CHAPTER TWO

TAXONOMIC STUDY OF CORALS IN LAKSHADWEEP
2.1 INTRODUCTION

A major recent major contribution to the systematic study of corals in the Lakshadweep archipelago has been by Pillai (1971a,b, 1972, 1983a, 1986a,b) and Pillai & Jasmine (1989). However, these studies were centered on Minicoy, Kiltan and Chetlat islands. Pillai (1983a) reported seventy eight species of corals from Minicoy and Kiltan. Pillai and Jasmine (1989) continued their exploration of the coral fauna of other islands in Lakshadweep. Their study updated the number of coral species to 104, with 26 new additions.

The taxonomical classification of corals adopted in the present study is that of Vaughan and Wells (1943) as modified by Wells (1956), Chevalier (1971) and Veron (1992). Chevalier (1971) excluded the subfamily Montastreinae Vaughan and Wells while Veron (1992) shifted the genus Psammocora from family Thamnasteriidae to family Siderastreidae, on the basis of affinities. Similarly, Hydnophora which was considered to belong to family Faviidae is now placed under family Merulinidae due to its closer affinities with the latter (Veron, 1992).

2.2 METHODOLOGY

Field studies were carried out on several islands in Lakshadweep during 1993-1995 (Table 2.1) to investigate the coral fauna of the archipelago. Representative corals were collected from reef flats as well as lagoons. Field surveys were conducted on reef
<table>
<thead>
<tr>
<th>Survey</th>
<th>Period</th>
<th>No. of days</th>
<th>Islands surveyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>27-02-93 to 12-04-93</td>
<td>45</td>
<td>Agatti, Kalpitti, Bangaram</td>
</tr>
<tr>
<td>II</td>
<td>14-10-93 to 5-12-93</td>
<td>53</td>
<td>Agatti, Tinnakara Parali, Kavaratti</td>
</tr>
<tr>
<td>III</td>
<td>7-03-94 to 30-04-94</td>
<td>55</td>
<td>Kalpeni, Tilakkam, Pitti, Cheriyan, Andrott, Agatti Kavaratti</td>
</tr>
<tr>
<td>IV</td>
<td>15-10-94 to 6-12-94</td>
<td>53</td>
<td>Agatti, Bangaram, Kadmat, Kiltan</td>
</tr>
<tr>
<td>V</td>
<td>14-03-95 to 26-04-95</td>
<td>44</td>
<td>Minicoy, Chetlat, Bitra, Kavaratti, Agatti</td>
</tr>
<tr>
<td>VI</td>
<td>18-10-95 to 16-11-95</td>
<td>30</td>
<td>Minicoy, Viringili, Agatti, Kalpitti</td>
</tr>
</tbody>
</table>

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flats during low tide, and in lagoons using boats and by snorkeling.

Identification of corals was done with the help of the recent literature available (Pillai, 1967a-g; Pillai & Scheer, 1976; Scheer & Pillai, 1983; Veron et al., 1977; Veron & Pichon, 1980, 1982; Veron, 1985b; Veron & Wallace, 1984). The identification was based on microscopic examination of the coral skeletal structures, type of asexual reproduction, colouration as well as clues provided by their habitat.

2.3 RESULTS AND DISCUSSION

Ninety six species of corals belonging to 34 genera, including 28 new records, were recorded during the surveys (Table 2.2). These coral species were generally observed at all islands and localities of new records are indicated in the table (Table 2.2). A key to the taxonomic identification of scleractinian coral species so far recorded in Lakshadweep is presented in Appendix 1. A descriptive account of only the new record of coral species obtained in the present study is outlined below. Their synonymies and distribution as documented in recent publications are also indicated. A world map depicting the Indo-Pacific region is sketched in Fig. 2.1 to facilitate locations of coral reef areas.

Phylum Cnidaria Hatschek (1888)
  Class Anthozoa Ehrenberg (1834)
    Subclass Zoantharia Blainville (1830)
      Order Scleractinia Bourne (1900)
Family Acroporidae Verrill (1902)
Genus Acropora Oken (1815)
Type species: Millepora muricata Linnaeus (1758)
Table 2.2 Coral species recorded in Lakshadweep.  
(Localities of new records indicated in brackets)

<table>
<thead>
<tr>
<th>Phylum Cnidaria Hatschek (1888)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Anthozoa Ehrenberg (1834)</td>
</tr>
<tr>
<td>Order Scleractinia Bourne (1900)</td>
</tr>
<tr>
<td>Suborder Astrocoeniina Vaughan &amp; Wells (1943)</td>
</tr>
<tr>
<td>Family Pocilloporidae Gray (1842)</td>
</tr>
<tr>
<td><em>Pocillopora damicornis</em> (Linnaeus, 1758)</td>
</tr>
<tr>
<td><em>Pocillopora eydouxi</em> Edwards &amp; Haime (1860)</td>
</tr>
<tr>
<td><em>Pocillopora verrucosa</em> Ellis &amp; Solander (1786)</td>
</tr>
<tr>
<td><em>Syllophora pistillata</em> Esper (1797)</td>
</tr>
<tr>
<td>Family Acroporidae Verrill (1902)</td>
</tr>
<tr>
<td><em>Acropora aspera</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora australis</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora cerealis</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora corymbosa</em> (Lamarck, 1816)</td>
</tr>
<tr>
<td><em>Acropora danae</em> (Edwards &amp; Haime, 1860)</td>
</tr>
<tr>
<td><em>Acropora efflorescens</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora formosa</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora forskali</em> (Ehrenberg, 1834)</td>
</tr>
<tr>
<td><em>Acropora granulosa</em> (Edwards &amp; Haime, 1860)</td>
</tr>
<tr>
<td><em>Acropora humilis</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora hyacinthus</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora ?millepora</em> (Ehrenberg, 1834)</td>
</tr>
<tr>
<td><em>Acropora ?monticulosa</em> (Bruggemann, 1879)</td>
</tr>
<tr>
<td><em>Acropora nasuta</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora nobilis</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora (Isopora) palifera</em> (Lamarck, 1816)</td>
</tr>
<tr>
<td><em>Acropora pulchra</em> (Brook, 1891)</td>
</tr>
<tr>
<td><em>Acropora robusta</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora selago</em> (Studer, 1878)</td>
</tr>
<tr>
<td><em>Acropora tenuis</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Acropora teres</em> (Verrill, 1866)</td>
</tr>
<tr>
<td><em>Acropora valida</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Astreopora listeri</em> Bernard, 1896</td>
</tr>
<tr>
<td><em>Astreopora myriophthalma</em> (Lamarck, 1816)</td>
</tr>
<tr>
<td><em>Astreopora ocellata</em> Bernard (1896)</td>
</tr>
<tr>
<td><em>Montipora foliosa</em> (Pallas, 1766)</td>
</tr>
<tr>
<td><em>Montipora foveolata</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Montipora tuberculosa</em> (Lamarck, 1816)</td>
</tr>
<tr>
<td><em>Montipora turgescens</em> Bernard (1897)</td>
</tr>
<tr>
<td><em>Montipora venosa</em> (Ehrenberg, 1834)</td>
</tr>
<tr>
<td>Suborder Fungiina Verrill (1865)</td>
</tr>
<tr>
<td>Family Agariciidae Gray (1847)</td>
</tr>
<tr>
<td><em>Gardineroseris planulata</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Pachyseris speciosa</em> (Lamarck, 1801)</td>
</tr>
<tr>
<td><em>Pavona decussata</em> (Dana, 1846)</td>
</tr>
<tr>
<td><em>Pavona varians</em> Verrill (1864)</td>
</tr>
<tr>
<td><em>Pavona venosa</em> (Ehrenberg, 1834)</td>
</tr>
</tbody>
</table>
Family Siderastreidae Vaugan & Wells (1943)
  *Psammocora contigua* (Esper, 1797)
  *Psammocora profundacella* Gardiner (1898)

Family Fungiidae Dana (1846)
  *Fungia (Verrillofungia) concinna* Verrill (1864) (Chetlat)
  *Fungia (Fungia) fungites* Linnaeus, 1758
  *Fungia (Danafungia) scruposa* Klunzinger (1879) (Bangaram)
  *Fungia (Pleuractis) scutaria* Lamarck (1801)

Family Poritidae Gray (1842)
  *Goniopora lobata* Edwards & Haime (1860) (Agatti, Bitra)
  *Goniopora stokesi* Edwards & Haime (1851)
  *Porites compressa* Dana (1846) (Agatti, Bangaram, Kalpeni)
  *Porites lichen* Dana (1846) (Agatti, Kavaratti, Chetlat, Kiltan)
  *Porites lutea* Edwards & Haime (1860)
  *Porites minicoiensis* Pillai (1967)
  *Porites nigrescens* Dana (1848) (Agatti, Kavaratti)
  *Porites solida* (Forsskal, 1775)
  *Porites* (Synarea) *convexa* Verrill (1864)

Suborder Faviina Vaughan & Wells (1943)
Family Faviidae Gregory (1900)
  *Cyphastrea microphthalmalna* (Lamarck, 1816)
  *Cyphastrea serailia* (Forsskal, 1775)
  *Diploastrea heliopora* (Lamarck, 1816)
  *Echinopora lamellosa* (Esper, 1795)
  *Favia ?favus* (Forsskal, 1775)
  *Favia pallida* (Dana, 1846)
  *Favites abdita* (Ellis & Solander, 1786)
  *Favites complanata* (Ehrenberg, 1834)
  *Favites flexuosa* (Dana, 1846)
  *Favites russelli* (Wells, 1954) (Agatti, Kavaratti)
  *Goniastrea aspera* Verrill (1865) (Agatti)
  *Goniastrea edwardsi* Chevalier (1971) (Agatti, Kalpeni, Minicoy)
  *Goniastrea pectinata* (Ehrenberg, 1834)
  *Goniastrea retiformis* (Lamarck, 1816)
  *Leptastrea purpurea* (Dana, 1846)
  *Leptastrea transversa* Klunzinger (1879)
  *Leptoria phrygia* (Ellis & Solander, 1786)
  *Montastrea curta* (Dana, 1846) (Agatti, Chetlat)
  *Montastrea magnistellata* Chevalier (1971) (Agatti)
  *Montastrea valenciennesi* (Edwards & Haime, 1848) (Agatti)
  *Platygyra daedalea* (Ellis & Solander, 1786)
  *Platygyra lamellina* (Ehrenberg, 1834)
  *Platygyra sinensis* (Edwards & Haime, 1849)

Family Oculinidae Gray (1847)
  *Galaxea astreata* (Lamarck, 1816) (Agatti)
  *Galaxea fascicularis* (Linnaeus, 1767)

Family Merulinidae Verrill (1866)
  *Hydnophora exesa* (Pallas, 1766) (Agatti)
  *Hydnophora microconos* (Lamarck, 1816)

Family Mussidae Ortmann (1890)
  *Acanthastrea echinata* (Dana, 1846)
Lobophyllia corymbosa (Forsskal, 1775)  
*Symphyllia radians* Edwards & Haime (1849)  
*Symphyllia nobilis* (Dana, 1846)  
Suborder Caryophylliina Vaughan & Wells (1943)  
Family Caryophylliidae Gray (1847)  
*Tubastrea aurea* (Quoy & Gaimard, 1833)  
*Paracyathus* sp. (Agatti)  
*Euphyllia glabrescens* (Chamisso & Eysenhadt, 1821)  
*Symphyllia radians* Edwards & Haime (1849)  
*Symphyllia nobilis* (Dana, 1846)  
Suborder Caryophylliina Vaughan & Wells (1943)  
Family Caryophylliidae Gray (1847)  
*Symphyllia radians* Edwards & Haime (1849)  
*Symphyllia nobilis* (Dana, 1846)  
Suborder Caryophylliina Vaughan & Wells (1943)  
Family Caryophylliidae Gray (1847)  
*Tubastrea aurea* (Quoy & Gaimard, 1833)  
*Paracyathus* sp. (Agatti)  
*Tubastrea mucronata* Ehrenberg (1834) (Kadmat)  
Turbinaria frondens (Dana, 1846) (Agatti)  
Turbinaria mesenterina (Lamarck, 1816)  
Order Stolonifera Hickson (1833)  
Family Tubiporidae Ehrenberg (1828)  
*Tubipora musica* Linnaeus (1758)  
Order Coenothecalia Bourne (1895)  
Family Helioporidae Mosely (1876)  
Heliopora coerulea (Pallas, 1766)  
Order Stolonifera Hickson (1833)  
Family Tubiporidae Ehrenberg (1828)  
*Tubipora musica* Linnaeus (1758)  
Order Coenothecalia Bourne (1895)  
Family Helioporidae Mosely (1876)  
Heliopora coerulea (Pallas, 1766)  
Class Hydrozoa Owen (1843)  
Order Milleporina Hickson (1901)  
Family Milleporidae Fleming (1828)  
*Millepora exesa* (Forsskal, 1775)  
*Millepora dichotoma* (Forsskal, 1775)  
*Millepora platyphylla* Hemprich & Ehrenberg (1834)

* indicates new distribution records for Lakshadweep
Fig. 2.1 Map of the Indo-Pacific region.
2.3.1. *Acropora austera* (Dana, 1846) (Plate 2.1, Photo 1-2)

**Specimens Examined:** Bangaram 2; Kadmat 2; Minicoy 1; Kalpeni 1.

**Synonymy**

*Madrepora austera* Dana (1846); Brook (1893)

*Madrepora multiramosa* Nemenzo (1967)

*Madrepora scherzeriana* Brueggemann; not Brueggemann (1877a,b); Brook (1893)

*Acropora austera* (Dana, 1846); Verrill (1902); Faustino (1927); Wallace (1978); Veron & Wallace (1984)

Colonies are arborescent with very thick branches measuring about 4cm in thickness.

Axial corallites are thick walled, about 4mm in diameter and up to 3mm exert. Radial corallites show a wide range in size, shape and orientation. They are appressed to tubular, the former with nariiform openings. The coenosteum is coarse and spongy.

Living colonies are brown to creamish in colour and this species is usually encountered in lagoons.

**Distribution:** Red Sea, Saudi Arabia and Australia.

2.3.2. *Acropora cerealis* (Dana, 1846) (Plate 2.1, Photo 3-4)

**Specimens Examined:** Agatti 1; Chetlat 1.

**Synonymy**

*Madrepora cerealis* Dana (1846); Brook (1893)

*Madrepora hystrix* Dana (1846); Brook (1893)

*Madrepora tizardi* Brook (1892, 1893)

*Acropora cerealis* (Dana, 1846); Faustino (1927); Nemenzo (1967); Wallace (1978); Veron & Wallace (1984)
Acropora hystrix (Dana, 1846); Wells (1954)

Acropora tizardi (Brook, 1893); Wells (1954); Zou (1975)

Colonies are caespitose to caespito-corymbose with the branches approximately 10mm thick.

Axials are not more than 1mm exert and about 2mm thick. Radials are strongly appressed at the base of the branch becoming tubo-nariform at the tips. Radials are 1-1.5mm in diameter. Immersed corallites are present in between larger corallites.

This species was collected from lagoons at Chetlat and Agatti. Colonies are creamish in colour when live.

Distribution: Maldives, Philippines, Marshall Islands, Indonesia, Tonga and Australia.

2.3.3. Acropora ?millepora (Ehrenberg, 1834) (Plate2.1, Photo 5-6)

Specimens Examined: Agatti 2.

Synonymy

Heteropora millepora Ehrenberg (1834)

?Madrepora convexa Dana (1846); Brook (1893)

Madrepora millepora (Ehrenberg, 1834); Brook (1893)

?Madrepora prostrata Dana (1846)

Madrepora spathulata Brook (1891, 1893)

Madrepora squamosa Brook (1892, 1893)

Acropora librata Nemenzo (1967)

Acropora millepora (Ehrenberg, 1834); Verrill (1902); Thiel (1932); Nemenzo (1967); Wallace (1978); Veron & Wallace (1984)

?Acropora prostrata (Dana, 1846); Faustino (1927); Wells (1954)

Acropora sarmentosa (Brook), not Brook (1892); Vaughan (1918)
Acropora singularis Nemenzo (1967)

Acropora squamiosa (Brook); Vaughan (1918); Matthai (1923); Crossland (1952); Stephenson & Wells (1955); Pillai (1967e)

The colony was corymbose with a side attachment bearing short branches.

Axial corallites are 2-4mm in diameter and slightly exert with six primary septa, well discernible. Radial corallites are usually subimmersed to immersed. Walls of both axial and radial corallites are spinulose.

Of the two specimens collected and examined, one of them is part of a young colony and hence its identity could not be conclusively ascertained. Perhaps, it is only an ecomorph of A. corymbosa.

Specimens were collected from the reef flat at Agatti.

Distribution: Gulf of Mannar, Andaman, Sri Lanka, Maldives, Thailand and Australia.

2.3.4. Acropora pulchra (Brook, 1891) (Plate2.1, Photo 7-8)

Specimens Examined: Agatti 6; Bangaram 1; Andrott 1.

Synonymy
Madrepora pulchra Brook (1891, 1893)

Acropora pulchra (Brook); Vaughan (1918); not Crossland (1952); Stephenson & Wells (1955); Nemenzo (1967); Chevalier (1968); Zou (1975); Wallace (1978); Veron & Wallace (1984)

Colonies are arborescent, usually with thin branches.

Axial corallites are 1-2mm exert and 2-3mm in diameter. Radials are of mixed sizes with the upper wall not developed and the lower wall lip like. Openings of the corallites may be nariform or dimidiate. The directive septa are prominent. Corallites are costate with a porous coenosteum in between made up of flattened spinules.
Specimens were collected from reef flats as well as from lagoons. Live colonies are brownish in colour, paler at the tips.

**Distribution:** Cocos-Keeling Islands, Mozambique, Reunion and Australia.

2.3.5. *Acropora selago* (Studer, 1878) (Plate 2.2, Photo 1-2)

**Specimen Examined:** Agatti 1.

**Synonymy**

Madrepora delicatula Brook (1891, 1893)

Madrepora selago Studer (1878)

*Acropora delicatula* (Brook, 1891); Wells (1954), not Stephenson & Wells (1955); Wallace (1978); Veron & Wallace (1984)

Colonies are caespito-corymbose bearing main branches less than 1 cm thick and giving rise to small branchlets.

Axials are less than 1.5 mm exert and 1.8-2 mm thick. Radials are neatly arranged, ascending, dimidiate, with flaring outer lips.

Live colonies are brown in colour. The specimen was collected from the reef flat.

**Distribution:** Sri Lanka, Marshall, Solomon Islands and Australia.

2.3.6. *Acropora tenuis* (Dana, 1846) (Plate 2.2, Photo 3-4)

**Specimen Examined:** Chetlat 1.

**Synonymy**

?Madrepora africana Brook (1893)

Madrepora bifaria Brook (1892, 1893) Madrepora kenti Brook (1892, 1893)

Madrepora macrostoma Brook (1891, 1893)
Madrepora tenuis Dana (1846); Brook (1893)

Acropora africana (Brook); Crossland (1948)

Acropora kenti (Brook); Wells (1954)

Acropora macrostoma (Brook); Crossland (1952); Nemenzo (1967)

Acropora plana Nemenzo (1967)

Acropora tenuis (Dana, 1846); Faustino (1927); Wallace (1978); Veron & Wallace (1984)

Colonies are caespito-corymbose with the main branches dividing into 2-3 branchlets, 8-10mm thick.

Axials are 1-2mm exert. Radial corallites are large, usually of one size, with wide openings. Corallites are 2-3mm thick at the base of the branches, becoming smaller towards the tips. A few immersed corallites are present on the lower parts of the bases.

Distribution: Widely distributed in the tropical Indo-Pacific; from Sri Lanka, Mauritius, Marshall Islands to Australia.

2.3.7. Acropora valida (Dana, 1846) (Plate2.2, Photo 5-6)

Specimens Examined: Agatti 1; Kavaratti 1.

Synonymy

Madrepora coalescens Ortmann (1889); Brook (1893)

Acropora concinna (Brook); Verrill (1902); Searle (1956)

Acropora dissimilis (Verrill, 1902); Faustino (1927); Nemenzo (1967); Zou (1975)

?Madrepora rousseauii Edwards & Haime (1860); Brook (1893)

Madrepora valida Dana (1846); Brook (1893)

Madrepora variabilis Klunzinger (1879); Brook (1893)
*Acropora dissimilis* Verrill (1902)

*Acropora rousseauii* (Edwards & Haime, 1860); Marenzeller (1907)

*Acropora valida* (Dana, 1846); Verrill (1902); Hoffmeister (1925); Wells (1954); Nemenzo (1967); Zou (1975); Grigg *et al.* (1981); Veron & Wallace (1984)

*Acropora variabilis* (Klunzinger, 1879); Verrill (1902); Marenzeller (1907); Vaughan (1918); Matthai (1923); Faustino (1927); Wells (1950, 1955); Crossland (1952); Rossi (1954); Stephenson & Wells (1955); Searle (1956); Scheer (1964b); Chevalier (1968); Scheer & Pillai (1974); Pillai & Scheer (1976); Wallace (1978)

Colonies form compact bushes with the branches about 8mm thick at their tips.

Axial corallites are 2mm thick and 1-2mm exert. Radials are strongly appressed with oval to nariform openings.

Specimens were collected from the reef flat. Colonies are usually creamish in colour when live.

**Distribution:** West coast of India, Gulf of Mannar, Andamans, Sri Lanka, Maldives, Red Sea, Hawaii and Australia

**Genus Astreopora** Blainville (1830)

Type species: *Astrea myriophthalma* Lamarck (1816)

2.3.8. *Astreopora ocellata* Bernard (1896) (Plate 2.2, Photo 7-8)

**Specimen Examined:** Agatti 1.

**Synonymy**

*Astrea ocellata* Bernard (1896) *Astreopora ocellata* Bernard (1896); Mayer (1918); Vaughan (1918); Yabe & Sugiyama (1941); Wells (1954); Pillai & Scheer (1976); Veron & Wallace (1984)

*Astrea ocellata* and *Astrea kenti* Bernard (1896)

Colonies are massive, cushion shaped or flattened. Calices are large, up to 4mm
in diameter, with thick rounded openings. Smaller sized corallites are seen between the large corallites.

The specimen was collected from the reef flat. When live, the colony is brown in colour.

**Distribution**: Maldives, Chagos, Palau Island and Australia.

Genus *Montipora* Blainville (1830)

Type species: *Porites verrucosa* Lamarck (1816)

2.3.9. *Montipora foveolata* (Dana, 1846) (Plate 2.3, Photo 1)

**Specimens Examined**: Agatti 3; Kiltan 1.

**Synonymy**

*Manopora foveolata* Dana (1846)

*Montipora foveolata* (Dana, 1846); Edwards & Haime (1851a); Quelch (1886); Whitelegge (1898); Gardiner (1898); Bernard (1897); Crossland (1952); Wells (1954); Ma (1959); Nemenzo (1967); Veron & Wallace (1984)

*Montipora socialis* Bernard (1897); Gardiner (1898); Crossland (1952); Wells (1954)

Corallum is massive with the surface coenochyme raised into foveolations. The thecal pappilae that form the rim of the thecae may or may not completely encircle the calices. Calice openings are 1-2mm in diameter. Two cycles of septa are clearly discernible. The ends of the primary septa fuse at the calice centre. Septa are reduced to spines. The coenosteum is made up of spinules. Those on the thecal pappilae have highly elaborate tips.

**Distribution**: Distributed throughout the central and western Pacific including Australia.
Suborder Fungiina Verrill (1865)
Family Agariciidae Gray (1847)
Genus Pachyseris Edwards & Haime (1849)
Type species: Agaricia rugosa Lamarck (1801)

2.3.10. Pachyseris speciosa (Lamarck, 1801) (Plate 2.3, Photo 2)

Specimen Examined: Kavaratti 1.

Synonymy
Agaricia speciosa Dana (1846)
Agaricia levicollis Dana (1846)
Pachyseris clementei Nemenzo (1955)
Pachyseris involuta Studer (1878); Horst (1921)
Pachyseris levicollis Horst (1922a); Hoffmeister (1925); Scheer & Pillai (1974); Pillai & Scheer (1976)
Pachyseris speciosa (Dana, 1846); Edwards & Haine (1851b, 1860); Studer (1881); Duncan (1884); Quelch (1886); Ortmann (1888); Vaughan (1918); Horst (1921); Matthai (1924, 1948a); Hoffmeister (1925); Yabe et al. (1936); Eguchi (1938); Crossland (1952); Wells (1954); Pichon (1964); Chevalier (1968); Scheer (1972); Scheer & Pillai (1974, 1983); Veron & Pichon (1980); Head (1980)

A small dead colony was found washed ashore at Kavaratti.

The specimen was plate-like, approximately 10mm thick. The calices run parallel to each other with the distance from centre to centre ranging from 2-3mm. Septo-costae are confluent between the centres, heavily granulated. Most septo-costae cannot be differentiated into orders except in some region where two orders are distinguishable. Columella is well developed, solid and discontinuous.

Distribution: Nicobar, Maldives, Chagos, Red Sea, Aldabra, E. Africa, Marshall Islands, Cargados (Mauritius), Saya de Malha (Seychelles), Mergui, Indonesia,
Philippines, Palau Island, Samoa, Tahiti and Australia.

Genus *Pavona* Lamarck (1801)

Type species: *Madrepora cristata* Ellis & Solander (1786)

2.3.11. *Pavona decussata* (Dana, 1846) (Plate 2.3, Photo 3-4)

Specimens Examined: Agatti 5.

**Synonymy**

*Lophoseris cristata* Edwards & Haime (1860)

*Pavonia angularis* Klunzinger (1879); Marenzeller (1906)

*Pavonia crassa* Dana (1846); Matthai (1924)

*Pavonia decussata* Dana (1846); Quelch (1886); Bedot (1907)

*Pavonia lata* Dana (1846); Matthai (1924)

*Pavona crassa* Dana (1846)

*Pavona decussata* (Dana); Horst (1922a,b); Matthai (1924, 1948b); Hoffmeister (1925); Faustino (1927); Yabe *et al.* (1936); Umbgrove (1940); Crossland (1952); Stephenson & Wells (1955); Nemenzo (1955); Utinomi (1965, 1971); Scheer (1967); Loya & Slobodkin (1971); Pillai & Scheer (1973); Veron & Pichon (1980); Head (1980); Scheer & Pillai (1983); Pillai (1986b)

*Pavona lata* Dana (1846); Pillai & Scheer (1974)

*Pavona seriata* Brueggemann (1879); Yabe *et al.* (1936)

Colonies are either encrusting, massive or foliaceous.

Calices are deep, in close proximity to each other and usually arranged in rows with the distance between the adjacent rows ranging from 1-3mm. Septa are arranged in two cycles and heavily granulated. Columella is poorly developed, styliform.

Live colonies are cream in colour. Specimens were collected from the reef flat.

2.3.12. Pavona venosa (Ehrenberg, 1834) (Plate 2.3, Photo 5-6)

Specimens Examined: Agatti 2.

Synonymy
Polyastra venosa Ehrenberg (1834)
Pavonia calcifera Gardiner (1898)
Tichoseris obtusata Quelch (1884)
Pavona (Polyastra) obtusata (Quelch); Wells (1936); Umbgrove (1940); Nemenzo (1955); Stephenson & Wells (1955); Scheer (1964b)
Pavona (Polyastra) venosa (Ehrenberg, 1834); Wells (1936); Nemenzo (1955)
Pavona venosa (Ehrenberg, 1834); Veron & Pichon (1980)

Corallum is massive, encrusting or columnar.

Calices are arranged in valleys or placed in groups. Three orders of septa are present. Septa are granulated on the sides and bear dentate margins. Columella is absent or poorly developed.

Specimens were collected from the reef flat.


Family Fungiidae Dana (1846)
Genus Fungia Lamarck (1801)
Type species: Madrepora fungites Linnaeus (1758)
2.3.13. *Fungia (Verrillofungia) concinna* Verrill (1864) (Plate 2.3, Photo 7-8)

**Specimen Examined:** Chetlat 1.

**Synonymy**

*Fungia agariciformis* Dana (1846)

*Fungia concinna* Verrill (1864); Quelch (1886); Doederlein (1902); Gardiner (1909); Vaughan (1918); Horst (1921); Boschma (1925); Faustino (1927); Hoffmeister (1929); Thiel (1932); Umbgrove (1939, 1940); Yabe & Sugiyama (1941); Wells (1954); Nemenzo (1955); Stephenson & Wells (1955); Scheer & Pillai (1974, 1983); Veron & Pichon (1980); Head (1980)

*?Fungia granulosa* Vaughan (1906)

*Fungia patella* Verrill (1864)

*Fungia plana* Studer (1878); Quelch (1886); Doederlein (1902); Gravier (1907, 1911); Marenzeller (1907); Yabe & Sugiyama (1935)

*Fungia serrulata* Verrill (1864)

The corallum is circular and convex measuring 13cm in length.

Lower order septa are exert, approximately 1mm thick near the central fossae and show small triangular dentations. Higher order septa show lobed dentations. The sides of the septa show minute conical spines. Costae are unequal. The major ones decrease in size towards the centre. They have a hirsute appearance and tend to bifurcate at the tips. The corallum is imperforate.

**Distribution:** Andaman and Nicobar Islands, Chagos, Red Sea, Kenya, Mozambique, Thailand, Australia and Tuamotu Archipelago.

2.3.14. *Fungia (Danafungia) scruposa* Klunzinger (1879) (Plate 2.4, Photo 1-2)

**Specimen Examined:** Bangaram 1.
Synonymy

*Fungia scruposa* Klunzinger (1879); Doederlein (1902); Marenzeller (1907); Horst (1921); Matthai (1924); Yabe & Sugiyama (1935, 1941); Rossi (1956); Schuhmacher (1979); Veron & Pichon (1980); Head (1980); Scheer & Pillai (1983)

A single specimen belonging to this species was collected from the Bangaram lagoon.

The corallum measured 8cm in greatest breadth and was perforate. Lower order septa are markedly exert at the centre and at the periphery. The septa are large dentations with pointed tips. All septa are heavily granulated. Higher order septa do not form costae and can be traced at the periphery of the corallum. The two to three orders of septa are made up of slender spines. Spines are either single or bifurcate at the tips. Unlike *F. fungites* with which this species is usually confused, the sides of the costae bear spinules. Columella is trabecular.

**Distribution:** Red Sea, Chagos and Australia.

Family Poritiidae Gray (1842)

Genus *Goniopora* Blainville (1830)

Type species: *Goniopora pedunculata* Quoy & Gaimard (1833)

2.3.15. *Goniopora lobata* Edwards & Haime (1860) (Plate2.4, Photo 3-4)

**Specimens Examined:** Agatti 6; Bitra 1.

**Synonymy**

*Goniopora columna* Dana (1846); sensu Scheer & Pillai (1974)

?*Goniopora hirsuta* Crossland (1952)

*Goniopora lobata* Edwards & Haime (1860); Duncan (1889); Bernard (1903); Bedot (1907); Vaughan (1907, 1918); Hoffmeister (1925); Crossland (1948, 1952); Wells (1955); Stephenson & Wells (1955); Searle (1956); Veron & Pichon (1982)
?Goniopora traceyi Wells (1954)

Colonies are massive and hemispherical.

Calices are rounded or polygonal, 3mm in diameter, with porous walls. Septa are arranged in three cycles. The septal edges are dentate and sides are granular. The peritheca is thick and porous. Columella consists of a few twisted trabeculae.

Specimens were collected from the reef flats as well as from lagoons. When live colonies are brownish in colour.


**Genus Porites Link (1807)**

Type species: *Porites polymorpha* Link (1807) = *P. porites* Pallas (1766)

2.3.16. *Porites compressa* Dana (1846) (Plate2.4, Photo 5,6)

**Specimens Examined:** Agatti 1; Bangaram 1; Kalpeni 1.

**Synonymy**

*Porites compressa* Dana (1846); Vaughan (1907); Nemenzo (1955); Pillai (1967f, 1986b); Pillai & Scheer (1973, 1974); Scheer & Pillai (1983); Pillai & Patel (1988)

Colonies are branched with the branches 3-4cm long and 10-25mm thick at the base.

Calices are polygonal, approximately 1.6-2mm in diameter, with thin walls made up of frosted denticles. The pali are well developed. The ventral triplet is not fused into a trident. A single denticle is seen on the upper margin of the septa.
Columella is a compressed plate flattened in the direction of the directive septa.

**Distribution:** Gulf of Kachchh, Gulf of Mannar, Red Sea, Arabian Gulf, Strait of Malacca, Philippines, Palau, Hawaii, Mascarene Islands and Mozambique.

2.3.17. *Porites nigrescens* Dana (1848) (Plate 2.4, Photo 7-8)

**Specimens Examined:** Agatti 2; Kavaratti 1.

**Synonymy**

*Porites* Fiji 8', Bernard (1905)

*Porites nigrescens* Dana (1848); Edwards & Haime (1851a, 1860); Rathburn (1887); Rehberg (1892); Bernard (1905); Vaughan (1918); Faustino (1927); Yabe & Sugiyama (1932, 1935); Eguchi (1938); Umbgrove (1940); Nemenzo (1955); Searle (1956); Ma (1959); Pichon (1964, 1978); Zou (1975); Faure (1977)

*Porites saccharata* Brueggemann (1878); Studer (1881); Ortmann (1888); Bernard (1905)

*Porites Singapore 7* Bernard (1905)

*Porites suppressa* Crossland (1952); Scheer & Pillai (1974)

*Porites Tonga 10* Bernard (1905)

Colony is free, ramose with short, anastomosing branches which are constricted at their base and broadened at their tips.

Calices are about 1mm in diameter and separated from each other by a thin ridge made up of mural denticles which are finely echinulate. A single denticle is present between the wall and the pali. Columella is in the form of a style. Septal denticles and columella appear frosted due to the presence of echinulations similar to those on the mural denticles. This species was usually encountered in lagoons.

**Distribution:** Andaman and Nicobar Islands, Red Sea, Saudi Arabia, Chagos, Kenya, Mozambique, Tulcar, Aldabra, Seychelles, Reunion, Mauritius, Cocos Keeling, Thailand, Madagascar, Mascarene Islands, South China Sea, Fiji and Tonga.
2.3.18. *Porites lichen* Dana (1846) (Plate 2.5, Photo 1)

**Specimens Examined:** Agatti 2; Kavaratti 1; Chetlat 1; Kiltan 1.

**Synonymy**

*Porites lichen* Dana (1846); Quelch (1886); Rathburn (1887); Whitelegge (1898); Bernard (1905); Vaughan (1907, 1918); Yabe & Sugiyama (1932, 1935); Wells (1954); Scheer (1964a); Wells & Davies (1966); Eguchi (1968); Pillai & Scheer (1976); Pillai (1986b); Veron & Pichon (1982)

*Goniopora? lichen* Edwards & Haime (1851a, 1860)

*Goniopora lichen* Klunzinger (1879)

'Porites Ellice Islands' Bernard (1905)

*Porites eridani* Umbgrove (1940); Pillai & Scheer (1974)

'Porites Fiji 16, 17, 18' Bernard (1905)

'Porites Great Barrier Reef 32' Bernard (1905)

*Porites klunzingeri* Marenzeller (1907)

*Porites purpurea* Gardiner (1898); Bernard (1905); Yabe & Sugiyama (1932, 1935)

*Porites reticulosa* Dana (1846); Rathburn (1887); Bernard (1905); Vaughan (1907); Chevalier (1968)

*Porites viridis* Gardiner (1898); Bernard (1905); Vaughan (1918); Eguchi (1938); Umbgrove (1940)

Colonies are encrusting. The surface of the corallum is irregular and hillocky.

Calices average 1mm in diameter with the walls about 0.5-1mm thick. Pali are weakly to well developed with these variations occurring in the same corallum. The ventral directive septum is free or fused. The palar synapticular ring is well developed.

The columnella is either present, in the form of a single style fused to the septa by radii, or absent.

This species was recorded on reef flats as well as in lagoons.
This species was recorded on reef flats as well as in lagoons.

**Distribution:** Widely distributed throughout the tropical Indo-Pacific; from the Gulf of Kachchh, west coast of India, Gulf of Mannar, Maldives, Red Sea, Ellice, Marshall Islands, Fiji, Samoa to Australia.

Suborder Faviina Vaughan & Wells (1943)
Family Faviidae Gregory (1900)
Genus *Favites* Link (1807)
Type species: *Favites astrinus* Link (1807)

2.3.19. *Favites russelli* (Wells, 1954) (Plate2.5, Photo 2)

**Specimens Examined:** Agatti 1; Kavaratti 1.

**Synonymy**

*Favites rufa* Wijsman-Best (1972, 1976)

*Plesiastrea russelli* Wells (1954)

*Favites russeli* Veron *et al.* (1977)

The corallum is submassive with cerioid corallites.

- Corallites are either round or slightly polygonal with thick theca, 4-7mm in diameter. Septa are arranged in three orders. Primary septa show well developed paliform lobes which are separated from the septa by a deep notch. Septa exhibit regular fan shaped dentations. All septa are granular. Septa are adjoined over the thecae, with the primary septa becoming secondary in the adjacent corallites. The columella is spongy.

Specimens were collected from the reef flat. Live colonies display a gray colouration.
Distribution: Marshall Islands, New Caledonia, Indonesia and Australia.

Genus *Goniastrea* Edwards & Haime (1848)

Type species: *Astrea retiformis* Lamarck (1816)

2.3.20. *Goniastrea aspera* Verrill (1865) (Plate 2.5, Photo 3)

Specimen Examined: Agatti 1.

Synonymy

*Prionastrea spectabilis* Verrill (1872) = *Astraea (Fissicella) magnifica* Dana (1846)

*Favites aspera* Verrill (1865)

*Favites spectabilis* Verrill (1865)

*Goniastrea aspera* Verrill (1865); Yabe & Sugiyama (1935); Yabe *et al.* (1936); Eguchi (1938); Veron *et al.* (1977)

*Goniastrea equisepta* Nemenzo (1959)

*Goniastrea incrustans* Duncan (1889); Matthai (1924); Foidart (1971); Chevalier (1971)

*Goniastrea mantonae* Crossland (1952); Stephenson & Wells (1955); Nemenzo (1959); Foidart (1971)

*Goniastrea spectabilis* (Verrill, 1872); Wijsman-Best (1972)

Corallum is encrusting with the cerioid calices having a cellular appearance.

Calices are 6.5-9mm in diameter. Septa are arranged in two alternating cycles. Primary septa have paliform lobes that descend vertically. Secondary septa are present as ridges down the walls. Septa have dentate margins and granular sides.

Columella is compact and spongy. Adjacent septa are not continuous over the walls.

Distribution: Sri Lanka, Mozambique, Reunion, Mauritius, Rodriguez Island, Mergui
Archipelago, Thailand, Indonesia, Philippines, Australia, Palau and New Caledonia.

2.3.21. *Goniastrea edwardsi* Chevalier (1971) (Plate 2,5, Photo 4-5)

**Specimens Examined:** Agatti 3; Kalpeni 1; Minicoy 1.

**Synonymy**

*Astraea parvistella* Dana (1846)

*Goniastrea edwardsi* Chevalier (1971); Wijsman-Best (1976); Veron *et al.* (1977)

*Goniastrea parvistella* (Dana); *sensu* Vaughan (1918); Yabe & Sugiyama (1935); Yabe *et al.* (1936); Nemenzo (1959); Foidart (1970a, 1970b, 1972); Wijsman-Best (1972)

*Goniastrea solida* (pars); Edwards & Haime (1848); (pars) Edwards & Haime (1857); Gardiner (1899, 1904); Matthai (1914)

Colonies massive.

Calices are polygonal and exhibit a neat cellular arrangement. Calices are of an even size, 3-7mm in diameter. Septa are arranged in three distinct orders. The first order septa are slightly exert, reach the columella and develop prominent paliform lobes. Second order septa run deep within the calice and do not fuse with the columella. The theca is thin and shows the presence of a ridge.

Pillai (1983a) considered *G. edwardsi* to be a synonymy of *G. retiformis*. During the present surveys, these two species occurred in the same biotope, suggesting that they are distinct species. They are thus treated separately.

**Distribution:** Sri Lanka, Red Sea, Mozambique, Seychelles, Chagos, Thailand, Australia and Loyalty Islands.

**Genus Montastrea** Blainville (1830)

**Type species:** *Astrea guettardi* Defrance (1826)
2.3.22. *Montastrea curta* (Dana, 1846) (Plate 2.5, Photo 6-7)

**Specimens Examined:** Agatti 1; Chetlat 1.

**Synonymy**

*Orbicella curta* Dana (1846); Gardiner (1899, 1904); Vaughan (1917, 1918); Hoffmeister (1925); Yabe & Sugiyama (1935); Yabe *et al.* (1936); Eguchi (1938); Umbgrove (1940); Crossland (1952)

*Orbicella coronata* Dana (1846); Gardiner (1899)

*Astraea lamarckiana* Edwards & Haime (1849)

*Astraea laperousiana* Edwards & Haime (1849)

*Astraea solidior* Edwards & Haime (1849); Gardiner (1899); Matthai (1914)

*Astraea quadrangularis* Edwards & Haime (1849)

*Orbicella funafutensis* Gardiner (1899)

*Orbicella rotumana* Gardiner (1899)

*Orbicella vacua* Crossland (1952)

*Orbicella wakayana* Gardiner (1899); Matthai (1914)

*Montastrea curta* (Dana, 1846); Chevalier (1971); Wijsman-Best (1977); Veron *et al.* (1977)

Corallum is massive with irregularly distributed plocoid or plococeroid corallites.

Corallites are rounded, 5-12mm in diameter. Septa are arranged in three orders. The first order septa have irregular dentations that increase in size towards the columella. The inner dentations give rise to one or two paliform lobes. Second and third order septa do not reach the columella. The sides of the septa as well their dentations are heavily granulated. Costae are unequal and correspond to the septa.

Columella is made up of loosely entangled trabeculae.

**Distribution:** Sri Lanka, Red Sea, Saudi Arabia, Thailand, Tulear, Chagos, Reunion,
Mauritius, Madagascar, Tuamotu and Australia.

2.3.23. *Montastrea magnistellata* Chevalier (1971) (Plate 2.5, Photo 8)

**Specimens Examined:** Agatti 2.

**Synonymy**

*Montastrea magnistellata* Chevalier (1971); Wijsman-Best (1977); Veron *et al.* (1977)

Colonies are encrusting or massive.

Corallites are plocoid, large, 7-12mm in diameter. Septa are arranged in two orders, with large septal dentations. Second order septa are reduced and discernible as ridges down the thecae. Primary septa bear dentations that increase in size towards the centre where they form one or more paliform lobes.

Columella is trabecular or spongy. Costae are unequal and dentate. Both septa and costae show dentations on their sides.

Living colonies are greenish in colour.

**Distribution:** Red Sea, Seychelles, Thailand, Indonesia, New Caledonia and Australia.

Family Oculinidae Gray (1847)

Genus *Galaxea* Oken (1815)

Type species: *Madrepora fascicularis* Linnaeus (1767)

2.3.24. *Galaxea astreata* (Lamarck, 1816) (Plate 2.6, Photo 1-2)

**Specimens Examined:** Agatti 2.

**Synonymy**

*Anthophyllum clavus* Dana (1846)
Anthophyllum musicale (Linnaeus, 1767); Dana (1846)

Caryophyllia astreata Lamarck (1816)

?Madrepora musicalis Linnaeus (1767)

Sarcinula organum Lamarck (1816)

Galaxea astreata (Lamarck, 1816); Chevalier (1971); Scheer & Pillai (1983);

Galaxea cf. astreata Veron & Pichon (1980)

Galaxea clavus Dana (1846); Edwards & Haime (1857); Vaughan (1918); 
Faustino (1927); Crossland (1952); Chevalier (1971); Pillai (1986b)

Galaxea lamarcki Edwards & Haime (1857); Klunzinger (1879); Matthai 
(1914); Pillai & Scheer (1976)

Galaxea musicalis (Linnaeus); Edwards & Haime (1857); Matthai (1914); 
Thiel (1932); Yabe et al. (1936)

Colonies are encrusting or massive.

Corallites are circular or oval, 3-6mm in diameter, up to 4mm exert and 2-4mm apart. Septa are arranged in three cycles. Up to 28 septa are seen in most calices. About 12 septa reach the columella, the latter being made up of a solid mass or a few dentations. Costae corresponding to the septa can be traced up to the base of the corallite.

The coenosteum is finely blistered with vesicles in between.

This species was encountered on the reef flat.

Family Merulinidae Verrill (1866)

Genus *Hydnophora* Fischer de Waldheim (1807)

Type species: *Hydnophora demidovii* Fischer de Waldheim (1807)

2.3.25. *Hydnophora exesa* (Pallas, 1766) (Plate 2.6, Photo 3-4)

Specimens Examined: Agatti 8.

Synonymy

*Merulina folium* (Lamarck, 1816); Dana (1846)

*Madrepora exesa* Pallas (1766); *(pars)* non Ellis & Solander (1786); Esper (1789)

*Monticularia exesa* (Pallas, 1766); Schweigger (1820)

*Monticularia folium* Lamarck (1816); Blainville (1830, 1834)

*Monticularia microcons* Lamarck (1816)

*Monticularia meandrina* Lamarck (1816)

*Hydnophorella exesa* (Pallas, 1766); *(pars)* Bedot (1907)

*Hynophorella microcons* (Lamarck, 1816); non Gravier (1911)

*Hydnophora contignatio* (Forskal); Klunzinger (1879); Marenzeller (1907); Matthai (1928, 1948b); Umbgrove (1939)

*Hydnophora demidovii* Fisher de Waldheim (1807, 1830-1837); Edwards & Haime (1848, 1849, 1857); Quelch (1886)

*Hydnophora ehrenbergi* Edwards & Haime (1849, 1857)

*Hydnophora exesa* (Pallas, 1766); Verrill (1864); Studer (1881); Gardiner (1899); Matthai (1924, 1928, 1948b); Vaughan (1918); Faustino (1927); Yabe & Sugiyama (1935); Yabe et al., 1936; Eguchi (1938); Umbgrove (1939); Searle (1956); Nemenzo (1959); Wijsman-Best (1972, 1976); Scheer & Pillai (1974, 1983); Mergner & Schuhmacher (1974); Chevalier (1975); Pillai & Scheer (1976); Veron et al. (1977); Head (1980); Pillai (1986b); Pillai & Patel (1988) *Hydnophora grandis* Gardiner (1904); Matthai (1928); Yabe et al. (1936)

*Hydnophora gyrosa* Edwards & Haime (1849, 1857)
Hydnophora lohata (Lamarck); Lamouroux (1821); Dana (1846); Edwards & Haime (1849, 1857); Klunzinger (1879); Gardiner (1899, 1904)

Hydnophora maldivensis Gardiner (1904)

Hydnophora pallassii Fisher de Waldheim (1807)

Hydnophora polygonata (Lamarck); Dana (1846); Edwards & Haime (1849, 1857)

Hydnophora tennella Quelch (1886); Matthai (1928); Umbgrove (1940)

Colonies are encrusting or laminar tending to be massive or columnar.

Monticules are well developed, conical or elongated. The height of the monticules is 5-7mm with a basal length of about 2-10mm. On some parts of the coralla, the monticules are long and sinuous. Adjacent monticules are 3-6mm apart.

6-12 septa reach the top of the colline. Edges of septa are finely dentate. Columella consist of twisted trabeculae.

Specimens were collected from the reef flat as well as from the lagoon. Live colonies are brownish in colour.

Distribution: Gulf of Kachchh, Gulf of Mannar, Andaman and Nicobar Islands, Sri Lanka, Maldives, Red Sea, Ellice Islands, Australia, Fiji and Samoa.

Suborder Caryophylliina Vaughan & Wells (1943)

Family Caryophylliiidae Gray (1847)

Genus Paracyathus Edwards & Haime (1848)

Type species: Paracyathus procumbens Edwards & Haime (1848)

2.3.26. Paracyathus sp. (Plate2.6, Photo 5)

Specimen Examined: Agatti 1.
Corallites are solitary and cryptic in nature, usually found attached under dead coral boulders.

Corallites are 2.6-3mm in diameter and 1.8-2mm in height. Septa are arranged in three alternating orders. First order septa bear paliform lobes. All septa are heavily granulated. Columella is made up of papillae. Costae are unequal and granulated. They are discernible up to the base of the corallite wall.

Suborder Dendrophylliina Vaughan & Wells (1934)
Family Dendrophylliidae Gray (1847)
Genus Tubastrea Lesson (1834)
Type species: Tubastrea coccinea Lesson (1829)

2.3.27. Tubastrea micranthus (Ehrenberg, 1834) (Plate2.6, Photo 6)

Specimen Examined: Kadmat 1.

Synonymy
Coenopsammia micranthus Klunzinger (1879); Ortmann (1888)
Coenopsammia nigrescens Edwards & Haime (1860)
Dendrophyllia micranthus Horst (1922b, 1926); Crossland (1952); Rossi (1954); Scheer & Pillai (1974, 1983); Head (1980); Ditlev (1980)
Dendrophyllia nigrescens Dana (1846); Vaughan (1918)
Tubastrea micranthus Loya & Slobodkin (1971); Mergner & Schuhmacher (1974)

The single arborescent colony was collected by some fishermen from Kadmat Island. A portion of the colony had accidentally broken whilst fishing, being towed aboard, attached to the net.

Corallites are exert and somewhat arranged in rows. Main branches give rise to branchlets, formed by budding of mature corallites. The distance between adjacent
corallites is 3-15mm. Septa are arranged in two orders. The walls of the corallites are costate. The septa have granular sides. Columella is made up of trabeculae.

The dead specimen (not cleaned) was blackish in colour.

**Distribution:** Nicobar Islands, Sri Lanka, Maldives, Red Sea, Seychelles, Aldalbra, Mauritius, Cocos-Keeling, Philippines, Japan, Palau, Fiji and the Great Barrier Reef.

**Genus Turbinaria Oken (1815)**
Type species: *Madrepora crater* Pallas (1766)

2.3.28. **Turbinaria frondens** (Dana, 1846) (Plate2.6, Photo 7-8)

**Specimens Examined:** Agatti 5.

**Synonymy**
*Gemmipora frondens* Dana (1846)

*Turbinaria abnormalis* Bernard (1896)

*Turbinaria aurantiaca* Bernard (1896)

*Turbinaria contorta* Bernard (1896); Eguchi (1938, 1968); Yabe & Sugiyama (1941); Ma (1959); Utinomi (1965)

*Turbinaria danae* Bernard (1896); Gardiner (1898); Wells (1955); Ma (1959)

*Turbinaria edwardsi* Bernard (1896); Ma (1959)

*Turbinaria foliosa* Bernard (1896); Yabe & Sugiyama (1941); Nemenzo (1962)

*Turbinaria frondens* Dana, (1846); (as *T. frondescens*) Edwards & Haime (1860); Bernard (1896); ?Gravely (1927); Crossland (1952); Stephenson & Wells (1955); Nemenzo (1962); Veron & Pichon (1982)

*Turbinaria magna* Bernard (1896); Ma (1959)

*Turbinaria pustulosa* Bernard (1896), Ma (1959); Nemenzo (1962)

*Turbinaria samosa* Yabe & Sugiyama (1941)

*Turbinaria rugosa* Bernard (1896); Yabe & Sugiyama (1941); Ma (1959);
Eguchi (1968)

Colonies are either massive or encrusting.

Corallites are of irregular size and of various shapes. They are packed loosely together or up to 3mm apart. They are either immersed or approximately 4mm exert. Budding takes place at the periphery of the corallum. Corallites are 3-4mm in diameter. Septa are arranged in a single order. Some septa show bifurcation at the corallum wall. The columella is spongy and hemispherical.

Specimens were collected from the reef flat. Live colonies are brownish in colour.

**Distribution:** Red Sea, Saudi Arabia, Arabian Gulf, Chagos, Kenya, Tulear, Mauritius, Mergui Archipelago and Thailand.

2.4 CONCLUSIONS

The present surveys conducted on several islands in Lakshadweep revealed ninety six coral species spread over thirty four genera (Table 2.2). Of the thirty four genera reported, thirty two are hermatypic while two are ahermatypic. Twenty eight species recorded in the present study are reported for the first time from the Lakshadweep archipelago. The majority of new records belong to the family Acroporidae. Two new genera are reported from Lakshadweep: *Pachyseris* and *Paracyathus*, a hermatypic and an ahermatypic coral genus respectively. A third new genus viz. *Montastrea* reported in the present study has earlier been recorded in Lakshadweep by its synonym viz. *Favia valenciennesi*, by Pillai and Jasmine (1989).

*Montastrea* and *Plesiastrea* have been at the centre of a taxonomic debate due to their very close similarities. Vaughan and Wells (1943) and Wells (1956) consider
Montastrea as an Atlantic genus, absent in the Indo-Pacific. Chevalier (1971) opined that Plesiastrea has true pali and its polyps apparently lacked directive mesenteries, distinguishing it from Montastrea. He was of the view that Montastrea also occurs in the Indo-Pacific, a view that is more or less widely accepted and adopted in the present work. Further, Chevalier (1971) did not recognize any subfamilies within the Faviidae, such as Montastreinae and Faviinae, and remarked that in Favia, intra and extra-tentacular reproduction occurred. Typical examples are Favia laxa (Kluzinger), Favites pentagona (Esper) and Montastrea valencennesi (Edwards & Haimes) belonging to family Faviinae but displaying extra-tentacular budding. Due to the predominance of extra-tentacular budding, the latter species has been accordingly placed in the genus Montastrea.

Among the new records, 5 species viz. Montipora foveolata, Fungia (Danafungia) scruposa, Favites russelli, Montastrea magnistellata and Turbinaria frondens are reported from south Asia for the first time. Ten species are being reported from Indian waters for the first time (Acropora austera, A. cerealis, A. pulchra, A. selago, A. tenuis, Astreopora ocellata, Pavona venosa, Porites nigrescens, Goniastrea edwardsi and Montastrea curta). The large number of additional coral species recorded in the present study re-affirm the view that more extensive surveys are likely to reveal additional genera/ species.

Many genera, viz. Alveopora, Cycloseris, Plesiastrea, Merulina, Caryophyllia, Stephanocyathus and Flabellum reported by Pillai and Jasmine (1989) were not observed during the present surveys. Some of them, e.g. Merulina, Caryophyllia, Stephanocyathus and Flabellum reported by them are mainly from deep water collections made by Alcock (1898) and Gardiner (1903-1906) during their investigations in Lakshadweep. The inclusion of genera reported by these workers
increases the number of documented genera in Lakshadweep to forty three. One of the controversial coral species recorded in the present study is Porites (Synarea) convexa. This species has been considered as a synonym of Porites (Synarea) rus (Veron & Pichon, 1982; Sheppard, 1987). The identities of these two species have been retained as their growth forms differ: Porites (Synarea) convexa is branching while Porites (Synarea) rus is massive (Dr. Pillai, personal communication).

Pillai and Scheer (1976) have considered A. irregularis to be a valid species. However, a scrutiny of the descriptions and photographs (Pillai & Scheer, 1976; Plate 4, Fig. 1-3) and the growth form of the species suggest that it is similar to A. danai (Veron & Wallace, 1984; Fig. 486-491). Similarly, A. abrotanoides described and illustrated (Pillai & Jasmine, 1989; Fig. 4) has a very close resemblance to A. danai. In the present work, A. irregularis and A. abrotanoides are considered to be synonyms of A. danai, an opinion also expressed by some authors (Veron & Wallace, 1984; Sheppard, 1987). Synonymies are further discussed in Chapter 3.

Thus, after considering synonymies, the present study raises the tally of coral species reported so far from Lakshadweep to 133.
Photo 1-2 Acropora austera  
Photo 3-4 Acropora cerealis.  
Photo 5-6 Acropora ?millepora,  
Photo 7-8 Acropora pulchra (each subdivision of scale bar = 10 mm)
Photo 1-2 *Acropora selago*  Photo 3-4 *Acropora tenuis*  Photo 5-6 *Acropora valida*  Photo 7-8 *Astreopora ocellata* (each subdivision of scale bar = 10mm)
Photo 1 Montipora foveolata  Photo 2 Pachyseris speciosa  Photo 3-4 Pavona decussata  Photo 5-6 Pavona venosa  Photo 7-8 Fungia (Verrillofungia) concinna (each subdivision of scale bar = 10mm)
Plate 2.4

Photo 1-2 *Fungia (Danafungia) scruposa*
Photo 3-4 *Goniopora lobata*
Photo 5-6 *Porites compressa*
Photo 7-8 *Porites nigrescens* (each subdivision of scale bar = 10mm)
Photo 1 *Porites lichen*  Photo 2 *Favites russelli*  Photo 3 *Goniastrea aspera*  Photo 4-5 *Goniastrea edwardsi*  Photo 6-7 *Montastrea curta*  Photo 8 *Montastrea magnistellata*  
(each subdivision of scale bar = 10mm)
Photo 1-2 *Galaxea astreata*  
Photo 3-4 *Hydnophora exesa*  
Photo 5 *Paracyathus* sp.  
Photo 6 *Tubastrea micranthus*  
Photo 7-8 *Turbinaria frondens* (each subdivision of scale bar = 10mm)