

STUDIES ON INDIAN CORALS—5.

PRELIMINARY REPORT ON NEW RECORDS OF HERMATYPIC CORALS OF THE SUBORDER ASTROCOENIINA*†

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THE author made a fairly exhaustive collection of shallow-water stony corals from Palk Bay and Gulf of Mannar around Mandapam (Long. 79° 9' 30" E., Lat. 9°17' N.) from 1964 to 1966, during fair weather i.e. from June to September from Palk Bay and from November to March from Gulf of Mannar. For the details of the various localities from where collections are made, reference is invited to the accompanying map. The collections were supplemented by materials obtained from Chetlat Island (Long. 72° 40' E., Lat. 11° 45' N.) and Minicoy (Long. 73° E. Lat. 8° 14' N.) from the Laccadives and Tuticorin from Gulf of Mannar (Long. 78° 9' E., Lat. 8° 48' N.) and from Port Blair (Long. 92° 46' E., Lat. 11°41' N) in Andamans. The present paper which forms the fifth in the series of studies on Indian corals (Nos. 1 to 4, Pillai, 1967) 25 species of hermatypic corals of the suborder Astrocoeniina are reported for the first time from the seas around India. Out of these, *Acropora exigua* (Dana), *Montipora granulosa* Bernard, *M. turgescens* Bernard, *M. elschneri* Vaughan, *M. verrilli* Vaughan and *M. composita* Crossland are new records to the Indian Ocean as a whole. The classification of scleractinia adopted here is that of Vaughan and Wells (1943) as modified by Wells (1956). Only important references are given under the synonymy for each species. A detailed report of the specimens with relevant illustrations will be published elsewhere. All the specimens mentioned herein are collected at a depth not exceeding 2 metres at low tide.

Order SCLERACTINIA Bourne 1900

Suborder ASTROCOENIINA Vaughan and Wells, 1943

Family : POCILLOPORIDAE

Genus *STYLOPHORA* Schweiger, 1819

Stylophora mordax (Dana), 1846

Sideropora mordax Dana, 1846, p. 518, pl. 49, figs. 1, 1a, 1b.

Stylophora mordax Vaughan, 1918, p. 81, Pl. 25, figs. 1, 1a, 2, 2a, 2b.

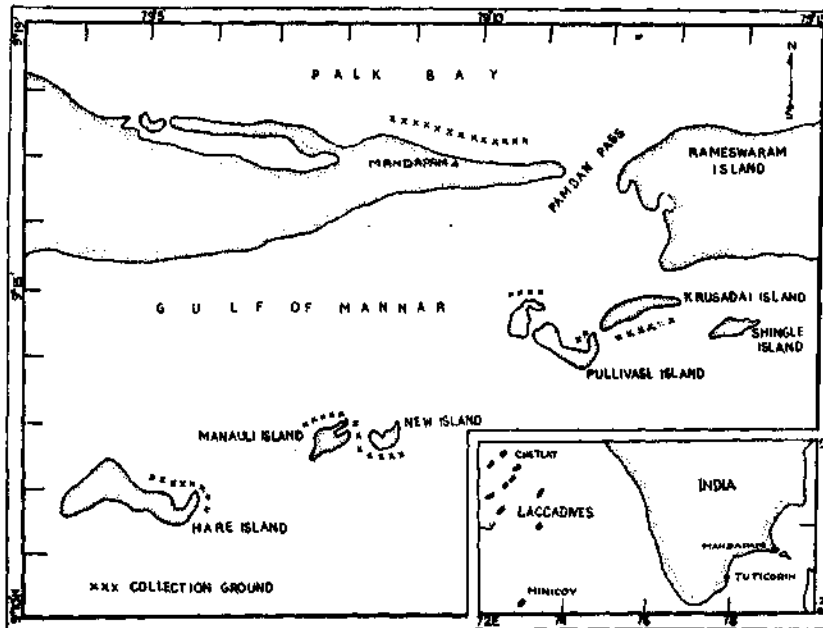
Yabe, Sugiyama and Eguchi, 1936, p. 13, pl. 3, fig. 3.

Wells, 1954, p. 411, pl. 96, fig. 5.

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† Extracted from a Ph.D. Thesis approved by the University of Kerala.

The present specimen match well with Vaughan's (1918) figures and shows no noteworthy variation.



Enlarged map of Mandapam and adjacent areas in Palk Bay and Gulf of Mannar. Inset shows South India with localities of collections.

Occurrence : Chetlat Island (Laccadives).

Distribution : Previously known from the Red Sea, east coast of Africa, Indonesia ; Fiji ; Fanning Islands ; Maldives and Marshall Islands. This is the first record of the genus to the seas of India.

Genus *POCILLOPORA* Lamarck, 1816

Pocillopora danae Verrill, 1864

Pocillopora danae Verrill, 1864, p. 50.

Wells, 1954, p. 412.

Three bushy large colonies of this species are collected along with a few fragments.

Occurrence : Manauli Island, Rameswaram Island (Gulf of Mannar).

Distribution : Previously known from Mauritius ; Banda Sea ; Philippines ; Great Barrier Reef ; Fiji ; Marshall Islands and Tahiti.

Pocillopora verrucosa (Ellis and Solander), 1786

Pocillopora verrucosa (Ellis and Solander). Vaughan, 1918, p. 77, pl. 23, figs. 1, 2, 2a.

Stephenson and Wells, 1956, p. 12.

Nemenzo, 1964, p. 209.

Two specimens, one a small entire colony 15 × 10 cm. in top diameters and 9 cm. in height and another a broken clump from an apparently arborescent colony, of this species are obtained from Port Blair.

Distribution : Previously known from Red Sea ; Tanganyika (Talbot, 1965) ; Singapore ; Cocos-Keeling Islands ; Taiwan ; Low Isles ; Palau Islands ; Caroline Islands ; Fiji ; Marshall Islands and Hawaii.

Family ACROPORIDAE Verrill, 1902

Genus *ACROPORA* Oken, 1815

Acropora intermedia (Book), 1893

Madrepora intermedia Brook, 1893, p. 31, pl. 1, fig. C.

Acropora intermedia Crossland, 1952, p. 200, pl. 32, fig. 1.

This species was found to be fairly common near the Pamban Bridge in the Palk Bay. Large quantities of dead and broken branches are found lying on sandy bottom.

Distribution : Previously known only from Maldives and Queensland. This is the first record of the species from the Indian coast.

Acropora squamosa (Brook), 1892

Madrepora squamosa Brook, 1893, p. 120, pl. 20, fig. 3.

Acropora squamosa Vaughan, 1918, p. 173, pl. 72, figs. 1, 2, 2a, 3.

Stephenson and Wells, 1956, p. 18.

This species is fairly abundant at the outer side of the reef in Palk Bay (Mandapam), where colonies may attain a greater diameter of 30 to 40 cm. The living corallum is dull green with pink axial corallites. This is a highly variable species. It may probably be synonymous with *A. millepora* (Ehrenberg). But Brook states that they are different.

Distribution : The species is previously known from Murray Island, Low Isles ; East Indies and Rocky Islands. The present record extends its distribution to central Indian Ocean.

Acropora exigua (Dana), 1846*Madrepora exigua* Dana, 1846, p. 469, pl. 38, fig. 2.

Brook, 1893, p. 125.

Acropora exigua Hoffmeister, 1925, p. 57, pl. 9, figs. 1a, 1b, 2.

A cespito-arborescent corallum, with slender branches, agreeing with Hoffmeister's description and figures of this species, is collected.

Occurrence : Palk Bay (Mandapam).

Distribution : Previously known from New Hebrides ; Solomon Islands ; Fiji and Samoa. This is a new record to Indian Ocean.

Acropora diversa (Brook), 1891*Madrepora diversa* Brook, 1893, p. 141, pl. 16, fig. 3.*Acropora diversa* Wells, 1954, p. 424, pl. 117, figs. 3 to 6.

This is not a common species around Mandapam. The collection includes a fair sized entire colony and a few fragments.

Occurrence : Krusadai Island ; Tuticorin, Andaman Islands.

Distribution : The previous records of this species are restricted to Diego Garcia ; Tanganyika (Talbot, 1965) ; Great Barrier Reef (Crossland 1952 as *A. otteri*) ; Marshall Islands and Thursday Island. This is a new record to central Indian Ocean.

Acropora digitifera (Dana), 1846*Madrepora digitifera* Dana, 1846, p. 454.

Brook, 1893, p. 75.

Acropora digitifera Vaughan, 1918, p. 175, pl. 76, figs. 1, 1a, 2.

Wells, 1954, p. 427, pl. 127, figs. 1, 2.

Stephenson and Wells, 1956, p. 13.

A single colony which agrees with Vaughan's description and figures was collected.

Occurrence : Palk Bay (Mandapam).

Distribution : Previously known from Madagascar ; Low Isles ; Murray Island ; Marshall Islands. The type locality is unknown. This is a new record to Central Indian Ocean.

Acropora polymorpha (Brook), 1891

Madrepora polymorpha Brook, 1893, p. 169, pl. 31, figs. B to D.

Acropora polymorpha Vaughan, 1918, p. 180, pl. 81, figs. 1 to 5.

Wells, 1954, p. 416, pl. 105, figs. 2 to 5.

A single colony was collected. The specimen exhibits no noteworthy variation from the earlier descriptions.

Occurrence : Palk Bay (Mandapam).

Distribution : Previously known from Malacca ; Fanning Island ; Fiji and Marshall Islands. This is a new record to central Indian Ocean.

Acropora syringodes (Brook), 1892

Madrepora syringodes Brook, 1893, p. 177, pl. 33, fig. E.

Acropora syringodes Vaughan, 1918, p. 185, pl. 83, figs. 1, 1a, 1b, 1c, 1d.

Wells, 1954, p. 428, pl. 129, figs. 3, 4 ; pl. 130, figs. 5, 6.

The collection includes a clump belonging to this species. It agrees well with Brook's (1893) description.

Occurrence : Port Blair (Andamans).

Distribution : Banda Sea ; Murray Island ; Marshall Islands. Recently Wells and Davis (1966) have mentioned its occurrence at Addu Atoll. This is the first record of this species to the seas of India.

Acropora echinata (Dana), 1846

Madrepora echinata Dana, 1846, p. 464, pl. 36, fig. 1.

Brook, 1893, p. 185.

Studer, 1901, p.

Acropora echinata Vaughan, 1907, p. 158, pls. 49, 50.

Wells, 1954, p. 423, pl. 135, figs. 1 to 4 ; pl. 136, figs. 1 to 6.

A single colony of this species has been examined. The exact locality of it is doubtful. The specimen was found in an old collection of the Central Marine Fisheries Research Institute. It may be probably collected somewhere from the vicinity.

Distribution : Philippines ; Marshall Islands ; Fiji Islands ; Samoa and Hawaii. The only previous Indian Ocean record of this species appears to be that of Pichon (1964) from Madagascar.

Acropora procumbens (Brook), 1892

Madrepora procumbens Brook, 1893, p. 188, pl. 29, fig. D.

Acropora procumbens Thiel, 1932, p. 130, pl. 10, fig. 2.

A part of a colony which agrees with Brook's (1893) description and figure in most of its characters, is examined.

Occurrence : Port Blair (Andamans).

Distribution : Previous records of this species are confined to Singapore ; Banda sea ; South sea and Fiji. The present record extends its distribution to Andamans.

Genus **MONTIPORA** Quoy and Gaimard, 1830

(a) Smooth or glabrous explanate *Montipora*.

Montipora subtilis Bernard, 1897

Montipora subtilis Bernard, 1897, p. 21, pl. 31, fig. 2.

Wells, 1954, p. 433, pl. 142, figs. 3, 4.

A large explanate corallum agrees well with Bernard's description.

Occurrence : Manauli Island. (Gulf of Mannar). Not a common member of the genus.

Distribution : Previously known from the Providence Reef ; Mascarene Islands and Bikini Atoll.

Montipora granulosa Bernard, 1897

Montipora granulosa Bernard, 1897, p. 21, pl. 1, fig. 2 ; pl. 31, fig. 3.

Crossland, 1952, p. 181, pl. 27, fig. 4.

Wells, 1954, p. 434, pl. 142, figs. 1, 2.

An encrusting corallum with a greater diameter of 13 cm. and a maximum thickness of 8 mm. belongs to this species.

Occurrence : Manauli Island. (Gulf of Mannar). Not a common species here.

Distribution : Previously known from Maccles field—China Sea ; Great Barrier Reef and Marshall Islands. This is a new record to Indian Ocean.

(b) Glabro-foveolate ramose *Montipora*.

Montipora digitata (Dana), 1846

- Montipora digitata* (Dana). Bernard, 1897, p. 47.
 Crossland, 1952, p. 183, pl. 26, fig. 1.
 Stephenson and Wells, 1956, p. 20.

A large suit of specimens was examined. The major variations noted in the present specimens are in the thickness of the branch and in the degree of foveolation. The top of branches may be either slender and digitate or expanded and 'cocks-comb' shaped.

Occurrence: Mandapam (Palk Bay); Manauli island; Hare Island; Pulli and Krusadai Islands; Tuticorin; Andaman Islands. This species flourishes in the lagoon of the various Islands in the Gulf of Mannar near Mandapam.

Distribution: Previously known from Singapore, Cocos-Keeling Islands; Banda Sea; Low Isles; Solomon Island and Fiji. The present record extends its distribution to central Indian Ocean.

(c) Foveolate *Montipora*.**Montipora turgescens** Bernard, 1897

- Montipora turgescens* Bernard, 1897, p. 43, pl. 6, fig. 2; pl. 32, fig. 11.
 Vaughan, 1918, p. 151, pl. 62, figs. 5, 4a.
 Wells, 1954, p. 435, pl. 142, figs. 4, 5.

An encrusting colony about 20 cm. in greater spread, with a maximum thickness of 10 mm. agrees well with Bernard's description of the species as far as its calicular and coenenchymal characters are concerned.

Occurrence: Manauli Island. (Gulf of Mannar). Not a common member of the genus here.

Distribution: Previously known from Murray Island; Great Barrier Reef and Marshall Islands. This is the first record of this species from the Indian Ocean.

(d) Papillate *Montipora*.

(i) Papillae irregular.

Montipora elschneri Vaughan, 1918

- Montipora elschneri* Vaughan, 1918, p. 154, pl. 64, figs. 1, 1a.
 Hoffmeister, 1925, p. 51.
 Wells, 1954, p. 435, pl. 144, figs. 1, 2.

A single explanate, thick colony answering Vaughan's description of this species in almost all respects is collected.

Occurrence : Hare Island. The species is not a common member of the genus here.

Distribution : Previous records are confined to Fanning Island ; Marshall Islands and Samoa. This is a new record to Indian Ocean.

***Montipora monasteriata* (Forskål), 1775**

Montipora monasteriata (Forskål) Crossland, 1941, p. 34, pl. 6 (3 figures not numbered).

A large suit of specimen was collected which shows individual variation among different colonies. These variations will be fully considered in a subsequent paper.

Occurrence : Mandapam (Gulf of Mannar). It is fairly common in the inner protected side of the granite wall of the dock-yard.

Distribution : Previously known from the Red Sea and the Somaliland. The present record extends its distribution to the Central Indian Ocean.

***Montipora venosa* (Ehrenberg), 1834**

Montipora venosa (Ehrenberg) Bernard, 1897, p. 69, pl. 32, fig. 15.

Vaughan, 1918, p. 153, pl. 63, fig. 3.

Stephenson and Wells, 1956, p. 23.

The collection includes a single specimen of this species.

Occurrence : Krusadai Island. Not a common member of the genus here.

Distribution : Previously known from Red Sea ; Taiwan ; Murray Island ; Amboina ; Low Isles ; Bikini Atoll ; Eniwetok Atoll ; Samoa. The present record is the first from the central Indian Ocean.

***Montipora spumosa* (Lamarck), 1816.**

Montipora spumosa (Lamarck). Bernard, 1897, p. 71, pl. 8, fig. 1 ; pl. 11 ; pl. 32, fig. 16.

Vaughan, 1918, p. 154, pl. 63, figs. 2, 2a.

Stephenson and Wells, 1956, p. 23.

Two colonies with their characteristic massive growth were collected. Presence of certain slender digitiform branches harbouring a central worm-tube is an interesting feature in the present specimens.

Occurrence : Manauli Island, Mandapam (Palk Bay). The species is rare here.

Distribution : Previously known from Cocos-Keeling Islands ; Tongatabu ; Low Isles ; Lacépède Island. This is the first record of the species from the central Indian Ocean.

Montipora edwardsi Bernard, 1897

Montipora edwardsi Bernard, 1897, p. 78, pl. 8, fig. 3 ; pl. 33, fig. 14.

A large corallum about 45 cm. in greater diameter was collected. This specimen agrees well with Bernard's description. The only mention of this species ever since its original description, appears to be that of Kawaguti (1953).

Occurrence : Mandapam (Palk Bay). The top of the corallum was hardly 20 cm. below the level of water, when collected. The species is very rare here.

Distribution : Previously known from Red Sea and Taiwan. The present record is new to Central Indian Ocean.

(ii) Papillae nipple-shaped.

Montipora verrucosa (Lamarck), 1816

Montipora verrucosa (Lamarck) Bernard, 1897, p. 103, pl. 19, fig. 2.

Vaughan, 1907, p. 116, pls. 53 to 59.

Gravier, 1911, p. 88, pl. 12, fig. 53.

Wells, 1954, p. 438, pl. 143, figs. 6, 7 ; pl. 147, fig. 3.

An encrusting corallum with the upper surface rising into digitiform processes was found on a dead colony of *Echinopora lamellosa*.

Occurrence : Manauli Island. (Gulf of Mannar). Not commonly met with.

Distribution : Previously known from Red Sea ; Somaliland ; Madagascar ; Great Barrier Reef ; Murray Island ; Marshall Islands ; Fanning Island ; Fiji and Hawaii. This is a new record to Central Indian Ocean.

(e) Tuberculate *Montipora*.

Montipora verrilli Vaughan, 1907

Montipora verrilli Vaughan, 1907, p. 168, pl. 63, figs. 2, 2a, 2b ; pl. 64, figs. 1, 1a.

Hoffmeister, 1925, p. 53, pl. 7, figs. 3, 3a.

Wells, 1954, p. 438, pl. 145, figs. 3, 5 ; pl. 148, figs. 1, 2 ; pl. 179, fig. 4.

A fair suit of specimens belonging to this species was examined. The living coral is usually yellowish brown but with occasional pinkish patches. The species exhibit a wide range of variation.

Occurrence : Mandapam (Palk Bay), Pulli Island, Krusadai Island, Manauli Island and Hare Island. (Gulf of Mannar). A fairly common species here.

Distribution : Previously known from the Hawaiian Islands ; Samoa ; Fanning Islands and Marshall Islands. This is a new record to Indian Ocean.

Montipora informis Bernard, 1897

Montipora informis Bernard, 1897, p. 133, pl. 27, fig. 2 ; pl. 34, fig. 3.
 Vaughan, 1918, p. 156, pl. 64, figs. 3, 4, 4a, 4b, 4c.
 Stephenson and Wells, 1956, p. 22.

This is a fairly common species around Mandapam. The living corallum exhibit greenish-brown colour.

Occurrence : Mandapam (both Palk Bay and Gulf of Mannar), Krusadai Island, Manauli Island and Hare Island.

Distribution : Previously known from Madagascar ; Cocos-Keeling Islands ; Low Isles ; Taiwan ; Haza-Zima ; and Murray Island. This is the first record from the central Indian Ocean.

Montipora composita Crossland, 1952

Montipora composita Crossland, 1952, p. 195, pl. 28, figs. 1, 5 ; pl. 29, figs. 1, 3, 4.
 Wells, 1954, p. 439, pl. 148, figs. 4, 5 ; pl. 150, fig. 1-3.

A large colony about 60 cm. in greater diameter was collected. The fronds are about 35 cm. in greater width. The living corallum was greenish brown in colour.

Occurrence : Mandapam (Palk Bay). The depth at the time of collection about 50 cm.

Distribution : Previously known from Great Barrier Reef and Marshall Islands. This is the first record from the Indian Ocean.

SUMMARY

25 species of shallow-water stony corals belonging to four genera of the sub-order Astrocoeniina are reported for the first time from the seas around India, out of which, one species of *Acropora* and 5 species of *Montipora* are first records to the Indian Ocean as a whole. The genus *Stylophora* is here recorded for the first time from the seas around India.

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* Not referred to in original.