Veron (2002)

Skeletal detail:
Colonies are free-living, circular in outline, up to 20 cm diameter and are flat or form a central dome. Most colonies are regenerated from fragments and thus have a central area of parallel septo-costae

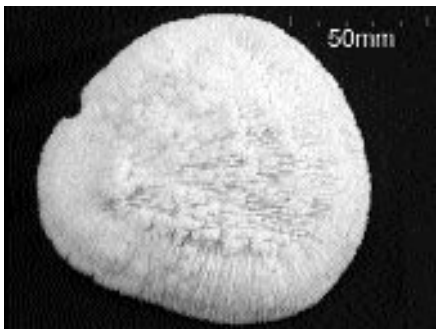

Figure 196. *Halomitra meierae,* holotype (G55799). From Bali, Indonesia. From a shallow reef slope. Showing extensive central area.

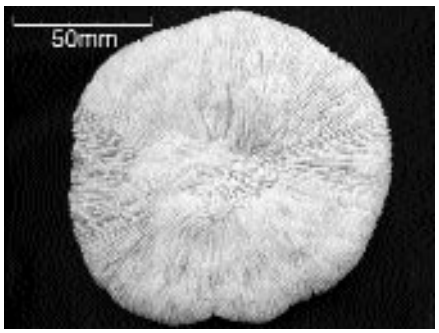

Figure 197. *Halomitra meierae,* from Bali, Indonesia. From a shallow reef slope. Showing a small central area.

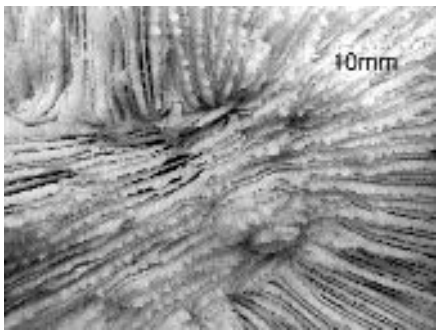

Figure 198. *Halomitra meierae,* same colony as figure 197. Showing detail of the central area and septa extending from it.

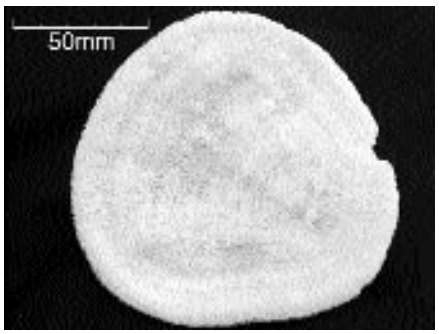

Figure 199. *Halomitra meierae,* holotype. Showing the undersurface of the colony.

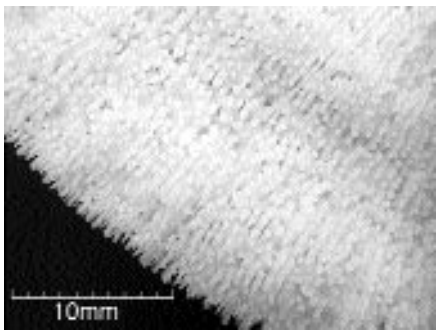

Figure 200. *Halomitra meierae,* holotype. Showing detail of costal.

(the original fragment) surrounded by a border of peripheral septo-costae which are perpendicular to the margin. Mouths are distinctive in the central area, but are small or absent in peripheral areas. Septo-costae are in two or three indistinct orders. Septal spines are tall with elaborated dentations which are covered by minute spinules. Dentations vary greatly, but are approximately 2 mm long, up to 3 mm high. Costae are uniform in size, uniformly cover the undersurface and are finely serrated.

Affinities:

Halomitra pileus may have a similar growth-form but is distinctly coloured, has more mouths, and has smooth septal spines. *Halomitra clavator* is relatively fragile, is usually attached, and has

distinctive orders of septo-costae and more distinctive mouths. There are also resemblances to *Sandalolitha*, especially *S. dentata*, which also fragments. The distinctions between these genera are arbitrary with the suite of species now recognised.

The name:
Named after Karin Meier, coral biologist, who first saw this species.

Holotype:
Specimen G55799. The specimen is 120 mm maximum dimension. Collected by Karin Meier from a shallow reef, Bali, Indonesia.

Abundance:
Uncommon.

Habitat:
Mid reef slopes protected from wave action.

Distribution:
Recorded only from Bali, Indonesia.

Genus *Podabacia* Milne Edwards and Haime, 1849

Podabacia sinai Veron, 2000

Original description: Veron (2000) Volume 2, page 314.

> **Characters:** Colonies are attached, laminar, unifacial and may form tiers. Plates usually have lobed margins and commonly have radiating costal ridges. Corallites are small and not inclined towards the plate margins. Septo-costae are similar to those of *Halomitra*. **Colour:** Pale brown with white margins. **Similar species:** *Podabacia motuporensis* is very similar, but has smaller corallites and finer costae. See also *P. crustacea*, which forms larger colonies and has larger corallites. **Habitat:** Most reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 2, page 314, figures 1-4, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are attached forming unifacial plates up to approximately 1 m diameter, which are commonly in tiers in larger colonies. Some colonies are almost entirely encrusting. Plates usually have lobed margins and commonly have radiating folds or ridges associated with septo-costae. Corallites have calices up to 3 mm wide and are mostly 3-10 mm apart. These tend to be in concentric rows. They are usually only slightly inclined towards the plate margins. Most corallites are indistinct being a fusion of 3-5 septo-costae to form a solid columella. Septo-costae are similar to those of *Halomitra* with irregular dentations covered with fine spinules. They commonly alternate. The undersurface of colonies is uniform mass of parallel, slightly serrated fine costae.

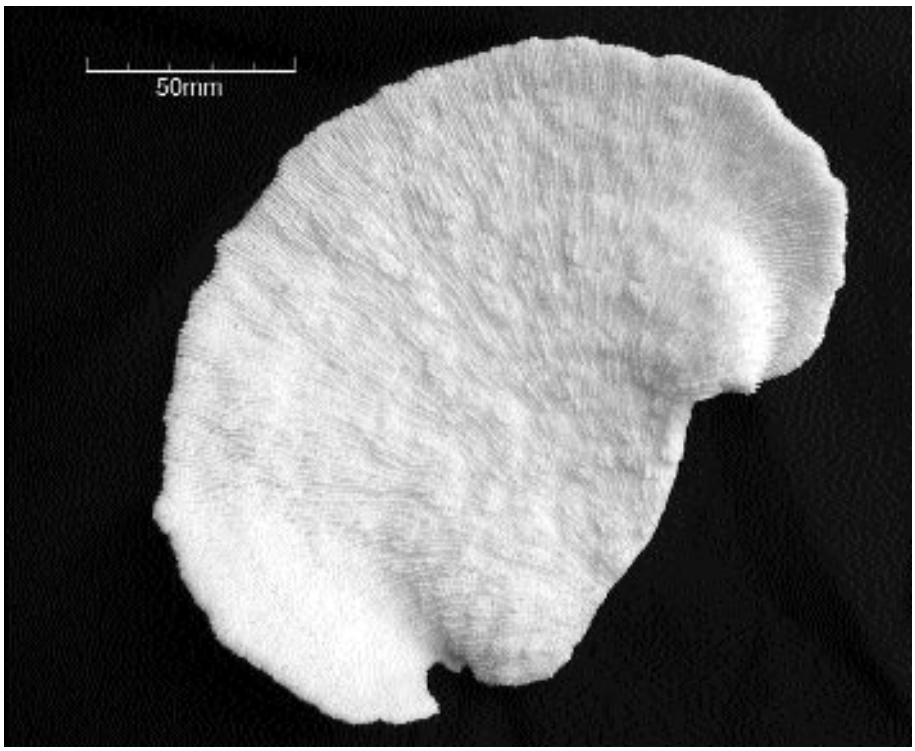

Figure 201. *Podabacia sinai,* holotype (G55793). From Sharm al-Sheikh, Sinai Peninsula, Egypt. From a reef slope at 15 metres depth.

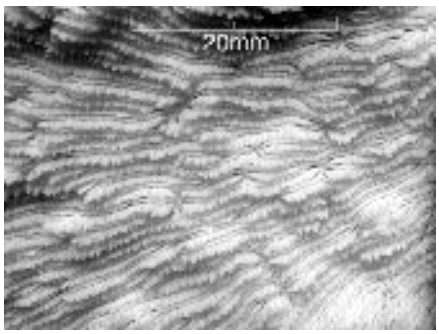

Figure 202. *Podabacia sinai,* holotype. Showing the corallum surface.

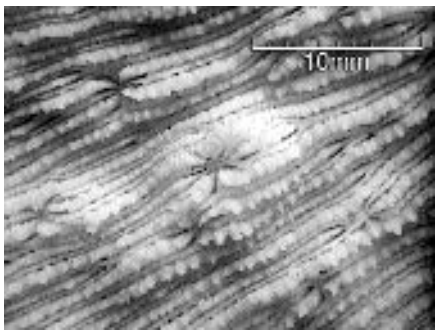

Figure 203. *Podabacia sinai,* holotype. Showing septal detail.

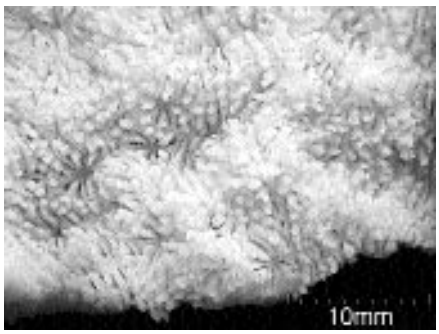

Figure 204. *Podabacia sinai,* from Sharm al-Sheikh, Sinai Peninsula, Egypt at 5 metres depth and exposed to wave action. Showing thickened septa structures.

Affinities:
Podabacia motuporensis is very similar, but has smaller corallites and finer costae. *Podabacia crustacea* forms larger colonies and has larger corallites.

The name:
So named because the holotype is from the Sinai Peninsula, Egypt.

Holotype:
Specimen G55793. The specimen is 180 mm maximum dimension. Collected by the author from approximately 15 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

Abundance:
Uncommon except in restricted habitats of the Sinai Peninsula.

Habitat:
Shallow to deep reef slopes protected from wave action.

Distribution:
Northern Red Sea.

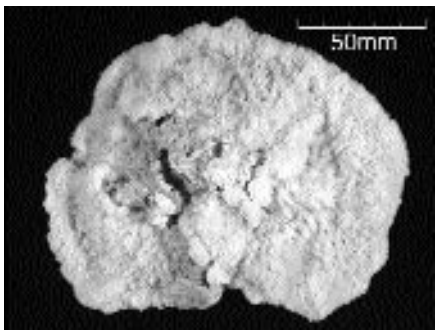

Figure 205. *Podabacia lankaensis,* holotype (G55852). From southern Sri Lanka.

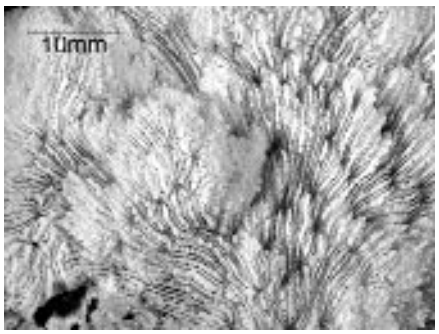

Figure 206. *Podabacia lankaensis,* holotype. Showing the contorted corallum surface.

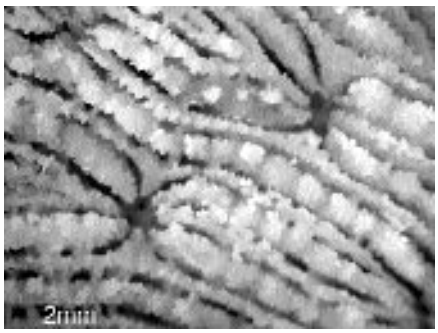

Figure 207. *Podabacia lankaensis,* holotype. Showing septal and corallite detail.

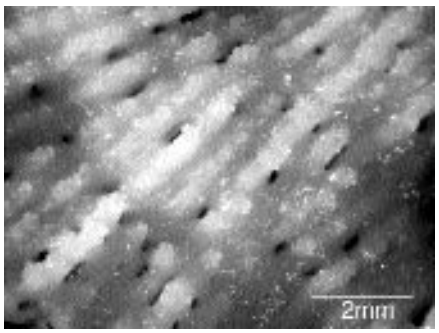

Figure 208. *Podabacia lankaensis,* holotype. Showing costal detail.

Podabacia lankaensis Veron, 2000

Original description: Veron (2000) Volume 2, page 315.

> **Characters:** Colonies are loosely attached or free-living, encrusting or laminar, unifacial, with irregularly lobed margins and an irregularly contorted surface. There is no central corallite. Peripheral corallites are inclined towards the plate margins. Septo-costae are similar to those of *Halomitra*. **Colour:** Grey-brown with white margins. **Similar species:** This species combines various characters of *Lithophyllon*, *Podabacia* and *Halomitra*. Corallites are smaller, less regular and more inclined on the colony surface than are those of *P. motuporensis*. **Habitat:** Shallow, horizontal, protected, partly turbid environments. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 2, page 315, figures 6, 7, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are loosely attached or free-living, encrusting or laminar. They are mostly thick highly contorted unifacial laminae with irregularly lobed margins. There is no central corallite. Corallites are approximately 3 mm wide and are mostly, but not always, inclined towards the plate margins. There are no columellae as corallites are deep excavations formed by the fusion of up to 6 septo-costae. They are therefore deep pits, approximately 0.5 mm diameter. Septo-costae are similar to those of *Halomitra* with coarse irregular dentations covered with spinules. They alternate on most parts of the colony surface. The undersurface of plates is a mass of parallel subequal costae separated by deep pits. These are finely serrated.

Affinities:
This species combines various characters of *Lithophyllon*, *Podabacia* and *Halomitra*. Corallites are smaller, less regular and more inclined on the colony surface than are those of *P. motuporensis* and are approximately equal in size to those of *P. crustacea*.

The name:
So named because the holotype is from Sri Lanka.

Holotype:
Specimen G55852. The specimen is 150 mm maximum dimension. Collected by the author from approximately 3 m depth, southern Sri Lanka.

Abundance:
Rare.

Habitat:
found only in shallow, horizontal, protected, partly turbid environments.

Distribution:
Recorded only from Sri Lanka.

Family Pectiniidae Vaughan and Wells, 1943

Genus *Echinophyllia* Klunzinger, 1879

Echinophyllia costata Fenner and Veron, 2000

Original description: Veron (2000) Volume 2, page 330.

> **Characters:** Colonies are thin delicate laminae with widely but uniformly spaced corallites. Corallites are well defined, becoming immersed, with indistinct walls. Septo-costae form parallel striations irrespective of the position of corallites. Most septa radiate from the corallite centre, but those adjoined to costae remain aligned with the costae. Septo-costae inside corallites are in three indistinct orders. Columellae consist of a few septal spines or are absent. **Colour:** Usually dark brown, sometimes grey. **Similar species:** No other *Echinophyllia* has septo-costae crossing corallites. *Echinophyllia pectinata* has similar thin laminae and corallites of similar size. **Habitat:** Shallow reef environments. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 2, page 330, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Echinophyllia costata Fenner and Veron, 2000: Veron (2002), Fenner (2002)

Skeletal detail:
Colonies are thin, delicate, side-attached laminae, less than 4 mm thick, which are sometimes arranged in tiers or whorls. Individual plates are evenly curved, 20-50 cm tall and 30-80 cm wide. Corallites are 3-20 mm apart, are well defined, mostly immersed, with indistinct walls. They are 3-6 mm diameter with circular or elliptical calices approximately 4 mm maximum dimension. They are 1-3 mm deep, being shallowest near the growing edge and deepest proximally. Septo-costae form roughly parallel striations irrespective of the position of corallites. Three orders can usually be recognised in most corallites. Primary septa are about 0.5 R, the others are restricted to the corallite wall. Columellae consist of a few septal spines or are absent. Costae are fine, equal and have fine dentations approximately 1 mm apart.

Affinities:
Echinophyllia pectinata (below) has similar thin laminae. Corallites are much larger and are immersed, with an indistinct wall.

The name:
So named because the dominance of the costae on the upper surface of fronds.

Holotype:
Specimen G55809. The specimen is 71 mm maximum dimension. Collected by Doug Fenner from approximately 22 m depth, Banai Island, Sulawesi, Indonesia.

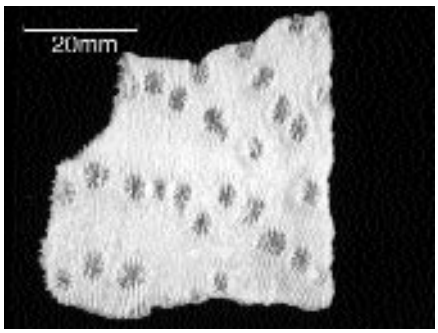

Figure 209. *Echinophyllia costata,* holotype (G55809). From Sulawesi, Indonesia.

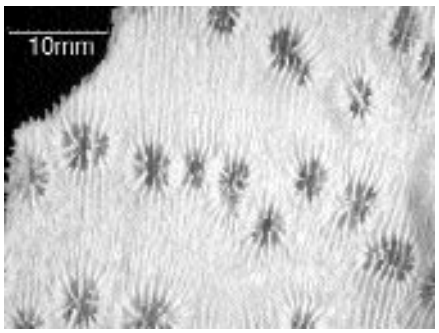

Figure 210. *Echinophyllia costata,* holotype. Showing the corallum surface.

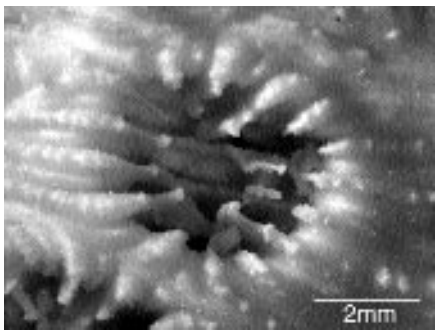

Figure 211. *Echinophyllia costata,* holotype. Showing corallite detail.

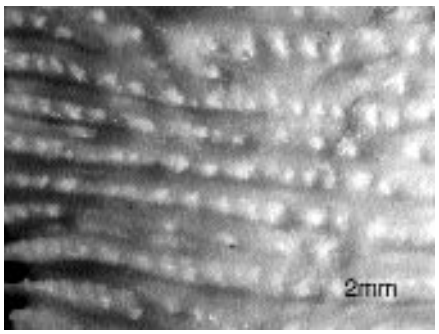

Figure 212. *Echinophyllia costata,* holotype. Showing detail of costae.

Abundance:
Known from a small number of specimens.

Habitat:
Shallow reef slopes protected from wave action.

Distribution:
Papua New Guinea and the Indonesian-Philippines archipelago.

Echinophyllia pectinata Veron, 2000

Original description: Veron (2000) Volume 2, page 331.

Characters: Colonies are thin, flat, encrusting laminae with widely spaced irregular corallites. A central corallite may be distinguishable. Most corallites are shallow, elliptical and concentrically arranged or irregular. Costae are exsert, equal, smooth and have a toothed lobe where they commence. There are perforations between the costae and the coenosteum is finely ridge. Columellae are small. **Colour:** Green or cream with pale costae. **Similar species:** Corallites resemble those of *Pectinia maxima* more than other *Echinophyllia* species. *Pectinia maxima* has upright bifacial fronds and a distinctive colouration. **Habitat:** Protected turbid reef environments, especially on steeply sloping surfaces. **Abundance:** Rare.

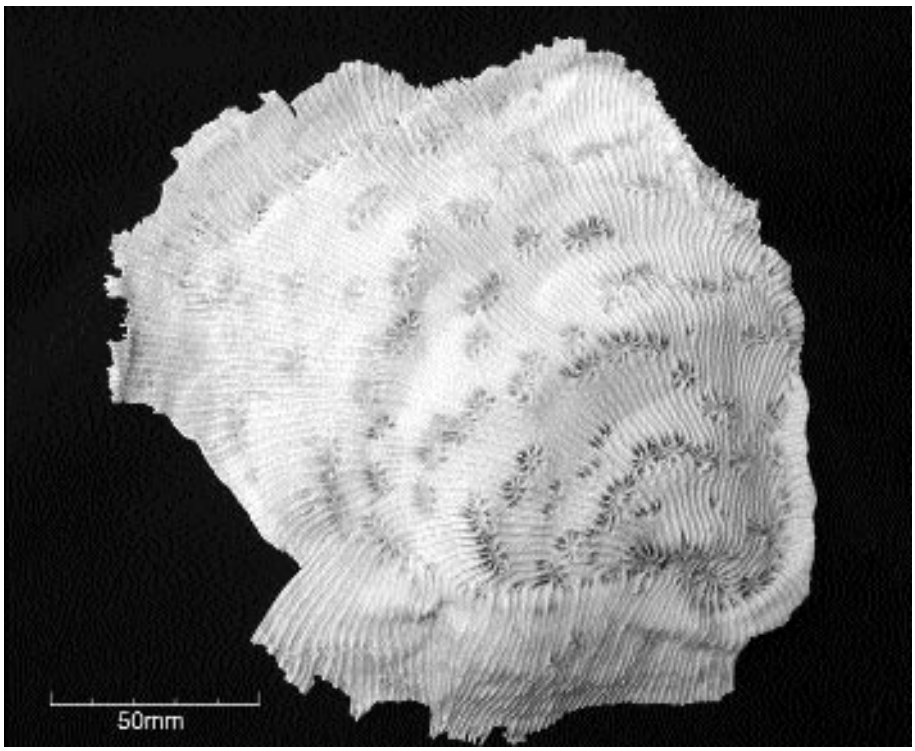

Figure 213. *Echinophyllia pectinata,* holotype (MSI-3004-CO). From the Calamian Islands, Palawan, Philippines.

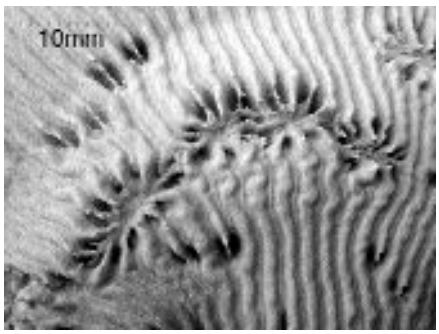

Figure 214. *Echinophyllia pectinata,* holotype. Showing the corallum surface.

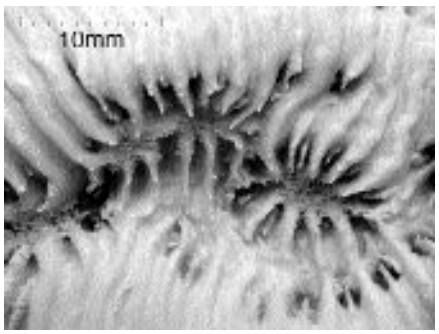

Figure 215. *Echinophyllia pectinata,* holotype. Showing corallite detail.

Previous illustrations:
Veron (2000) Volume 2, page 331, figure 1 colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
Echinophyllia pectinata Veron, 2000: Veron (2002)

Skeletal detail:
Colonies are thin, very delicate laminae, encrusting or centrally attached. Corallites are irregularly spaced, with some tendency to be concentric. Corallites are separated concentrically approximately 2-5 mm and radially approximately 20 mm. A central corallite may be distinguishable. Corallites are elliptical

in shape, up to 14 x 7 mm maximum dimensions. They are shallow, without any discernable theca. The smallest corallites are pits with one septum. The largest have two alternating orders of septa, up to 8 in each order. There are deep lacunae between the septa. All septa are strongly dentate. Costae are exsert, equal, smooth, and have a toothed lobe where they commence. There are perforations between the costae and the coenosteum is finely ridge. Columellae are mostly small, consisting of a few highly elaborated spines, but may be up to 3 mm wide and consist of highly fused dentations. The undersurface has widely spaced equal costae ornamented by dentations up to 10 mm apart.

Affinities:
Corallites resemble those of *Pectinia maxima* more than other *Echinophyllia* species. *Pectinia maxima* has upright bifacial fronds and a distinctive colouration. This species is placed in *Echinophyllia* and not *Pectinia* because it forms only flat plates and corallites are as distinct, as they are in other *Echinophyllia*.

The name:
So called because this species has close similarity with the genus *Pectinia*.

Holotype:
Specimen MSI-3004-CO. The specimen is 194 mm maximum dimension. Collected by the author from approximately 25 m depth, Calamian Islands, Palawan, Philippines.

Abundance:
Known from a small number of specimens.

Habitat:
Protected turbid reef environments, especially on steeply sloping surfaces.

Distribution:
The Indonesian-Philippines archipelago.

Genus *Oxypora* Saville-Kent, 1871

Oxypora convoluta Veron, 2000

Original description: Veron (2000) Volume 2, page 340.

> **Characters:** Colonies are thin, highly contorted laminae. They may be up to 2 metres across. Laminae frequently form compact tiers which may become so contorted that they form chimneys. They have ragged margins. Costal spines are prominent. Corallites are small, with few costae and are often difficult to distinguish among costal spines. **Colour:** Grey, sometimes with white margins. **Similar species:** *Oxypora lacera*, which may have highly convoluted laminae, but these are less convoluted than those of the present species and seldom form tiers. *Oxypora lacera* also has more distinct corallites. See also *Oxypora glabra*, which may have fronds of similar shape. **Habitat:** Protected reef environments. **Abundance:** Uncommon but conspicuous.

Previous illustrations:
Veron (2000) Volume 2, page 340, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

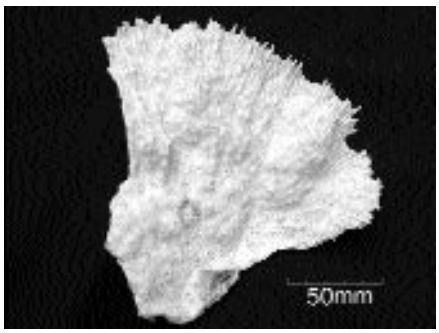

Figure 216. *Oxypora convoluta,* holotype (G55792). From Sharm al-Sheikh, Sinai Peninsula, Egypt.

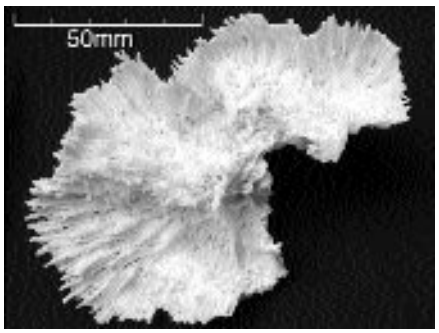

Figure 217. *Oxypora convoluta,* from Sharm al-Sheikh, Sinai Peninsula, Egypt. A lamina from the lower part of a colony.

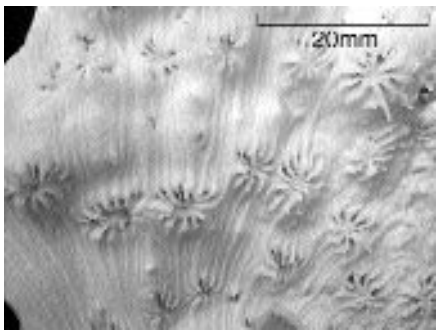

Figure 218. *Oxypora convoluta,* holotype. Showing the corallum surface.

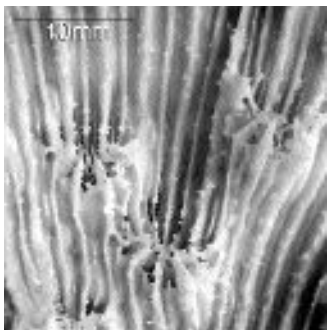

Figure 219. *Oxypora convoluta,* from Sharm al-Sheikh, Sinai Peninsula, Egypt. Showing corallite detail.

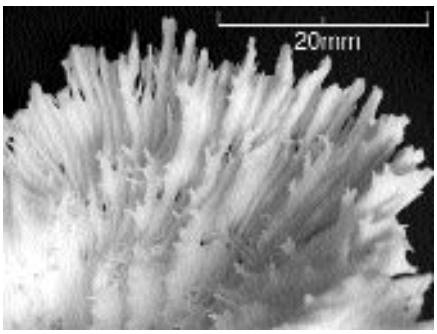

Figure 220. *Oxypora convoluta,* same colony as figure 217. Showing skeletal detail at the edge of a plate.

Synonymy:
None.

Skeletal detail:
Colonies may be up to 1.5 metres across. They are thin, highly contorted laminae, which tend to form compact tiers towards the colony base and be upright or form tubular chimneys towards the colony top. Laminae, including chimneys, are unifacial. They have ragged margins caused by projecting costae. Costal spines are prominent and highly irregular in height and thickness. The largest costae have thick irregular dentations up to 3 mm wide, with spine-like elaborations at their tips. Most costae have insertion pits and

larger septa have 1-3 tall dentations. Corallites are up to 4 mm maximum dimension. Septa are very irregular and do not form orders. Columellae usually consist of a few highly fused septal spines forming a solid boss which may be indistinguishable from septa, especially in small corallites. There are deep lacunae between septa. The undersurface consists of irregular contorted laminae ornamented by widely spaced sharp spines.

Affinities:
Closest to *Oxypora lacera*, which may have highly convoluted laminae, but these are less convoluted than those of the present species and seldom form tiers. Corallites are more distinct corallites, costal spines are fine and highly elaborated and columellae are better developed. *Oxypora glabra* may have fronds of similar shape but other characters, especially those of the costae are very different.

The name:
So called because of the convoluted structure of colony fronds.

Holotype:
Specimen G55792. The specimen is 190 mm maximum dimension. Collected by the author from approximately 20 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

Abundance:
Uncommon but conspicuous.

Habitat:
Protected reefs slopes, especially where diversity is high.

Distribution:
Recorded only in the Red Sea.

Oxypora egyptensis Veron, 2000

Original description: Veron (2000) Volume 2, page 341.

> **Characters:** Colonies are submassive or form thick laminae. They may be over one metre across. Corallites are large (up to 15 mm diameter) on older parts of colonies, becoming smaller towards the periphery of laminae. Large corallites may be up to 15 mm exsert and occasionally have daughter corallites budded from their walls. Peripheral corallites are usually inclined towards the margins of laminae. Costae are large and have few if any teeth. Septa and columellae may be twisted into a short spiral. **Colour:** Yellow-brown. **Similar species:** *Oxypora glabra*, which has smaller corallites. Peripheral corallites are similar to those of *Mycedium*. **Habitat:** Shallow reef slopes. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 2, page 341, figure 1 colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies may be over one metre across and are submassive or form thick laminae. Laminae mostly encrust the substrate, but may have free margins. Corallites are large (up to 15 mm diameter) on older parts of

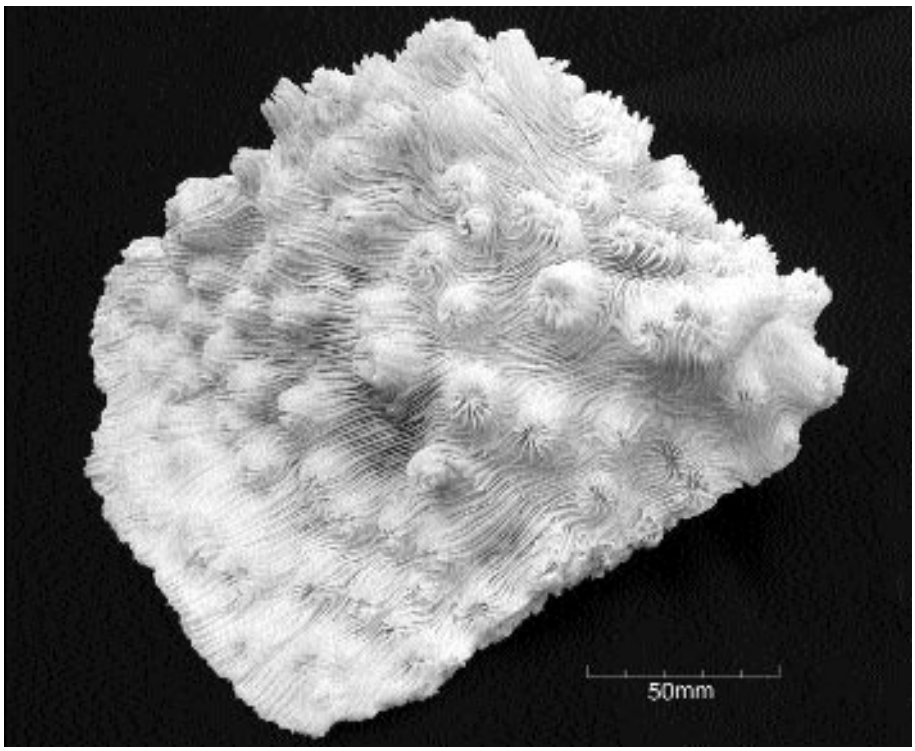

Figure 221. *Oxypora egyptensis,* holotype (G55784). From eastern Sinai Peninsula, Egypt.

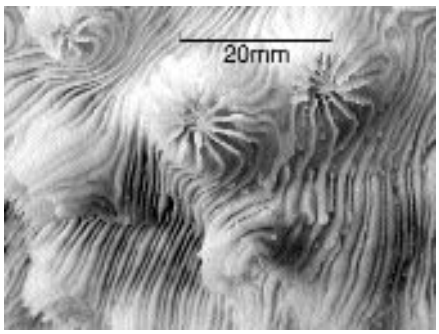

Figure 222. *Oxypora egyptensis,* holotype. Showing the corallum surface.

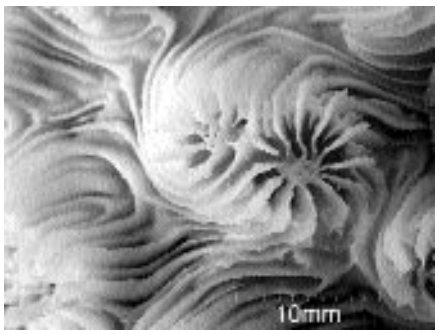

Figure 223. *Oxypora egyptensis,* holotype. Showing corallite detail.

colonies, becoming smaller towards the periphery of laminae. Large corallites may be up to 15 mm exsert and occasionally have daughter corallites budded from their walls. Peripheral corallites are usually inclined towards the margins of laminae. Walls are well-defined and very thin. Septo-costae are thin and high and are finely serrated or smooth-edged, with few if any conspicuous dentations. They usually alternate and may be twisted into a short spiral. Columellae consist of a few twisted spines or are absent. The coenosteum between the costae is smooth and blistered. Costae insertion pits are present, but uncommon.

Affinities:
Oxypora glabra has smaller corallites with septo-costae distinctively exsert over the walls. Peripheral corallites are similar to those of *Mycedium* species but these are inclined on the frond surface and pits at the insertion of costae are absent.

The name:
So called because the holotype is from Egypt.

Holotype:
Specimen G55784. The specimen is 196 mm maximum dimension. Collected by the author from approximately 15 m depth, eastern Sinai Peninsula, Egypt.

Abundance:
Rare.

Habitat:
Shallow reef slopes.

Distribution:
Known only from the Red Sea.

Genus *Mycedium* Oken, 1815

Mycedium umbra Veron, 2000

Original description: Veron (2000) Volume 2, page 342.

> **Characters:** Colonies are laminar or encrusting. Corallites are up to 15 mm diameter, nose-shaped and face outward towards the colony perimeter. Septa and columellae are well developed and costae form outwardly radiating ribs on the colony surface. Costae have few ornamentations and costal ridges extend towards the periphery from the edge of corallites. The coenosteum is never pitted at the commencement of new septo-costae. Tentacles are extended only at night. **Colour:** Upper or peripheral parts of colonies are yellowish brown while older parts are iridescent purple-grey. **Similar species:** *Mycedium elephantotus*, which has a very wide range of corallite structures and colours. The present species has a distinctive colouration, tends to be more convoluted, has more widely spaced corallites and has costal ridges extending outward from the edges of corallites. Costal spines are less prominent. **Habitat:** Most reef environments protected from strong wave action. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 2, page 342, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Sheppard and Sheppard (1991), figures 112a, 112b, plate 73, and Scheer and Pillai (1983), plate 36, figures 1, 2 (both as *Mycedium elephantotus).*

Synonymy:
Mycedium elephantotus (Pallas, 1766): Head (1980), Scheer and Pillai (1983), Sheppard and Sheppard (1991), not *Madrepora elephantotus* Pallas (1766)

This species is what has commonly been called *Mycedium elephantotus* or (it's junior synonym, *M. tubifex*) in the Red Sea.

Figure 224. *Mycedium umbra,* holotype (G55783). From eastern Sinai Peninsula, Egypt.

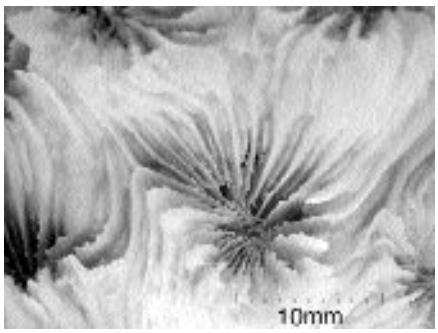

Figure 225. *Mycedium umbra,* holotype. Showing corallite detail.

Skeletal detail:
Colonies may be over 1 metre diameter and are mostly highly contorted laminae which are primarily horizontal towards the margins, becoming more upright towards the colony centre. Corallites are nariform and inclined towards the colony perimeter. They may be aligned concentrically and are sometimes joined to form short valleys parallel with the frond margin. When not joined they are 7-15 mm wide. Septo-costae may alternate near corallites. They are mostly perpendicular to plate margins. Finer septo-costae usually have irregular dentations, larger septo-costae usually have smooth margin. Columellae are composed of a compact tangle of septal dentations up to 3 mm wide. The coenosteum is smooth and blistered and is not pitted at the insertion of new septo-costae. The undersurface is uniformly costate, the costae having irregular widely spaced dentation as well as fine closely spaced sharp serrations less than 0.3 mm high.

Affinities:
This species is clearly very similar to *Mycedium elephantotus*, which has a very wide range of corallite structures. *Mycedium umbra* has a distinctive colouration (illustrated in Veron, 2000), tends to be more convoluted, has more widely spaced corallites and more prominent costal spines. There are minor skeletal differences, but these are too environmentally variable to be reliable distinctions. These two species require further study in the Red Sea.

The name:
So called because of the shadowy colouration of the fronds.

Holotype:
Specimen G55783. The specimen is 130 mm maximum dimension. Collected by the author from approximately 10 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

Abundance:
Common in a wide range of habitats.

Habitat:
Most reef environments protected from strong wave action.

Distribution:
Found only in the Red Sea and Socotra.

Mycedium steeni Veron, 2000

Original description: Veron (2000) Volume 2, page 347.

> **Characters:** Colonies are extremely delicate, usually less than 0.3 metres across, and are composed of small thin unifacial fronds forming whorls. Individual fronds have up to 15 corallites which decrease in size from approximately 6 mm diameter near the base to 4 mm diameter near the margins. Costae are prominent and radiate from the base to the margins. Corallites are superficial, composed primarily of a few septo-costae and small columellae. **Colour:** Pale brown. **Similar species:** *Mycedium robokaki* has slightly larger corallites which are much more exsert and fronds are much larger. **Habitat:** Sheltered reef slopes with turbid water. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 2, page 347, 4-6 colour photographs of living coral. *Erratum*: the monochrome figure on page 347 is incorrect, see present publication.

Synonymy:
Mycedium steeni Veron, 2000: Veron and Fenner (2000)

Skeletal detail:
Colonies consist of thin fronds arranged in whorls up to 300 mm diameter. Colonies mostly consist of less than 10 fronds. The upper surfaces of fronds are dominated by costae which project beyond the margin, giving fronds a saw-like edge. The under surfaces of fronds are smooth but have microscopic granules giving a frosted appearance. Costae are very conspicuous, are approximately 1mm wide and have no insertion pits. They are conspicuously granulated, the granules being uniformly spaced and visible without magnification. They occur on the sides well as the margin of costae. Individual fronds have up to 15 corallites which decrease in size from approximately 6 mm diameter near the base to 4 mm diameter near the margins. Corallites are arranged roughly concentrically. They may come into contact laterally forming concentric rows. The first row of centres is approximately 40 mm from the outer margin of laminae. Corallites consist of little more than a diffuse tangle of highly fused columella spines 0.5-1.0 mm thick. These spines are granulated, the granules sometimes being conspicuous. There is almost no septal development. The sterome between the costae is smooth and thin.

Affinities:
The closest species is *Mycedium robokaki* Moll and Borel-Best, 1984 which forms larger colonies with larger and much more developed corallites.

The name:
Named after Roger Steene, marine photographer who contributed many photographs to *Corals of the World* and *Coral ID* (Veron and Stafford-Smith, 2002).

Holotype:
Specimen MSI-3011-MSI. The specimen is 87 mm maximum dimension. Collected by the author from approximately 6 m depth, Calamian Islands, Palawan, Philippines. Photographed *in situ*, Veron (2000) Volume 2, page 347, figure 5 and 6.

Abundance:
Rare.

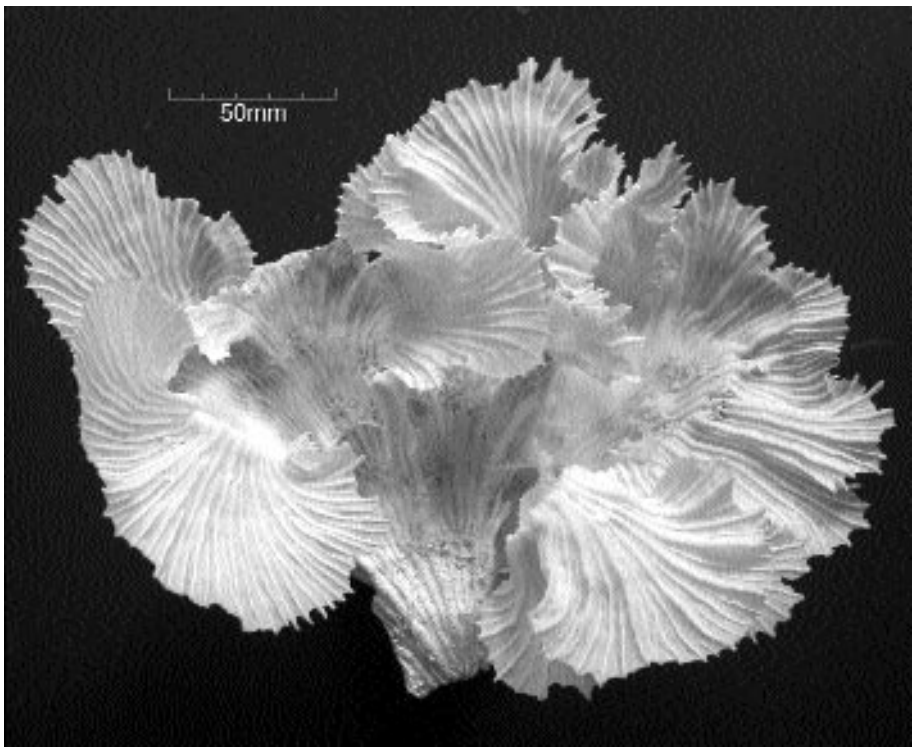

Figure 226. *Mycedium steeni,* holotype (MSI-3011-CO). From the Calamian Islands, Palawan, Philippines.

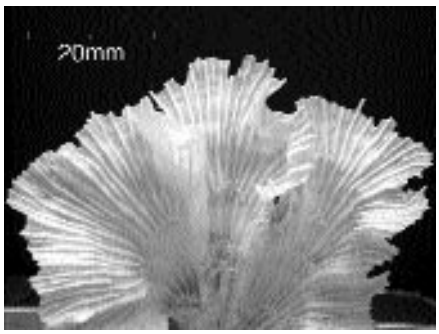

Figure 227. *Mycedium steeni,* holotype. Showing the surface of a frond.

Figure 228. *Mycedium steeni,* holotype. Showing corallite detail.

Habitat:
Shallow, well protected coral communities where the water is clear and circulation good.

Distribution:
The Indonesian-Philippines archipelago.

Genus *Pectinia* Oken, 1815

Pectinia africanus Veron, 2000

Original description: Veron (2000) Volume 2, page 353.

Characters: Colonies are usually less than 0.3 metres across and hemispherical or flattened. Valleys are contorted but mostly extend from the colony centre towards the periphery. Walls are short, sometimes with short spires. Columellae are weakly developed. Septa are smooth or have small teeth. **Colour:** Green and grey with valleys and walls commonly of contrasting colours. **Similar species:** *Pectinia lactuca*, which has larger, less contorted valleys. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

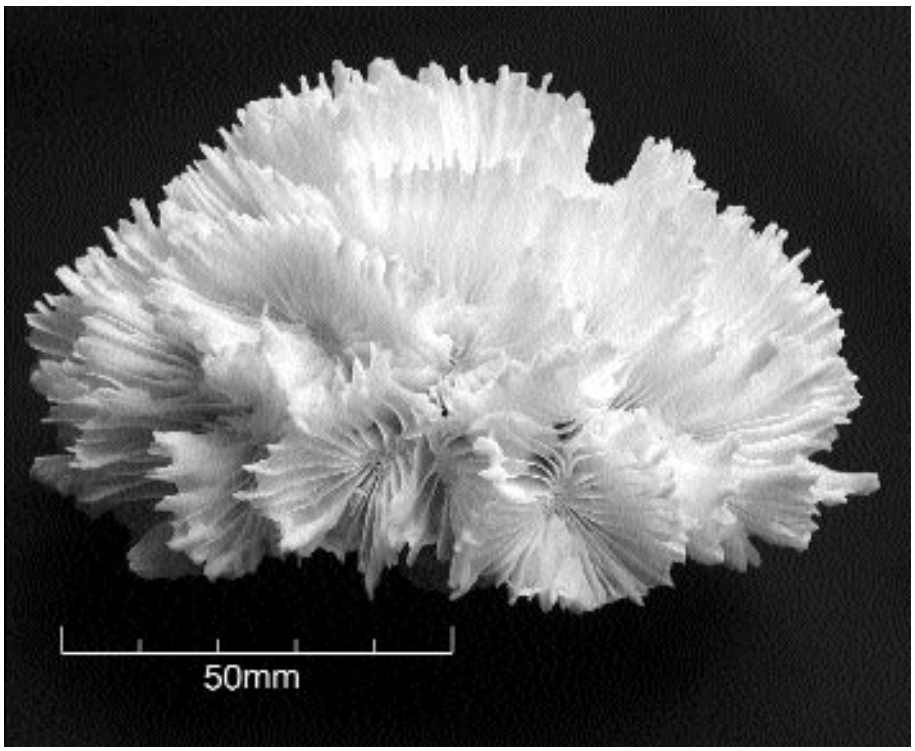

Figure 229. *Pectinia africanus,* holotype (G55856). From Chumbe Island, Zanzibar, Tanzania.

Figure 230. *Pectinia africanus,* holotype. Showing valleys at the side of the colony.

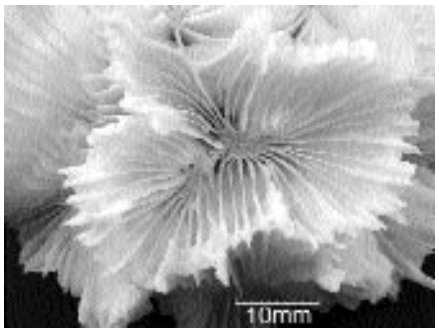

Figure 231. *Pectinia africanus,* holotype. Showing corallite detail.

Previous illustrations:
Veron (2000) Volume 2, page 353, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Pectinia africanus Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies are usually less than 0.3 metres across and hemispherical or flattened. Valleys are sinuous, especially towards the colony centre, but mostly extend from the centre towards the periphery. Walls are thin and acute and sometimes have short spires. Valleys are 10–15 mm wide and up to 18 mm deep. Septa form one order and are smooth-edged or have fine dentations deep in the valleys. Septa of adjacent valleys are adjoined above the wall where they are up to 5 mm exsert giving walls a ragged appearance. Columellae are irregular in shape and consist of compact septal dentations up to 8 mm wide. The undersurfaces of fronds have high, thin, widely spaced costal ridges interspersed with blistered coenosteum.

Affinities:
Pectinia lactuca has larger, straighter valleys with more even walls. *Pectinia paeonia* has much less valley formation.

The name:
So named because this species seems to be restricted to the African coast.

Holotype:
Specimen G55856. The specimen is 111 mm maximum dimension. Collected by the author from approximately 10 m depth, Chumbe Island, Zanzibar, Tanzania.

Abundance:
Uncommon but distinctive.

Habitat:
Shallow reef environments.

Distribution:
South-western Indian Ocean.

Pectinia pygmaeus Veron, 2000

Original description: Veron (2000) Volume 2, page 361.

> **Characters:** Colonies are thickets of spire-like branches. Branches are twisted and tapered and form sub-branches at obtuse angles. Corallite centres occur primarily where branches divide. All corallite structures are fine. **Colour:** Pale brown. **Similar species:** *Pectinia teres* and *P. elongata* both of which have similar growth-forms where colonies consist primarily of spires, but both have much larger skeletal structures. From a distance may be mistaken for finely branched *Seriatopora* (Pocilloporidae). **Habitat:** Lower reef slopes, especially with turbid water. **Abundance:** Locally common.

Previous illustrations:
Veron (2000) Volume 2, page 361, figures 4-6, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies may be several metres across and consist of a loose tangle of spire-like or pointed branches. Branches are flattened, approximately 3 mm wide distally and up to 8 mm wide proximally. They are twisted and tapered and form sub-branches at obtuse angles. Corallite centres occur primarily where branches divide. Corallites are rounded, 4-7 mm diameter. Septa and costae are mostly distinct. Thecae are not visible. Septa are of variable length and are highly fused with each other and with the columella, which is an indistinct fusion of septal dentations. Septa increase in height towards the centre of the corallite. Each has 1-4 spines which also increase in height towards the corallite centre. Costae are fine, thin, irregular in height and have widely spaced sharp dentations. The undersurface of branches are smooth except for widely spaced, fine costae which are finely beaded.

Affinities:
Pectinia teres and *P. elongata* both have similar growth-forms, where colonies consist primarily of spires or pointed branches, but both have much larger skeletal structures.

The name:
So named because to the small size of colonies.

Holotype:
Specimen G55829. The specimen is 115 mm maximum dimension. Collected by the author from approximately 50 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Common in some habitats and may be a dominant species in small areas.

Habitat:
Lower reef slopes where the water is turbid and were there is total protection from currents and wave action.

Distribution:
Eastern Papua New Guinea.

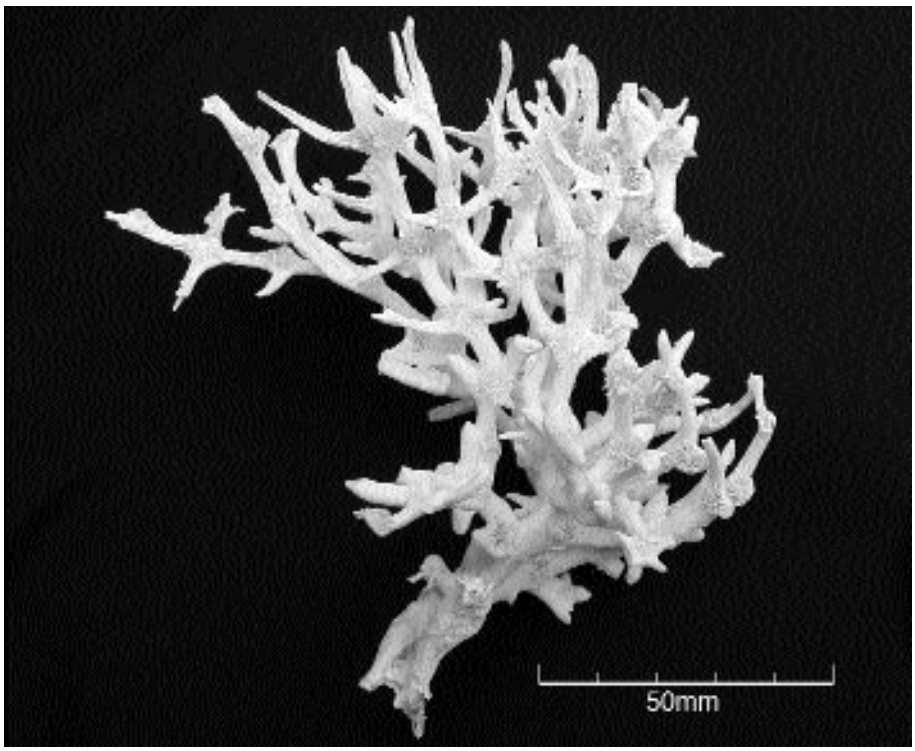

Figure 232. *Pectinia pygmaeus,* holotype (G55829). From Milne Bay, eastern Papua New Guinea.

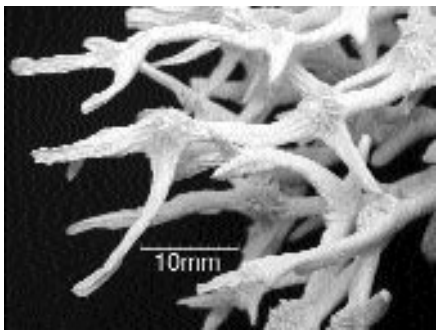

Figure 233. *Pectinia pygmaeus,* holotype. Showing colony branch ends.

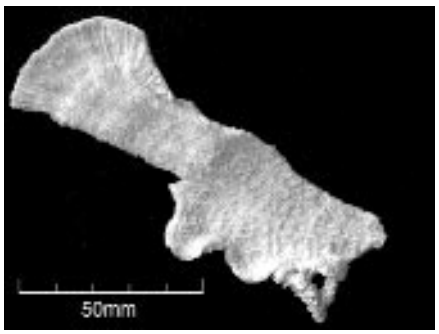

Figure 234. *Pectinia pygmaeus,* holotype. Showing corallite detail.ends.

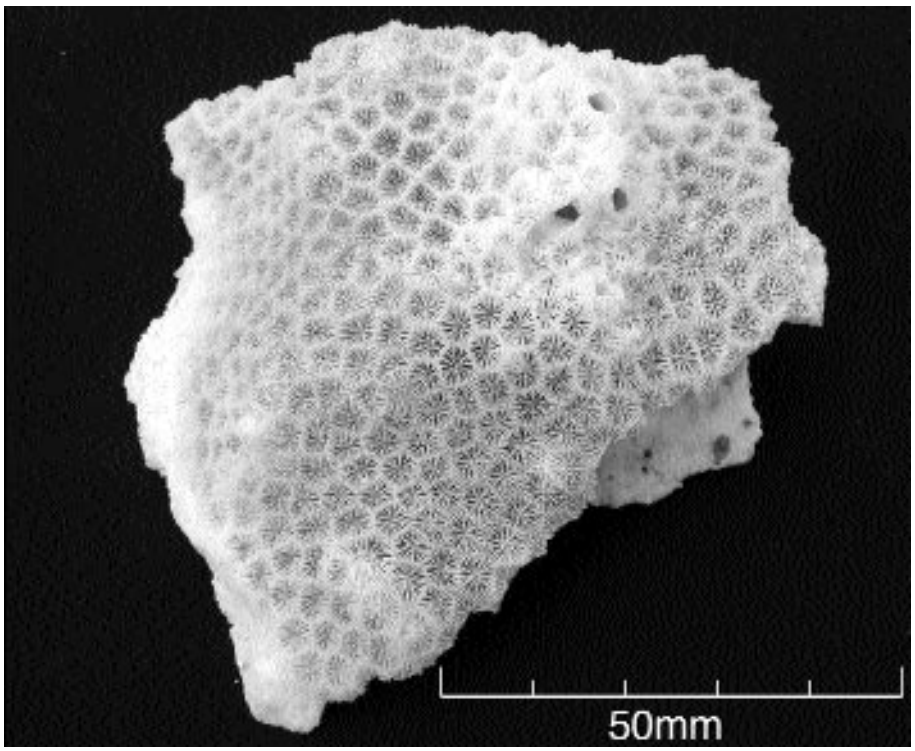

Figure 235. *Micromussa diminuta,* holotype (G55851). From southern Sri Lanka.

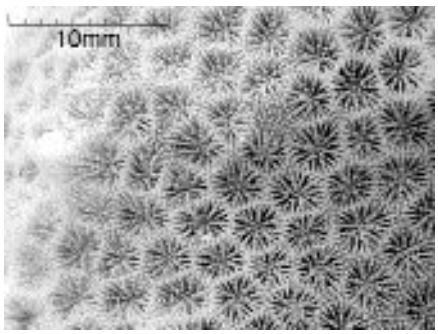

Figure 236. *Micromussa diminuta,* holotype. Showing the colony surface.

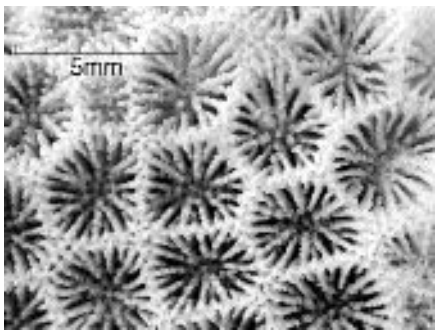

Figure 237. *Micromussa diminuta,* holotype. Showing corallite detail.

Family Mussidae Ortmann, 1890

Genus *Micromussa* Veron, 2000

Original description: Veron (2000) Volume 3, page 8.

> **Characters:** Colonies are submassive or encrusting, usually flat. Corallites are cerioid or subplocoid, either circular or angular in shape and up to 8 mm diameter. Septa are thickened at the corallite wall, and have conspicuous teeth. Colonies may have fleshy tissue over the skeleton, but skeletal structures remain visible. Tentacles are extended only at night. **Similar genera:** *Acanthastrea*, which has larger polyps. Underwater this genus is readily confused with the faviid genera *Favia* and *Favites* which have corallites of similar size. **Fossil record:** None.

Previous illustrations:
Veron (2000) Volume 3, page 9, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Acanthastrea minuta Moll and Borel-Best, 1984: Moll and Borel-Best (1984)
Acanthastrea amakusensis Veron, 1990: Veron, (1990, 1992) Nishihira and Veron (1995)
Micromussa minuta (Moll and Borel-Best, 1984): Veron (2000)
Micromussa amakusensis (Veron, 1990): Veron (2000)
Micromussa diminuta Veron, 2000: Veron (2000)

Affinities:
This genus is erected to include species of *Acanthastrea* with corallites less than 5 mm diameter.

The name:
So named because the species of this genus are the smallest of Family Mussidae.

Micromussa diminuta Veron, 2000

Original description: Veron (2000) Volume 3, page 9.

> **Characters:** Colonies are massive and cerioid, with pentagonal or hexagonal corallites 3-4 mm diameter. Walls are thin. Septa are beaded and columellae are poorly developed. Colonies do not have thick fleshy tissue over the skeleton. **Colour:** Brown, with pale grey centres. The surface is usually speckled white. **Similar species:** *Micromussa minuta*, which has larger, more rounded corallites with fewer, thicker septa. Underwater this species can readily be mistaken for a faviid with small corallites. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 9, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Micromussa diminuta Veron, 2000: Veron and Fenner (2000), Veron and Turak (in prep.)

Skeletal detail:
Colonies are submassive or encrusting, usually flat, up to 300 mm diameter. Corallites are cerioid or subplocoid, either circular or angular in shape and up to 5 mm diameter. Septa are in two inconspicuous orders, first order septa reaching the columella, second order septa being approximately 0.5 R. All septa have thick column-like dentations which give the septa a ribbed appearance in side view. Some septa have their inner margins irregularly fused in *Siderastrea*-like formations. There are no paliform lobes. Columellae consist of one to several vertical pinnules. Walls are thin, with septa of adjacent corallites either adjoined or separated by a fine groove. The tops of the walls have the tallest dentations. Where there are gaps between corallites, these are filled by very coarse coenosteum with tall spines identical in structure to septal dentations.

Affinities:
Micromussa minuta has larger, more rounded corallites with fewer, thicker septa and has a paliform crown.

The name:
So named because of the small (diminutive) corallites.

Holotype:
Specimen G55851. The specimen is 83 mm maximum dimension. Collected by the author from approximately 15 m depth, southern Sri Lanka.

Abundance:
Uncommon.

Habitat:
Shallow reef slopes.

Distribution:
The Indonesian-Philippines archipelago and Sri-Lanka

Genus *Acanthastrea* Milne Edwards and Haime, 1848

Acanthastrea subechinata Veron, 2000

Original description: Veron (2000) Volume 3, page 13.

> **Characters:** Colonies are encrusting to massive and are usually small. Corallites are subplocoid and circular, with thick walls. Septa have rounded evenly spaced teeth. Colonies have thick fleshy tissue over the skeleton but this tissue does not form concentric folds. Septal dentations appear as evenly spaced rows of bead-like tissue down the septal margins. **Colour:** Uniform grey or green, sometimes mottled. **Similar species:** *Acanthastrea echinata*, which has more fleshy corallites with tissue forming concentric folds, and larger less regular septal teeth. These species are not easily separated unless they occur together. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 13, figures 3-5, colour photographs of living coral and monochrome photograph of coral skeleton.

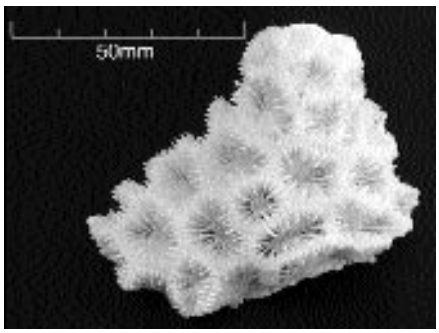

Figure 238. *Acanthastrea subechinata,* holotype (MSI-3001-CO). From the Calamian Islands, Palawan, Philippines.

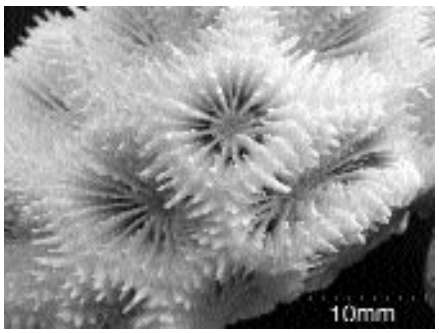

Figure 239. *Acanthastrea subechinata,* holotype. Showing corallite detail.

Synonymy:
Acanthastrea subechinata Veron, 2000: Veron (2002), Fenner (2002)

Skeletal detail:
Colonies are encrusting to massive and are usually less than 200 mm diameter. Corallites are circular or angular, 7-11 mm across. They are subplocoid and separated by a conspicuous ambulacral groove 1-2 mm wide. Septa usually alternate at the walls but not within the calices. They plunge steeply within the calices and most reach the columella. Each septum has 3-10 tall, evenly spaced, dentations. Columellae are compact, approximately 3 mm wide. A specimen from Saudi Arabia which may be this species has no columellae developed: this may be an abnormality. There are no paliform lobes.

Affinities:
Acanthastrea echinata has larger less regular septal teeth and little on no formation of ambulacral grooves. These species are not easily separated unless they occur together. Living colonies of *Acanthastrea echinata* have more fleshy corallites with tissue forming concentric folds.

The name:
So named because the skeletal characteristics are like those of *Acanthastrea echinata* but less prominent.

Holotype:
Specimen MSI-3001-CO. The specimen is 69 mm maximum dimension. Collected by the author from approximately 10 m depth, Calamian Islands, Palawan, Philippines.

Abundance:
Uncommon.

Habitat:
Shallow reef environments.

Distribution:
The Indonesian-Philippines archipelago.

Acanthastrea regularis Veron, 2000

Original description: Veron (2000) Volume 3, page 16.

> **Characters:** Colonies are massive and subplocoid. Septa are uniformly spaced with 8-10 evenly spaced, rounded teeth. Teeth on adjacent septa are often aligned, forming concentric circles. Some septa are more prominent than others. Columellae are weakly developed. Colonies do not have thick tissue over the skeleton. **Colour:** Variable brown and yellow-brown, usually with contrasting corallite walls and centres. **Similar species:** May resemble the faviids *Montastrea* and *Favia* species more than other *Acanthastrea* underwater. See also *A. faviaformis*. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 16, figures 1-4, colour photographs of living coral and monochrome photograph of coral skeleton. *Erratum*: photograph 4 was taken at Palau, not Guam.

Synonymy:
Acanthastrea regularis Veron, 2000: Veron and Fenner (2000)

Skeletal detail:
Colonies are massive, either flat or hemispherical, up to 300 mm diameter. Corallites are rounded or slightly angular, 7-9 mm diameter. They are subplocoid and mostly separated by a deep fissure. Septa are thick above the wall and taper towards the columella and are thus wedge-shaped. They are of a single uniform order and are evenly spaced. Those of adjacent corallites are sometimes in contact but may interlock like cogs. Each septum has 8-10 evenly spaced, rounded dentations. Dentations on adjacent septa are often aligned, forming concentric circles. Columellae are approximately 2 mm diameter and are weakly developed.

Affinities:
Does not closely resemble any other mussid. Is faviid-like underwater.

The name:
So named because the skeletal characteristics are unusually regular for *Acanthastrea*.

Holotype:
Specimen G55818. The specimen is 138 mm maximum dimension. Collected by the author from approximately 3 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Uncommon but as it is difficult to distinguish from common faviids it may be more abundant than recorded.

Habitat:
Shallow reef slopes exposed to moderate wave action.

Distribution:
Great Barrier Reef, Papua New Guinea, Palau and the Indonesian-Philippines archipelago.

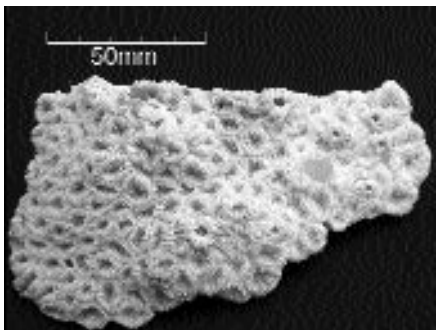

Figure 240. *Acanthastrea regularis,* holotype (G55818). From Milne Bay, eastern Papua New Guinea.

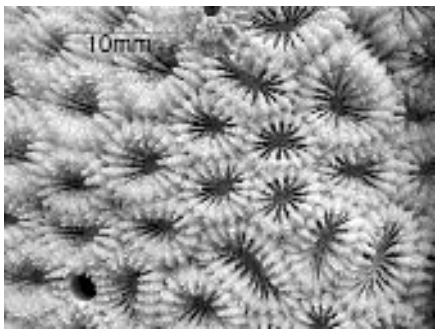

Figure 241. *Acanthastrea regularis,* holotype. Showing the colony surface.

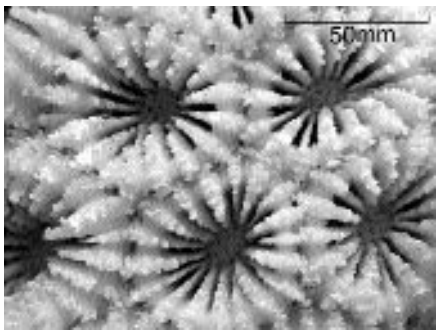

Figure 242. *Acanthastrea regularis,* holotype. Showing corallite detail. Groove and tubercle formations are just visible.

Acanthastrea faviaformis Veron, 2000

Original description: Veron (2000) Volume 3, page 24-5.

Characters: Colonies are encrusting to massive, less than 0.2 metres across. Most consist of a small number of encrusting corallites. Corallites are plocoid. Septo-costae are prominent and have thick teeth which have ornamented edges. Columellae are deep-seated. Colonies lack the fleshy tissue of most *Acanthastrea*. **Colour:** Mottled browns. **Similar species:** *Acanthastrea faviaformis* resembles the faviid *Favia* more than any other *Acanthastrea* and has been called *Favia matthai* in other publications. See also *A. regularis*. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 24-5, figures 1-5, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Acanthastrea faviaformis Veron, 2000: Veron and Fenner (2000), Veron (2002)

Skeletal detail:
Colonies are encrusting to massive, less than 0.2 metres across. Most consist of a small number of encrusting plocoid corallites. Corallites are rounded or squashed into irregular shapes, approximately 12-20 mm diameter. Septa are in two alternating orders. Primary septa are relatively thick, have 6-10

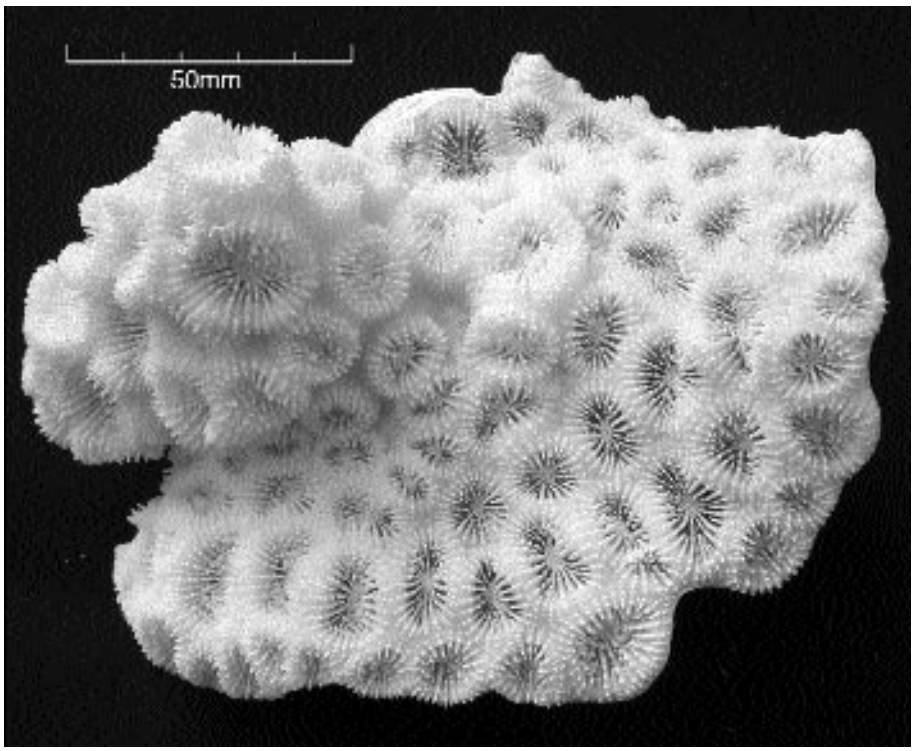

Figure 243. *Acanthastrea faviaformis,* holotype (G55832). From the northern Red Sea coast of Saudi Arabia.

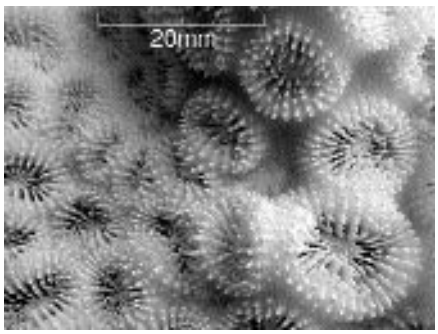

Figure 244. *Acanthastrea faviaformis,* holotype. Showing the colony surface.

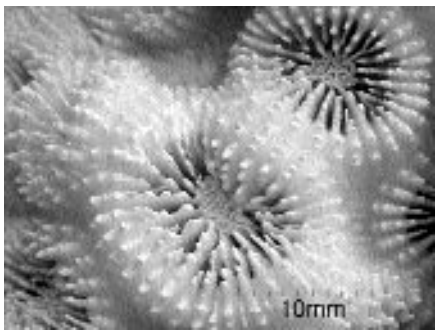

Figure 245. *Acanthastrea faviaformis,* holotype. Showing corallite detail.

broad dentations and mostly reach the columellae. Secondary septa are fine and restricted to the wall. There are no paliform lobes. Walls are thick. Dentations of septo-costae are frequently aligned to form concentric circles. Columellae are deep-seated, 2-3 mm diameter. Costae are well formed and identical to the septa except that dentations are smaller. Costae of adjacent corallites are sometimes adjoined, sometimes separated by an ill-defined ambulacral groove.

Affinities:
Acanthastrea regularis (above) has smaller, more compact corallites and septa which do not alternate. Colonies lack the fleshy tissue of most *Acanthastrea*.

The name:
So named because the skeletal characteristics are *Favia*-like.

Holotype:
Specimen G55832. The specimen is 145 mm maximum dimension. Collected by Emre Turak from approximately 10 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Usually uncommon in the Red Sea, rare in the central Indo-Pacific.

Habitat:
Shallow reef environments.

Distribution:
The Red Sea and the Indonesian-Philippines archipelago.

Genus *Lobophyllia* Blainville, 1830

Lobophyllia serratus Veron, 2000

Original description: Veron (2000) Volume 3, page 41.

> **Characters:** Well developed colonies are hemispherical and are commonly over 2 metres across. Corallites are large (averaging 50 mm diameter), becoming flabello-meandroid, with one to three centres. Septa have tall sharp teeth. Polyps are thick and fleshy, with a rough surface. The margins of polyps are extended to form a distinct serrated rim. **Colour:** Blue-grey to mustard with white polyp margins. **Similar species:** *Lobophyllia flabelliformis*, which has corallites of similar size and fleshy appearance, but these are always flabello-meandroid and have an extensive covering of mantle papillae. **Habitat:** Protected reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 41, figures 5, 6, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Lobophyllia serratus Veron, 2000: Veron and Fenner (2000), Veron (2002)

Skeletal detail:
Well developed colonies are hemispherical and are commonly over 2 metres across. Most colonies are phaceloid becoming flabello-meandroid, usually with a maximum of three centres, but sometimes with more. This distance between corallites is approximately 10 mm and is very uniform. Corallites are 21-25 mm diameter with flabello-meandroid valleys reaching 45 mm in length. Septa are in two indistinct alternating orders. First order septa plunge steeply within the calice and most reach the columella. Second order septa do not extend far from the wall. Septa have mostly straight margins with dentations being restricted to the vicinity of the wall edge. Most have 1-3 dentations, which are tall and sharp. Costae are in one order and have long sharp widely spaced dentations. Columellae are approximately 4.5 mm diameter and are compact and spongy.

Affinities:
Lobophyllia flabelliformis (see below) has corallites of similar size, but these are always flabello-meandroid and have one order of septa and diffuse columellae. *Lobophyllia dentatus* (see below) has smaller corallites which are almost always monocentric. Living colonies of these three species are distinct from each other and from the highly polymorphic *L. hemprichii*.

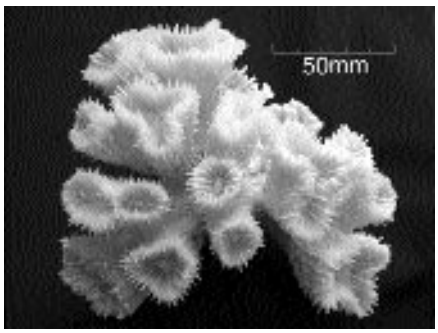

Figure 246. *Lobophyllia serratus,* holotype (MSI-3007-CO). From the Calamian Islands, Palawan, Philippines.

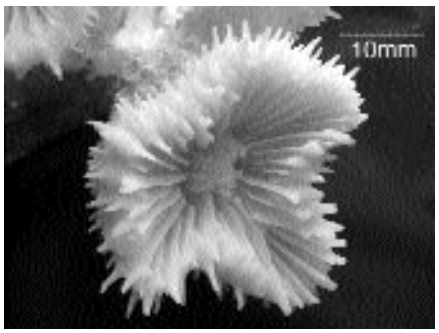

Figure 247. *Lobophyllia serratus,* holotype. Showing corallite detail.

The name:
So named because the margins of polyps have a conspicuously serrated appearance.

Holotype:
Specimen MSI-3007-CO. The specimen is 160 mm maximum span of branches; the corallum has an extended base branch. Collected by the author from approximately 10 m depth, Calamian Islands, Palawan, Philippines.

Abundance:
Uncommon although may be common in some shallow lagoons.

Habitat:
Lagoons and reef slopes protected from wave action and where species diversity is low.

Distribution:
The Indonesian-Philippines archipelago.

Lobophyllia dentatus Veron, 2000

Original description: Veron (2000) Volume 3, page 46.

> **Characters:** Colonies are flat to hemispherical, up to 2 metres across. They have tusk-like, elongate, closely compacted monocentric corallites. Individual corallites unite only at the base of the colony. Primary septa are very exsert, with long teeth. The exsert primary septa have a spoke-like appearance underwater. **Colour:** Uniform grey. **Similar species:** *Lobophyllia corymbosa*, which lacks the spoke-like appearance of septa and has a wide range of colours. See also *L. hemprichii*. **Habitat:** Upper reef slopes and lagoons. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 46, figures 1-4, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Lobophyllia dentatus Veron, 2000: Veron (2002)

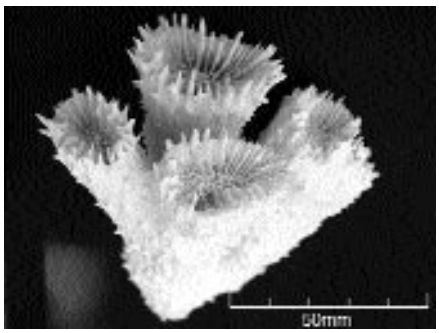

Figure 248. *Lobophyllia dentatus,* holotype (G55826). From Milne Bay, eastern Papua New Guinea.

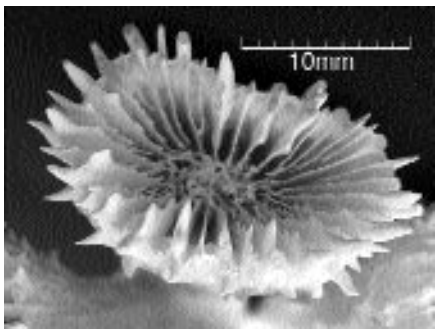

Figure 249. *Lobophyllia dentatus,* holotype. Showing corallite detail.

Skeletal detail:
Colonies are flat to hemispherical, up to 2 metres across. They are phacelloid, with monocentric corallites 10-20 mm across. In side view, corallites are like inverted tusks as they divide when they reach a critical diameter. Corallites only unite at the base of colonies. Septa are sometimes in recognisable orders. Primary septa are exsert, with dentations running the full length of the septum. Dentations are mostly thick and broad on the upper corallite wall, becoming thin and elongate towards the corallite centre. The exsert septa give corallites a spoke-like appearance, which is distinctive underwater. Secondary septa, if present, remain close to the wall and are small. Columellae are spongy and compact and are up to 8 mm diameter. Costae are weakly developed and have widely spaced spines. Lower parts of corallites are usually dead.

Affinities:
Lobophyllia corymbosa lacks the spoke-like arrangement of septa and has larger corallites. *Lobophyllia serratus* is less strictly monocentric and also lacks the spoke-like arrangement of septa. Living colonies of these three species are distinct from each other.

The name:
So named because the primary septa have conspicuously elongate dentations.

Holotype:
Specimen G55826. The specimen is 90 mm maximum dimension. Collected by the author from approximately 4 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Uncommon except in very restricted habitats.

Habitat:
Upper reef slopes and lagoons protected from wave action or exposed to some wave action.

Distribution:
Papua New Guinea, and the Indonesian-Philippines archipelago.

Lobophyllia flabelliformis Veron, 2000

Original description: Veron (2000) Volume 3, page 48.

> **Characters:** Colonies are large, usually dome-shaped. They are flabello-meandroid with closely compacted elongate valleys. Despite a robust appearance, large colonies readily break apart. Polyps have a thick fleshy mantle which obscures the underlying skeletal structure and thus this species appears to be a *Symphyllia* underwater. If the mantle is touched it retracts revealing the underlying growth-form, where valleys have no walls in common. The mantle is covered with elongate papillae that may resemble tentacles. **Colour:** Uniform dark grey-brown. **Similar species:** *Lobophyllia robusta*, which does not have such a completely flabello-meandroid growth-form. **Habitat:** Most shallow reef environments. **Abundance:** Usually uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 48-9, figures 1-5, colour photographs of living coral and page 49, monochrome photograph of coral skeleton.

Synonymy:
Lobophyllia flabelliformis Veron, 2000: Veron (2002), Fenner (2002)

Skeletal detail:
Colonies are flat to hemispherical, up to 2 metres across. They are flabello-meandroid, with valleys 30-50 mm wide. Valleys only unite at the base of colonies, which makes them deceptively brittle. They are uniformly spaced. Up to 10 centres commonly occur in one valley. Septa are mostly of one order although they may occasionally alternate above the wall. Septa are exsert, with approximately 10-15mm long dentations. These are thicker on some septa than others. All septa are thick above the valley wall and are markedly thinner within the valleys. They curve towards columellae and columellae are linked by thin septa. All thin septa and thin parts of septa have smooth or finely serrated margins Columellae may be irregularly aggregated where valleys are wide or are dividing but are mostly compact, approximately 7 mm diameter. Costae are weakly developed and have widely spaced spines. Lower parts of corallites are usually dead.

Affinities:
This is the most flabello-meandroid of all *Lobophyllia*. Both *L. hemprichii* and *L. robusta* may be partly meandroid: these have substantially more robust skeletal characters. Living colonies of these three species are distinct from each other.

The name:
So named because of the flabello-meandroid colony structure.

Holotype:
Specimen G55827. The specimen is 240 mm maximum dimension. Collected by the author from approximately 7 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Uncommon to rare in Japan and the central Indo-Pacific, more common in eastern Papua New Guinea.

Habitat:
Most shallow reef environments.

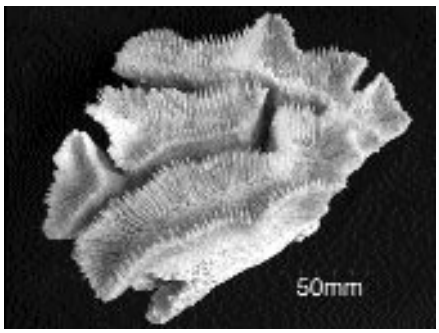

Figure 250. *Lobophyllia flabelliformis,* holotype (G55827). From Milne Bay, eastern Papua New Guinea.

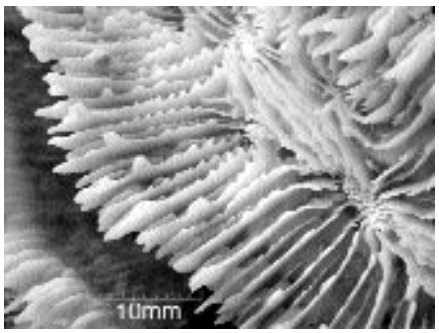

Figure 251. *Lobophyllia flabelliformis,* holotype. Showing a valley.

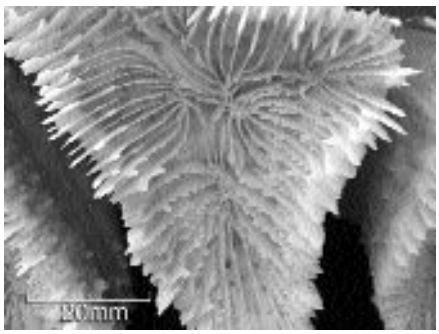

Figure 252. *Lobophyllia flabelliformis,* holotype. Showing a small group of centres with lamellar connections.

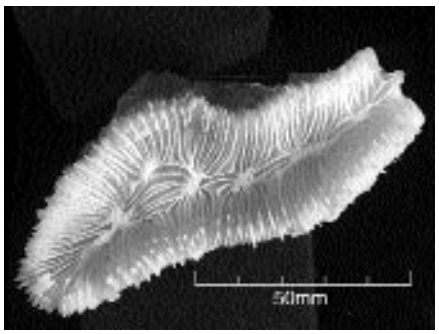

Figure 253. *Lobophyllia flabelliformis,* from Kushimoto, southern Honshu, Japan.

Distribution:

Great Barrier Reef of north-east Australia, Papua New Guinea, the Indonesian-Philippines archipelago, Ryukyu Islands of Japan and Kushimoto, southern Honshu, Japan.

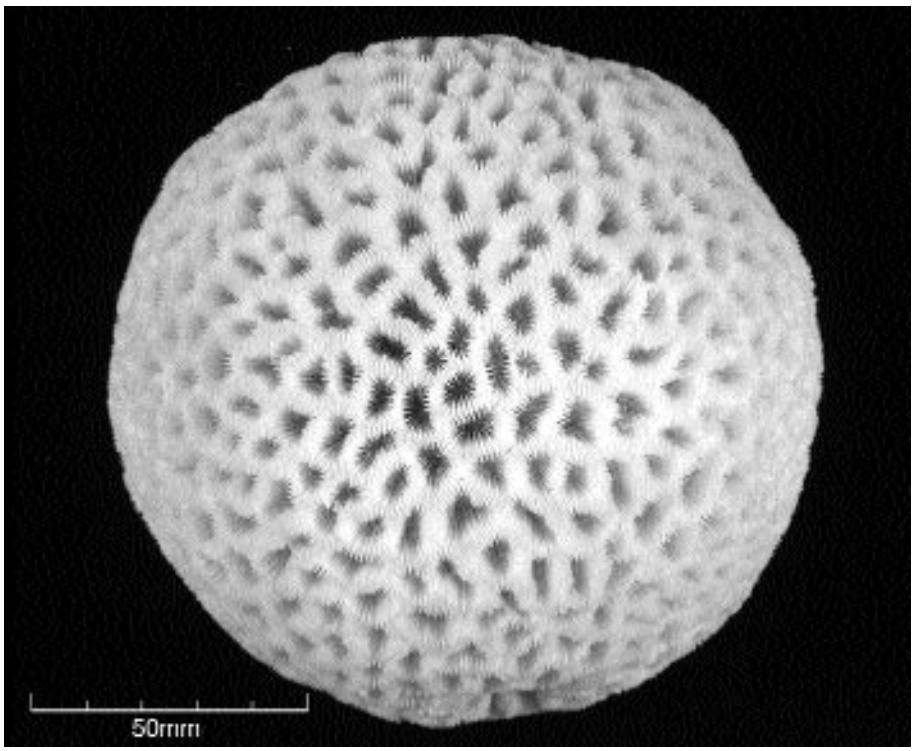

Figure 254. *Favia lacuna,* holotype (G55836). From the northern Red Sea coast of Saudi Arabia.

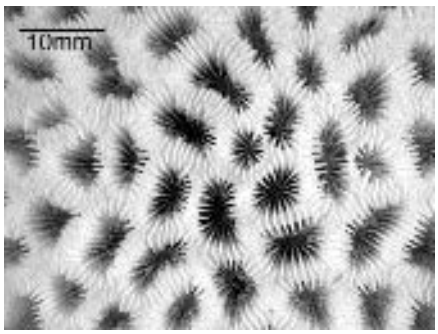

Figure 255. *Favia lacuna,* holotype. Showing corallum surface.

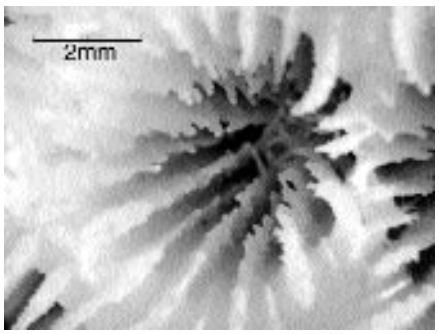

Figure 256. *Favia lacuna,* holotype. Showing corallite detail.

Family Faviidae Gregory, 1900

Genus *Favia* Oken, 1815

Favia lacuna Veron, Turak and DeVantier, 2000

Original description: Veron (2000) Volume 3, page 111.

> **Characters:** Colonies are submassive to massive, usually more than one metre across. Corallites are subplocoid, circular to irregular in shape, and crowded. The inner walls of corallites plunge vertically. Septa are thin, uniformly spaced and subequal, most reaching the columella deep within the calice. Costae of adjacent corallites do not meet, leaving a narrow ambulacral groove. There are no paliform lobes. Columellae are small and compact. **Colour:** Tan with white centres. **Similar species:** Looks like a small *Oulophyllia* underwater. **Habitat:** Shallow exposed reef environments. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 3, page 111, figure 6, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are submassive to massive, commonly one metre across. Corallites are subplocoid becoming immersed, circular to irregular in shape, and crowded. Budding is intra-tentacular. Walls have a uniform thickness of 3-5 mm. The inner face of walls plunge vertically. Septo-costae are thin, uniformly spaced and subequal, most reaching the columella deep within the calice. Those of adjacent corallites may be adjoined but usually they are not and may be separated by a thin ambulacral groove. There are no paliform lobes. Columellae are small and compact and very deeply seated.

Affinities:
Although this species is plocoid, it is *Favites*- or *Oulophyllia*-like in being almost sub-cerioid. The most similar *Favia* is *F. fragum* which may also have highly immersed corallites although these are much smaller.

The name:
So named because the steep sided walls give corallites the appearance of lacunae in living colonies.

Holotype:
Specimen G55836. The specimen is 132 mm maximum dimension. Collected by Emre Turak from an unknown depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Common.

Habitat:
Shallow exposed reef environments.

Distribution:
Recorded only in the Red Sea.

Favia albidus Veron, 2000

Original description: Veron (2000) Volume 3, page 112.

> **Characters:** Colonies are massive, usually small. Corallites are crowded, usually circular and monocentric but rarely becoming elongate and polycentric. Septa are thickened over the corallite wall and exsert, with large teeth near the wall. Paliform lobes may form a crown around the columella. Columellae are small. **Colour:** Usually pale brown. **Similar species:** *Favia matthai*, which has thinner septa, less development of a paliform crown and smaller septal dentations. Septal dentations are sufficiently long to be *Acanthastrea*-like (Mussidae). **Habitat:** Upper reef slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 112, figures 1, 2, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are massive, usually small. Corallites are crowded, usually circular or with slightly angular walls and are 8-12 mm diameter. Budding is intra-tentacular. Walls are approximately 3 mm thick. Most corallites are monocentric but some may be elongate and polycentric. Septa are in one order although part of the wall of some corallites may have a second, alternating, order. Primary septa are thickened over the wall and uniformly taper to the columella. Dentations are exsert and *Acanthastrea*-like near the wall and progressively decrease in size towards the columella. If present, the second order is composed of very fine septa only. Paliform lobes may form a crown around the columella. Columellae are compact, 3-5 mm diameter.

Affinities:
Favia matthai has thinner septa, less development of a paliform crown and smaller septal dentations. Septal dentations are sufficiently long to be *Acanthastrea*-like (Mussidae).

The name:
So named because living colonies are always pale colours.

Holotype:
Specimen G55788. The specimen is 87 mm maximum dimension. Collected by the author from approximately 17 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

Abundance:
Usually uncommon but may be common in restricted areas of shallow reef.

Habitat:
Upper reef slopes, either protected or exposed to moderate wave action.

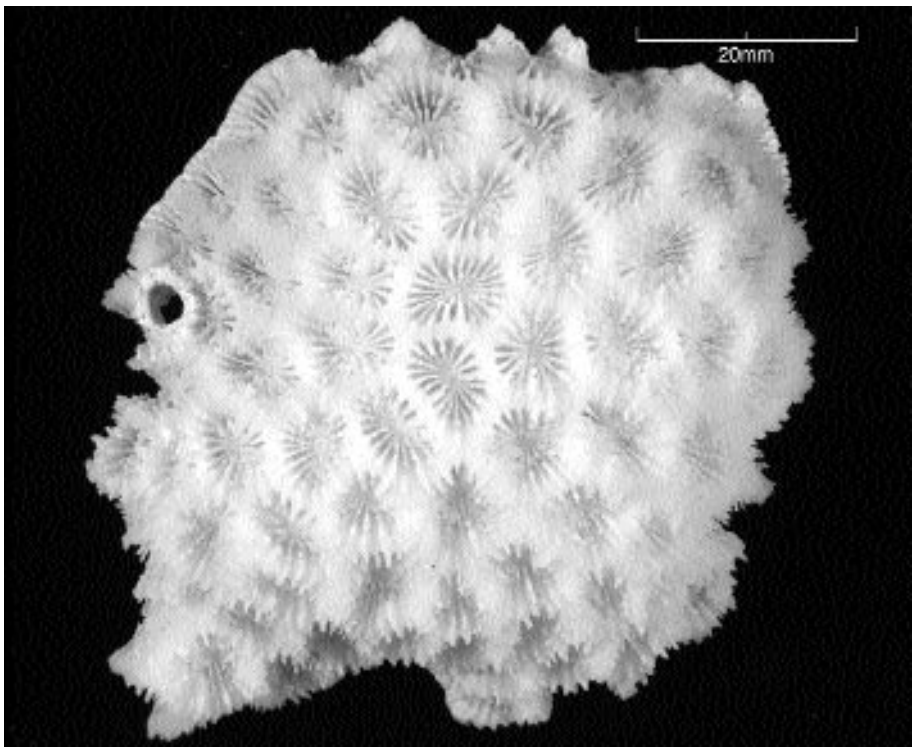

Figure 257. *Favia albidus,* holotype (G55788). From Sharm al-Sheikh, Sinai Peninsula, Egypt.

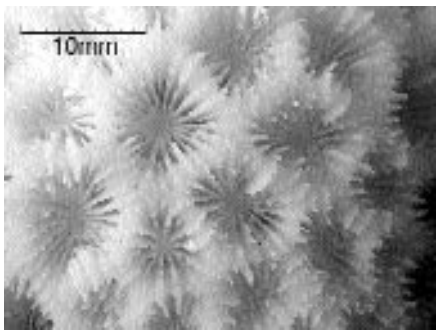

Figure 258. *Favia albidus,* holotype. Showing the colony the surface.

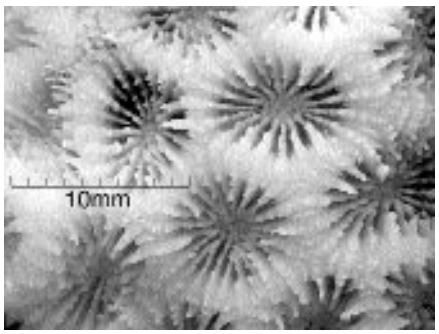

Figure 259. *Favia albidus,* from Sharm al-Sheikh, Sinai Peninsula, Egypt. Showing corallite detail.

Distribution:
Recorded only in the Red Sea.

Favia truncatus Veron, 2000

Original description: Veron (2000) Volume 3, page 113.

> **Characters:** Colonies are massive, flat or hemispherical. Corallites are typically inclined on the colony surface, facing downwards on hemispherical surfaces. Corallite walls have sharp rims except for colonies from very shallow water. The lower part of the wall of inclined corallites is commonly immersed, giving the upper part a hooded appearance. Septa are widely spaced and irregular in size. Paliform crowns are well developed. **Colour:** Uniform yellowish-green or brown. **Similar species:** *Favia speciosa* and *F. pallida*, both of which have larger corallites with less exsert septo-costae. The inclined corallites, giving a hooded appearance, usually makes colonies recognisable underwater. **Habitat:** Most shallow reef environments. **Abundance:** Common in equatorial regions.

Previous illustrations:
Veron (2000) Volume 3, page 113, figures 3-6, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Favia truncatus Veron, 2000: Veron (2002), Fenner (2002), Veron and Turak (in prep.)

Skeletal detail:
Colonies are massive, flat or hemispherical. Corallites are 6-9 mm diameter and are uniform in size when mature. Typically, they are inclined towards colony margins and face downwards towards the edge of hemispherical surfaces. Budding is intra-tentacular. Corallite walls have sharp margins except for colonies from very shallow water which have rounded margins. The lower part of the wall of inclined corallites is commonly immersed, giving the upper part a hooded appearance. Septo-costae are widely spaced and markedly irregular in size. Longer septa reach the columella and shorter septa remain close to the wall. All are irregularly dentate. Costae are mostly equal, those of adjacent corallites are seldom adjoined. Paliform crowns are distinct to well-developed.

Affinities:
Favia speciosa and *F. pallida*, both have larger corallites with less exsert septo-costae. Septal structures are like those of *F. pallida* except paliform lobes are taller. The major distinguishing character of *F. truncatus* is its inclined corallites.

The name:
So named because corallites appear to be cut-off (truncated).

Holotype:
Specimen G55823. The specimen is 160 mm maximum dimension. Collected by the author from approximately 5 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Common in the equatorial central Indo-Pacific.

Habitat:
Most shallow reef environments, especially those exposed to moderate to strong wave action.

Distribution:
Occurs throughout the Indo-west Pacific and south-west Indian Ocean.

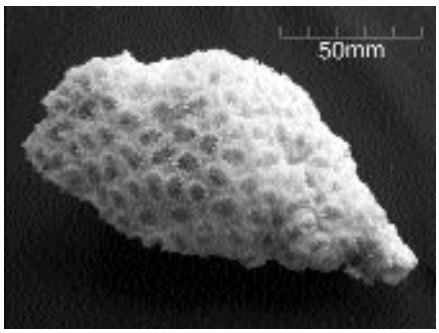

Figure 260. *Favia truncatus,* holotype (G55823). From Milne Bay, eastern Papua New Guinea. From an upper reef slope.

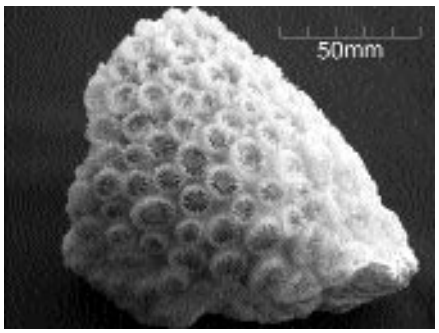

Figure 261. *Favia truncatus,* from Milne Bay, eastern Papua New Guinea. From a shallow reef flat.

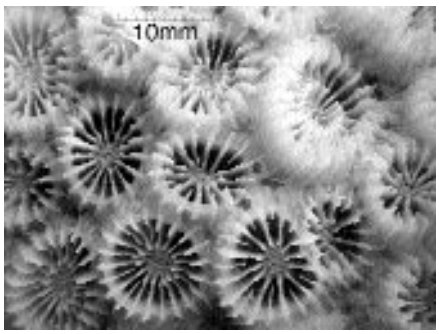

Figure 262. *Favia truncatus,* same specimen as figure 261. From a shallow reef flat. Showing the typical inclination of the corallites.

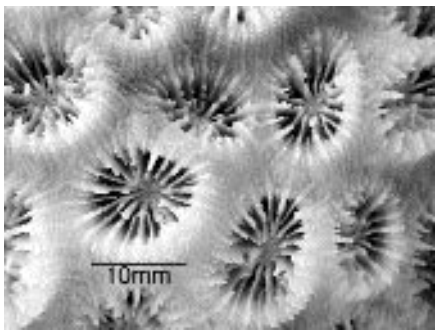

Figure 263. *Favia truncatus,* from Milne Bay, eastern Papua New Guinea. From a shallow reef flat exposed to strong wave action.

Favia rosaria Veron, 2000

Original description: Veron (2000) Volume 3, page 119.

Characters: Colonies are submassive to encrusting and often up to one metre across. Corallites are crowded, up to 20 mm diameter, and have low walls. Extratentacular budding is common. Septo-costae are uniform, not exsert. Septa have fine teeth. Paliform lobes are inconspicuous. **Colour:** Distinctive pinkish-brown with darker corallite inner walls and pale oral discs. **Similar species:** The colouration is distinctive underwater. *Favia favus* and *F. danae* have corallites of similar size. The former has coarser septo-costae, the latter have more exsert corallites. **Habitat:** Shallow reef slopes. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 119, figures 3, 4 colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are submassive to encrusting and often up to one metre across. Corallites are crowded, up to 20 mm diameter, and have low walls up to 3 mm thick. They typically have a wide variety of shapes. Extra-tentacular budding is common. Septo-costae are in two distinct orders alternating over the wall. Primary

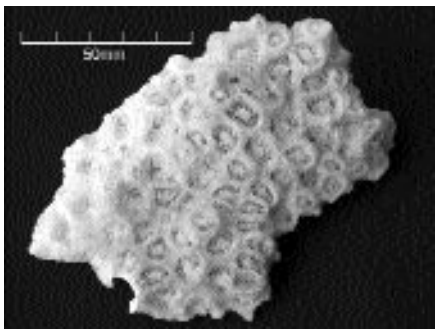

Figure 264. *Favia rosaria,* holotype (G55822). From Milne Bay, eastern Papua New Guinea. From an upper reef slope.

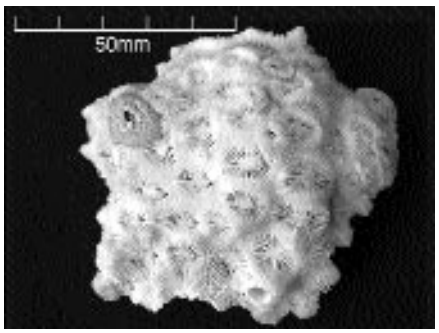

Figure 265. *Favia rosaria* from Milne Bay, eastern Papua New Guinea. From a shallow reef flat.

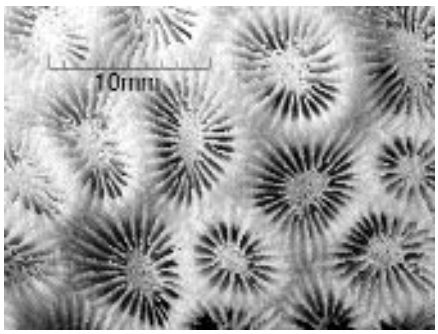

Figure 266. *Favia rosaria,* holotype. Showing the colony surface.

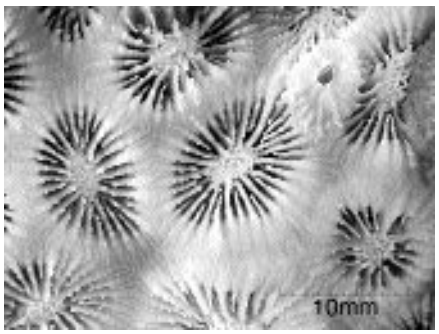

Figure 267. *Favia rosaria* from Milne Bay, eastern Papua New Guinea. From a shallow reef flat, showing corallite detail.

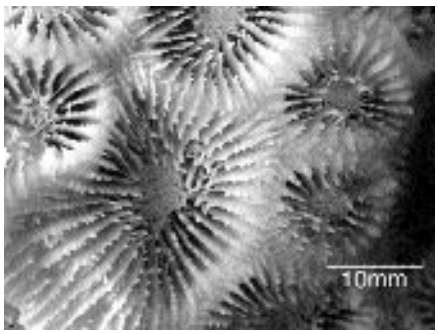

Figure 268. *Favia rosaria,* holotype. Showing corallite detail.

septo-costae are uniform, not exsert. Secondary septo-costae are small and are commonly not developed on parts or all of some corallites. Septa have fine teeth which usually increase in length towards the columella. Paliform lobes are inconspicuous. Columellae are up to 4 mm wide and are compact. Costae may retain the two orders of septo-costae. Costae of adjacent corallites but touch, but do not uniformly adjoin.

Affinities:

Favia favus and *F. danae* have corallites of similar size. The former has coarser septo-costae, the latter have more exsert corallites. There are many further skeletal differences between coralla of these species but these vary with location and environment. Living colonies are distinctive.

The name:
So named because of the distinctive colour of living colonies.

Holotype:
Specimen G55822. The specimen is 118 mm maximum dimension. Collected by the author from approximately 10 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Rare, but conspicuous due to a distinctive colouration.

Habitat:
Shallow reef slopes.

Distribution:
Indo-west, from Vanuatu and the Great Barrier Reef of north-east Australia to the Indonesian-Philippines archipelago..

Favia marshae Veron, 2000

Original description: Veron (2000) Volume 3, page 122.

> **Characters:** Colonies are dome-shaped or flat. Corallites are shallow, circular, neatly arranged and 15-20 mm diameter. Corallites at the colony margin are frequently arranged in concentric rows. Septa are fine. Paliform lobes are weakly formed or absent. **Colour:** Uniform pale grey with contrasting walls and centres. **Similar species:** *Favia rotundata*, which has larger, more fleshy corallites. Superficially resembles *Favites vasta*. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 122, figures 1, 2, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are dome-shaped or flat, up to 600 mm diameter. Corallites are shallow, rounded, and neatly arranged, especially at the colony margin where they may be in concentric rows. They are 15-20 mm diameter. Budding is intra-tentacular. Walls are uniform, approximately 3-5 mm thick. Septo-costae alternate on the wall. Primary septa are mostly fine, irregular in length, with approximately half reaching the columella. Some primary septa fuse with others in an irregular pattern. Secondary septa alternate with primary septa over the wall and are short. All septa have conspicuous dentations, which increase in length towards the columella. Paliform lobes are usually weakly formed or absent but occasionally form a crown. Septa of adjacent corallites are usually adjoined.

Affinities:
Favia rotundata has larger, more exsert and less uniform corallites.

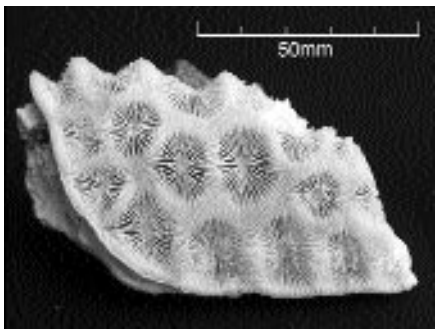

Figure 269. *Favia marshae,* holotype (WAM Z12910). From Ashomore Reef, north-west Australia.

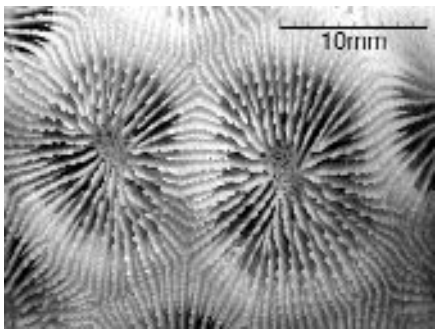

Figure 270. *Favia marshae,* holotype. Showing corallite detail.

The name:
Named after Loisette Marsh, former curator at the Western Australian Museum and colleague of the author.

Holotype:
Specimen WAM Z12910. The specimen is 98 mm maximum dimension. Collected by the author from approximately 9 m depth, Ashomore Reef, north-west Australia.

Abundance:
Uncommon except in restricted habitats on the north-western Australian coast.

Habitat:
Shallow reef environments, especially those exposed to moderate to strong wave action.

Distribution:
Guam, the Indonesian-Philippines archipelago and many west Australian locations.

Favia vietnamensis Veron, 2000

Original description: Veron (2000) Volume 3, page 127.

> **Characters:** Colonies are usually small. Corallites are irregularly shaped and deeply excavated. Septa are irregular in height. Paliform lobes are weakly developed. Colonies are very fleshy. **Colour:** Brown or grey, either uniform or with distinctive oral discs. **Similar species:** Unlike other *Favia* but resembles subphaceloid growth-forms of *Caulastrea tumida* underwater. **Habitat:** Protected reef environments. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 127, figures 3-5, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are usually small irregular and encrusting. Corallites are squashed into irregular shape and may be up to 15 mm maximum dimension. Most corallites are exsert and deeply excavated. Budding is intra-tentacular. Septo-costae are in two alternating orders. Between half and all primary septa reach the columella and there is some fusion of the inner margins of septa. They have strong irregular dentations which tend to increase in length towards the columella. Paliform lobes are weakly developed. Columellae are compact, 3-6 mm in diameter. Costae of adjacent corallites are usually adjoined.

Affinities:
Favia vietnamensis is like other *Favia* but resembles subphaceloid growth-forms of *Caulastrea tumida* in general appearance.

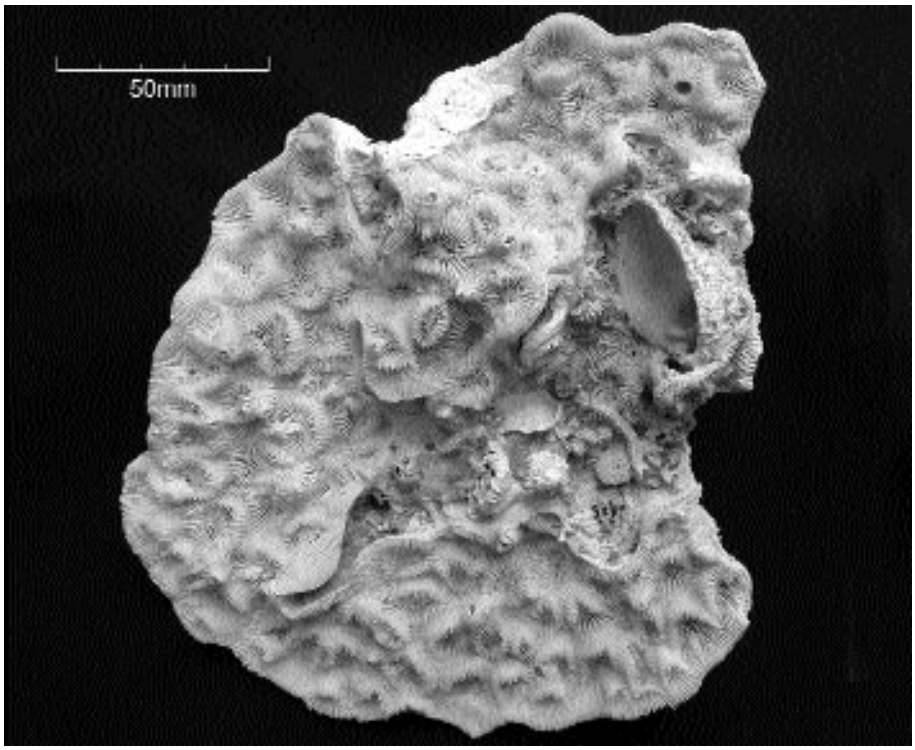

Figure 271. *Favia vietnamensis,* holotype (G55859). From Nha Trang, Vietnam.

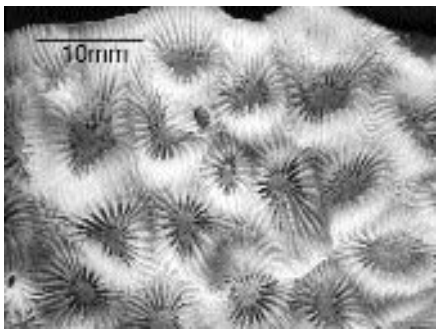

Figure 272. *Favia vietnamensis,* holotype. Showing the colony surface.

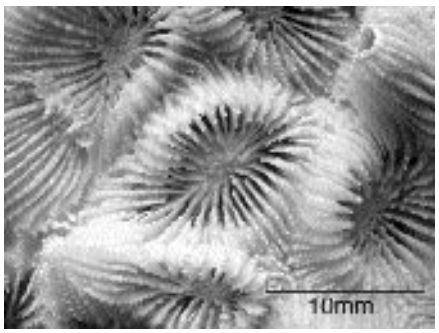

Figure 273. *Favia vietnamensis*, holotype. Showing corallite detail.

The name:
So called because the holotype is from Vietnam.

Holotype:
Specimen G55859. The specimen is 176 mm maximum dimension. Collected by the author from approximately 10 m depth, Nha Trang, Vietnam.

Abundance:
Rare.

Habitat:
Found only in protected reef environments.

Distribution:
From the Great Barrier Reef of eastern Australia in the south to mainland Japan in the north. Found throughout the central Indo-Pacific where there appears to be wide geographic variation.

Genus *Favites* Link, 1807

Favites micropentagona Veron, 2000

Original description: Veron (2000) Volume 3, page 137.

> **Characters:** Colonies are encrusting to submassive. Corallites are pentagonal in shape and 3-4 mm diameter. Septa are in two alternating cycles, with irregular teeth. The paliform crown is clearly developed. **Colour:** Pale brown, sometimes with dark oral discs. **Similar species:** *Favites pentagona*, which has larger but otherwise similar corallites. See also *F. stylifera*. **Habitat:** Upper reef slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 137, figures 6-10, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Favites micropentagona Veron, 2000: Veron and Fenner (2000), Veron (2002), Veron and Turak (in prep.)

Skeletal detail:
Colonies are encrusting to submassive, up to 0.5 metres diameter. Corallites are pentagonal in shape and 3-4 mm diameter. Walls are thin with septa forming a palisade along their tops. Septa are in two orders although in some corallites a third order may be present. First order septa extend to the columella and have a paliform lobe. Second order septa are short and the third order, if present, occurs only at the tops of walls. Dentations are irregular. A paliform crown is clearly developed. Columellae are set deep within the corallite, are approximately 1 mm diameter and consist of only a few twisted spined.

Affinities:
Favites pentagona has larger but otherwise similar corallites. *Favites stylifera* has larger, highly contorted corallites with very exsert septal dentations.

The name:
So named because this species looks like a diminutive form of the well know *Favites pentagona*.

Holotype:
Specimen MSI-3006-CO. The specimen is 79 mm maximum dimension. Collected by the author from approximately 12 m depth, Calamian Islands, Palawan, Philippines.

Abundance:
Uncommon except in some very localised habitats.

Habitat:
Upper reef slopes exposed to wave action.

Distribution:
From Indonesia north to the Ryukyu Islands of Japan.

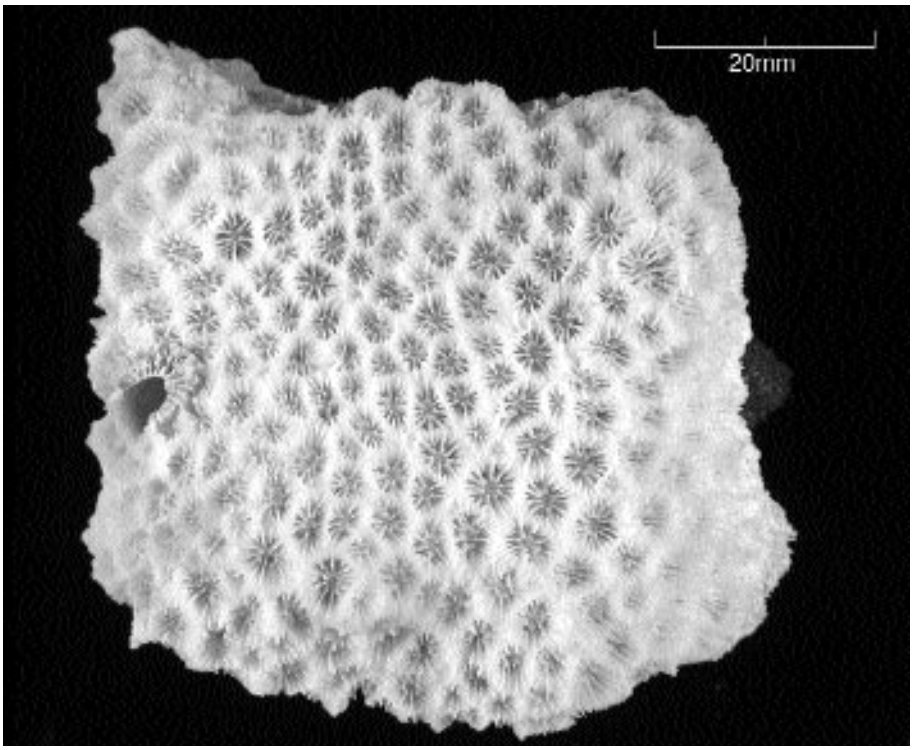

Figure 274. *Favites micropentagona,* holotype (MSI-3006-CO). From the Calamian Islands, Palawan, Philippines.

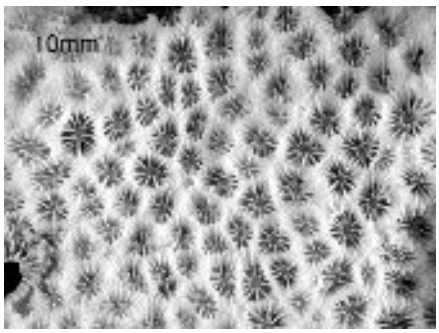

Figure 275. *Favites micropentagona,* holotype. Showing the colony surface.

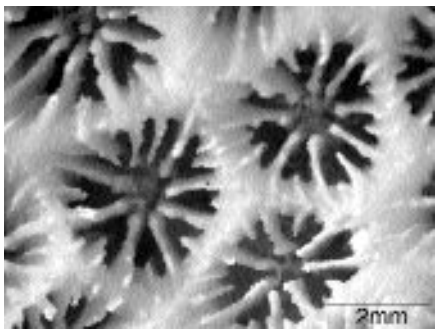

Figure 276. *Favites micropentagona,* holotype. Showing corallite detail.

Favites bestae Veron, 2000, new name

Original description: Veron (2000) Volume 3, page 140.

> **Characters:** Colonies are submassive to encrusting. Corallites are thick walled and rounded, becoming subplocoid. Septa are few in number, uniform in height and are usually in two (alternating) orders. Paliform lobes and columellae are well developed. **Colour:** Browns and greens, usually with contrasting walls and centres. **Similar species:** *Favites pentagona*, which has angular corallites and irregular septa and *Favites chinensis*, which has no paliform lobes. See also *Montastrea colemani*. **Habitat:** Shallow reef environments. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 140, figures 1, 2, colour photographs of living coral and monochrome photograph of coral skeleton.
Wijsman-Best (1972) Plate V, figure 3.

Synonymy:
Astraea melicerum Ehrenberg, 1834

?*Goniastrea laxa* Quelch, 1886

Favites melicerum Ehrenberg (1834): Matthai (1914), Vaughan (1918), Wijsman-Best (1972), not Ehrenberg (1834).

Favites melicerum was considered a synonym of *F. pentagona* by Matthai (1914) and a valid species by Vaughan (1918) and Wijsman-Best (1972). The type, figured by Matthai (1914) (Plate 36, Figure 2), a small colony encrusting a *Lambis* shell is now lost. As this name is unverifiable the species has been given a new name. Wijsman-Best (1972, pages 29-30) gives a detailed account of the species' taxonomic history.

Skeletal detail:
Colonies are submassive to encrusting. Corallites are 6-10 mm diameter, thick walled and rounded, cerioid to subplocoid. Septa are few in number, uniform in height and are usually in two very distinct alternating orders. First order septa are strongly tapered, thick at the wall and also have thick paliform lobes that form a prominent crown. Second order septa only occur at the tops of walls, but may reach 0.5 R. If developed at all, costae are low and equal; those of adjacent corallites are not adjoined. Columellae are compact, approximately 2 mm diameter.

Affinities:
Favites pentagona has angular corallites and irregular septa. *Favites chinensis* has angular corallites with thin walls and no paliform lobes. *Montastrea colemani* has corallites of similar size and shape but budding is mostly extratentacular and groove and tubercle formations are distinctive.

The name:
Named after the faviid taxonomist, Dr Maya Borel-Best.

Holotype:
Specimen ZMA Coel. 5820. The specimen is 107 mm maximum dimension. Collected by Maya Wijsman-Best from 5 m depth, southern New Caledonia.

Abundance:
Usually rare, sometimes common in Vietnam.

Habitat:
Shallow reef environments protected from wave action.

Distribution:
Fiji, Micronesia, Indonesia, Philippines and Vietnam. Type specimens of Quelch are from Sri Lanka.

Favites paraflexuosa Veron, 2000

Original description: Veron (2000) Volume 3, page 155.

Characters: Colonies are hemispherical or flat. Corallites are angular and deep. Septa are even, with fine teeth. Paliform lobes are weakly developed. **Colour:** Brown with pale oral discs. **Similar species:** *Favites flexuosa*, which has identical corallite shape but septa have conspicuous teeth, a distinction which is clear underwater. *Favites vasta* has larger, less angular corallites and a distinctive colouration. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

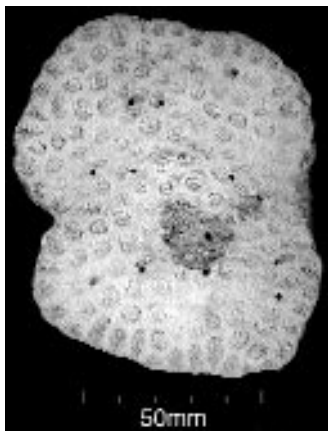

Figure 277. *Favites bestae,* holotype (ZMA Coel. 5831). From New Caledonia.

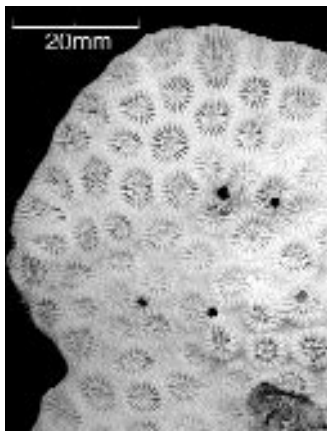

Figure 278. *Favites bestae,* holotype. Showing colony surface.

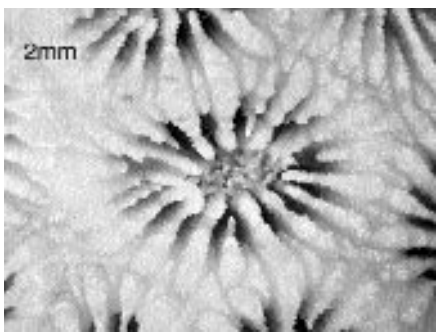

Figure 279. *Favites bestae,* holotype. Showing corallite detail.

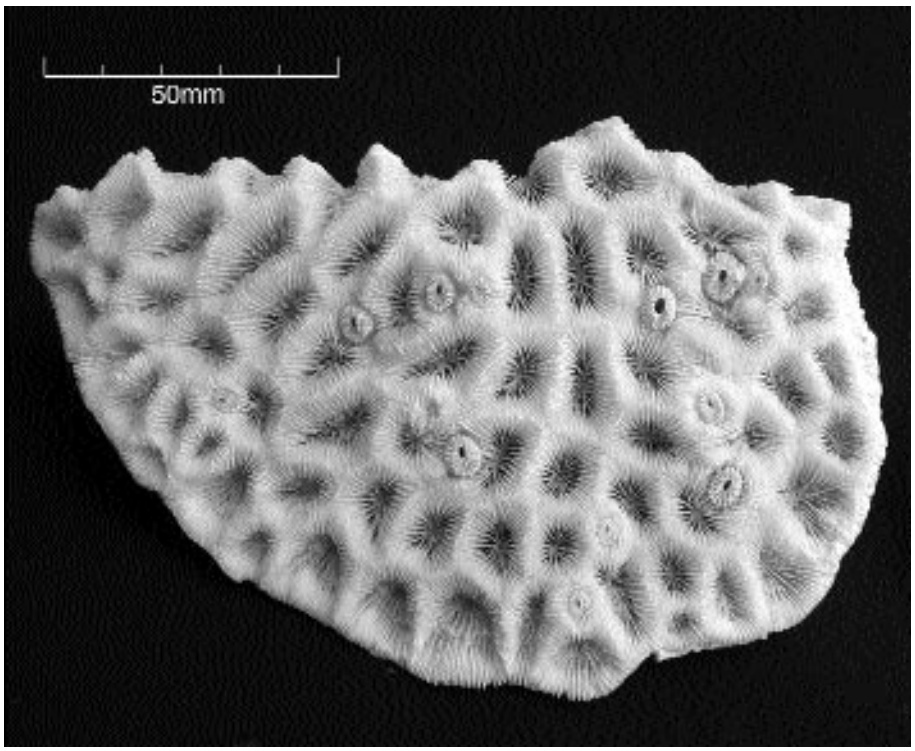

Figure 280. *Favites paraflexuosa,* holotype (WAM Z12911). From Houtman Abrolhos Islands, south-western Australia.

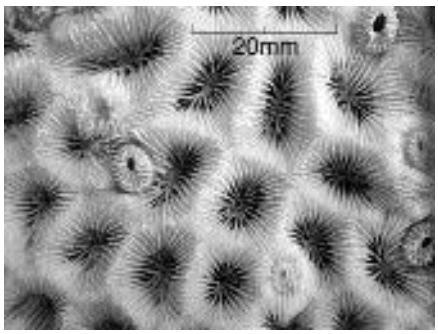

Figure 281. *Favites paraflexuosa,* holotype. Showing the colony surface.

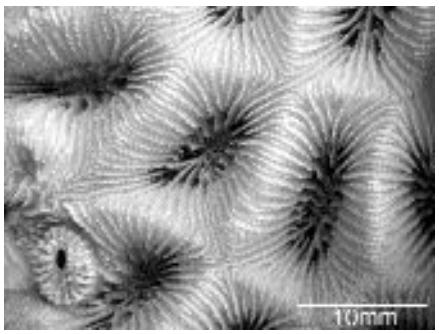

Figure 282. *Favites paraflexuosa,* holotype. Showing corallite detail.

Previous illustrations:
Veron (2000) Volume 3, page 155, figures 4-6, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Favites paraflexuosa Veron, 2000: Veron and Fenner (2000), Veron (2002), Fenner (2002), Veron and Turak (in prep.)

Skeletal detail:
Colonies are hemispherical or flat and may be up to 600 mm diameter. Corallites are similar in size, 10-15 mm diameter, angular and deeply excavated. Septa are uniformly arranged and are in two

alternating orders. First order septa are short and plunge steeply within the calice with approximately half reaching the columella. Second order septa are mostly restricted to the upper corallite wall. All are finely serrated. Paliform lobes are weakly to moderately well developed and may form a crown.

Affinities:
Favites flexuosa has the same growth form and identical corallite shape and size, but septa have prominent dentations and there are no paliform lobes. *Favites vasta* has larger, less angular corallites and also has prominent septal dentations.

The name:
So named because this species is very similar to the well know *Favites flexuosa*.

Holotype:
Specimen WAM Z12911. The specimen is 153 mm maximum dimension. Collected by the author from approximately 15 depth, Houtman Abrolhos Islands, south-western Australia.

Abundance:
Probably uncommon over most of the distribution range.

Habitat:
Upper reef slopes and reef flats.

Distribution:
From the central Indo-Pacific west to the Red Sea.

Genus *Goniastrea* Milne Edwards and Haime, 1848

Goniastrea minuta Veron, 2000

Original description: Veron (2000) Volume 3, page 158-9.

> **Characters:** Colonies are usually encrusting, becoming submassive. Corallites are angular, with a uniform appearance. Walls are usually thin. Long and short septa strongly alternate. Paliform lobes are well developed, forming a neat crown. **Colour:** Uniform pale brown or greenish-brown. Wall tops are pale. **Similar species:** *Goniastrea retiformis*, which has similar corallite characters but corallites are much larger. May be mistaken for the poritids *Porites* and *Poritipora* underwater. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 158-9, figures 1-5, colour photographs of living coral and page 158, monochrome photograph of coral skeleton.

Synonymy:
Goniastrea minuta Veron, 2000: Veron and Fenner (2000), Veron and Turak (in prep.)

Skeletal detail:
Colonies are usually encrusting, becoming submassive or massive with a smooth undulating surface. Corallites are angular to rounded, with a uniform appearance, 2-3 mm diameter. Walls are usually thin. Septo-costae strongly alternate. Primary septo-costae are equal, reach the columella, and have well-developed paliform lobes which form a neat crown. Secondary septo-costae are shorter, do not

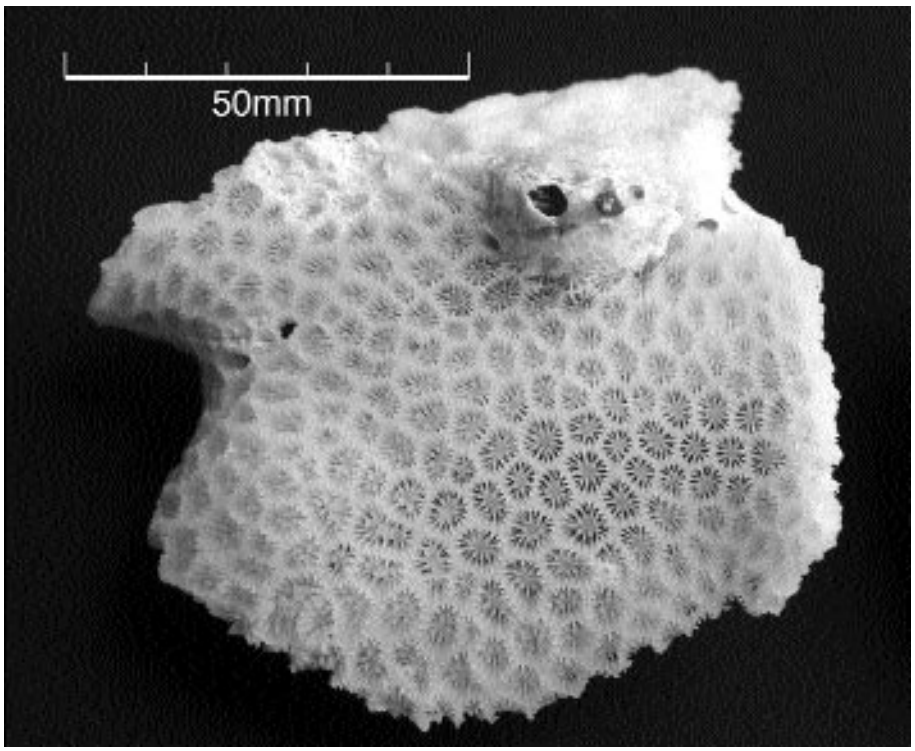

Figure 283. *Goniastrea minuta,* holotype (G55825). From Milne Bay, eastern Papua New Guinea. From an upper reef slope.

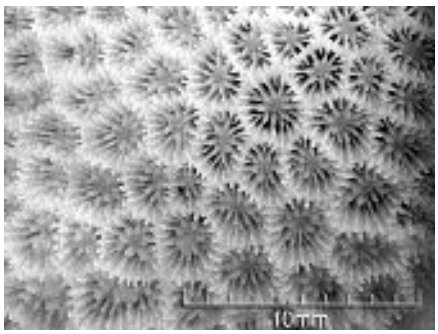

Figure 284. *Goniastrea minuta,* holotype. Showing corallite detail.

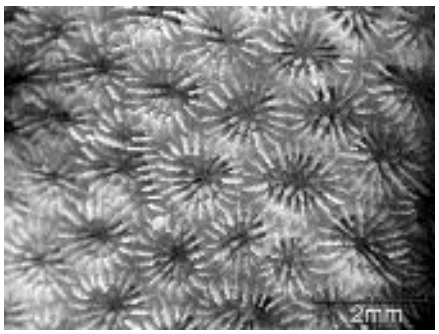

Figure 285. *Goniastrea minuta,* from Milne Bay, eastern Papua New Guinea. From a reef flat. Showing corallite detail.

reach the columella and do not have paliform lobes. All septa have finely serrated margins. Columellae are compact, approximately 0.6 mm diameter and are deep-seated within a palisade of paliform lobes. Costae are sub-equal, distinct, and do not regularly fuse with those of adjacent corallites.

Affinities:
Goniastrea retiformis and *G. edwardsi* both have similar corallite characters but corallites are much larger.

The name:
So named because this species is much smaller than other *Goniastrea*.

Holotype:
Specimen G55825. The specimen is 60 mm maximum dimension. Collected by the author from approximately 4 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Uncommon.

Habitat:
Shallow reef environments where wave action is moderate.

Distribution:
Widely distributed from the south-west Indian Ocean to the far eastern Papua New Guinea.

Goniastrea ramosa Veron, 2000

Original description: Veron (2000) Volume 3, page 160.

> **Characters:** Colonies are small irregular clumps of branches, usually less than 0.3 metres across. Corallites are angular, with thick rounded walls. The ends of branches are ragged, being primarily composed of exsert costae. Septa are two alternating orders and have large dentations. Columellae are small and compact. Paliform lobes form a distinct crown. **Colour:** Uniform cream or brown. **Similar species:** This is the only branching *Goniastrea.* Corallites are similar to those of *G. retiformis*. *Australogyra zelli* has similar branch shapes but is much larger. **Habitat:** Reef flats sheltered from strong wave action. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 160, figures 1, 2, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are usually less than 0.3 metres across. They consist of irregular clumps of contorted flattened branches up to approximately 10 cm long and 1 cm minimum thickness. Branch ends are mostly flattened and strongly tapered with tips primarily composed of exsert costae. Branching occurs irregularly. Branches towards colony centres are upright while those towards the periphery are mostly prostrate. Corallites are cerioid, angular and are irregular in shape, depending on their position on branches. They have thick rounded walls. Septa are two conspicuous orders while a third order is sometimes present. Primary septa reach the columellae and have paliform lobes which may form a distinct crown. Secondary septa are shorter and do not reach the columella, but they may have small, laterally flattened, paliform lobes. Tertiary septa, if formed, occur only near the corallite rim. All septa are finely dentate and have slightly granulated sides. Columellae are approximately 2-3 mm diameter and are compact and spongy. Septa of adjacent corallites are adjoined.

Affinities:
Australogyra zelli has similar branch shapes but all colony characters are much larger. This species is not placed in the genus *Australogyra* because the neatly formed corallites have *Goniastrea*-like characters, being essentially the same *G. retiformis*. This is the only branching species of *Goniastrea*.

The name:
So named because of the branching growth form of this species.

Holotype:
Specimen G55803. The specimen is 58 mm maximum dimension. Collected by the author from approximately 1 m depth, Flores, Indonesia.

Abundance:
Rare.

Habitat:
Found only on very shallow reef flats sheltered from strong wave action.

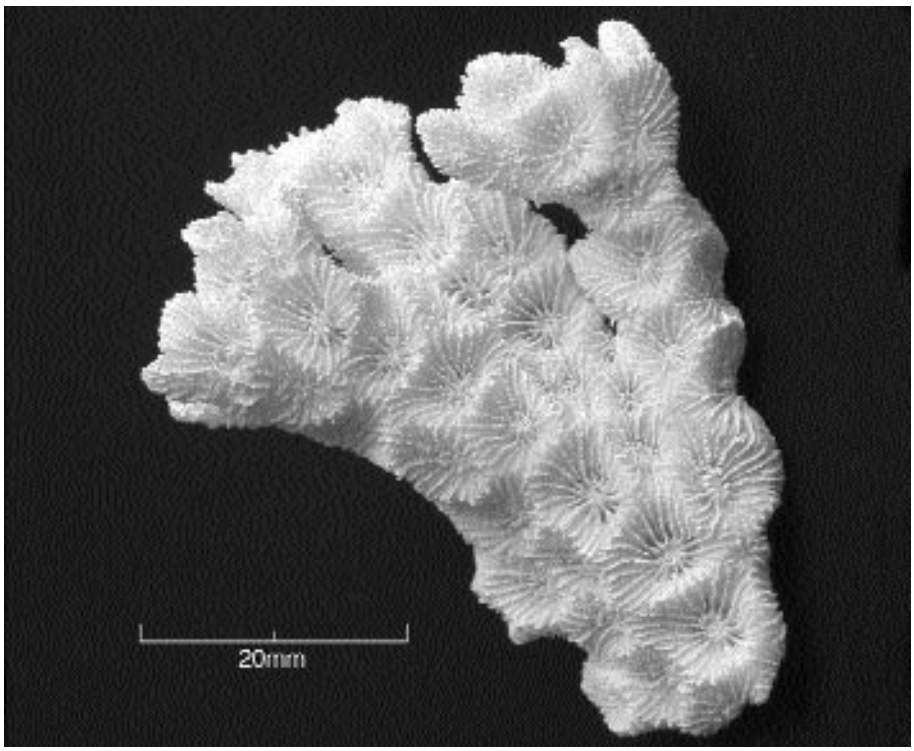

Figure 286. *Goniastrea ramosa,* holotype (G55803). From Flores, Indonesia.

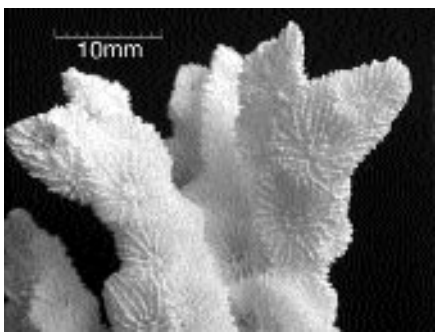

Figure 287. *Goniastrea ramosa,* from Flores, Indonesia. From a shallow reef flat. Showing branch ends.

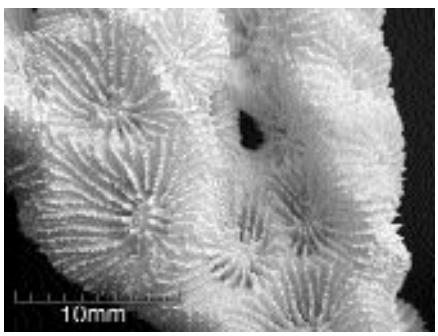

Figure 288. *Goniastrea ramosa,* from Flores, Indonesia. From a shallow reef flat. Showing corallite detail.

Distribution:
The Indonesian-Philippines archipelago.

Goniastrea thecata Veron, DeVantier and Turak 2000

Original description: Veron (2000) Volume 3, page 169.

> **Characters:** Colonies are massive and more than one metre across. Corallites are irregular in shape, with 1-3 centres. Walls are thick. Septa are evenly spaced and strongly alternate with short septa developed only near the corallite rim. Paliform lobes are poorly developed or absent. Columellae form distinct centres. Fleshy polyp tissue forms a distinctive rim above the theca giving a subplocoid appearance. **Colour:** Steel grey. **Similar species:** Superficially resembles *Oulophyllia bennettae* underwater. See also *Favites paraflexuosa*. **Habitat:** Semi-exposed reef slopes. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 169 monochrome photograph of coral skeleton. *Erratum*: the colour photograph on page 169 is incorrect.

Synonymy:
Goniastrea thecata Veron, 2000: Veron and Turak (in prep.).

Skeletal detail:
Colonies are massive and more than one metre across. Corallites are irregular in shape, monocentric or with short valleys with up to three centres. Corallites average approximately 10 mm in width and are plocoid and deeply excavated. Walls are thick. Septa are in two evenly spaced and strongly alternating orders. Primary septa all reach the columella and usually have small paliform lobes, although these may be absent. Secondary septa are short and near the corallite rim. All septa are finely dentate and have granulated sides. Columellae form distinct centres in valleys. They are compact, spongy and approximately 2 mm diameter. Septa of adjacent corallites adjoin and may form a very fine ridged.

Affinities:
This species is placed in genus *Goniastrea* because the corallites have neat *Goniastrea*-like characters, being most similar to those of *G. aspera*. Superficially the species is similar to *Favites paraflexuosa*.

The name:
So called because living colonies have prominent wall-like edges to corallites.

Holotype:
Specimen G55837. The specimen is 166 mm maximum dimension. Collected by Lyndon DeVantier from 1 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Rare.

Habitat:
Reef slopes exposed to some wave action.

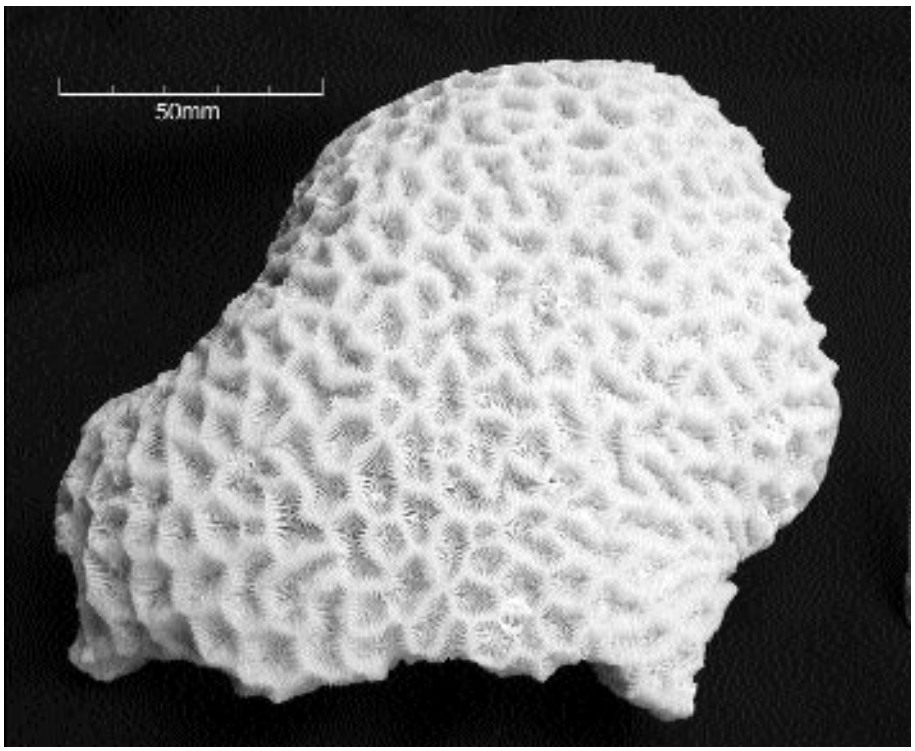

Figure 289. *Goniastrea thecata,* holotype (G55837). From the northern Red Sea coast of Saudi Arabia.

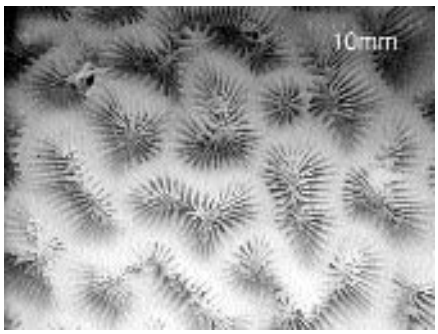

Figure 290. *Goniastrea thecata,* holotype. Showing the colony surface.

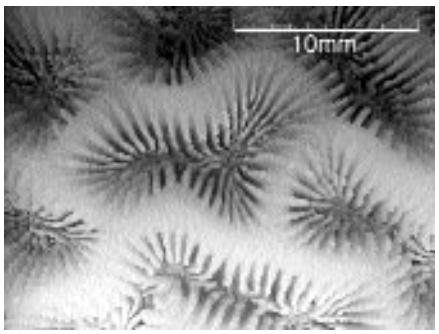

Figure 291. *Goniastrea thecata,* holotype. Showing corallite detail.

Distribution:
Recorded from the Red Sea and north-west Madagascar.

Genus *Platygyra* Ehrenberg, 1834

Platygyra carnosus Veron, 2000

Original description: Veron (2000) Volume 3, page 184.

Characters: Colonies are massive and cerioid to submeandroid with thin, acute walls. Valleys are irregular in length in the one colony. Septa are thin and highly granulated. They converge and may fuse except where valleys are straight. Columellae are well developed. Polyps are fleshy. **Colour:** Uniform dark brown or red, with pale tops to walls. **Similar species:** No other *Platygyra* has such fleshy polyps. Skeletal structures are similar to those of *P. verweyi* and are somewhat *Goniastrea*-like. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

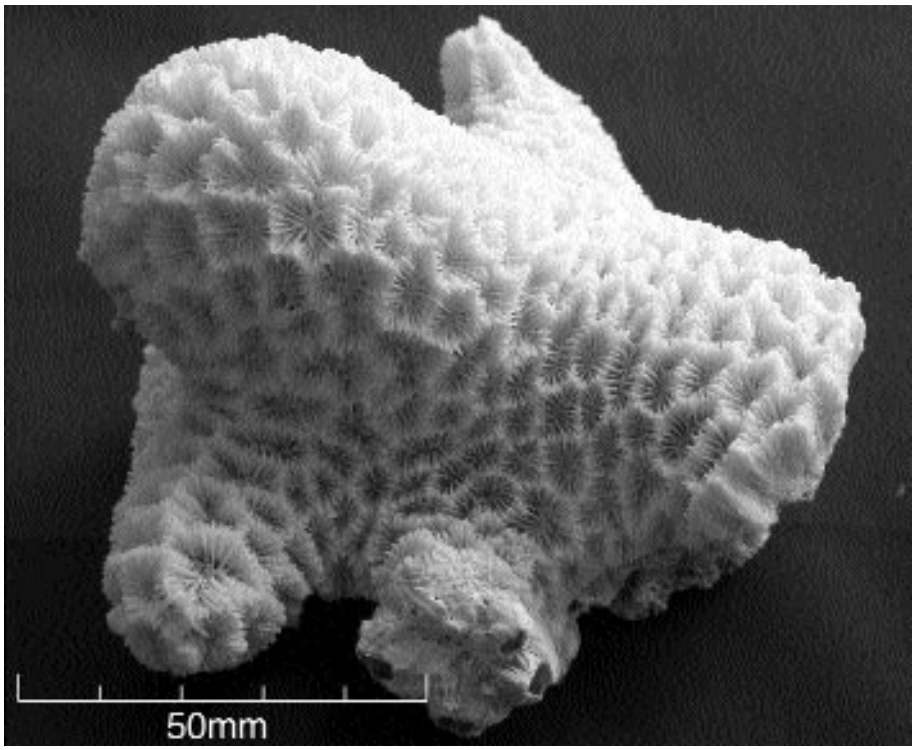

Figure 292. *Platygyra carnosus,* holotype (G55795). From Hong Kong.

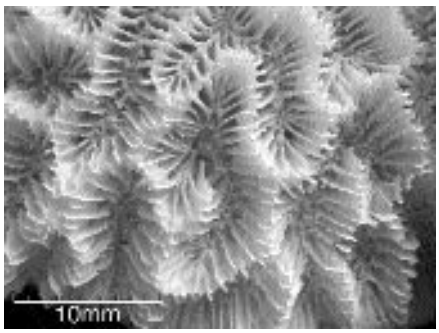

Figure 293. *Platygyra carnosus,* From north-east Madagascar. Showing short valleys.

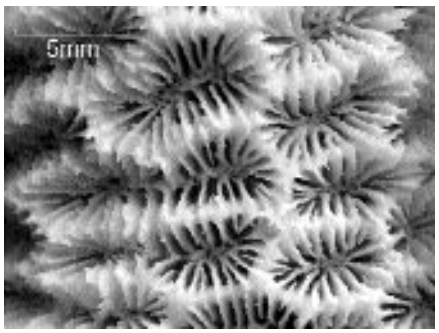

Figure 294. *Platygyra carnosus,* holotype. Showing valley detail.

Previous illustrations:
Veron (2000) Volume 3, page 184, figures 1-3, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Platygyra carnosus Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies are encrusting to massive up to approximately 400 mm diameter and are cerioid to submeandroid with valleys averaging approximately 4 mm diameter. Valleys are highly irregular in length in the one colony. Walls are thin and acute. Septa are of one or two indistinct orders. They are thin and irregularly dentate, with granulated sides. Primary septa converge and may fuse except where valleys are straight. They have vertical inner margins. Septa of adjacent valleys are mostly adjoined. Columellae are well developed in monocentric corallites but become poorly developed in valleys."

Affinities:
Skeletal structures are most similar to those of *P. verweyi* which also has monocentric corallites and short valleys, but septa are shorter and more irregularly arranged, like those of most *Platygyra*. Columellae centres are more distinct than those of most *Platygyra*.

The name:
From the Latin 'carnosus', meaning fleshy.

Holotype:
Specimen G55795. The specimen is 111 mm maximum dimension. Collected by the author from approximately 5 m depth, Hong Kong.

Abundance:
Uncommon although many colonies have been observed in single habitats.

Habitat:
Shallow reef environments that may be exposed to some wave action.

Distribution:
Widely distributed from the Red Sea to the south-west Indian Ocean to the Indonesian-Philippines archipelago.

Platygyra acuta Veron, 2000

Original description: Veron (2000) Volume 3, page 190.

Characters: Colonies are massive and meandroid, with walls forming an acute or sharp edge. Septa are uniformly exsert and have ragged margins. Columellae are well developed but do not form centres. **Colour:** Walls are a uniform grey-brown with pale tops. Valley floors are greenish. **Similar species:** *Platygyra daedalea*, which has weakly developed columellae. Living colonies of *P. daedalea* do not have walls with such acute edge. See also *P. sinensis*, which has more meandroid valleys and walls of uniform thickness. **Habitat:** Most reef environments, especially shallow fringing reefs. **Abundance:** Sometimes common.

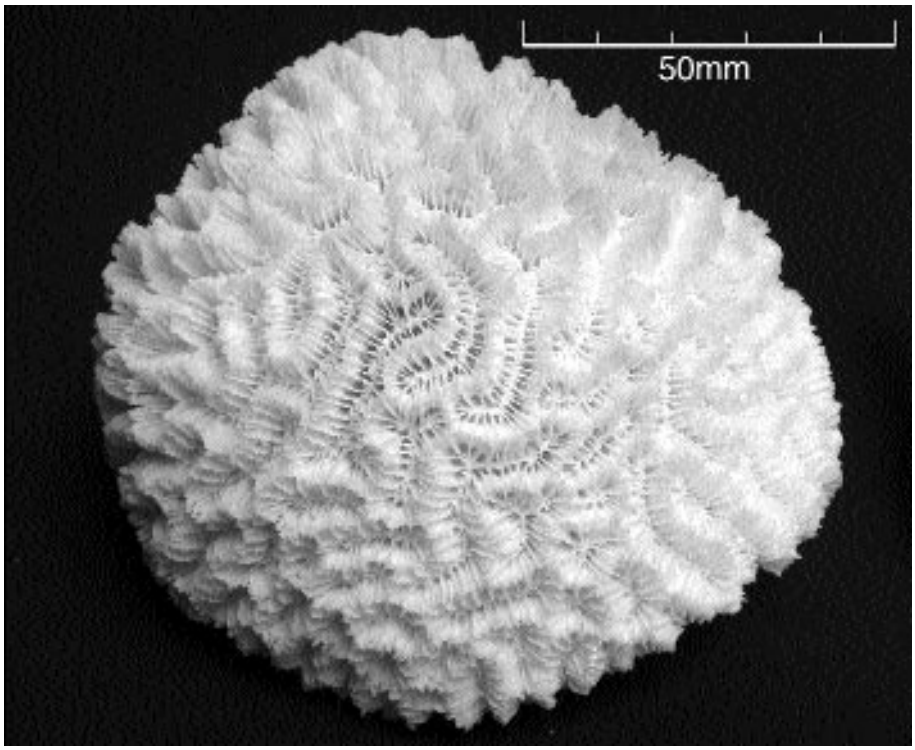

Figure 295. *Platygyra acuta,* holotype (G55845). From Mahé, Seychelles.

Figure 296. *Platygyra acuta,* holotype. Showing short valleys and acute walls.

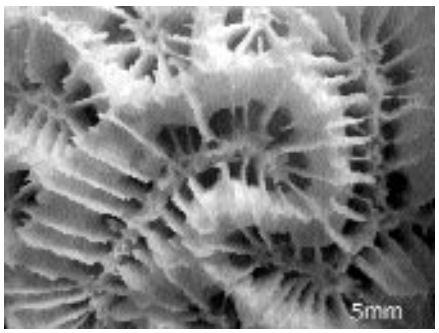

Figure 297. *Platygyra acuta,* holotype. Showing valley detail.

Previous illustrations:
Veron (2000) Volume 3, page 190, figures 1-4. colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Platygyra acuta Veron, 2000: Veron and Fenner (2000), Veron (2002), Fenner (2002), Veron and Turak (in prep.)

Skeletal detail:
Colonies are massive, sometimes flattened but mostly hemispherical. They are primarily meandroid although some valleys may be short or monocentric. Valleys are approximately 3-4 mm wide. Walls are acute with a fine ridge on their summit. Septa are uniformly exsert and have ragged margins. They do not form orders, but vary greatly in length. Approximately half the septa reach the columellae. Columellae are well developed, and are composed of a loose tangle of septal spines. They do not form centres. Septa of adjacent valleys are adjoined.

Affinities:
Platygyra daedalea has less well developed columellae and walls which are thinner but do not have such acute edges. *Platygyra sinensis*, which has more meandroid valleys and walls of more uniform thickness.

The name:
So named because of the sharp (acute) edges of walls.

Holotype:
Specimen G55845. The specimen is 103 mm maximum dimension. Collected by the author from approximately 15 m depth, Mahé, Seychelles.

Abundance:
Sometimes common in shallow habitats.

Habitat:
Most reef environments, especially shallow fringing reefs exposed to some wave action.

Distribution:
Widely distributed from the Red Sea to the south-west Indian Ocean to the Indonesian-Philippines archipelago.

Genus *Montastrea* Blainville, 1830

Montastrea serageldini Veron, 2000

Original description: Veron (2000) Volume 3, page 213.

> **Characters:** Colonies are massive, usually hemispherical, up to 0.8 metres across. Corallites are circular, and vary in size according to stage of growth. Mature corallites are 6-8 mm diameter, crowded and open, with a neat appearance. Sept are neatly arranged in two alternating orders. A paliform crown is formed from 6-8 septa. Columellae are small. **Colour:** Uniform grey, pinkish-brown or orange with pale oral discs. **Similar species:** Does not closely resemble any other *Montastrea*. *Plesiastrea versipora* has smaller, less compact corallites with thicker walls. See also *Plesiastrea devantieri*. **Habitat:** Shallow reef environments. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 213, figures 2-4, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Montastrea serageldini Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies are massive, usually hemispherical to sub-spherical, up to 0.8 metres across. Corallites are circular, plocoid, and vary in size only according to stage of growth. Mature corallites are 6-8 mm diameter, crowded and open, with a neat appearance. Sept are in two alternating orders. Primary

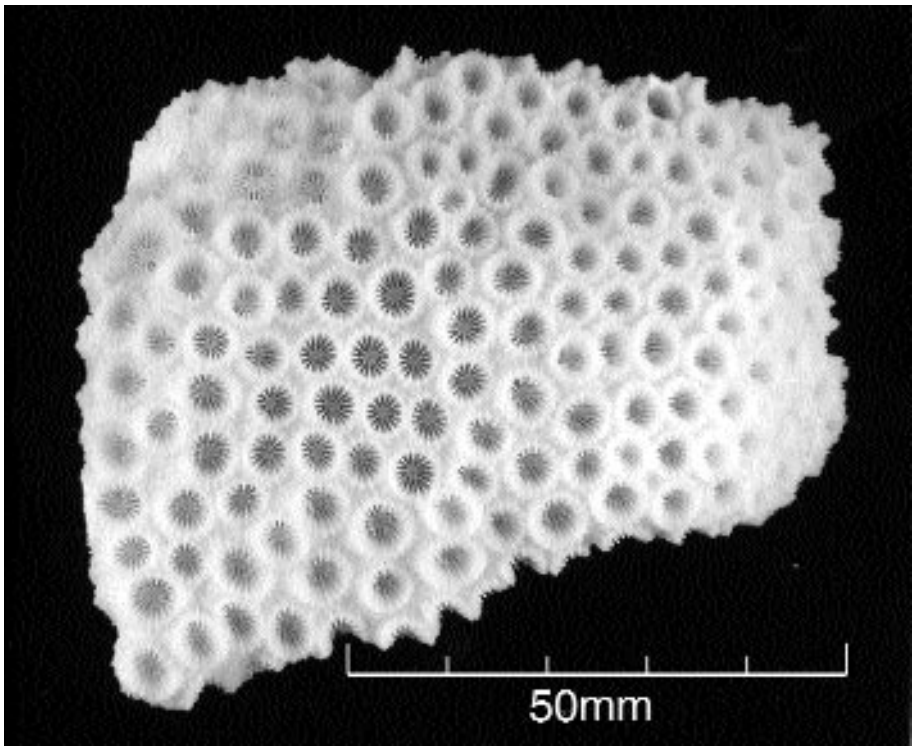

Figure 298. *Montastrea serageldini,* holotype (G55844). From Mahé, Seychelles.

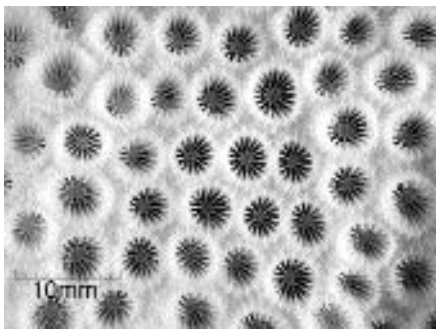

Figure 299. *Montastrea serageldini,* holotype. Showing corallum surface,

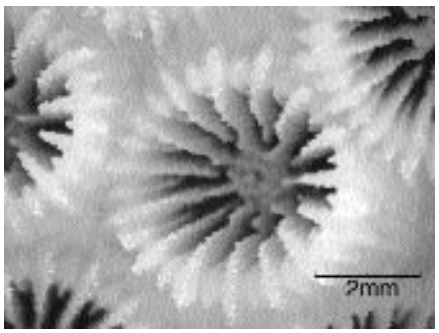

Figure 300. *Montastrea serageldini,* holotype. Showing corallite detail.

septa slope steeply within the calice, and reach the columella. Most have a tall paliform lobe. Second order septa are formed only at the rim of the calice. A palisade of pillar-like paliform lobes surrounds the columella. Columellae are small, deep seated and compact. Costae strongly alternate down the sides of the corallites. Costae of adjacent corallites are not adjoined.

Affinities:
Montastrea curta has more widely spaced corallites with thicker walls, longer septa and less developed paliform lobes. *Plesiastrea devantieri* (see below) has smaller corallites, more widely and irregularly spaced septa and also has fewer paliform lobes.

The name:
Named after Ismail Serageldin, writer and philosopher.

Holotype:
Specimen G55844. The specimen is 96 mm maximum dimension. Collected by the author from approximately 10 m depth, Mahé, Seychelles.

Abundance:
Rare to uncommon although is conspicuous.

Habitat:
Any shallow reef habitat sheltered from very strong wave action.

Distribution:
Western and south-western Indian Ocean east to Sri Lanka.

Montastrea colemani Veron, 2000

Original description: Veron (2000) Volume 3, page 219.

> **Characters:** Colonies are submassive to encrusting, with compact rounded corallites 5-8 mm diameter. 'Groove and tubercle' formations are well developed. Two cycles of septa clearly alternate; both are thickened over walls and are uniformly toothed. A paliform crown is well developed. **Colour:** Uniform brown or brown with green centres. **Similar species:** *Montastrea valenciennesi* has a similar appearance underwater and is distinguished by having larger, more irregular corallites. **Habitat:** Most reef environments. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 3, page 219, figures 6-11, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Montastrea colemani Veron, 2000: Veron and Fenner (2000), Veron (2002), Fenner (2002), Veron and Turak (in prep.)

Skeletal detail:
Colonies are submassive to encrusting, up to approximately 400 mm across. Corallites are closely compacted, rounded to angular in shape and 5-8 mm diameter. 'Groove and tubercle' formations are well developed. Two orders of septa clearly alternate and a third order may be developed. First order

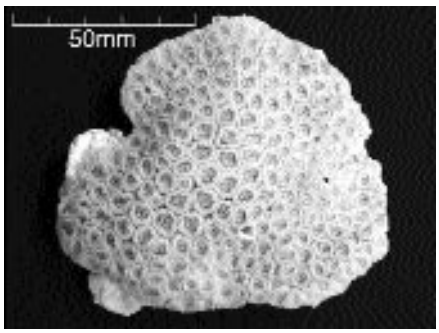

Figure 301. *Montastrea colemani,* holotype (MSI-3008-CO). From the Calamian Islands, Palawan, Philippines.

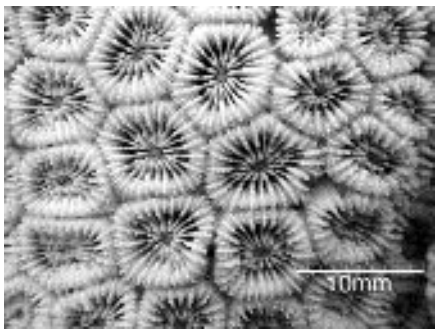

Figure 302. *Montastrea colemani,* holotype. Showing corallite detail.

septa reach the columella and have well developed paliform lobes. A paliform crown is well developed. Second order septa are slightly shorter. Third order septa, if present, are only formed at the calice rim. All septa are thickened over walls and are conspicuously and uniformly dentate. Columellae are deep seated, consist of a few fused spines and mostly less than 1.5 mm diameter. Costae are hardly visible from the colony surface.

Affinities:
Montastrea valenciennesi is distinguished by having larger, more irregular corallites with a less well developed paliform crown.

The name:
Named after Neville Coleman who contributed many photos to *Corals of the World* and *Coral ID* (Veron and Stafford-Smith,2002).

Holotype:
Specimen MSI-3008-CO. The specimen is 104 mm maximum dimension. Collected by the author from approximately 15 m depth, Calamian Islands, Philippines.

Abundance:
Common.

Habitat:
Most reef habitats, but particularly those exposed to moderate wave action.

Distribution:
Socotra, Madagascar the Indonesian-Philippines archipelago and the tropical western Pacific.

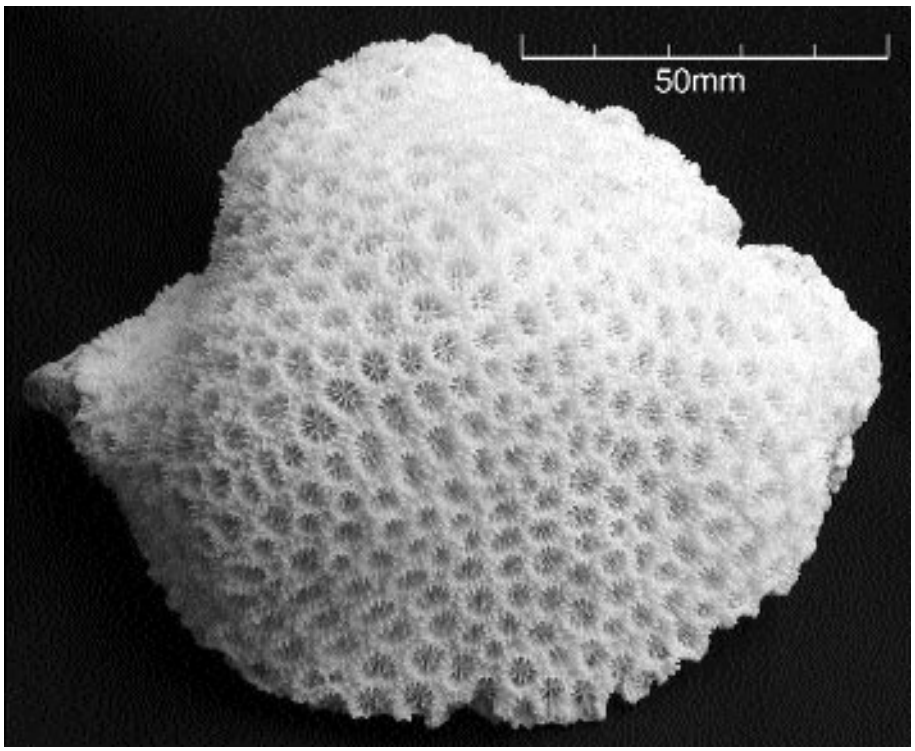

Figure 303. *Plesiastrea devantieri,* holotype (G55847). From Socotra.

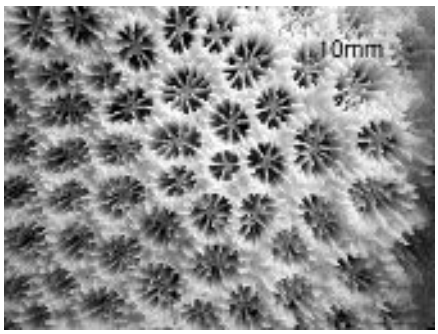

Figure 304. *Plesiastrea devantieri,* holotype. Showing the colony surface.

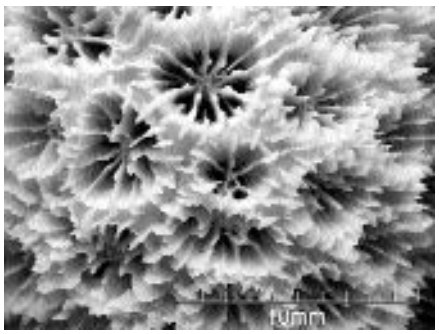

Figure 305. *Plesiastrea devantieri,* holotype. Showing corallite detail.

Genus *Plesiastrea* Milne Edwards and Haime, 1848

Plesiastrea devantieri Veron, 2000

Original description: Veron (2000) Volume 3, page 228.

> **Characters:** Colonies are smooth massive boulders up to 1.5 m across. Corallites are uniform, 3-5 mm diameter with well defined walls. Septa are in two distinct orders of 6-8 and are exsert. Paliform lobes are inconspicuous. Columellae are small. **Colour:** Red to orange, usually with green centres. **Similar species:** *Plesiastrea versipora*, which has more septa and conspicuous paliform lobes. **Habitat:** Shallow reef environments. **Abundance:** Seldom common.

Previous illustrations:
Veron (2000) Volume 3, page 228, figures 1, 2, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Plesiastrea devantieri Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies are massive, hemispherical to sub-spherical, up to 1.5 m across, with an even surface. Corallites are uniform, plocoid, 3-5 mm diameter with well defined walls. Corallites on sides of large colonies are usually slightly and uniformly inclined downwards. Septa are in two distinct orders of 6-8. Both orders are exsert. First order septa have paliform lobes which range from inconspicuous to tall and have vertical inner margins which fuse with the columella. Second order septa are equal and seldom more than 0.3 R. Columellae are deep seated, consist of a few spines only and are up to 1.5 mm diameter. Costae are prominent and alternate. The do not cross the coenosteum which is smooth.

Affinities:
Plesiastrea versipora less excavated calices, has more numerous septa and usually has more conspicuous paliform lobes. *Montastrea serageldini* (see above) has larger corallites with less widely and irregularly spaced septa and also has more paliform lobes.

The name:
Named after the coral biologist Dr Lyndon DeVantier.

Holotype:
Specimen G55847. The specimen is 112 mm maximum dimension. Collected by Lyndon DeVantier from between 3 and 12 m, Hawlaf, Socotra in the Gulf of Aden.

Abundance:
Uncommon but is conspicuous.

Habitat:
Shallow reef habitats, especially lagoons.

Distribution:
Recorded only from Socotra and Madagascar.

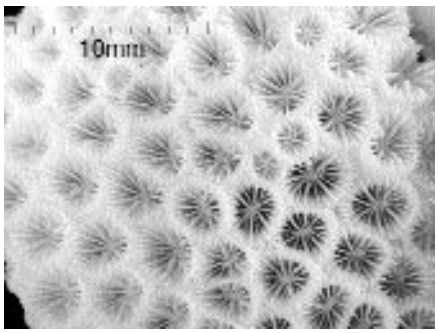

Figure 306. *Leptastrea aequalis,* holotype (WAM Z12912). From Cocos (Keeling) Atoll, eastern Indian Ocean.

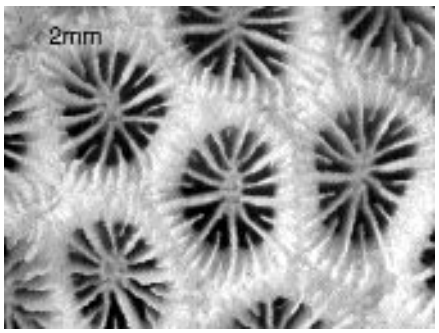

Figure 307. *Leptastrea aequalis,* holotype. Showing corallite detail.

Genus *Leptastrea* Milne Edwards and Haime, 1848

Leptastrea aequalis Veron, 2000

Original description: Veron (2000) Volume 3, page 235.

Characters: Colonies are massive to encrusting. Corallites are rounded and clearly plocoid, with thick walls. Corallites are often uniformly inclined on the colony surface. Septa are in two indistinct orders, primary septa being numerous and equal. 'Groove and tubercle' formations are rare. **Colour:** Cream with dark calices. **Similar species:** *Leptastrea inaequalis*, which has barrel-shaped corallites and six exsert primary septa and *L. bottae*, which has more compacted corallites and exsert primary septa. See also *L. transversa*. **Habitat:** Shallow reef environments. **Abundance:** Rare, except at Cocos (Keeling) Atoll.

Previous illustrations:
Veron (2000) Volume 3, page 235, figures 5-7, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Leptastrea aequalis Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies are massive to encrusting and mostly less than 200 mm across. Corallites are rounded, plocoid and 2.5-3.5 mm diameter. Corallites are often uniformly inclined on the colony surface towards the edge. Septa are in two indistinct orders and a third intermediate order may be recognisable. Primary septa are equal and slope towards the columella, plunging steeply near the columella to fuse with it. Secondary septa, if distinguishable as such are similar but shorter. The third order (second if only two orders are recognisable) are short and restricted to the calice rim. There are no paliform lobes. Columellae are usually elongate, approximately 1 mm long and 0.5 mm wide, and consist mostly of upright spinules. 'Groove and tubercle' formations are rarely found between some of the corallites. Costae are weakly developed and subequal.

Affinities:
Leptastrea inaequalis has barrel-shaped corallites and six exsert primary septa. *Leptastrea bottae* has more compacted corallites which are not inclined on the colony surface and relatively exsert primary septa.

The name:
So named because of this species close affinities with *Leptastrea inaequalis*.

Holotype:
Specimen WAM Z12912. The specimen is 50 mm maximum dimension. Collected by the author from approximately 15 m depth, Cocos (Keeling) Atoll, eastern Indian Ocean.

Abundance:
Rare, except at Cocos (Keeling) Atoll where it is common.

Habitat:
Shallow reef environments exposed to wave action.

Distribution:
South-western Indian Ocean to the Indonesia-Philippines archipelago.

Genus *Parasimplastrea* Sheppard, 1985

Parasimplastrea sheppardi Veron, 2000, new name

Original description: Veron (2000) Volume 3, page 239.

> **Characters:** Colonies are encrusting to submassive. Corallites are 4-6 mm diameter. A 'groove and tubercule' formation may be present, but corallites are cerioid to subplocoid, retaining individual walls. Septa have smooth or slightly serrated margins, are widely spaced, and plunge steeply within the corallite. Columellae are rudimentary, consisting of thickened inner septal margins. Polyps are fleshy. **Colour:** Brown with greenish calices. **Similar species:** *Leptastrea bewickensis*, which is fully cerioid, has more irregular septa and has small columellae. The mussid *Blastomussa merleti* has similar fleshy polyps. The smooth septa resemble those of the oculinids *Galaxea* and *Simplastrea*. **Habitat:** Reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 239, figures 7-10, colour photographs of living coral and monochrome photograph of coral skeleton.

Sheppard and Sheppard (1991), figure 147 (*Parasimplastrea simplicitexta).*

Synonymy:
Parasimplastrea omanensis Sheppard, 1985

Parasimplastrea simplicitexta (Umbgrove, 1942): Sheppard and Sheppard (1991), not Umbgrove (1942)

This is a new name for *Parasimplastrea simplicitexta* originally described as *Parasimplastrea omanensis* by Sheppard (1985) from Oman and subsequently as *Parasimplastrea simplicitexta* from Saudi Arabia (Sheppard and Sheppard, 1991).

Goniastrea simplicitexta Umbgrove (1942) is a fossil species recorded from the Miocene of Java, also recorded from the Plio-Pleistocene of Papua New Guinea by Veron and Kelley (1988). The name *Parasimplastrea omanensis* cannot be used because there is no holotype associated with it.

Skeletal detail:
Colonies are encrusting to submassive. Corallites are 4-6 mm diameter. Budding is extratentacular. A 'groove and tubercule' formation may be present, but corallites are cerioid to subplocoid, retaining individual walls. Septa have smooth or slightly serrated margins, are widely spaced, few in number and plunge steeply within the corallite. There are usually two alternating cycles. Primary septa are up to 12 in average corallites, are 1-2 mm exsert inside the wall, then plunge steeply to the columella. Secondary septa are usually incomplete and may be absent from some or all corallites. They are 0.5 R or less and are relatively thin. There are no pali and septal dentations are weakly developed or absent. Columellae are rudimentary, consisting of thickened inner septal margins. They may form a laterally flattened plate or row of pinnules.

Affinities:
This genus is moved from Family Oculinidae because of general similarities with *Leptastrea bewickensis* and the occasional occurrence of septal serrations and rudimentary columellae. The case for inclusion in either family is not clear as there are also similarities with the mussid genus *Blastomussa*.

The name:
Named after coral biologist Dr Charles Sheppard who originally described the species.

Holotype:
Specimen G55860. The specimen is 73 mm maximum dimension. Collected by the author from approximately 15 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

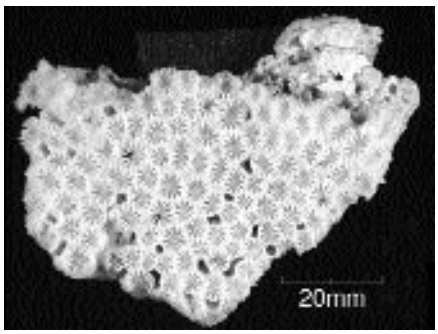

Figure 308. *Parasimplastrea sheppardi,* holotype (G55860). From Sharm al-Sheikh, Sinai Peninsula, Egypt.

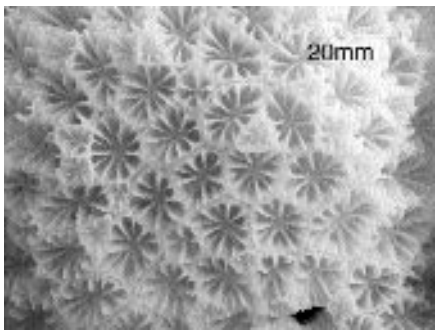

Figure 309. *Parasimplastrea sheppardi,* from Socotra. Showing colony surface.

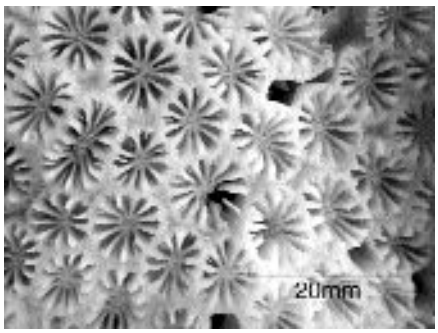

Figure 310. *Parasimplastrea sheppardi,* holotype. Showing corallilte detail.

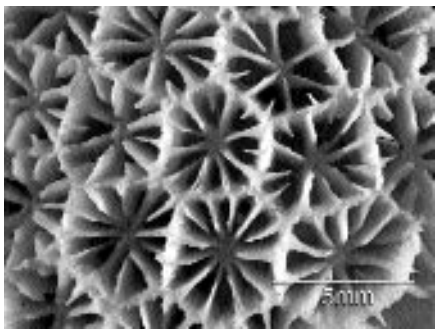

Figure 311. *Parasimplastrea sheppardi,* Oman. Showing corallilte detail.

Distribution:
North-western Indian Ocean and Arabian Gulf.

Genus *Cyphastrea* Milne Edwards and Haime, 1848

Cyphastrea hexasepta Veron, Turak and DeVantier 2000

Original description: Veron (2000) Volume 3, page 245.

> **Characters:** Colonies are massive, with a smooth or irregular surface. Corallites are widely spaced and immersed to tubular, the latter being strongly inclined on the colony surface. Calices are small. The coenosteum is covered with prominent spines which have elaborate surfaces. Septa are usually in two cycles. There are usually six primary septa although this varies among corallites. **Colour:** Mottled brown. **Similar species:** None. The small, widely spaced corallites are distinctive. *Cyphastrea microphthalma* is readily identified by its 10 primary septa. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 245, figure 1 colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are encrusting to massive, with a smooth or irregular surface. Corallites are widely spaced, averaging 2.5 mm apart. Corallites are 0.8 to 1.2 mm diameter and are mostly immersed although some may be inclined on the colony surface. The coenosteum is covered with prominent spines which have elaborate surfaces. Septa are usually in two cycles. There are usually six primary septa although this varies among corallites. The second cycle is developed only near the calice rim and is abortive. Septa have hightly irregular dentations. The margins, sides and dentations are all highly granulared. Columellae are reduced to a few twisted spines. Costae are absent.

Affinities:
Inclusion of this species in Genus *Cyphastrea* is provisional only as it does not closely resemble other *Cyphastrea* species and may warrant a generic designation of its own. It is most similar to *Cyphastrea microphthalma* which is distinguished by its larger and less widely spaced corallites and the presence of 10 primary septa.

The name:
So named because of the six primary septa, a distinguishing characteristic of this species.

Holotype:
Specimen G55834. The specimen is 106 mm maximum dimension. Collected by Emre Turak from 10 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Uncommon.

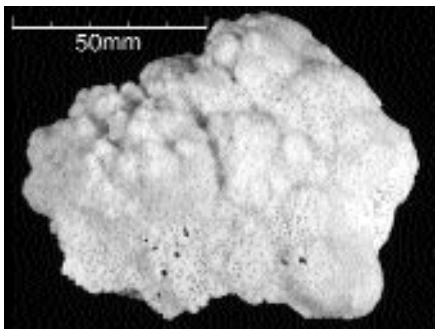

Figure 312. *Cyphastrea hexasepta,* holotype (G55834). From the northern Red Sea coast of Saudi Arabia.

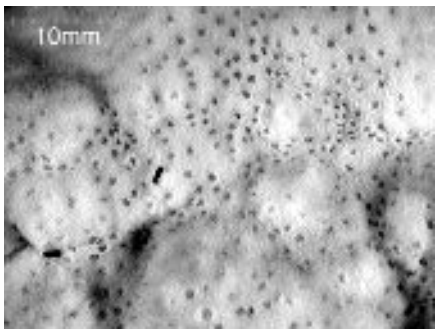

Figure 313. *Cyphastrea hexasepta,* holotype. Showing the colony surface.

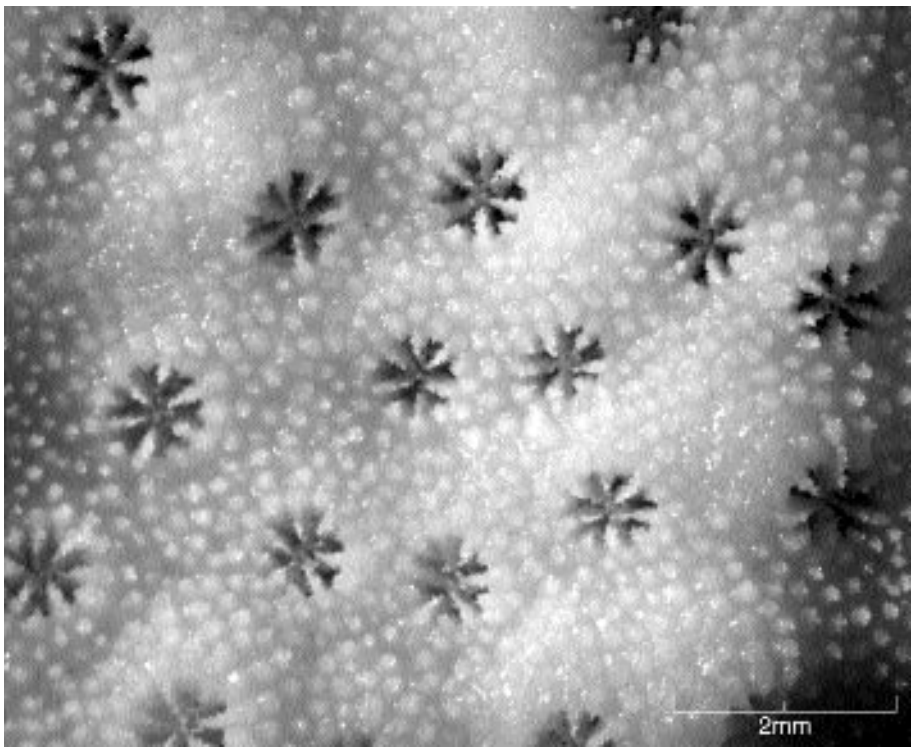

Figure 314. *Cyphastrea hexasepta,* holotype. Showing corallite and coenosteum detail.

Habitat:
Shallow reef environments.

Distribution:
Found only in the Red Sea.

Genus *Echinopora* Lamarck, 1816

Echinopora taylorae (Veron, 2000)

Original description: Veron (2000) Volume 2, page 327. In the original description, this species was erroneously placed in genus *Echinophyllia*.

Characters: Colonies are thick laminae with widely but uniformly spaced corallites. Corallites are well defined, immersed, and thick walled. Septa are in three cycles, the first of which is prominent. Costae are fine, equal, and have fine dentations. **Colour:** Green or yellow, sometimes mottled. **Similar species:** *Echinophyllia patula*, which has larger, less uniform corallites and much more prominent septo-costae. See also the faviid *Echinopora gemmacea*. **Habitat:** Shallow reef environments. **Abundance:** Rare.

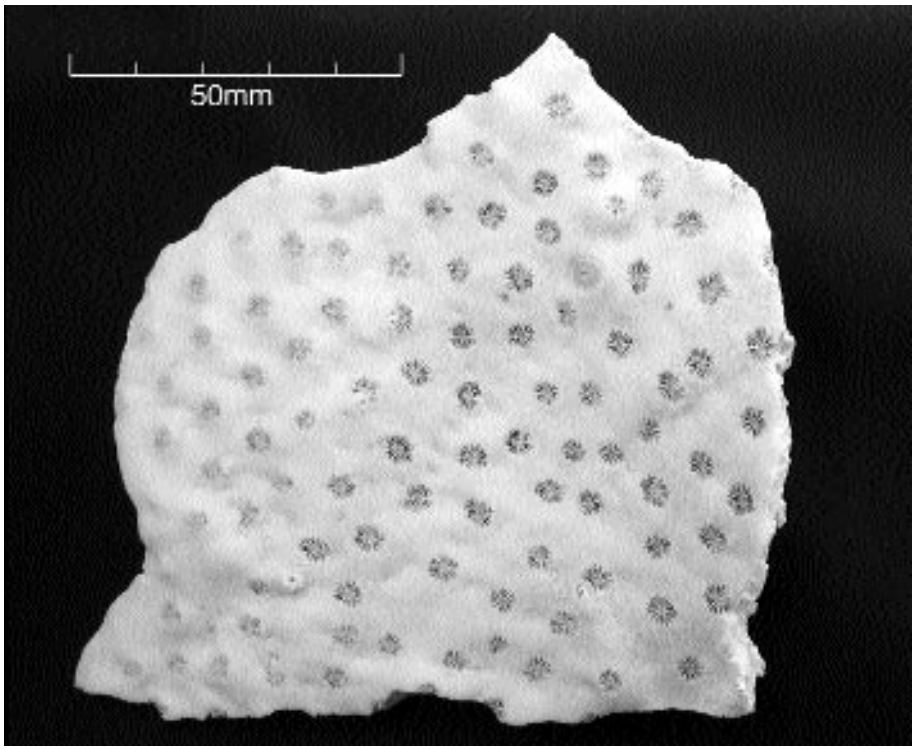

Figure 315. *Echinopora taylorae,* holotype (MSI-3005-CO). From the Calamian Islands, Palawan, Philippines. From an upper reef slope.

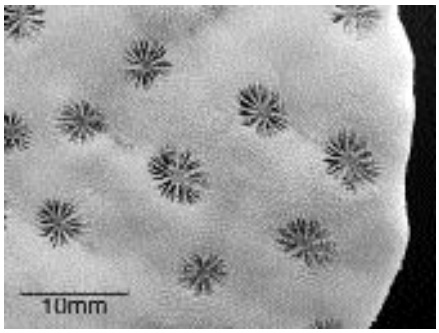

Figure 316. *Echinopora taylorae,* holotype. Showing the corallum surface.

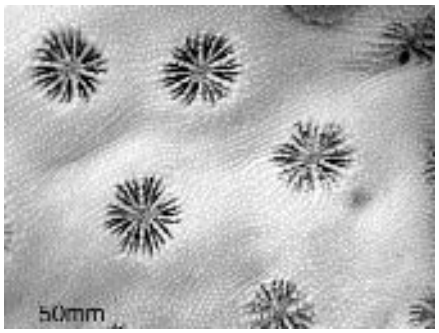

Figure 317. *Echinopora taylorae,* holotype. Showing corallite detail.

Previous illustrations:
Veron (2000) Volume 2, page 327, figure 6, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
Echinophyllia taylorae Veron, 2000: Veron and Fenner (2000)

Skeletal detail:
Colonies are up to 20 mm thick encrusting laminae with free margins. Corallites are approximately 7 mm apart and are well defined, immersed to very slightly conical, and are not inclined towards the colony perimeter. Corallites have well-defined calices approximately 4.5 mm diameter. There are no visible thecae. Septa are in two indistinct alternating orders. First order septa are relatively thick and reach the columella. Second order septa are usually slightly thinner and do not reach the columella. All septa have 1-3 tall column-like dentations. There are no paliform lobes. Columellae are compact, spongy, approximately 1.5 mm diameter. Costae are fine, equal, parallel and have fine equally spaced dentations. Dentations have finely elaborated tips. The undersurfaces of plates are covered by almost microscopic septo-costae which are parallel, equal, and very finely serrated.

Affinities:
This is a distinctive species closest to *Echinopora lamellosa* and *E. gemmacea*. It differs from both these species by having much thicker laminae. Corallites have no visible theca are immersed to slightly conical, rather than slightly exsert with a clearly defined theca. Most characteristically, the costae of the upper surface are much finer than those of other *Echinopora* and have much finer and more uniform serrations.

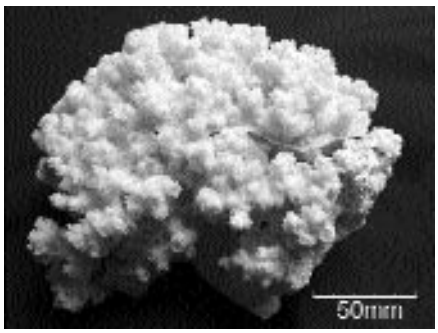

Figure 318. *Echinopora irregularis,* holotype (G55835). From the northern Red Sea coast of Saudi Arabia.

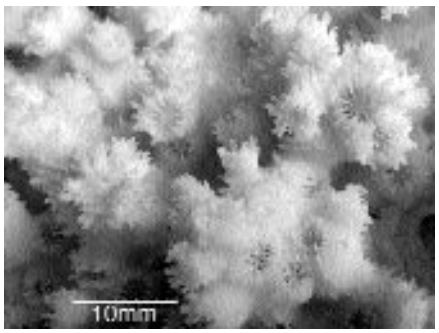

Figure 319. *Echinopora irregularis,* holotype. Showing the colony surface.

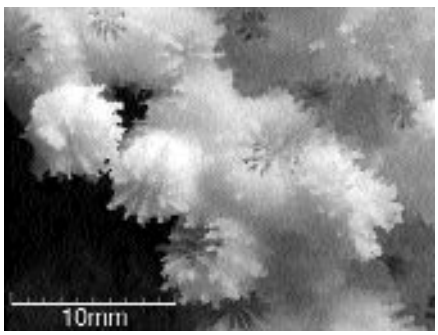

Figure 320. *Echinopora irregularis,* holotype. Showing corallite detail on the colony upper surface.

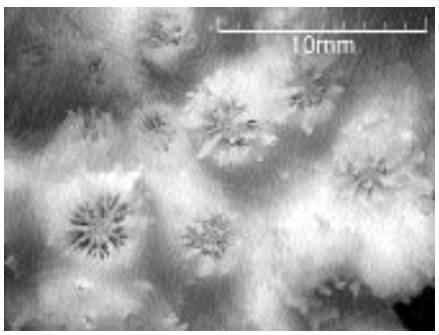

Figure 321. *Echinopora irregularis,* holotype. Showing corallite detail on the colony lower edge.

The name:
Named after Ms Val Taylor who contribute many photographs to *Corals of the World* as well as *Corals of Australia and the Indo-Pacific* (Veron, 1986).

Holotype:
Specimen MSI-3005-CO. The specimen is 125 mm maximum dimension. Collected by the author from approximately 12 m depth, Calamian Islands, Palawan, Philippines.

Abundance:
Known from a small number of specimens.

Habitat:
Largely unknown, recorded only on shallow upper reef slopes.

Distribution:
The Indonesian-Philippines archipelago and Sri Lanka.

Echinopora irregularis Veron, Turak and DeVantier 2000

Original description: Veron (2000) Volume 3, page 262.

> **Characters:** Colonies are composed of irregularly encrusting bases with short branches of irregularly fused corallites. Corallites are 4-7 mm diameter and are thick walled forming an interlocking clump. Septa are in three cycles, the first being exsert with prominent elaborated spines. Costae are irregularly contorted, also with elaborated spines which extend across the coenosteum. **Colour:** Cream. **Similar species:** *Echinopora hirsutissima*, which has much less irregular corallites. **Habitat:** Shallow partly protected reef environments. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 262, figure 1, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are clumps of branches of short irregularly fused corallites on an encrusting base. Corallites are 4-7 mm diameter, immersed to plocoid and thick walled. They form interlocking clumps and face any direction. Septa are in three cycles. First cycle septa are thick, very exsert, have one very prominent dentation and other smaller dentations, all of which have elaborated edges. Both first and second cycle septa reach the columella, the latter being much thinner, not exsert and with fine dentations. Columellae are diffuse, being composed of loosely intertwined septal spines. They are approximately 1-1.5 mm diameter. Costae are sub-equal, are irregularly contorted and have spinules with highly elaborated tips. Costae of adjacent corallites are only irregularly fused. The coenosteum has few elaborations.

Affinities:
Echinopora hirsutissima has corallites of similar size, with a similar septal configuration, but these are much less irregular and do not branch or form branches.

The name:
So named because of the irregularity of most skeletal characters.

Holotype:
Specimen G55835. The specimen is 185 mm maximum dimension. Collected by Emre Turak from 2 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Rare.

Habitat:
Shallow partly protected reef environments.

Distribution:
Recorded only from the Red Sea.

Echinopora robusta Veron, 2000

Original description: Veron (2000) Volume 3, page 263.

> **Characters:** Colonies are massive or are thick plates. Corallites are up to 8 mm diameter, closely compacted, and thick walled. Septo-costae are in two alternating cycles, those of the first cycle being very exsert and coarsely beaded. Columellae are large and consist primarily of fused paliform lobes. **Colour:** Grey- or greenish-brown. **Similar species:** *Echinopora forskaliana*. See also *E. hirsutissima*, which has relatively widely spaced corallites, less conspicuous first cycle septo-costae and smaller columellae. Colonies with closely compacted corallites are *Favia*-like. **Habitat:** Shallow reef environments. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 263, figures 2-4, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are massive or form thick plates. Corallites are 3-4 mm diameter, are closely compacted and are immersed to sub-plocoid with thick walls. Septa are in three cycles. First cycle septa are thick, exsert, and have coarse dentations with elaborated edges. Most first cycle septa reach the columella which consist of a few spines and are <1 mm diameter. Deep within the corallite tangled septal spines form a larger columella structure than visible from the surface. Paliform lobes are irregularly formed and may be laterally fused to form a circle around the columella. Second cycle septa are thinner, and approximately 0.5 R. Third cycle septa are short. All septa are thick and have granulated sides giving a gnarled appearance. Costae are sub-equal, are irregularly contorted and have spinules with elaborated tips. Costae of adjacent corallites are only irregularly fused. There is little visible coenosteum.

Affinities:
Echinopora forskaliana has corallites of similar size, but these are more exsert and have uniform septa. *Echinopora hirsutissima* has relatively widely spaced corallites, less conspicuous first cycle septa and smaller columellae.

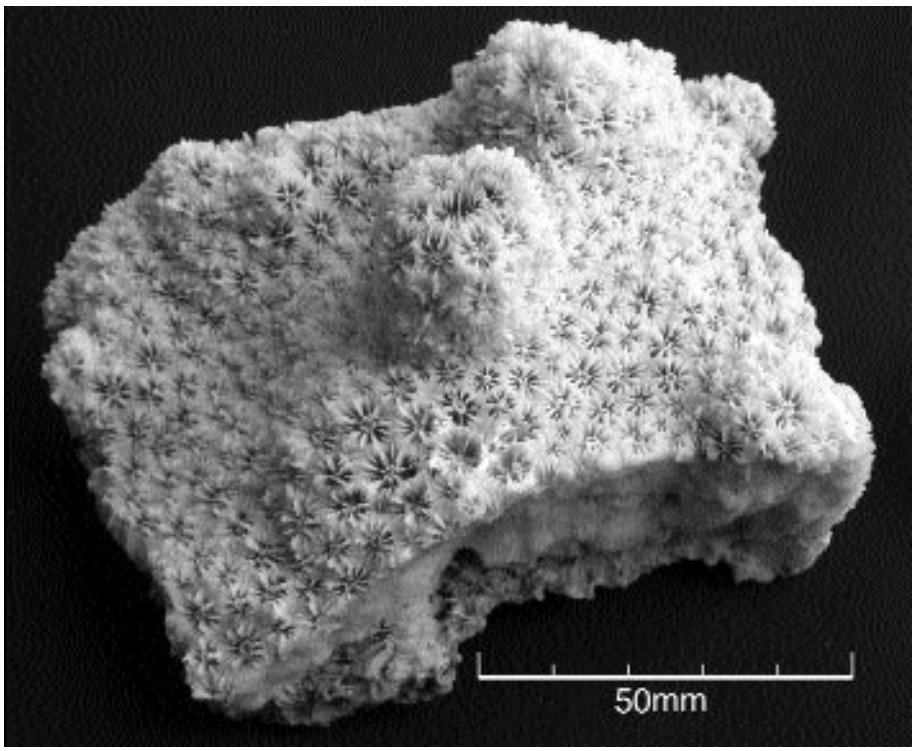

Figure 322. *Echinopora robusta,* holotype (G55849). From southern Sri Lanka.

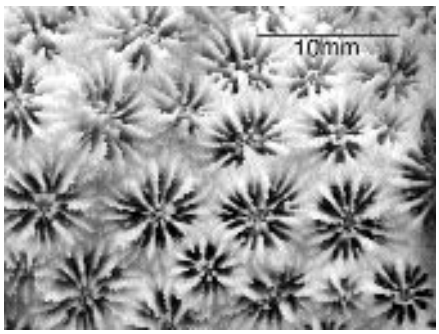

Figure 323. *Echinopora robusta,* holotype. Showing the colony surface.

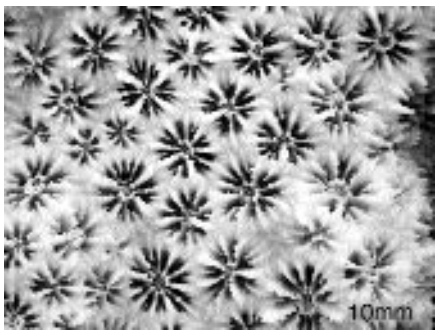

Figure 324. *Echinopora robusta,* holotype. Showing corallite detail.

The name:
So named because of the robust appearance of both living colonies and skeletons.

Holotype:
Specimen G55849. The specimen is 115 mm maximum dimension. Collected by the author from approximately 2 m depth, southern Sri Lanka.

Abundance:
Rare although common at some isolated locations.

Habitat:
Shallow reef environments.

Distribution:
Found only in Sri Lanka.

Echinopora tiranensis Veron, Turak and DeVantier, 2000, new name

Original description: Veron (2000) Volume 3, page 265.

> **Characters:** Colonies are composed of basal plates with short branches of irregularly fused corallites. Corallites are 3-4 mm diameter and are thick walled. Those on basal plates are up to 8 mm exsert and are strongly inclined. Septa are in four orders and may fuse according to Pourtalès plan. Primary septa have paliform lobes. Columellae are compact. Costae are in two orders and are mostly smooth. **Colour:** Pale brown and cream. **Similar species:** *Echinopora gemmacea*, which does not have a smooth coenosteum. *Echinopora mammiformis* has larger, less exsert corallites with the columella twisted into a spiral and no fusion of septa. **Habitat:** Shallow reef environments. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 265, monochrome photographs of coral skeleton.

Synonymy:
Echinopora ehrenbergi Milne Edwards and Haime (1849) in part.

The type series of *Echinopora ehrenbergi* Milne Edwards and Haime (1849) of which 6 specimens are in the Museum National d'Historie Naturelle, Paris, is a mixture of this species (specimen number 592 and possibly also 590 and 602) and *E. gemmacea* Lamarck, 1816 (Turak, personal communication). No holotype is determinable. The species is given a new name because the name *E. ehrenbergi* is unverifiable. Scheer and Pillai (1983) considered *Echinopora ehrenbergi* Milne Edwards and Haime to be a junior synonym of *E. gemmacea* Lamarck

Skeletal detail:
Colonies are composed of basal plates with short branches of irregularly fused corallites. Corallites are 3-4 mm diameter, are thick walled. Those on basal plates are up to 8 mm exsert and are strongly outwardly or irregularly inclined. Septa are in three cycles or, less conspicuously, four orders. First cycle septa are very exsert and have one to three large dentations, the inner one of which may form a paliform lobe. Both first and second cycle septa reach the columella, the latter are much thinner and less exsert than the former. Third cycle septa are thin and short. The cyclical arrangement may not be distinguishable and Pourtalès fusions may occur. Columellae are usually compact but may be diffuse. They are 0.9-1.3 mm diameter. Costae are in two orders and are mostly smooth. Those of adjacent corallites are not regularly fused. The coenosteum is smooth and imporforate.

Affinities:
Echinopora gemmacea does not have a basal plate with branching upgrowths and does not have a smooth coenosteum. *Echinopora mammiformis* has larger, less exsert corallites with the columella twisted into a spiral and there is no fusion of septa.

The name:
So named because the holotype is from the vicinity of Tiran Island, northern Red Sea.

Holotype:
Specimen G55843. The specimen is 158 mm maximum dimension. Collected by Emre Turak from 15 m depth, northern Red Sea coast of Saudi Arabia.

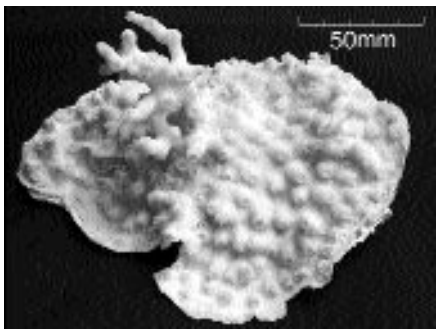

Figure 325. *Echinopora tiranensis,* holotype (G55843). From the northern Red Sea coast of Saudi Arabia. Showing a basal plate and one dividing branch.

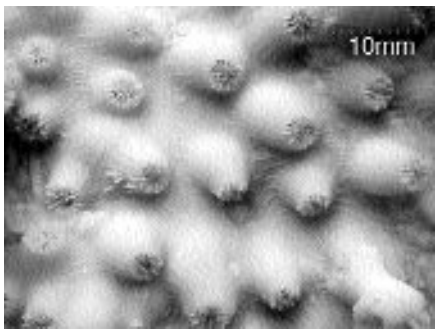

Figure 326. *Echinopora tiranensis,* holotype. Showing branch detail.

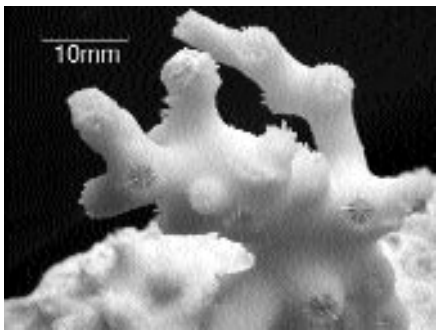

Figure 327. *Echinopora tiranensis,* holotype. Showing plate detail.

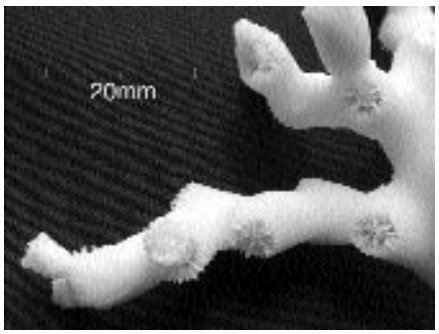

Figure 328. *Echinopora tiranensis,* from the northern Red Sea coast of Saudi Arabia. Showing branch corallites.

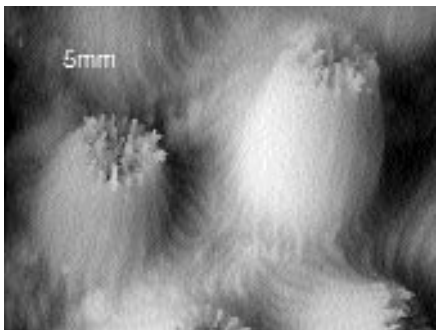

Figure 329. *Echinopora tiranensis,* holotype. Showing plate corallites.

Abundance:
Rare.

Habitat:
Shallow reef environments.

Distribution:
Recorded only from the Red Sea.

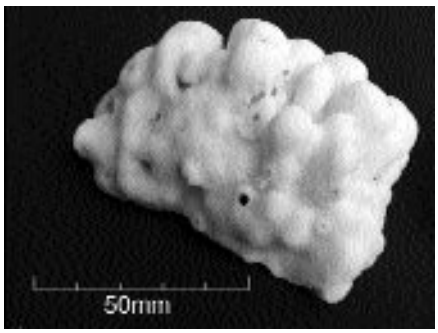

Figure 330. *Porites desilveri,* holotype (G55853). From southern Sri Lanka.

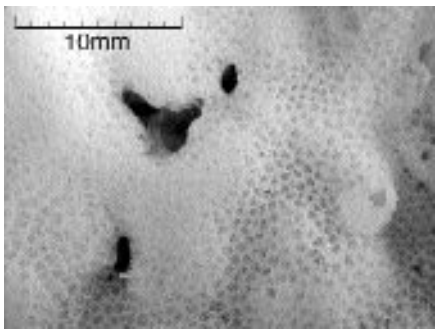

Figure 331. *Porites desilveri,* holotype. Showing the colony surface.

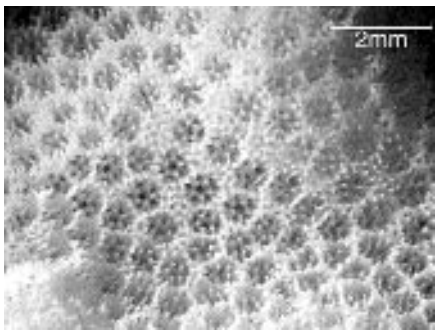

Figure 332. *Porites desilveri,* holotype. Showing corallite detail near column tip.

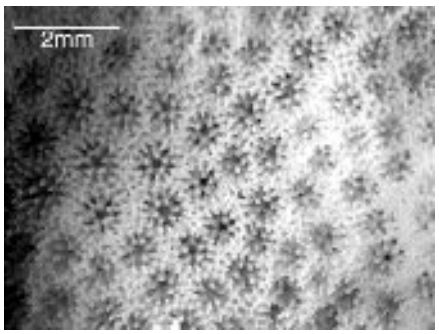

Figure 333. *Porites desilveri,* holotype. Showing corallite detail near column base.

Family Poritidae Gray, 1842

Genus *Porites* Link, 1807

Porites desilveri Veron, 2000

Original description: Veron (2000) Volume 3, page 308.

> **Characters:** Colonies are encrusting with a smooth or nodular surface forming short branches. Septa are so irregular that the *Porites* pattern is often unrecognisable. **Colour:** Grey with white tops to nodules. **Similar species:** *Porites heronensis*. **Habitat:** Shallow reef environments, especially lagoons. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 3, page 308, figures 1, 2, colour photographs of living coral and icon diagram of corallite.

Synonymy:
None.

Skeletal detail:
Colonies are encrusting with a smooth or nodular surface. Short irregular column-like branches are sometimes formed. Corallites are immersed and are approximately 0.3 mm apart. Calices are 0.8-1.0 mm diameter. Septa do not preserve any indication of the *Porites* pattern of fusion. Usually only 4 to 8 septa are developed. These do not fuse. They are approximately radial in orientation although some may occur at any angle. They are thin and without dentations and average approximately 0.5 R. Pali are tall and are commonly not positioned at the ends of septa. Columellae are usually absent but if present they resemble pali.

Affinities:
This species is retained in the genus *Porites* because there are other species which have wholly or partly lost any remnant of the *Porites* biradial pattern of septal fusion. *Porites desilveri* is closest to *P. heronensis* which retains remnants of the *Porites* septal fusion pattern.

The name:
Named after Ranjith DeSilva, who originally brought this species to the author's attention.

Holotype:
Specimen G55853. The specimen is 80 mm maximum dimension. Collected by the author from approximately 7 m depth, southern Sri Lanka.

Abundance:
Common and may be a dominant in some habitats.

Habitat:
Shallow reef environments, especially lagoons.

Distribution:
Recorded only from Sri Lanka.

Porites napopora Veron, 2000

Original description: Veron (2000) Volume 3, page 318.

> **Characters:** Colonies are broad basal laminae with irregular clumps of tapered irregularly fused branches. Corallites are irregularly spaced and are in excavated pits. Those on branches are especially deeply excavated, giving branches a rough surface. Walls between corallites are thin. **Colour:** Brown with white corallite centres. **Similar species:** *Porites nigrescens*, and *P. negrosensis*, both of which have similarly excavated corallites. *Porites nigrescens* does not have basal laminae and *P. negrosensis* has corallites with rounded walls. *Porites horizontalata* has similar corallites but forms primarily explanate plates. See also *P. flavus* and *P. tuberculosa*. **Habitat:** Shallow reef environments. **Abundance:** Sometimes common.

Previous illustrations:
Veron (2000) Volume 3, page 318, figures 1-4, colour photographs of living coral and icon diagram of corallite. *Erratum*: photograph 3 was taken at Palau, not Guam.

Synonymy:
Porites napopora Veron, 2000: Veron (2002)

Skeletal detail:
Colonies are broad basal laminae with irregular clumps of anastomosing branches 5-8 mm thick. Colonies occurring in low light levels are predominantly plate-like while those in high light levels or exposed to some wave action are more branching. Corallites are irregularly spaced but are approximately 0.8 mm apart on branches and plates. They are 1.0-1.4 mm diameter and are in excavated (foveolate) pits. Those on branches are especially deeply excavated, giving branches a rough surface. Walls between corallites are thin. Septa have a biradial pattern, are of similar length, approximately 0.7 R. They have two denticles each and do not fused at their inner margins except for the triplet which is sometimes fused. All septa of the *Porites* biradial pattern are present. There are five large pali, one on each lateral pair and one on the dorsal directive septum. There are no pali on the triplet. Columellae are small. The coenosteum between the corallites is finely textured and forms the ridges referred to above.

Affinities:
Porites nigrescens, and *P. negrosensis* have similarly excavated corallites. *Porites nigrescens* does not have basal laminae and *P. negrosensis* has corallites with rounded walls. *Porites horizontalata* has a similar appearance but forms primarily explanate plates and has substantial differences in corallite structure (fusion of the triplet and of the lateral pairs, 6 pali, no columella and a single denticle per septum). *Porites tuberculosa* (see below) also has corallites immersed between coenosteum ridges but has no similarity of corallite characters. *Porites rugose* (see below) has much smaller corallites with *P.rus*-like structures.

The name:
So named because the species has affinities with species of the former subgenus *Napopora*.

Holotype:
Specimen WAM Z12914. The specimen is 110 mm maximum dimension. Collected by the author from approximately 10 m depth, Ashmore Reef, north-west Australia.

Abundance:
Common in some habitats.

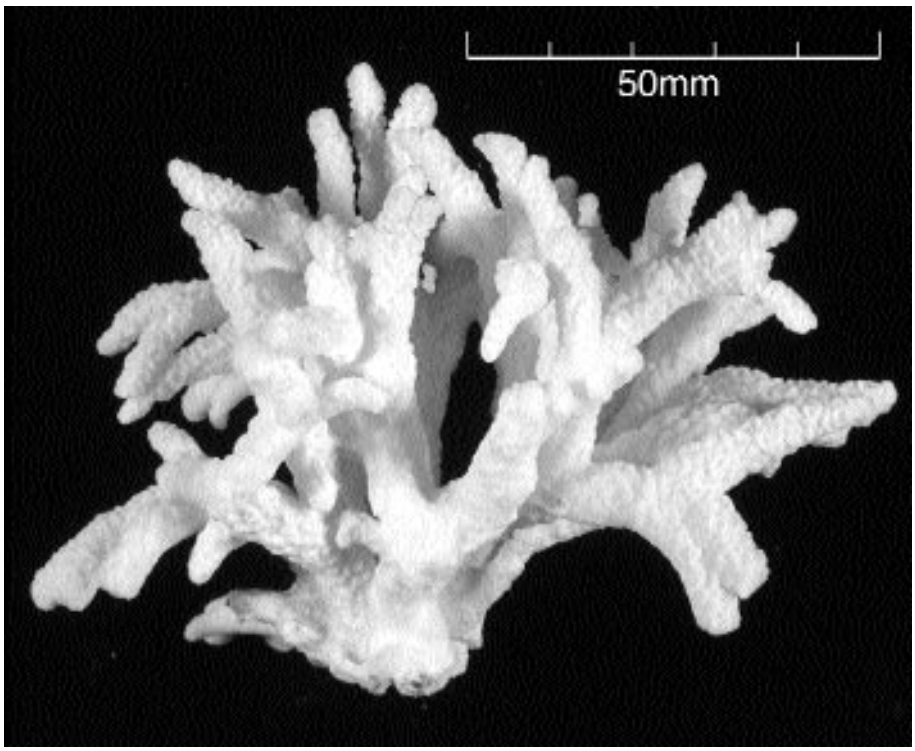

Figure 334. *Porites napopora,* holotype (WAM Z12914). Ashmore Reef, north-west Australia.

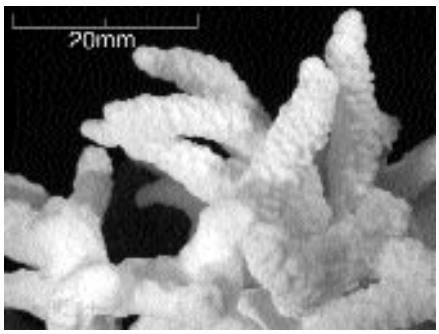

Figure 335. *Porites napopora,* holotype. Showing branch ends.

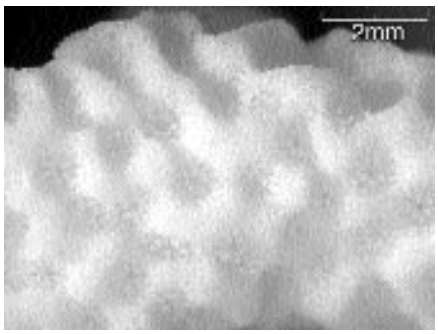

Figure 336. *Porites napopora,* holotype. Showing corallite detail on the side of a branch.

Habitat:
Shallow reef habitats either protected from wave action or exposed to moderate wave surge.

Distribution:
Palau, the Indonesian-Philippines archipelago, Ashmore Reef and the Ryukyu Islands of Japan.

Porites tuberculosa Veron, 2000

Original description: Veron (2000) Volume 3, page 331.

> **Characters:** Colonies are sturdy fused branches, sometimes with basal plates. Branches usually have squared-off tips. Corallites are moderately excavated and connected by ridges of coenosteum. **Colour:** Grey or green. **Similar species:** *Porites attenuata*, which has larger corallites that are not connected by ridges of coenosteum. See also *P. napopora*, which has thicker branches. This species can readily be mistaken for a *Montipora* (Acroporidae) underwater. **Habitat:** Shallow protected reef environments. **Abundance:** Sometimes common in Indonesia.

Previous illustrations:
Veron (2000) Volume 3, page 331, figures 5-8, colour photographs of living coral and icon diagram of corallite.

Synonymy:
Porites tuberculosa Veron, 2000: Veron (2002), Fenner (2002)

Skeletal detail:
Colonies sometimes have small basal laminae but are predominantly clumps of tapered thick branches which may, rarely, anastomose. Only colonies occurring in low light levels have basal plates. Corallites are irregularly spaced but are approximately 0.2-1.0 mm apart. They are approximately 1.6 mm diameter, but appear to be up to 2.2 mm diameter when surrounded by upraised coenosteum. They are separated by irregular *Montipora*-like tuberculae composed of coarse coenosteum. These tuberculae commonly form ridges several mm long which run in any direction and which may fuse with other ridges. Walls between corallites are irregular. Septa are thick and have a biradial pattern. Septa of lateral pairs are usually longer that the other septa and are approximately 0.8 R. Those of the triplet are not fused. Five to eight tall pali are present, five if only one occurs with the triplet. Denticles are inconspicuous or absent. Columellae are large. The coenosteum between the corallites is coarsely textured.

Affinities:
No other *Porites* has tubercle-like formations of coenosteum. *Porites napopora* (see above) has coenosteum ridges but colonies have well-developed basal plates, thinner branches and substantially distinct corallites. *Porites rugose* (see below) has much smaller corallites with *P.rus*-like structures.

The name:
So named because this species has tuberculae-like coenosteum structures.

Holotype:
Specimen G55804. The specimen is 86 mm maximum dimension. Collected by the author from approximately 12 m depth, Flores, Indonesia.

Abundance:
Sometimes common in Indonesia.

Habitat:
Shallow protected reef environments.

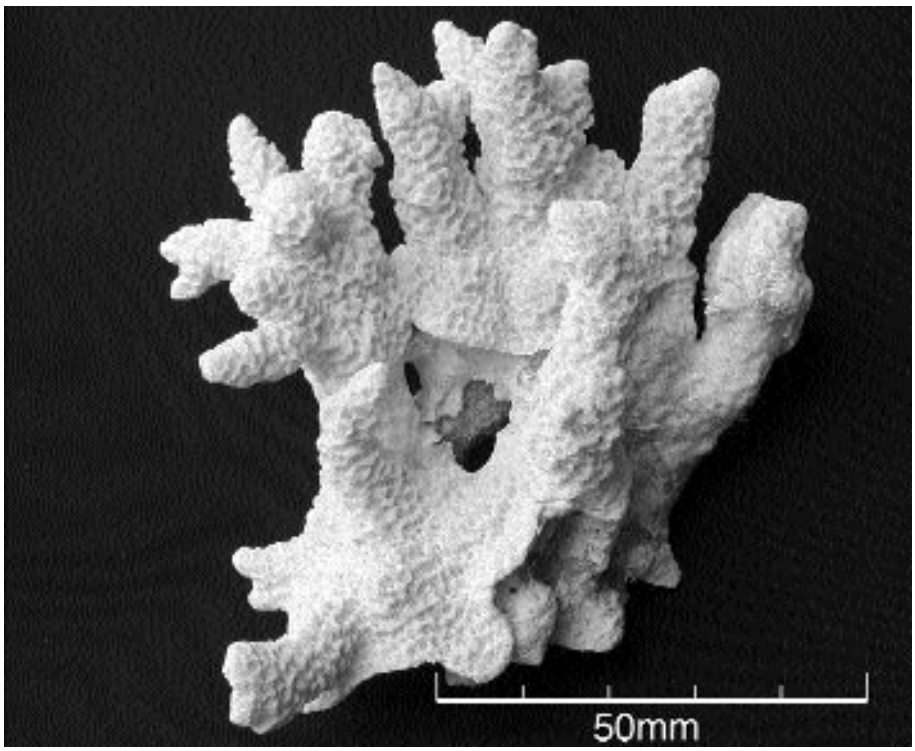

Figure 337. *Porites tuberculosa,* holotype (G55804). From Flores, Indonesia.

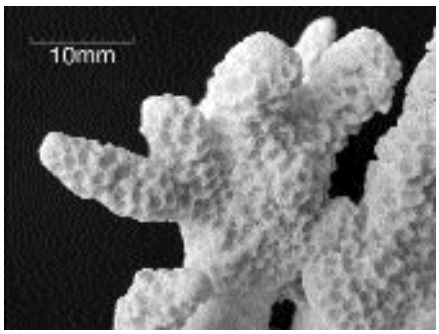

Figure 338. *Porites tuberculosa,* holotype. Showing branch surface.

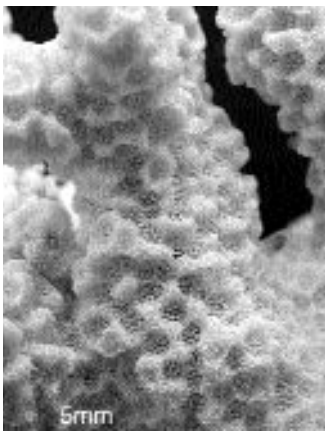

Figure 339. *Porites tuberculosa,* holotype. Showing branch detail.

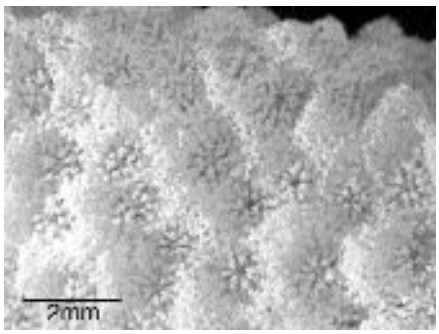

Figure 340. *Porites tuberculosa,* holotype. Showing corallite detail.

Distribution:
Eastern Papua New Guinea to the Indonesian-Philippines archipelago.

Porites flavus Veron, 2000

Original description: Veron (2000) Volume 3, page 341.

> **Characters:** Colonies consist of thin tapered branches which irregularly fuse. There are no basal laminae. Corallites are superficial giving branches a smooth appearance. **Colour:** Uniform pale grey with yellow tips to branches. **Similar species:** *Porites sillimaniana*, which has branches of similar size and appearance but has flat laminar bases. See also *P. ornata*. **Habitat:** Shallow protected fringing reefs. **Abundance:** Locally common.

Previous illustrations:
Veron (2000) Volume 3, page 341, figures 3-5, colour photographs of living coral and icon diagram of corallite.

Synonymy:
Porites flavus Veron, 2000: Veron (2002)

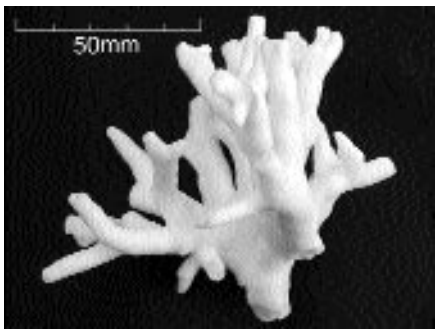

Figure 341. *Porites flavus,* holotype (G55830). From Milne Bay, eastern Papua New Guinea.

Figure 342. *Porites flavus,* holotype. Showing sides of branches.

Figure 343. *Porites flavus,* holotype. Showing branch surface detail.

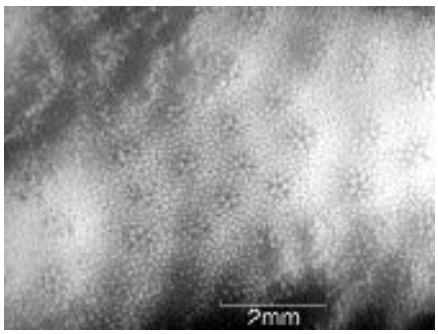

Figure 344. *Porites flavus,* holotype. Showing coenosteum and corallite detail.

Skeletal detail:
Colonies are compact thickets, commonly hemispherical in shape, up to 400 mm diameter and are composed of a mass of curved branches without the formation of basal laminae. Branches are slightly tapered, approximately 7 mm diameter at mid-length, divide infrequently and anastomose rarely. Corallites are superficial. Calices are approximately 0.8 mm diameter and have very thick walls. They have no columella. Septa have one denticle near the corallite wall. The triplet forms a trident and there are 4-6 large pali, one on the triplet and usually one on each lateral pair. The coenosteum is fine.

Affinities:
Porites ornata also has very small corallites and branches without basal laminae, but branches are strongly tapered, corallite walls are not thick, a small columella is present. Septa also form a more regular pattern with one palus on each lateral pair, the triplet and dorsal directive. *Porites rus* and *P. monticulosa* develop branches but always have submassive or laminar bases, coenosteum ridges and also have smaller corallites.

The name:
So named from the Latin 'flavus', meaning yellow and referring to the colour of branch tips.

Holotype:
Specimen G55830. The specimen is 92 mm maximum dimension. Collected by the author from approximately 15 m depth, Milne Bay, eastern Papua New Guinea.

Abundance:
Locally common.

Habitat:
Shallow reef slopes protected from strong wave action

Distribution:
Recorded only from eastern Papua New Guinea.

Porites rugosa Fenner and Veron, 2000

Original description: Veron (2000) Volume 3, page 342.

> **Characters:** Colonies are branching, the branches being irregularly contorted and fused. Corallites are very small and are deeply embedded in the coenosteum. The coenosteum is very rough and seldom surrounds corallites, but rather forms irregular ridges. **Colour:** Pale brown or pinkish, with yellow tips to branches. **Similar species:** *Porites nigrescens*, which has larger corallites, less contorted branches and a more even coenosteum. **Habitat:** Shallow reef environments. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 342, figures 1, 2, colour photographs of living coral and icon diagram of corallite.

Synonymy:
Porites rugosa Fenner and Veron, 2000: Veron (2002), Fenner (2002)

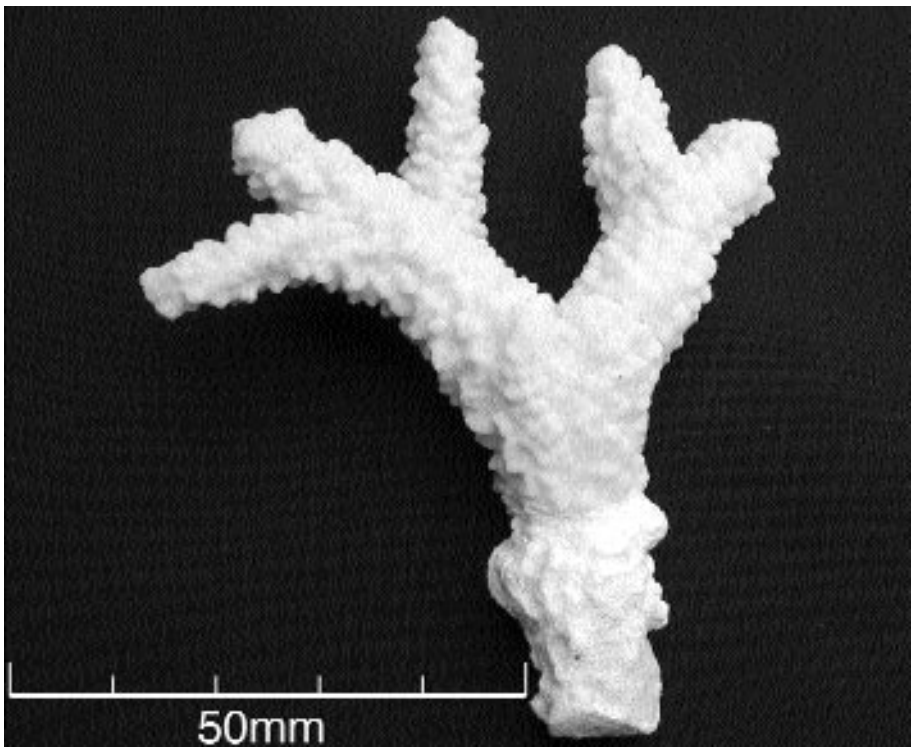

Figure 345. *Porites rugosa,* holotype (G55808). From Sulawesi, Indonesia.

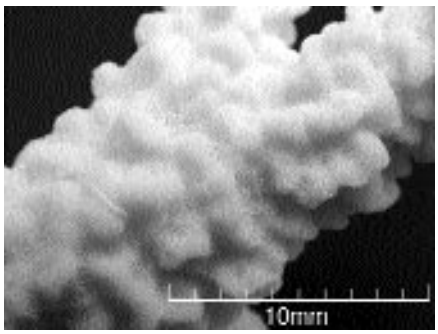

Figure 346. *Porites rugosa,* holotype. Showing branch surface detail.

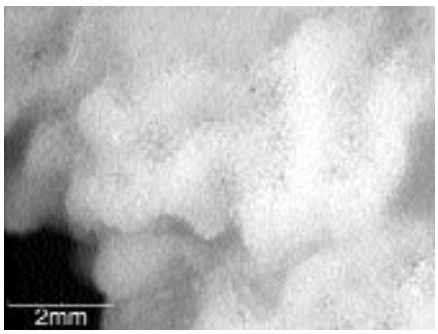

Figure 347. *Porites rugosa,* holotype. Showing corallite detail.

Skeletal detail:

Colonies are up to 1 m diameter. They have no basal laminae and are irregular clumps of twisted, occasionally anastomosing, branches up to 15 mm thick. Branches commonly have pointed ends. Branches surfaces are rough, due to ridges and conical projections of coenosteum. Corallites are irregularly spaced but are approximately 0.5-1.0 mm apart. They are very small, approximately 0.7 mm diameter. Corallites are separated by high irregular ridges of coenosteum. Septa have a biradial pattern, are of uniform length, approximately 0.8 R. Each septum has one denticle adjacent to the corallite wall. The triplet and radial pairs are always highly fused. All septa of the *Porites* biradial pattern are present. There are six pali, one on each lateral pair and one on the dorsal directive and one on the triplet. Columellae are present. The coenosteum between the corallites is finely textured and forms the conspicuous ridges referred to above.

Affinities:
All other *Porites* with prominent coenosteum ornamentations have much larger corallites. The corallites of *P. rugosa* are similar to those of other branching species, notably *P. flavus* (see above), *P. ornata* and *P. monticulosa*, but these species do not have a similar ornamentation.

The name:
From the Latin 'rugose', meaning folded and referring to the contortions on branches.

Holotype:
Specimen G55808. The specimen is 70 mm maximum dimension. Collected by Doug Fenner from approximately 8 m depth, Banggai Islands, Sulawesi, Indonesia.

Abundance:
Uncommon.

Habitat:
Shallow reef environments exposed to some wave action or currents.

Distribution:
Indonesian-Philippines archipelago.

Porites harrisoni Veron, 2000

Original description: Veron (2000) Volume 3, page 343.

> **Characters:** Colonies are usually less than one metre across. They have a wide range of submassive, nodular, columnar and branching growth-forms on a broad encrusting base. **Colour:** Commonly dark brown, also pink or blue. **Similar species:** *Porites compressa*, which has distinct corallite characters. See also *P. nodifera*, which has a similar growth-form. **Habitat:** Shallow fringing reefs. **Abundance:** Locally common and may be a dominant species.

Previous illustrations:
Veron (2000) Volume 3, page 343, figures 3, 4 colour photographs of living coral and icon diagram of corallite.

Carpenter *et al*. (1997), as *Porites compressa*, page 46-7, photographs of living coral and monochrome diagram of skeleton.

Synonymy:
Porites compressa Dana, 1846: Scheer and Pillai (1983), Carpenter *et al*. (1997), not Dana (1846)
Porites harrisoni Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies are usually less than one metre across. They have a wide range of submassive, nodular, columnar and branching growth-forms on a broad encrusting base. Corallites have angular walls and moderately excavated calices 1.0-1.5 mm diameter. Lateral pairs of septa and the septa of the triplet are sometimes fused but are mostly free. All septa have one conspicuous denticle midway along the septum and a second denticle may occur near the corallite wall. There are usually 8 pali, but fewer pali are developed with the triplet depending on the latter' degree of fusion. Columellae are present, but small.

Affinities:
Porites compressa has similar colony formation except that colonies grow much larger. Corallites of *P. compressa* have lateral pairs of septa fused and usually have a fused triplet, both dorsal and ventral directive septa are short, all septa have one denticle near the corallite wall and 4-5 conspicuous radii.

Of Indo-Pacific *Porites*, *P. cylindrica* and *P. attenuata* have the most similar colony formation but these have longer, less irregular branches and very dissimilar corallite structures.

The name:
Named after the coral biologist Dr Peter Harrison who studied this species.

Holotype:
Specimen G55811. The specimen is 122 mm maximum dimension. Collected by Peter Harrison from a shallow unconsolidated reef, Kuwait.

Abundance:
Locally common and may be a dominant species.

Habitat:
Shallow fringing reefs.

Figure 348. *Porites harrisoni,* holotype (G55811). From Kuwait.

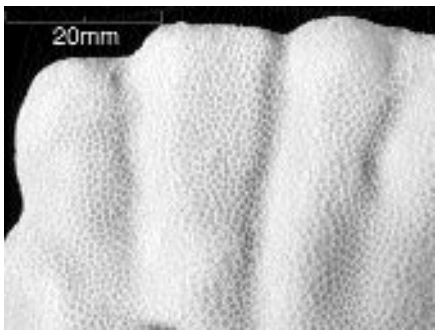

Figure 349. *Porites harrisoni,* holotype. Showing branch surface detail.

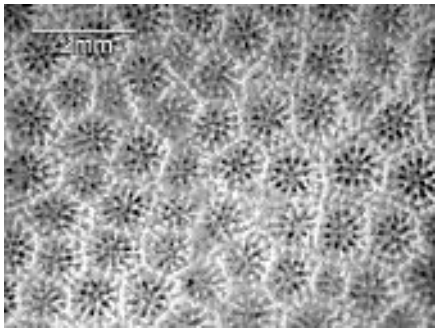

Figure 350. *Porites harrisoni,* holotype. Showing coenosteum and corallite detail.

Distribution:
Red Sea to Kuwait.

Genus *Poritipora* Veron, 2000

Original description: Veron (2000) Volume 3, page 347.

Characters, abundance and distribution: This genus has only one species, see *Poritipora paliformis*.

Previous illustrations of genus:
None.

Synonymy:
None.

Skeletal detail and affinities:
See *Poritipora paliformis*, below.

The name:
So named because this genus is readily mistaken for *Porites* underwater.

Poritopora paliformis Veron, 2000

Original description: Veron (2000) Volume 3, page 347.

> **Characters:** Colonies are massive, usually hemispherical, and may be several metres across. The surface is smooth to undulating. Corallites are deeply excavated. There are two cycles of 12 septa each, 6 pali and no columella. Walls are thin. **Colour:** Dull brown. **Similar species:** Resembles *Porites densa*, which has slightly smaller corallites, but this species is easily recognised underwater. See also the astrocoeniid *Stylocoeniella armata*. **Habitat:** Shallow reef environments and lagoons. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 347, figures 3, 4, colour photographs of living coral and drawing of coral skeleton.

Synonymy:
Porites paliformis Veron, 2000: Veron and Turak (in prep.)

Skeletal detail:
Colonies are massive and may be several metres across. The surface is smooth to undulating. Corallites are circular or angular, approximately 2.0-2.5 mm diameter, are immersed and closely compacted, with walls approximately 1 mm thick. Corallites are deeply excavated and have two cycles of 12 septa each. Septa form vertical comb rows down the sides of the corallite walls. Primary septa have tall pali. There are no columellae. Walls are composed of a very coarse matrix of skeletal rods. The upper surface of these walls is a palisade formed of the upper edges of septa.

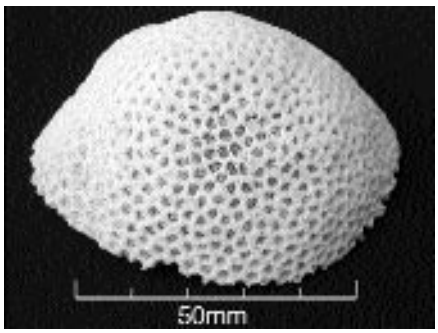

Figure 351. *Poritopora paliformis,* holotype (G55857). From Zanzibar, Tanzania.

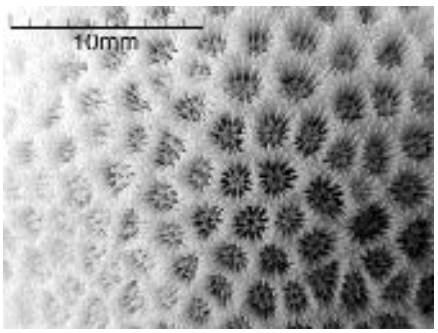

Figure 352. *Poritopora paliformis,* holotype. Showing surface detail.

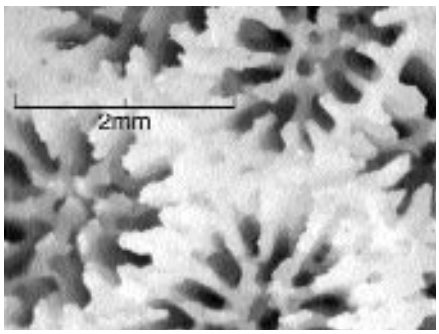

Figure 353. *Poritopora paliformis,* holotype. Showing corallite detail.

Affinities:
There are no clear affinities with any other genus. Although the general appearance suggests affinities with *Porites* and *Stylaraea*, the septa and absence of a columella do not resemble either of these genera. The coarse coenosteum and formation of septal comb rows is *Goniopora*-like.

The name:
So named because of the six prominent pali which are characteristic of the species.

Holotype:
Specimen G55857. The specimen is 65 mm maximum dimension. Collected by the author from approximately 15 m depth, Zanzibar, Tanzania.

Abundance:
Rare.

Habitat:
Shallow reef environments.

Distribution:
South-west Indian Ocean east to Sri lanka.

Genus *Goniopora,* Blainville, 1830

Goniopora sultani Veron, DeVantier and Turak 2000

Original description: Veron (2000) Volume 3, page 355.

> **Characters:** Colonies are thick short columns, oval in transverse section. Corallites are similar on the tops and sides of columns. They are very large (7-8 mm diameter), compact, with thin walls and thus have an angular shape. Columella are broad and are mostly composed of six septal deltas. Septa are short and uniform in size and spacing. Polyps are elongate when fully extended. **Colour:** Pale cream. **Similar species:** *Goniopora lobata* and *G. columna* which have similar columnar branches but smaller corallites. See also *G. stokesi* which has high, uneven septal walls. This species has the largest corallites of all *Goniopora.* **Habitat:** Upper reef slopes. **Abundance:** Uncommon.

Previous illustrations:
Veron (2000) Volume 3, page 355, figure 4, colour photograph of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are thick short columns, oval in transverse section. Corallites are similar on the tops and sides of columns. They are moderately excavated, very large (with calices 7-8 mm diameter), round to angular, compact and have 1.8-2.5 mm thick. Septa are in irregular comb rows and are irregularly fused along their inner margins forming small deltas or fused with the columella. Septa are thick near the wall and thin elsewhere. They are uniformly but widely spaced. Columellae are broad and are mostly composed of six septal deltas.

Affinities:
This species has the largest corallites of all *Goniopora. Goniopora lobata* and *G. columna* have similar columnar branches but smaller corallites. Additionally, *G. lobata* corallites do not have septal deltas and have much small columellae and *G. columna* corallites have less well defined and shorter septa. *Goniopora stokesi* also has large corallites but has distinctive high, uneven, septal walls and forms massive, not branching, colonies.

The name:
So named because of the majestic size of the polyps.

Holotype:
Specimen G55838. The specimen is 172 mm maximum dimension. Collected by Lyndon DeVantier from 12 m depth, northern Red Sea coast of Saudi Arabia.

Abundance:
Usually uncommon.

Habitat:
Recorded only on upper reef slopes.

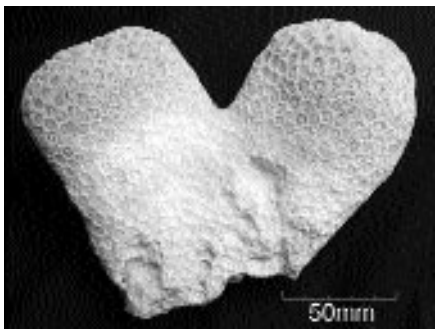

Figure 354. *Goniopora sultani,* holotype (G55838). From the northern Red Sea coast of Saudi Arabia.

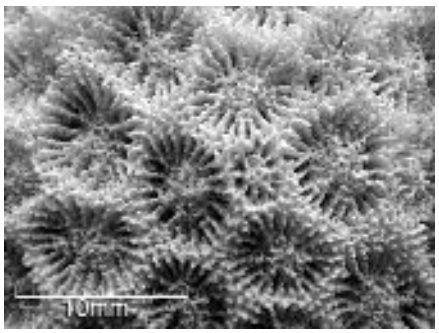

Figure 355. *Goniopora sultani,* holotype. Showing surface detail of a branch side.

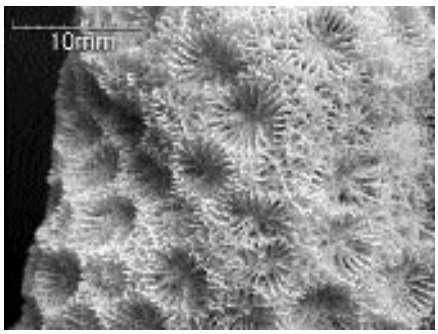

Figure 356. *Goniopora sultani,* holotype. Showing surface detail of a branch end.

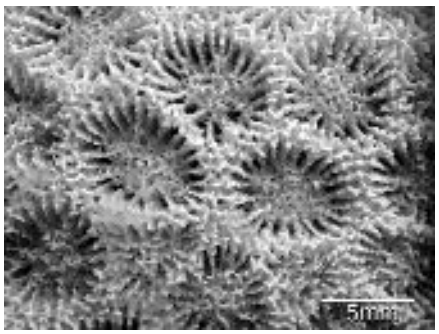

Figure 357. *Goniopora sultani,* holotype. Showing corallite detail.

Distribution:
Recorded only in the Red Sea.

Goniopora albiconus Veron, 2000

Original description: Veron (2000) Volume 3, page 361.

Characters: Colonies are encrusting, forming thin irregular laminae. Corallites are shallow, polygonal, and have thin walls. Corallites vary greatly in size. Septa are irregularly fused but do not form deltas. Columellae are very small. Polyps are short and even. Oral cones are exceptionally large while tentacles are short and thin. Polyps retract rapidly if disturbed. **Colour:** White oral cones are conspicuous. **Similar species:** Resembles zoanthids underwater. *Goniopora columna* also has large white oral cones but polyps are elongate and tentacles are thicker. **Habitat:** Shallow reef environments. **Abundance:** Sometimes common.

Previous illustrations:
Veron (2000) Volume 3, page 361, figures 3-6, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
Goniopora albiconus Veron, 2000: Veron (2002), Veron and Turak (in prep.)

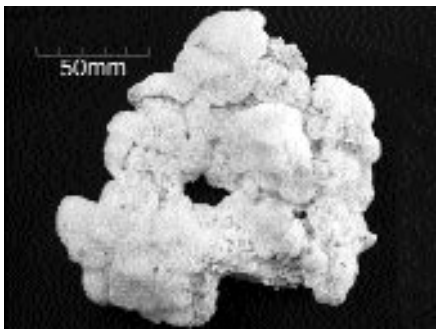

Figure 358. *Goniopora albiconis,* holotype (G55850). From southern Sri Lanka.

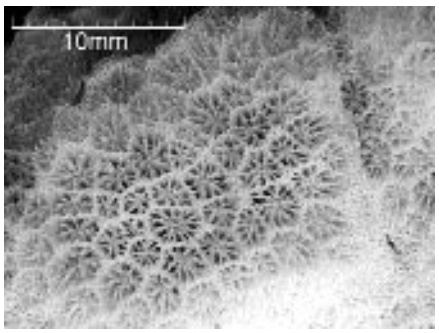

Figure 359. *Goniopora albiconis,* holotype. Showing corallite detail.

Skeletal detail:
Colonies are encrusting, forming thin irregular laminae up to approximately one metre diameter. Corallites vary greatly in size but are up to 2.4 mm diameter. They are superficial, polygonal, and have thin walls. Septa vary greatly within and among coralla with even adjacent corallites showing major septal differences. Septa are usually irregularly fused but do not form distinct deltas. They have highly granulated sides. Granules of adjacent septa tend to fuse and it is these fusions that commonly constitute the outer edge of columellae. Otherwise, columellae are small and diffuse, consisting of a few spines.

Affinities:
Living colonies have short trunks, exceptionally large oral cones and short tentacles and do not resemble any other *Goniopora*. *Goniopora columna* also has large oral cones but polyps are elongate and tentacles are thicker. Corallite structures are closest to *Goniopora polyformis* Zou, 1980 which has more septa forming neat fusion patterns.

The name:
So named because of the conspicuous white oral cones of living polyps.

Holotype:
Specimen G55850. The specimen is 114 mm maximum dimension. Collected by the author from approximately 2 m depth, southern Sri Lanka.

Abundance:
Common in some habitats in the western Indian Ocean and in Sri Lanka. Uncommon elsewhere.

Habitat:
Shallow reef habitats protected from strong wave action.

Distribution:
From Socotra and Madagascar in the western Indian Ocean east to the Indonesian-Philippines archipelago.

Goniopora pearsoni Veron, 2000

Original description: Veron (2000) Volume 3, page 365.

> **Characters:** Colonies are massive, hemispherical or irregular. Corallites are rounded with thick walls and have six prominent paliform lobes. Polyps are elongate. **Colour:** Uniform grey with blue mouths (which may photograph pink). **Similar species:** *Goniopora tenuidens*, which has closely packed uniform polyps and corallites with thin walls. See also *G. djiboutiensis*, which has larger polyps. **Habitat:** Shallow reef environments. **Abundance:** Common.

Previous illustrations:
Veron (2000) Volume 3, page 365, figures 4-6, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are massive, hemispherical or irregular with rounded even surfaces and may be over two metres across. Corallites are approximately 2.5-3.0 mm diameter, circular and are only slightly excavated. They are uniformly spaced, approximately 0.8 mm apart.. Septa form three cycles. Most primary septa have a paliform lobe which form a crown around the columella. Secondary septa are less than 0.5 R. Tertiary septa are short. All septa are closely compacted around the corallite rim where they form a neat row of bead-like granules. A synapticular ring is usually visible inside the granules deep within the corallite. There are no septal deltas. Columellae are indistinct, less than 0.3 mm diameter, and consist of a few fused rods.

Affinities:
Goniopora tenuidens has closely packed uniform corallites of similar size and shape but these are much more excavated and have better developed paliform lobes. *Goniopora djiboutiensis* also has corallites with similar characteristics, but these are larger, have much longer septa and have poorly defined paliform lobes.

The name:
Named after Dr Michael Pearson who did much developmental work for the Ras Mohammed National Park of Egypt.

Holotype:
Specimen G55790. The specimen is 85 mm maximum dimension. Collected by the author from approximately 15 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

Abundance:
Common and is a dominant species on some upper reef slopes.

Habitat:
Shallow reefs.

Distribution:
Recorded only in the Red Sea.

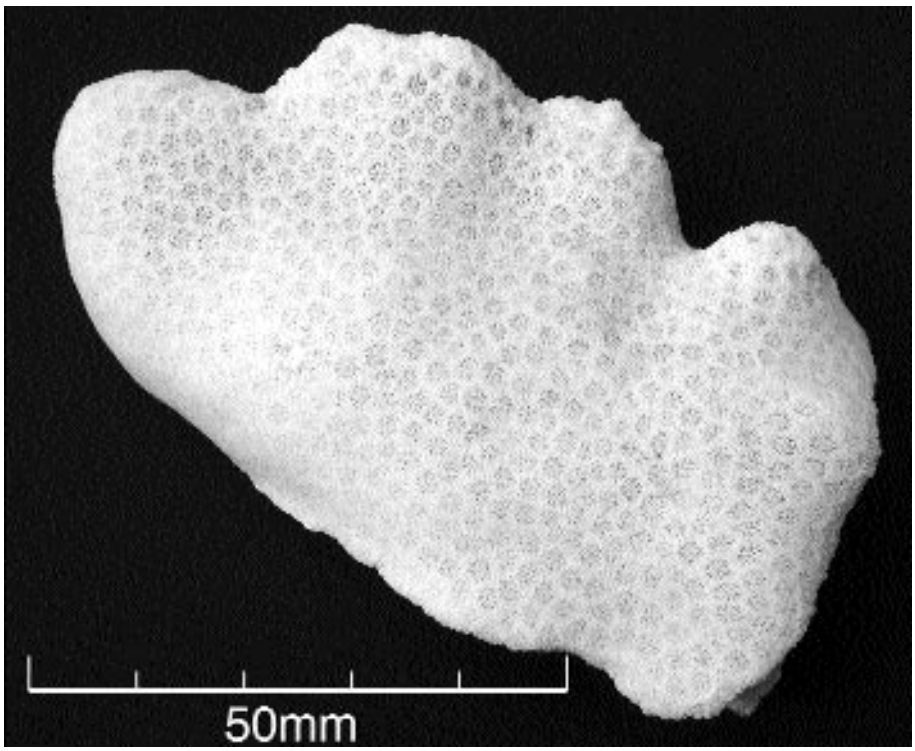

Figure 360. *Goniopora pearsoni,* holotype (G55790). From Sharm al-Sheikh, Sinai Peninsula, Egypt.

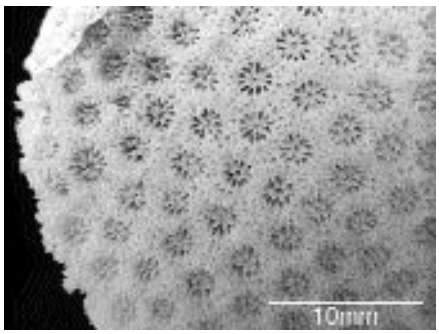

Figure 361. *Goniopora pearsoni,* from Sharm al-Sheikh, Sinai Peninsula, Egypt. Showing colony surface detail.

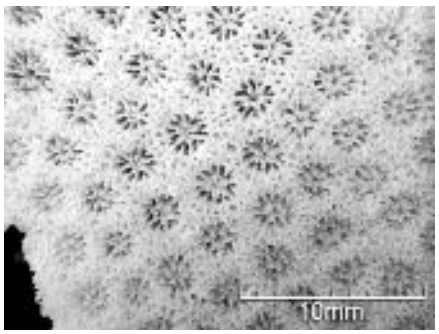

Figure 362. *Goniopora pearsoni,* same colony as figure 361. Showing corallite detail.

Goniopora ciliatus Veron, 2000

Original description: Veron (2000) Volume 3, page 372-3.

Characters: Colonies are submassive or columnar. Columns are short and usually form clumps. Corallites are uniform, and circular in outline. Septa are widely spaced and irregular. Columellae are small. Polyps have long thin tentacles. **Colour:** Pale brown. **Similar species:** *Goniopora eclipsensis* which has short tentacles and well developed columellae. See also *G. pendulus*. No other columnar species has medium sized corallites with such long tentacles. **Habitat:** Shallow reef environments exposed to turbulence. **Abundance:** Sometimes common.

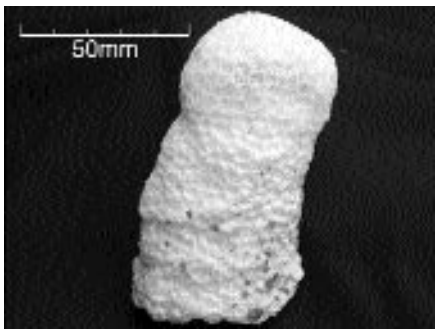

Figure 363. *Goniopora ciliatus,* holotype (G55789). From Sharm al-Sheikh, Sinai Peninsula, Egypt. A branch with only the tip living when collected.

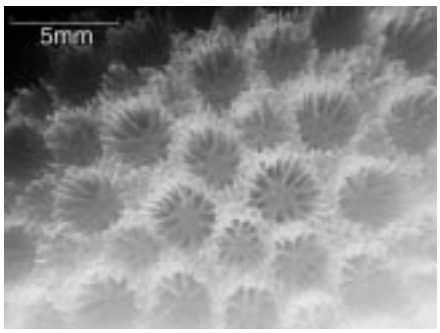

Figure 364. *Goniopora ciliatus,* holotype. Showing corallite detail.

Previous illustrations:
Veron (2000) Volume 3, page 372-3, figures 1-5 colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

Skeletal detail:
Colonies are massive, hemispherical or irregular with rounded even surfaces. Very large colonies may be over five metres across and are divided into mounds, usually <0.5 metres across. Corallites are approximately 4-5 mm diameter, circular and are deeply excavated. They are mostly closely compacted. Septa are irregularly shaped, thin, and are in two orders. First order septa plunge steeply within the corallite, then turn inwards to fuse with the columella or other septa. Second order septa form irregular comb rows down the inner wall. Walls are approximately 1.5 mm thick, thinner on growing surfaces. Columellae and small, usually <1.5 mm diameter and consist of loosely intertwined septa spines. Neither septal deltas nor paliform lobes are formed.

Affinities:
Goniopora ciliatus has long tentacles which makes it readily identifiable underwater and no other massive species has similar corallite characters. *Goniopora eclipsensis* develops branches and has corallites with much thicker walls and well developed paliform lobes and columellae. *Goniopora pendulus* has similar corallite shape but corallites are larger, have thicker walls and much wider columellae.

The name:
So named because of the fine thread-like appearance of polyp tentacles.

Holotype:
Specimen G55789. The specimen is 93 mm maximum dimension. Collected by the author from approximately 15 m depth, Ras Mohammed National Park, Sharm al-Sheikh, Sinai Peninsula, Egypt.

Abundance:
Common and may be a dominant species, covering extensive areas of reef surface.

Habitat:
Shallow reefs exposed to wave action.

Distribution:
Red Sea and Socotra.

Genus *Alveopora* Blainville, 1830

Alveopora minuta Veron, 2000

Original description: Veron (2000) Volume 3, page 396.

> **Characters:** Colonies are composed of short irregularly dividing knob-like branches. Corallites have no septa or one or two septa reduced to a single spine. A palisade of vertical spines occurs above the wall. Corallites are as small as many species of *Porites* (approximately 1 mm diameter) although this species always looks *Alveopora*-like underwater. **Colour:** Greenish-brown. **Similar species:** *Alveopora viridis*, which has coarser skeletal structures. See also *A. verrilliana*, which has larger corallites. **Habitat:** Rocky surfaces exposed to currents. **Abundance:** Rare.

Previous illustrations:
Veron (2000) Volume 3, page 396, figures 1, 2, colour photographs of living coral and monochrome photograph of coral skeleton.

Synonymy:
None.

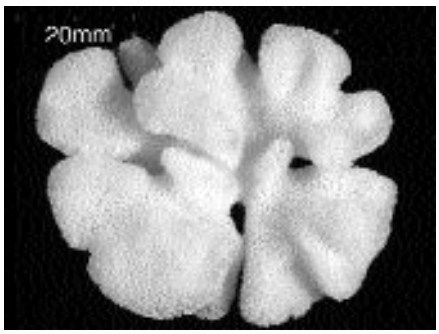

Figure 365. *Alveopora minuta,* holotype (G55798). From Bali, Indonesia.

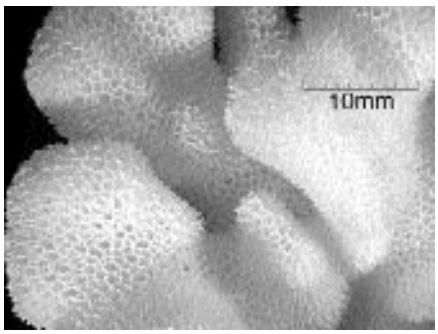

Figure 366. *Alveopora minuta,* holotype. Showing colony surface detail.

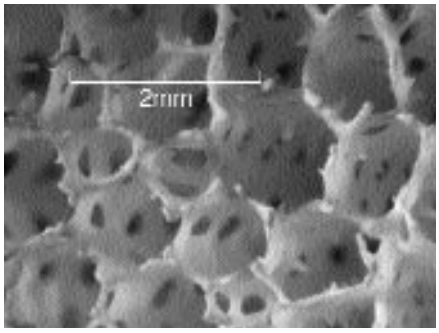

Figure 367. *Alveopora minuta,* holotype. Showing corallite detail.

Skeletal detail:
Colonies are usually less than 10 cm diameter and are submassive, composed of irregular knob-like, lobed branches. Corallites are 0.8-1.5 mm diameter. Septa are completely absent in some corallites or are reduced to a single spine in others. There are seldom more than five spines in a single corallite. A palisade of 7-10 vertical spines occurs above the wall. There are no other skeletal structures although when curved corallites are viewed from above, wall structure deep within the corallite appears as if it were skeletal material at the corallite centre.

Affinities:
Alveopora viridis has larger corallites and coarser skeletal structures. This species has been found with *Alveopora tizardi* from which it is readily distinguished by having smaller corallites with less skeletal structure. This species has the most reduced skeleton of any scleractinian.

The name:
So named because this species has the smallest corallites of any *Alveopora*.

Holotype:
Specimen G55798. The specimen is 63 mm maximum dimension. Collected by the author from approximately 15 m depth, Bali, Indonesia.

Abundance:
Rare, although several colonies may be found within the same localised area.

Habitat:
Rocky surfaces exposed to currents.

Distribution:
The Indonesian-Philippines archipelago.

References

Bernard H (1897). *The genus* Montipora. *The genus* Anacropora. Cat Madreporarian Corals British Mus **III**:192pp.

Blainville HM de (1830) *Zoophytes*. In 'Dictionnaire des Sciences naturelles'. Paris **60**: 295-364.

Brook G (1893). *The genus* Madrepora. Cat Madreporarian Corals British Mus **I**:212pp.

Carpenter KE, Harrison PL, Hodgson G, Alsaffar AH and Alhazeem H (1997). *The corals and coral reef fishes of Kuwait*. Kuwait Inst Sci Res and Environment Public Authority. 166pp.

Crossland C (1952). *Madreporaria, Hydrocorallinae*, Heliopora *and* Tubipora. Scientific Rept Great Barrier Reef Exped 1928-29 **VI(3)**:85-257.

Dana JD (1846). *Zoophytes*. United States Exploring Exped 1838-1842. **7**:740pp.

Ehrenberg CG (1834). *Beiträge zur physiologischen kenntniss der corallenthiere im Allgemeinen und besonders des Rothen Meeres*. Abhand Akad Wiss der DDR: 250-380.

Faulkner D and Chesher R (1979). *Living Corals*. Clarkson N Potter. New York. 310pp.

Fenner D (2002). *Comparison of individual survey*. In (Eds) McKenna SA, Allen GR Suryadi S A marine rapid assessment of the Raja Ampat Islands, Papua Province, Indonesia. RAP Bull. Biol. Assessment **22**:29-36.

Forskål P (1775). *Descriptions Animalium, Avium, Amphibiorum, Piscium, Insectorum, Vermium que in intinere orientali observavit Petrus Forskål*. IV Corallia. Hauniae. 131-9.

Gray J E (1842). *Pocilloporidae.* In Synopsis. British. Museum. (44th Ed.).

Gray JE (1847). *An outline of an arrangement of stony corals*. Ann. Mag. Nat. Hist. **19**:120-8.

Gregory (1900). *The fossil corals of Christmas Island*. In Andrews (Ed) A monograph of Christmas Island. British Musrum (Natural History) 206-25.

Head SM (1983). *An undescribed species of* Merulina *and a new genus and species of siderastreid coral from the Red Sea*. J Nat Hist **17**:419-435.

Hodgson G and Ross MA (1989). *Unreported scleractinian corals from the Philippines*. Proc. Fourth Int. Coral Reef Symp. Manilla **2**:171-5.

Klunzinger CB (1879). *Die Korallenthiere des Rothen Meeres*. Gutmann, Berlin. 188pp.

Lamarck JBP (1801). *Système des animaux sans vertèbres*. Paris. 432pp.

Lamarck JBP (1816). *Historie des animaux sans vertebres*. Verdière, Paris **2**:568pp.

Link HT (1807). *Beischreibung der Naturalien-Sammlungen der Universität zu Rostock*. **3**:161-165.

Matthai G (1914). *A revision of the recent colonial Astreidae possessing distinct corallites*. Trans Linnean Soc Second Ser (Zool) **17**:140pp.

Milne Edwards H and Haime J (1848). *Recherches sur les polipiers.* Mém. 3 Monographie des Eupsammides. des Astréidés. Suite 1 Astréens agglomérés. Ann Sci Nat (Zool) (3). **10**:65-114.

Milne Edwards H and Haime J (1849). *Recherches sur les polipiers.* Monographie des Astréidés. Suite 1 Astréens agglomérés. Ann Sci Nat (Zool) (3). **11**:233-312.

Milne Edwards H and Haime J (1860). *Historie Naturelle Coralliaires* **3**:560pp.

Moll H and Borel-Best M (1984). *New scleractinian corals (Anthozoa: Scleractinia) from the Spermonde Archipelago, South Sulawesi, Indonesia*. Zool Mededelingen **58**:47-58.

Nemenzo F (1967). *Systematic studies on Philippine shallow-water scleractinians. VI Suborder Astrocoeniina (*Montipora *and* Acropora*)*. Nat Appl Sci Bull Univ Philippines **20**:141pp.

Nemenzo F (1976). *Some new Philippine Scleractinian reef corals*. Natur. Appl. Sci. Bull. **28**:229-76.

Nishihira M and Veron JEN (1995). *Hermatypic corals of Japan*. Kaiyusha Publ, Tokyo (in Japanese). 440pp.

Oken L (1815). *Steinkorallen*. Lehrbuch Naturgesch. **3**:59-74.

Ortmann A (1889). *Beobachtungen an Steinkorallen von der Sudküste Ceylons*. Zool Jahrb Abteilung Allgemeine zool Physiol Tiere **4**:493-590.

Ortmann (1890). *Die Morphologie des Skeletts der Steinkorallen in Beziehung zur Koloniebildung*. Z. Wiss. Zool. **50**:278-316.

Pallas PS (1766). *Elenchus Zoophytorum*. Den Haag. 451pp.

Quelch JJ (1884). *Preliminary notice of new genera and species of* Challenger *reef corals*. Ann. Mag. Nat. Hist. Zool. Bot. Geol. Ser. 5. **13**:292-7.

Quelch JJ (1886). *Report on the reef corals collected by* HMS Challenger *during the years 1873-1876*. Rept Sci Results Voyage of HMS Challenger. Zoology **3**:203pp.

Ridley S0 (1884). *On the classificatory value of growth and budding in the Madreporaria and on a new genus illustrating this point*. Ann. Mag. Nat. Hist. **13**:284-91.

Saville-Kent W (1871). *On some new and little known species of Madrepores, or stony corals in the British Museum collection*. Proc. Zool. Soc. London **2**:275-86.

Scheer G and Pillai CSG (1983). *Report on the stony corals from the Red Sea*. Zoologica (Stuttgart) **133**:98pp.

Schweigger AF (1819). *Beobachtungen auf naturhistorischen Reisen-Anat*. Physiol. Untersuchungen ueber Corallen. Berlin.

Sheppard CRC (1985). *Reefs and coral assemblages of Saudi Arabia*. Fauna of Saudi Arabia **7**:37-58.

Sheppard CRC and Sheppard ALS (1991). *Corals and coral communities of Arabia*. Fauna of Saudi Arabia **12**:170pp.

Studer T (1878). *Zweite Abtheilung der Anthozoa polyactinia, welche wahrend der Reise* S.*M*.S. Corvette Gazelle *un die Erde gesammelt wurden*. Monatshr. K. Akad. Wissensch. Berlin. 525-50.

Umbgrove JHF (1942). *Corals from asphalt deposit of the Island Buton (East Indes)*. Leid. Geol. Meded. **13**:29-38.

Vaughan TW (1907). *Recent Madreporaria of the Hawaiian Islands and Laysan*. US National Mus Bull **59**:427pp.

Vaughan TW (1918). *Some shoal-water corals from Murray Islands, Cocos-Keeling Islands and Fanning Islands*. Papers Dep Mar Biol Carnegie Inst Washington **9**: 51-234.

Vaughan TW and Wells JW (1943). *Revision of the sub-orders, families and genera of the Scleractinia*. Geol. Soc. Am. Spec. Pap. **44**:363pp.

Veron JEN (1990). *New Scleractinia from Japan and other Indo-West Pacific Countries*. Galaxea **9**:95-173.

Veron JEN (1992). *Hermatypic corals of Japan*. Australian Inst Mar Sci Monogr. Ser **9**:86pp.

Veron JEN (2000). Corals of the World. Vols 1-3. Australian Inst Mar Sci. 1,382pp.

Veron JEN (2002). *Overview of Scleractinia*. A marine rapid assessment of the Raja Ampat Islands, Papua Province, Indonesia. McKenna SA, Allen GR Suryadi S (Eds) RAP Bull. Biol. Assessment **22**:26-28.

Veron JEN and Fenner D (2000) *Corals (Zooxanthellate Scleractina) of the Calamianes Islands, Palawan Province, Philippines*. Allen GR (Ed) RAP Bull. Biol. Assessment **17**:24-226.

Veron JEN and Hodgson G (1989). *Annotated checklist of the hermatypic corals of the Philippines*. Pacific Sci **43**:234-287.

Veron and Kelley (1988). *Species stability in reef corals of Papua New Guinea and the Indo-Pacific*. Assoc. Australasian Palaeontologists Memoir **6**:69pp.

Veron JEN, and Stafford-Smith MG (2002). *Coral ID*. Australian Inst Mar Sci, Townsville. CD-ROM.

Veron JEN and Turak E (in preparation). *Zooxanthellate Scleractinia of Madagascar*. McKenna SA, (Ed) RAP Bull. Biol. Assessment.

Veron JEN and Wallace C (1984). *Scleractinia of Eastern Australia. Part 5 Family Acroporidae*. Australian Inst Mar Sci Monogr Ser **VI**:485pp.

Verrill AE (1902). *Notes on corals of the genus* Acropora *(Madrepora Lam.) with new descriptions and figures of types, and of several new species*. Trans. Connecticut Acad. Arts Sci. **11**:207-66.

Wallace CC (1978). *The coral genus* Acropora *(Scleractinia: Astrocoeniina: Acroporidae) in the central and southern Great Barrier Reef Province*. Mem Queensland Mus **18**:273-319.

Wallace CC (1999). *Staghorn corals of the world.* CSIRO Publ. 421pp.

Wells JW (1972). *Notes on Indo-Pacific scleractinian corals. VIII Scleractinian corals from Easter Island*. Pacific Sci. **26**:183-90.

Wijsman-Best M (1972). S*ystematics and ecology of New Caledonian Faviidae (Coelenterata Sceractinia)*. Bijdragen Dierkunde **42**:90pp.

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