CMFRI
bulletin 43

APRIL 1989

MARINE LIVING RESOURCES OF THE UNION TERRITORY OF LAKSHADWEEP —

An Indicative Survey With Suggestions For Development

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
(Indian Council of Agricultural Research)
P. B. No. 2704, E. R. G. Road, Cochin-682 031, India

Bulletins are issued periodically by Central Marine Fisheries Research Institute to interpret current knowledge in the various fields of research on marine fisheries and allied subjects in India

Copyright Reserved
©

Published by

P. S. B. R. JAMES
Director
Central Marine Fisheries Research Institute
Cochin 682031, India

Edited by

C. SUSEELAN
Scientist
Central Marine Fisheries Research Institute
Cochin 682031, India

Limited Circulation

16. THE CORAL FAUNA OF LAKSHADWEEP

C. S. Gopinadha Pillai and S. Jasmine

INTRODUCTION

Despite the early works of Gardiner (1904, 1905) and Pillai (1971, 1971a, 1986, 1986a, 1987) the coral fauna of Lakshadweep, except for Minicoy, remained virtually unknown to the scientific community. A resume of corals and coral reef research from this area is presented by Pillai (1987) along with a discussion on the structure and composition of the fauna. During the survey of the marine resources by the Institute, corals were also collected from the various islands in Lakshadweep, and the present report embodies the information thus gathered along with data gleened from early literature. A detailed taxonomic treatment of the various species is not attempted in this communication. The material will be described in future work. An asterisk indicates a new record to this area. The classification adopted is that of Vaughan and Wells (1943) as modified by Wells (1956)

COMPOSITION OF THE CORAL FAUNA

In a previous paper, Pillai (1987) reported a total of 78 species of corals divided among 31 genera from Lakshadweep which was based on Minicoy and Kiltan. Out of these 27 genera and 69 species are hermatypes and the rest ahermatypes. Pillai (loc. cit) also felt that 40 to 45 genera of corals should occur in Lakshadweep. In the present account a total of 104 scleractinian corals divided among 37 genera are reported. Among the non. scleractanians, *Millepora*. *Heliopora* and *Tubipora* (The last mentioned for the first time) are also recorded. Out of the 104 species of scleractinians, 26 species including a few hitherto undescribed are new records to Lakshadweep waters. *Alveopora*, *Polyphyllia*, *Cyphastrea*, *Echinopora* and *Tubastrea* are the genera newly recorded. The present collection has also enchanced our knowledge of *Montipora* from

here which was previously known by a single species. However, a few widespread but less common Indo Pacific genera such as *Coscinarea, Siderastrea, Pachyseris, Oulophyllia, Trachyphyllia, Mycedium, Oxypora, Pierogyra* and *Seriatopora* still await detection from the reefs of Lakshadweep.

The following is a numerical representation of the various genera and species of scleractinians so far known from the different islands of Lakshadweep. Details of distribution of recorded genera are given below.

Island	*No. of genera*	*No of species*
Minicoy	28	73
Suheli	7	11
Kavaratti	18	38
Kalpeni	11	23
Androth	7	15
Agatti	10	27
Bingaram	5	8
Amini	15	37
Kadamat	21	43
Kiltan	19	42
Chetlat	23	57
Bitra	6	15
Total for Lakshadweep	37	103
Subgenus	1	1

The relatively low number of genera in some islands is not altogether a clear reflection of the paucity of the fauna. It can be due to less intense collecting. However, a sort of natural variation in the composition of the fauna at generic level seems to occur between Minicoy and the rest of the islands in the archipelago. For example, *Diploastrea, Podabacia* and *Lobophyllia* occured in Minicoy but were not found in central and northern islands. *Montipora* and *Cyphastrea* along with *Echinopora* are recorded from northern islands while *Cyphastrea* and *Echinopora* was never seen in the shallow waters of Minicoy. The extreme south (Minicoy) and north (Chetlat) have yielded the maximum number of genera and species.

The authors are gratelul to Dr. P. S. B. R. James, Director of the Institute for providing all facilities for the field trips as well as fo permitting to report on the corals collected from Lakshadweep during marine survey of islands. They also presonally thank Mr. George Varghese Director of Lakshadweep Fisheries and his colleagues at Amini, Kiltan, Kadmat and Chetlat for all the help rendered during the collection trips. The authors also thank the various scientists of the institute who took pains to collect corals from many islands under difficult situations.

THE CORAL FAUNA

CLASS. ANTHOZOA
Order SCLERACTINIA
Suborder ASTROCOENIINA
Family Thamnasteriidae
Genus Psammocora Dana, 1846

Psammocora contigua 1797 (Esper)
Fig 1

Fig. 1. *Psammocora contigus*

Localities: Minicoy, Kavaratti, Kalpeni, Agatti Amini, Kadmat, Kiltan, Chetlat.

Distribution: widely distributed throughout the Indo-Pacific from Red Sea to Tahiti.

Remarks: This ramose species is fairly common on both the reef flats and lagoon shoals. It is especially abundant at Chetlat lagoon where it grows mixed with *Porites* (*Synaraea*) *convexa* among *Heliopora*.

Psammocora digitata Milne Edwards and Haime, 1851

Localities: Minicoy, Amini and Chetlat.
Distribution: From Seychelles to Fiji Islands.
Remarks: This species is not common in Lakshadweep. It was cellected from the inner rreefs.

Psammocora haimeana Milne Edwards and Haime, 1851

Localities: Minicoy, Kavaratti, Agatti, Amini Kadmat, Chetlat.

Distribution: East coast of Africa, Red Sea Madagascar, Maldives, Lakshadweep, East Indies, Great Barrier Reef, Cocos-Keeling islands Marashall Islands.

Remarks: This encrusting species is found over-growing dead coralline material in the lagoon. A few colonies are lying free as submassive nodules over growing the substratum.

Psammocora profundacella Gradiner, 1898

Localities: Minicoy, Kavaratti, Kadmat

Distribution: South Africa, Mauritius, Lakshadweep, Andamans, Great Barrier Reef, Philippines, Taiwan, Japan, Funafuti, Fanning Island.

Remarks: Rare. Habitat the same as *P. haimeana*. The relationship between these two needs further studies.

Family Pocilloporidae

Genus *Pocillopora* Lamarck, 1816

Pocillopora damicornis (Linnaeus, 1758)

Localities: Found fairly common in all the islands of Lakshadweep.

Distribution Widespread from Red Sea to Hawaii in the Indo-Pacific.

Pocillopora ligulata Dana, 1846

Localities Minicoy, Chetlat.

Distribution: Maldives; Lakshadweep, Palau Island, Marshall Island, Solomon Islands, Cook Islands, Hawaii.

Remarks : Not very common. A few specimens were observed in Minicoy in 1969. The specific status of this species is still doubtful.

Pocillopora meandrina var *nobilis* Dana, 1846
Fig 2

Localities: Kalpeni, Androth. Agatti, Amini, Kadmat and Chetlat.

Distribution: Through out the Indo-Pacific but not Red Sea.

Remarks: Living colonies are not found in shallow waters. However dead branches are found washed ashore especialay at the windward side of the islands indicating that it lives in deeper surf beaten habitat.

Fig. 2. *Pocillopora meandrina* Var. *nobilis*

Pocillopora eydouxi Milne Edwards and Haime, 1860.

Localities: Minicoy, Kavaratti, Bitra.

Distribution: A fairly widespread Indo-Pacific species from Lakshadweep eastward to Hawaii.

Remarks: Living colonies rarely found in shallow reefs. Dead branches found washed ashore along with *P. meandrina, nobilis*.

Pocillopora verrucosa (Ellis and Solander, 1786

Localities: Minicoy, Suheli, Kalpeni, Bitra, Bangaram, Amini, Kadmat, Bitra.

Distribution: Red Rea (Scheer and Pillai, 1983) to Hawaii and Cook Islands.

Remarks: Lagoon and reef flats.

Genus *STYLOPHORA* Schweigger, 1819.

Stylophora pistillata (Esper, 1897)
Fig. 3

Localities: Minicoy, Amini, Kadmat, Kiltan, Chetlat.

Distribution: Red Sea eastward to Fiji and Samoa but not known from the southeast coast of India.

Remarks: The genus *Stylophora* is rare in Lakshadweep. Colonies were collected mostly from the inner protectd reefs.

Fig. 3. *Stylophora pistillata*

Family ACROPORIDAE Verrill, 1902

Genus *ACROPORA* Oken, 1815.

Acropora intermedia (Brook, 1891)

Localities: Minicoy, Kavaratti, Kalpeni, Agatti, Bangaram, Chetlat.

Distribution: Maldives, Lakshadweep, Great Barrier Reef.

Remarks: This arborescent species is found mixed with *A. formosa* in lagoon. These two are very close to each other except for the angle of the radial corallites.

Acropora formosa (Dana 1846)

Localities; Found in all the islands.

Distribution: East Africa eastward to Tuamotu Archipelago. Fairly common.

Remarks. The habitat is the same as *A. intermedia*.

Acropora abrotanoides (Lamarck, 1816)
Fig. 4

Localities : Minicoy, Kavaratti, Androth, Amini Kadmat, Chetlat.

Distribution: Maldives, Lakshadweep, Singapore, Great Barrier Reef, Marshall Islands, Tahiti, Cocos-Keeling Islands.

Remarks: The species which forms arborescent clusters with very thick main branches is common at the south side of the Minicoy atoll. On the reef flats the branches are more stunted.

Acropora efflorescens

Localities: Minicoy, (Pillai, 1971)

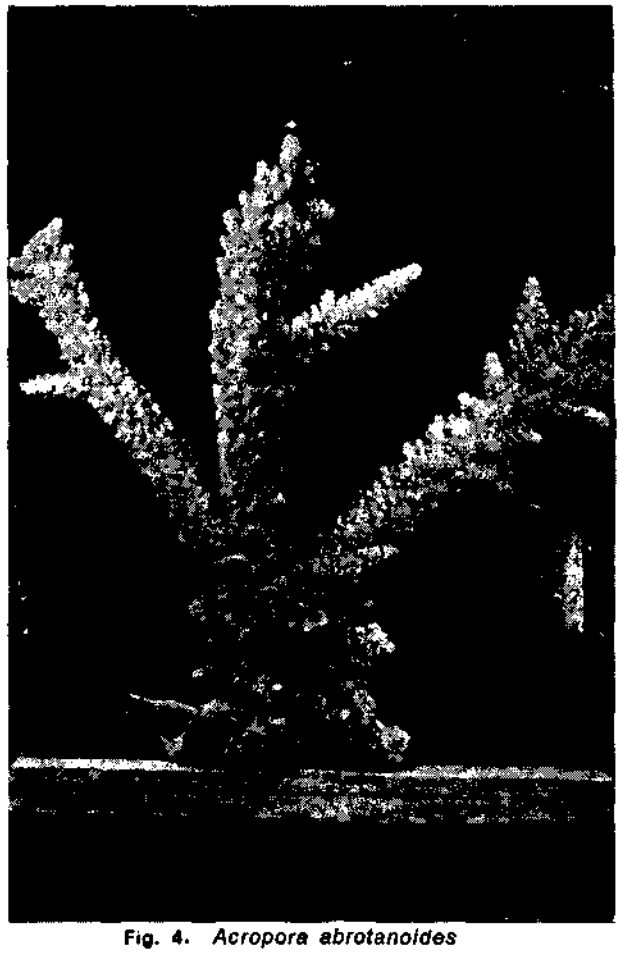

Fig. 4. *Acropora abrotanoides*

Distribution: Maldives, Lakshadweep Singapore, Sri Lanka.

Remarks: The species is rare in Minicoy. Only one colony was observed and collected.

Acropora robusta (Dana, 1846)

Locality: Minicoy.

Distribution: Chagos to Tahiti.

Remarks: This is the same as one reported by Pillai (1987) as *A conigera*. The species is essentially found on reef flat with a large encrusting base and thick stunted digitiform branches.

Acropora teres (Verrill, 1866)

Localities: Minicoy, Kalpeni, Agatti: Bitra. But should occur in all the islands.

Distribution: Maldives, Lakshadweep, China Sea, Philippines, Marshall Islands, Samoa.

Remarks: Forms large arborescent colonies in the deeper parts of the lagoon. It was very abundant in the southern half of Minicoy till seventies. Mostly dead at present.

Acropora irregularis (Brook, 1892)

Locality: Chetlat.

Distribution: Rodriguez, Seychelles, Maldives, Lakshadweep, Cocos-Keeling Islands.

Remarks: Only one colony was observed at the reef front of the lagoon reef of Chetlat in the deep groove.

Acropora corymbosa (Lamarck, 1816)
Fig. 5

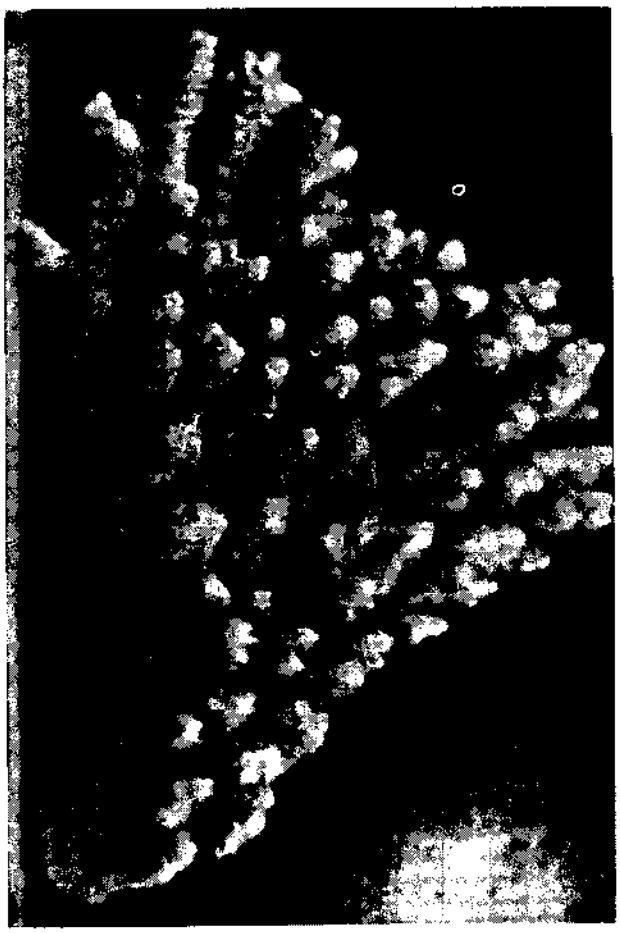

Fig. 5. *Acropora corymbosa*

Localities: Minicoy, Kavaratti, Kalpeni, Agatti, Amini, Kadmat, Kiltan and Chetlat. Probably occurs in all the islands.

Distribution: Red Sea, and eastward to Tuamotu Archipelago.

Remarks: Lagoon shoals and reef flat. A microhabitat for many economically important small species of fishes.

Acropora hyacinthus (Dana, 1846)

Localities: Found along with *A. corymbosa* in all localities.

Distribution. Red Sea eastward to Tuomotu Archipelago.

Acropora nasuta (Dana, 1846)

Localities: Minicoy, Kalpeni, Androth

Distribution: Widespread from Red Sea eastward to Tahiti.

Remarks: Reef flat and lagoon shoals as small corymbose or caespitose colonies.

Acropora humilis (Dana, 1846)
Fig. 6

Localities: This species occurs in all the atolls.

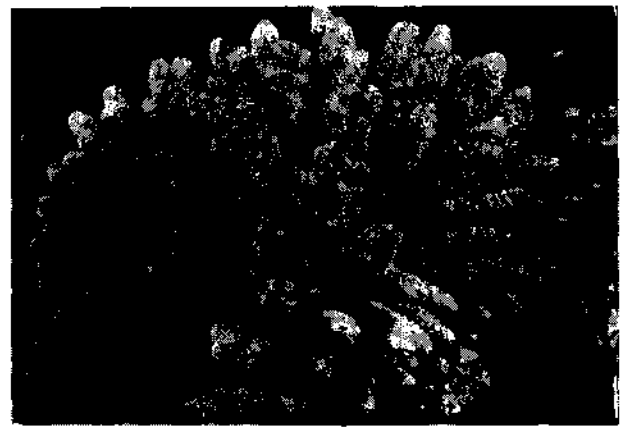

Fig. 6. *Acropora humilis*

It is fairly common both on lagoon and reef flats.

Distribution: A widespread and common Indo-Pacific species.

Acropara squarrosa (Ehrenberg, 1834)

Localities: Minicoy, Kavaratti.

Distribution: Red Sea, Seychelles, Maldives, Lakshadweep, Philippines, Great Barrier Reef, Murray Island, Marshall Islands and Tahiti.

Remarks: Not common.

Acropora monticulosa (Brueggemann, 1879)

Localities: Kadmat, Chetlat.

Distribution: Rodriguez, Lakshadweep, Eastern Australia.

Remarks: The identification of this species here in tentative. It's relationship with *A. conigera* needs further study.

Acropora granulosa (Milue Edwards and Haime, 1860)

Locality: Minicoy.

Distribution: Red Sea, Mascarene, Archipelago, Reunion, Maldives, Minicoy, Nicobar Islands, China Sea, Great Barrier Reef, Marshall Islands, Fiji, and Tahiti.

Remarks : A few specimens of this species was recorded from Minicoy in 1969 and reported under the name *A. ramableri* (Pillai 1971)

Acropora echinata (Dana, 1846)

Localities: Minicoy, Kavaratti, Kalpeni and Kiltan.

Distribution: Maldives, Lakshadweep, Marshall Islnds, Samoa.

Remarks: Not very common. Found in the deeper parts of the lagoon.

Acropora aspera Dana, 1846

Localities: Minicoy, Kavaratti, Agatti, Bangaram Amini, Kadmat, Kiltan, Chetlat, Bitra.

Distribution: Central Indian Ocean eastward to Fiji.

Remarks: Very common species throughout Lakshadweep both on lagoon and reef flats forming large thickets.

Acropora hemprichi (Ehrenberg, 1834)

Locality: Minicoy.

Distribution: Red Sea, East Africa, Mascarene Maldives, Minicoy, Sri Lanka, Great Barrier Reef, Solomon Islands.

Remerks: Rare. Was found mixed with other *Acropora* in Minicoy lagoon.

Acropora indica (Brook, 1893)

Localities: Minicoy, Kavaratti, Chetlat, Bitra.

Distribution: Lakshadweep, east coast of India.

Remarks; Isolated colonies of this species are found on open reef flats and inner lagoon reefs.

Acropora palifera (Lamarck, 1816)

Localities: Minicoy, Kavaratti, Agatti, Banagaram, Amini, Kadmat, Kiltan, Chetlat.

Distribution: Western Indian Ocean eastward to Samoa.

Remarks: *A. palifera* with large palmate branches is essentially a lagoon species throughout Lakshadweep. It is nowhere abundant.

Acropora forskali (Ehrenberg, 1834)

Localities: Minicoy (Pillai, 1971).

Distribution: Red Sea, Persian Gulf, Maldives, Minicoy.

Remarks: Rare. One colony was collected from Minicoy in 1969.

Genus *ASTREOPORA* de Blainville, 1830

Astreopora myriophthalma Lamarck, 1816

Localities: Minicoy, Kavaratti, Chetlat.

Disiribution: Widely distributed in tropical Indo-Pacific from Red Sea to the south Pacific.

Remarks: Found along with massive Porites on inner lagooh reefs. The species is common in Chetalt Island.

Astreopora listeri (Bernard, 1896)

Localities: Amini, Kadmat, Chetlat.

Distribution: Maldives, Lakshadweep, Nicobar Islands, Philippines, Marshall Islands, Cook Islands.

Remarks: The habitat is the same as *A. myriophthalma*

Genus *MONTIPORA* de Blainville

Montipora teberculosa (Lamarck, 1816)

Localities: Minicoy, Kadmat, Chetlat.

Disiribution: Wide spread Indo-Pacific species from Red Sea to Samoa.

Remarks: Mostly found as small encrustations on littoral reef flats.

Montipora explanata Brueggemann, 1897

Locality. Chetlat.

Distribution : Mauritius, Lakshadweep, south-east coast of India.

Remarks : This species was observed on the leeward reef flat of Chetlat island in fair numbers. Larger colonies were up to 30 cm in greater spread often with pink colour to the living corallum.

Montipora turgescens Bernard, 1897

Localities : Amini, Chetlat.

Disttibution : Central Indian Ocean, Great Barrier Reef, Solomon Islands, Philippines, Marshall Islands, Ellice Islands.

Remarks : Found as encrustations on reef flat.

Montipora venosa (Ehrenberg, 1834)

Locality : Amini, Chetlat.

Distribution : From Red Sea eastward to Marshall Islands.

Remarks : Rarely found on reef flat.

Monitipora foliosa (Pallas, 1766)
Fig. 7

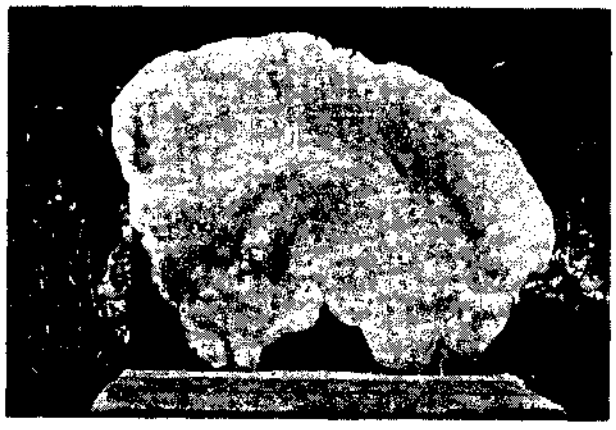

Fig. 7. *Montipora foliosa*

Localities : Kadmat and Chetlat.

Distribution : Indo-Pacific but not known from Red Sea.

Remarks : The species was found as forming small foliaceous colonies on the windward side of the reef at Kadmat. A few specimens from Chetlat from the same habitat was however, having closely set folia.

Montipora sp nov. 1

A few specimens obtained from Kadmat could not be placed satisfactorily to any of the known species known to the authors. These will be reported in a subsequent communication.

Montipora sp nov. 2

Localities : Amini, Chetlat. Reef flat.

Suborder FUNGIINA Verrill

Family AGARICIIDAE Gray

Genus *PAVONA* Lamarck, 1893.

pavona varians Verril, 1801
Fig. 8.

Localities: Minicoy, Kavaratti, Kalpeni, Androth, Kadmat, Kiltan Chetlat.

Distribution : Red Sea througout Indo-Pacific as far east as Panama.

Remarks: The species form small encrustations in all habitats. It is much more common on the northern Lakshadweep Islands than at Minicoy. Display wide range of skeletal variations.

Pavona maldivensis (Gardiner 1905.)

Localities : Minicoy (Gardiner, 1905), Chetlat.

Distribution: Red Sea, Maldives, Lakshadweep Nicobar Islands, East Indies, Palau Islands and Marshall Islands and Tahiti.

Fig. 8. *Pavona varians*

Remarks: Gardiner (1905) reported this species from Minicoy. But subsequent collections from Minicoy did not include this species. One specimen in the present collection is doubtfully placed under this species.

Pavona duerdeni Vaughan, 1907.

Localities : Minicoy, Kiltan and Chetlat.

Distribution : Abd-el-Kuri, Seychelles, Maldives. Lakshadweep, Nicobar Islands, Great Barrier Reef, Palau Islands, Caroli Islands, Marshall Islands and Hawaii.

Genus *GARDINEROSERIS* Scheer and Pillai, 1974

Gardineroseris planulata (Dana 1846)

Localities: Minicoy, Kavaratti, Kadmat, Chetlat.

Distribution : Red Sea, eastward to eastern Pacific.

Remarks : This species is found among lagoon shoals though not a conspicuous element of the coral fauna.

Family FUNGIIDAE Dana, 1846

Genus *CYCLOSERIS* Milne Edwards and Haime, 1849.

Cycloseris sp

Locality : Bangaram.

Remarks : There is only one specimen in the collection. Determination to species level is rather difficult.

Genus FUNGIA Lamarck, 1801

Fungia scutaria Lamarck, 1801.
Fig. 9

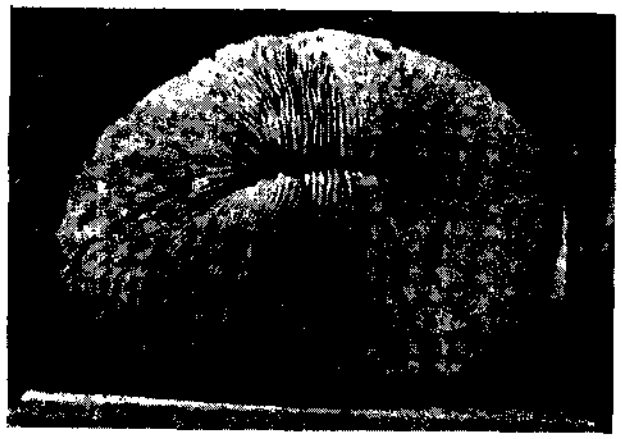

Fig. 9. *Fungia secutaria*

Localities: Minicoy, Kavaratti, Suheli, Androth, Agatti, Bangaram, Amini, Kadmat, Kiltan, Chetlat, Bitra.

Distribution : Widespread Indo-Pacific species from Red Sea to Tuamotu Archipelago.

Remarks : This is the most common species of *Fungia* found in Lakshadweep. Often found in lagoon shoals among *Acropra*. At Chetlat and Kadmat this species is extremely common.

Fungia somervillei Grandiner, 1901.

Locality: Minicoy.

Distribution: Seychelles, Lakshadweep, Amirantee, Nicobar Islands, Andamans, Mergui Archipelago, Sulu Sea.

Remarks: A Single specimen was collected in 1969 (Pillai, 1971). It was not found later in Minicoy nor the present collection include any.

Fungia danai Milne Edwards and Haime, 1851

Locality: Minicoy.

Distribution: Wide spread from Red Sea to Tahiti.

Remarks: A few large specimens of this species were collected from the southern half of the Minicoy lagoon in 1969. The present collection does not include any specimen of this species.

Fungia fungites ((Linnaues, 1758)

Locilities: Minicoy, Suheli, Androth, Agatti, Amini, Kadmat, Kiltan, Chetlat, Bitra.

Distribution: A very widespread Indo-Pacific species.

Remarks: Generally found on lagoon shoals in Lakshadweep.

Genus *POLYPHYLLIA* Quoy and Gaimard, 1830

Polyphyllia talpina (Lamarck, 1816)

Locality: Kadmat.

Distribution: Maldives, Lakshadweep, Mergui, Archipelago, Andaman, Nicobar Islands, Singapore, Philippines, Japan, Great Barrier reef, Palau Islands.

Remarks : Only one specimen of this species is obtained from Kadmat. The genus is rare in Lakshadweep reefs. It was found on the inner lagoon reef flat.

Genus *PODABACIA* Milne Edwards and Haime, 1849

Podabacia crustacea (Pallas, 1766)

Locality: Minicoy

Distribution: Red Sea east ward to Tuamotu Archipelago.

Remarks: This species is observed only at Minicoy near the Boaz Point towards the lagoon side at a site, where it is fairly common. It has a restricted occurrence in Minicoy.

Family PORITIDAE Gray, 1841

Genus *GONIOPOPRA* de Blainville, 1830

Though this genus is not profuse in Lakshadweep, the collection include at least four species. Two of them from the northern Lakshadweep appear to deserve new specific names, They are listed here as sp nov 1 and sp nov 2.

Goniopora stokesi Milne Edwards and Haime, 1860.

Localities: Minicoy, Kadmat.

Distribution : Red Sea, East Africa, Seychelles, Maldives, Lakshadweep, East coast of India, Nicobar Islands, Mergui Archipelago, East Indies, Philippines.

Remarks : This species is very conspicuous in living condition by its large expanded polyps during day time. It is rare in Lakshadweep.

Goniopora minor Crossland, 1952

Locality : Minicoy, Kiltan.

Distribution : Red Sea, Seychelles, Maldives, Lakshadweep, Sri Lanka, Great Barrier Reef, Philippines.

Goniopora sp nov. 1

Locality : Amini, Kadmat, Kiltan.

Goniopora sp. nov. 2

Localities : Amini, Kiltan.

Genus *PORITES* Link, 1807

The genus *Porites* is the most dominant coral on reefs in Lakshadweep though the number of species hitherto recorded is relatively low. Massive forms such as *P. solida, P. lutea* and *P. lobata* (tentative identification) are dominant on reef flats especially on the lagoon reefs in all the islands. The branching *Porites* such as *P. andrewsi and P. (Synaraea) convexa* are essentially lagoon forms. Two or three forms of *Porites* in the present collection could not be assigned to any named species known to the authors and appear to deserve new binominal names.

Porites solida (Forskal, 1775)

Localities : Minicoy, Kavaratti, Amini, Kadmat, Kiltan, Chetlat. This species should occur in all islands though not collected.

Distribution : Red Sea to Hawaii.

Remarks : Fairly common often forms large massive corallum.

Porites lutea Milne Edwards and Haime, 1860

Fig. 10

Fig. 10. *Porites lutea*

Localities: Minicoy, Suheli, Kavaratti, Kalpeni, Agatti, Amini, Kadmat, Chetlat, Bitra.

Distribution : Red Sea eastward in the Indo-Pacific as far east as Tuamotu Archipelago.

Remarks: Reef flats and lagoon, fairly common.

Porites lobota? Dana, 1846.

Localtiies: Kavaratti, Amini, Kadmat, Kiltan, Chetlat, Bitra.

Distribution : Lakshadweep, Nicobar Islands Great Barrier Reef, Hawaii, Galapagos Islands.

Porites lichen Dana, 1846.

Localities: Minicoy, Suheli, Kavaratti, Kalpeni Kiltan, Chetlat.

Distribution: Red Sea to Samoa and Fiji.

Remarks: Fairly common both on reef flat and lagoon. Small encrusting to submassive colonies occur in all habitats.

Porites sp nov. 1

Localities: Amini, Kadmat, Chetlat.

Bemarks: It is a massive species fairly common.

Porites sp nov. 2

Localities: Kadmat.

Remarks: Corallum massive.

Porites andrewsi Vaughan, 1918

Localities Minicoy, Kavaratti, Kalpeni, Agatti, Bangaram, Amini, Kiltan, Chetlat, Kadmat.

Distribution: Madagascar, Maldives, Lakshadweep, Nicobar Islands, Java, Palau Islands Marshall Islands, Solomon Islands, Great Barrier Reef, Samoa, Fiji.

Remarks; This ramose species of *Porites* is very common in lagoon of most of the Lakshadweep atolls. However, it is rarely recorded from the reefs. Recently mass mortality to this species also occurred in Minicoy and Kiltan.

Porites minicoiensis Pillai, 1969

Locality. Minicoy

Distribution: Known only by the type from Minicoy.

Subgenus *SYNARAEA* Verrill, 1864

The Subgenus *Synaraea* of *Porites* is hitherto not recorded from Lakshadweep, though found to be fairly common in some of the northern Lakshadweep islands such as Chetlat.

It occurs in Minicoy near the Boaz Point. It is essentially a lagoon form found mixed with *Psammocora contigua* and *Porites andrewsi* in Chetlat, often forming large colonies 50 to 60 cm in greater spread and height. Only one species as listed below is recorded.

Porites (*Synaraea*) *convexa* (Verrill, 1864)
Fig., 11

Fig. 11. *Porites (Synaraea) canvexa*

Localities: Minicoy, Kavaratti, Kalpeni, Chetlat
Distribution: Maldives, Lakshadweep' Singapore, Samoa, Tahiti.

Genus *ALVEOPORA* de Blainville, 1830

The genus *Alveopra* does not include in the present collection nor there is any record of this genus from Lakshadweep in literature. The senior author of this paper has examined a specimen among the collections of the museum at Kavaratti which is tetentetively reported here as follows.

Alveopora superficialis Pillai and Scheer, 1976
Locality : Kavaratti.
Distribution : Maldives, Lakshadweep,.

Suborder FAVIINA, Vaugham and Weels, 1943
Family FAVIIDAE, Gregory, 1900.

Genus *PLESIASTREA* Milne Edwards and Haime,

Plesiastrea versipora (Lamarck, 1816)

Localities : Minicoy, Kadmat, probably more wide spread in Lakshadweep.

Distribution : Throughout Indo-Pacific from Red Sea to Fiji.

Remarks : Gardiner (1904) mentioned its occurrence in Minicoy, but could not be re-collected. This species was fairly common on lagoon shoals in Kadmat.

Genus *FAVIA* Oken, 1815

Favia stelligera (Dana, 1846)

Localities : Minicoy, Kiltan, Chetlat.
Distribution : Red Sea to Hawaii.

Remarks : This small calicled *Favia* which forms massive or columnar growth is rare in Lakshadweep.

Favia pallida (Dana, 1846)
Fig. 12

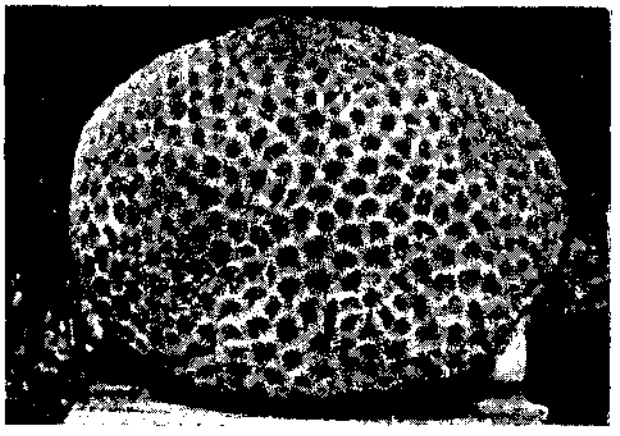

Fig. 12. *Favia pallida*

Localities : Minicoy, Amini.

Distribution : Red Sea to Hawaii.

Remarks: This is one of the most common Indo-Pacific *Favia*. However, it is not very conspicuous in Lakshadweep. It might occur more widely than is recorded from the Lakshadweep at present.

Favia speciosa (Dana, 1846)

Localities : Minicoy, Amini, Chetlat.

Distribution : Red Sea to Tuamotu Archipelago.

Favia favus (Forskal, 1775)

Localities : Minicoy, Kavaratti.

Distribution : Red Sea eastward to Tuomotu Archipelago.

Remarks: Rare. Ocurs on Reef flats and lagoon shoals.

Favia valenciennesii (Milne Edwards and Haime, 1948)

Localities : Kiltan.

Distribution : Red Sea, Lakshadweep, Gulf of Mannar, Andaman and Nicobar Islands, Banda, Philippines, Taiwan, Great Barrier Reef, Japan, Marshall Islands, New Caledonia.

Remarks : A dead specimen of this species was collected from Kiltan from the eastern shore. Living specimens could not be obtained.

Genus *FAVITES* Link, 1807

Like *Favia*, the genus *Favites* is also not a very conspicuous element of the coral fauna of Lakshadweep. Isolated and patchy colonies are found both on reef and lagoon.

Favites abdita (Ellis and Solander, 1786)

Localities : Minicoy, Kavaratti.

Distribution : Red Sea eastward to Fiji.

Favites complanata (Ehrenberg, 1834)

Locality. Minicoy.

Distribution : Red Sea, Lakshadweep, South-east coast of India, Gulf of Kutch, Australia, New Caledonia, Tuamotu Archipelago, Japan.

Remarks : *F. complenata* and *F. helicora* is one and the same and the species has a wide distribution in the Indo-Pacific.

Favites flexuosa (Dana, 1846)

Localities : Kadmat, Kiltan and Chetlat.

Distribution: Red Sea, Maldives, Lakshadweep, Nicobars, Gulf of Kutch, East Indies, Philippines, Japan, Great Barrier Reef, New Caledonia, Solomon Islands, Marshall Islands, Fiji and Cook Islands.

Favites pentagona (Esper, 1794)

Locality : Minicoy.

Distribution : Red Sea eastward to new Caledonia.

Remarks : Rare.

Favites melicerum (Ehrenberg, 1834)

Locality: Minicoy, Kalpeni, Agatti.

Distribution: Red Sea, Maldives, Lakshadweep, Providence Island, Southeast coast of India, Mergui Archipelago, Cocos-Keeling Island, New Caledonia.

Genus *GONIASTREA* Milne Edwards and Haine, 1848

Three species of *Goniastrea* occur in Lakshadweep of which one *viz. G. australensis* is a new record to this area. The genus is fairly common in all microhabitats, except the meandering australensis recorded only from Chetlat Island

Goniastrea retiformis (Lamarck, 1816)

Localities: Minicoy, Kavaratti, Kadmat, Chetlat.

Distribution: Red Sea eastward to Samoa.

Remarks: This species was very common in Minicoy at the northern end opposite to the Old Leper Colony till early seventies. However, they are mostly dead due to dumping or dredged soil.

Goniastrea retiformis (Ehrenberg, 1834)

Localities: Minicoy, Kavaratti, Kadmat, Chetlat.

Remarks: Red Sea eastward to Samoa. Fairly common.

Goniastrea australensis (Milne Edwards and Haime, 1857)

Locality: Chetlat.

Distribution: Red Sea, Natal coast, Seychelles Lakshadweep, Lanka, Great Barrier Reef Kermadic Islands, New Caledonia.

Genus *PLATYGYRA* Ehrenberg, 1034

Platygyra daedalea (Ellis and Solander, 1786)

Localities: Collection includes samples from Minicoy, Agatti, Chetlat, Kalpeni, Amini, Kilton and Chetlat. Should occur in all the islands.

Distribution: A wide spread Indo-Pacific species.

Platygyra sinensis (Milne Edwards and Haime, 1848)

Localities: Found along with P. *daedalea* in all localities.

Distribution: Similar to P. *daedalea*.

Genus *LEPTORIA* Milne Edwards and Haime, 1848

The genus is monotypic. In Lakshadweep

it is not very common though can be collected from the inner reef flat and lagoon shoals.

Leptoriaphrygia (Ellis and Solander, 1786)
Fig. 13

Fig. 13 *Leptoria phrygia*

Localities: Minicoy, Amini, Chetlat.

Distribution: Widely distributed in the Indo-Pacific and known from almost all coral growing areas.

Genus *HYDNOPHORA* Fisher de Waldheim, 1807.

Hydnophra microconos (Lamarck, 1816)

Localities: Minicoy, Suheli, Kavaratti, Kalpeni, Agatti, Amini, Kadmat, Kiltan, Chetlat and Bitra.

Distribution: Red Sea, throughout Indo-Pacific upto Cook Islands.

Remarks: The genus *Hydnophora* is represented only by *H. microconos*.

Genus *LEPTASTREA* Milne Edwards and Haime, 1848

Leptastrea bottae Milne Edwards and Haime, 1849

Locality: Minicoy

Distribution: Red Sea, Somaliland, Reunion, Chagos, Maldives, Minicoy, Cocos-Keeling Islands, Philppines, China Sea, Great Barrier Reef, New Caledonia, Marshall Islands, Ellice Islands, Tahiti.

Remarks: The present collection does not include samples of this species. The inclusion of the species herein is based on early record by Gardiner (1904).

Leptastrea purpurea (Dana, 1846)

Localities: Minicoy, Kavaratti, Amini, Kalpeni, Kadmat, Kiltan and Chetlat.

Distribution: Red Sea to Hawaii in the Indo-Pacific.

Remarks: This species differs from *L. transversa* in larger calices and relatively more number of septa.

Leptastrea transversa Klunzinger, 1879

Localities: Minicoy, Kavaratti, Amini, Kadmat, Kiltan and Chetlat.

Distribution: A common and wide spread species of *Leptastrea*, Often found in all places where *L. purpurea* occurs.

Genus *DIPLOASTREA* Matthai, 1914

Diploastrea heliopra (Lamarck, 1816)

Locality: Minicoy

Distribution: Red Sea weastward to Fiji and Samoa. It is not recorded from Southeast coast of India or Gulf of Kutch.

Remarks: The genus is monotypic. It was found only in Minicoy among the Lakshadweep Islands, that too at the northern part of the lagoon along the shore. (Pillai, 1971).

CYPHASTREA Milne Edwards and Haime, 1848

Cyphastrea seralia (Forskal, 1775)

Localities: Kavaratti, Kalpeni, Agatti, Amini, Kadmat, Kiltan, Chetlat.

Distribution: Widespread from Red Sea to Hawaii

Remarks: Inspite of very intensive collecting over several years the species or the genus was not found in Minicoy, though it was fairly common in northern Lakshadweep, especially on lagoon reefs.

Cyphastrea? microphthalma (Lamarck, 1816)

Localities: Suheli, Amini.

Distribution: Red Sea east ward to Tahiti.

Remarks: A few specimens in the present collection display variation in the septal numbers. Some calices show three cycles of complete septa as in *C. seralia* while others have only 28 as in *microphthalma*

Genus *ECHINOPORA* Lamarck, 1816

The genus *Echinopora* is recorded for the first time from Lakshadweep.

The genus apparantly does not occur in Minicoy.

Echinopora lamellosa (Esper, 1795)
Fig. 14

Fig. 14. *Echinopora lamellosa*

Localities : Kadmat. Androth.
Distribution : Red Sea to Tahiti. For details of areas reference may be made to Scheer and Pillai. (1983).
Remarks : Open reef flat, Rare. Colonies are small, sometimes with closely set flat folia.

Family OCULINIDAE Gray, 1847.

Genus *GALAXEA* Oken, 1815.

Galaxea fascicularis (Linn, 1758)

Localities : Minicoy, Androth, Kadmat, Chetlat, Kiltan
Distribution : Red Sea eastward to Fiji.

Family MERULINIDAE Verril, 1866

Genus *MERULINA* Ehrenberg, 1834

Merulina ampliata (Ellis and Solander, 1786)

Locality Minicoy.
Distribution : Red Sea (Scheer and Pilli, 1983) to Samoa.
Remarks: The genus *Merulina* does not include in the recent collection from Lakshadweep. Its inclusion is based on Gardiner (1905). One of us (Pillai) made carefull search for it at Minicoy over a long period but failed to detect its presence.

Family MUSSIDAE Ortmann, 1890.

Genus *LOBOPHYLLIA* de Blainiville, 1830.

Lobophyllia corymbosa (Forskal, 1775)

Locality : Minicoy.
Distribution: Red Sea to Tahiti. But not known from the southeast coast of India.
Remarks : The genus *Lobophyllia* is known from Lakshadweep only from Minicoy. Even at Minicoy it has a very restricted occurrence at the northern tip of the lagoon where it was once very common. It is almost dead at present due to dumping of dredged soil in the area.

Genus *ACANTHASTREA* Milne Edwards and Haime, 1848

Acanthastrea echinata (Dana, 1816)

Localities : Minicoy, Kalpeni, Chetlat.
Distribution : Red Sea to Tuamotu Archipelago.
Remarks : Not common any where.

Genus *SYMPHYLLIA* Milne Edwards and Haime, 1848

The inclusion is based on early record by Gardiner. The recent collections of corals from Lakshadweep do not include the genus

Symphyllia nobilis (Dana 1846)

Locality : Minicoy.
Distribution : Western Indian Ocean eastwards to Samoa.

Symphyllia radians Milne Edwards and Haime, 1848

Locality : Minicoy.
Distribution : Maldives, Lakshadweep, Gulf of Kutch, Great Barrier Reef, Japan, Rotumana, Tongatabu.

Suborder CARYOPHYLLINA Vaughan and Wells, 1943

Family CARYOPHYLLIIDAE Gray, 1847

Subfamily CARYOPHYLLIINAE Gray, 1847

The two genera viz. *Caryophyllia*, *Stephanocyathus* are listed here based on the deep water collections of Investigator reported by Alcock (1898, 1902) from the Laccadive sea. *Caryophyllia* is known by *C. clavus* Scacchi and *C. areucta* Milne Edwards and Haime. *Stephanocyathus* is known by *S. nobilis* (Mosely). Alcock (1898) may be consulted for the details.

Subfamily EUSMILIINE Milne Edwards and Haime, 1857

Genus *EUPHYLLIA* Dana, 1846

Euphyllia glabrescens (Chamisso and Eysenhardt, 1821)

Localities : Minicoy, Chetlat.

Disiribution : East Africa, Red Sea, Saya de Malha, Maldives, Lakshadweep, Sri Lanka, Nicobars, Mergui Archipelago, Singapore, Philippines, Japan, Great Barrier Reef, Palau Islands, Marshall Islands, New Caledonia, Rotuma.

Remarks : The genus is rare in Lakshadweep. One colony was collected from Minicoy lagoon in 1969 and two from Chetlat in 1987. In Chetlat it is found on the inner lagoon reef on the sides of *Heliopora*.

Super family FLABELLICAE Bourne, 1905

Family FLABELLIDAE Bourine, 1905

Genus *FLABELLUM*

Fiabellum pavonium Alcock, 1902

Locality Lakshadweep sea (Alcock) Investigator collection.

Suborder DENEROPHYLLIINA Vaughan and Wells, 1943

Family DENDROPHYLLIIDAE

Genus *TURBINARIA* Oken, 1815

One of the species of Turbinaria from the northern Lakshadweep could not be satisfactorily assigned to any known species. It is listed as *sp nov.* and will be described in a later communication.

Turbinaria mesenterina (Lamarck, 1816)

Localities : Minicoy, Kavaratti, Agatti, Chetlat, Kiltan

Distribution : Red Sea, Rodriguez, Maldives, Lakshadweep, Caroline Island, Marshall islands.

Turbinaria crater (Pallas, 1766)

Localities : Agatti, Kadmat.

Distribution : Central Indian Ocean to Marshall Islands.

Turbinaria sp nov

Loalities : Agatti, Kadmat and Chetlat.

Remarks : The calices are level and large.

Genus *TUBASTREA* Lesson, 1834

Tubastrea aurea (Quoy and Gaimard,1833)

Locality: Chetlat.

Distribution: Red Sea to Hawaii.

Remarks: The species occurs on the leeward reef of Chetlat under boulders. Living coral red in colour.

NON SCLERACTINIAN CORALS

Among the non-scleractinian corals *Heliopora* is the most dominant genus in all reefs of Lakshadweep. *Millepora* occurs in lagoon, while *Tubipora* is only once collected.

Subclass OCTOCORALLIA Haeckel, 1866

Order STOLONIFERA Hickson 1883

Family TUBIPORIDAE Ehrenberg, 1820

Genus *TUBIPORA*

Tubipora musica Linnaues, 1758

Locality: Bangaram.

Disttibution: Red Sea throughout Indian Ocean and Pacific but not found in southeast coast of India.

Remarks: The genus was not observed in living condition on any collection sites but a small dead fragment was obtained from the shore of Bangaram.

Order *COENOTHECALIA* Bourne, 1895

Family Helioporidae Mosely, 1876

Genus *HELIOPORA* de Blainville, 1830

Heliopora coerulea (Pallas, 1766)

Fig. 15

Fig. 15. *Heliopora coerulea*

Localities: Occurs in all the islands in fair numbers especially on the lagoon reefs. At Minicoy and Chetlat the species covers extensive areas.

Distribution: Widespread Indo-Pacific species.

CLASS HYDROZOA

Order MILLEPORINA Hickson, 1901

Order MILLEPORIDAE Flemming, 1828

Genus *MILLEPORA* Linnaeus, 1758

Millepora platyphyllia Ehrenberg, 1834

Localities: Minicoy, Suheli.

Distribution: Red Sea to Tahiti

Millepora exesa (Forskal, 1775)

Localities: Minicoy, Suheli, Kalpeni, Agatti, Amini, Kadmat, Chetlat

Distribution: Red Sea to Tuamotu Archipelago.

Millepora dichotoma (Forskal, 1775)

Localities: Minicoy, Kavaratti, Amini, Kalpeni,

Distribution: Red Sea to Tuamotu Archipelago.

Table. 1. Distribution of recorded genera of corals from the different islands in Lakshadweep

	Localities											
	Minicoy	Suheli	Kavaratti	Kalpeni	Androth	Agatti	Bangaram	Amini	Kadmat	Kiltan	Chetlat	Bitra
	1	2	3	4	5	6	7	8	9	10	11	12
Name of Genus												
Pasammocora Dana	X	—	X	X	—	X	—	X	X	X	X	—
Pocillopora Lamarck	X	X	X	X	X	X	X	X	X	X	X	X
Stylophora Schweigger	X	—	—	—	—	—	—	X	X	X	X	—
Acropora Oken	X	X	X	X	X	X	X	X	X	X	X	—
Montipora de Blainville	X	—	X	—	—	—	—	X	X	X	X	—
Astreopora de Blainville	X	—	X	—	—	—	—	X	X	—	X	—
Pavona Lamarck	X	—	X	X	X	—	—	—	X	X	X	—
Gardineroseris scheer and Pillai	X	—	X	—	—	—	—	—	X	—	X	—
Cycloseris	—	—	—	—	—	—	X	—	—	—	—	—
Fungia Lamarck	X	X	X	—	X	X	X	X	X	X	X	X
Polyphyllia Q & G	—	—	—	—	—	—	—	—	X	—	—	—
Podabacia MED-H	X	—	—	—	—	—	—	—	—	—	—	—
Porites Link	X	X	X	X	X	X	X	X	X	X	X	X
Goniopora de Blainville	X	—	—	—	—	—	—	X	X	X	—	—
Alveopora de Blainville	—	—	X	—	—	—	—	—	—	—	—	—
Plesiatrea MED-H	X	—	—	—	—	—	—	—	X	—	—	—
Favia Oken	X	—	X	—	—	—	—	X	—	X	X	—
Favites Link	X	—	X	X	—	X	—	—	X	X	X	—

	1	2	3	4	5	6	7	8	9	10	11	12
Goniastrea MED-H	X	—	X	—	—	—	—	—	X	X	X	—
Platygyra Ehrenberg	X	X	X	X	—	X	—	X	—	X	X	X
Leptoria MED-H	X	—	—	—		—	—	X	—	X	X	—
Hydnophora de Waldheim	X	X	X	X	—	X	—	X	X	X	X	X
Leptastrea MED-H	X	—	X	X	—	—	—	X	X	X	X	—
Diploastrea Matthai	X	—	—	—	—	—	—	—	—	—	—	—
Cyphastrea MED-H	—	X	X	X	—	X	—	X	X	X	X	—
Echinopora Lamarck	—	—	—	—	X	—	—	—	X	—	—	—
Galaxea Oken	X	—	—	—	X	—	—	—	X	X	X	—
Merulina Ehrenberg	X	—	—	—	—	—	—	—	—	—	—	—
Lobophyllia Blainville	X	—	—	—	—	—	—	—	—	—	—	—
Acanthastrea MED-H	X	—	—	X	—	—	—	—	—	—	X	—
Symphyllia MED-H	X	—	—	—	—	—	—	—	—	—	—	—
Caryophyllia Lamarck	—	—	—	—	—	—	—	—	—	—	—	—
Stephanocyathus Seguenza	—	—	—	—	—	—	—	—	—	—	—	—
Flabellum Lesson	—	—	—	—	—	—	—	—	—	—	—	—
Euphylli Dana	X	—	—	—	—	—	—	—	—	—	X	—
Tubastrea Lesson	—	—	—	—	—	—	—	—	—	—	X	—
Turbinaria Oken	X	—	X	—	—	X	—	—	X	X	X	—
Non Scleractinian Corals												
Millepora Linnues	X	X	X	X	X	—	X	X	X	X	X	—
Hellopora Blainville	X	X	X	X	X	X	X	X	X	X	X	—
Tubipora Ehrenberg	—	—	—	—	—	—	X	—	—	—	—	—

X = recorded
— = not recorded and not a negative indication of its occurrence

REFERENCES

ALCOCK, A. 1898. 1898. An account of the deep sea Madreporaria collected by the Royal Indian marine survey ship "Investigator". Indian Museum Calcutta ; 1-29, pla. 1-3.

ALCOCK, 1902. 1902 *A naturalist in Indian seas, or four years with the Royal Indian Marine survey* ship *"Investigator"*. John Murry London 328 pp.

GARDINER, J. S. 1904. Madreporaria Pt. 2. Astreidae *Fauna and geography of the Maldive and Laccadive Archipelagoes.* Vol. 2: 758-790 pl. 59-64.

GARDINER, J. S. 1905 Madreporaria Pt. 3. Fungida. *Ibid.*, Vol. 2: 933-957, pls, 89-93.

PILLAI, C. S. G. 1971. Distribution of shallow water stony corals at Minicoy Atoll in the Indian Ocean. *Atoll. Res. Bull. wash.*, 141: 1-12.

PILLAI, C. S. G. 1971a. Composition of the coral fauna of the southeastern coast of India and the Laccadives. In: *Regional*

variation in Indian Ocean coral reefs, Symp. Zool. Soc. Lond., 28: 301-327 Academic press.

PILLAI, C. S. G. 1986 Recent corals from the southeast coast of India. In *Recent advances in Marine Biology*. Today and tomorrow's printers and publishers New Delhi. : 107-201.

PILLAI, C. S. G. 1986a. Status of coral reefs in Lakshadweep. *Mar. Fish. Infor. Serv. T. & E ser*, 68: 38-41,

PILLAI, C. S. G. 1987. Structure and generic diversity of recent scleractinia of India. *J. Mar. biol. Ass. India*, 25 (1 & 2) : 78-90.

PILLAI, C. S. G and G. SCHEER 1976 Report on the stony corals from the Maldive Archipelago. *Zoologica* (Stuff) 126 : 1-83, pls. 1-32.

SCHEER, G and C. S. G. PILLAI. 1983. Report on the stony corals from Red Sea. *Ibid.*, 133: 1-198. pls. 41.

VAUGHAN, T. W. and J. W. WELLS. 1943. Revision of the suborders, families and genera of scleractiula. *Spec. pap. Geol. Soc. Am.*, 44 : 1-363.

WELLS. J. W. 1956. Scleractinia. In : *Treatise In Invertbrate Palentolaogy* pt. F. 328-444. univ. Kansas press.