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CHECKLIST OF HARD AND SOFT CORALS PRESENT IN THE ZOOLOGICAL AND GEOLOGICAL MUSEUMS, UNIVERSITY OF KARACHI

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ABSTRACT

The collection of marine invertebrate's representatives of class Anthozoa present in the Zoological Museum, since 1952, lacked faunstic studies as well as species of the *Scleractinian* present in Geological Museums of the University of Karachi. The present work is a comprehensive checklist of subclasses Octocorallia and Hexacorallia, order Scleractinia of the class Anthozoa belonging to the Phylum Cnidaria. The present checklist contains 8 families and belongs to the subclass octocorallia and 13 families belonging to the subclass Hexacorallia in the order Scleractinia. The specimens were identified through fauna of British India and pertinent literature.

Key words: Scleractinia, corals, zoological museum, marine invertebrate.

INTRODUCTION

The collections of corals present in the Zoological and Geological Museum of University of Karachi were originally collected by Mr. James A. Murray (Museum Curator and Zoologist in Karachi in 1880). He was member of Anthropological Society of Bombay, Bombay Natural History Society and a manager at Victoria Natural History Institute and curator at the Kurrachee (Karachi) Municipal Library and Museum. More than my research material was lodged in his Museum before partition, after partition these collections were transferred to Frere Hall (Victoria Museum) Karachi. His collections comprises of corals of Indian Ocean, Persian Gulf and Arabian Sea. And his collections of corals include: Scleractinines (Hexacorallia-Hard Corals), and Pennatulaceans, Alcyonaceans & Gorgonaceans (Octocarallians-Soft Corals). The collection of corals which is present in the Zoological Museum of University of Karachi is the result of efforts of Prof. Dr. Afzal Hussain Qadri (founder of the Department of Zoology, University of Karachi) and Prof. Dr. Hamid Mehmood (Curator and Ex. Chairman of Department of Zoology, University of Karachi). This collection was transferred from Victoria Museum to Zoological Museum in 1952. The collections of corals (comprises of corals from the collection of James A. Murry, 1880 to up till now) which is present in the Zoological Museum, University of Karachi. But no faunistic studies were made on the said collection of corals. Similarly no studies were made on the corals present in the Geological Museum, University of Karachi. Some of the quantitative data on the corals and corals reef in Pakistan has been provided by earlier workers. According to the Alizai *et al.,* (1988) Coral reefs are absent in Pakistan. The coastal environment of Pakistan is not favorable for the formation of corals reefs (UNEP, 1986). In Red Data Book of IUCN (1996) under provision of UNCLOS, any coral species was never mentioned related to biodiversity Pakistan. Ahmed (1986) pointed out that corals do not flourish in Pakistan but a world map has given an encyclopedia indicating presence of corals. The sub aquatic coast of Makran has patches of corals in some areas and this coast is suitable for coral growth than Sindh coast (Qureshi, 1961). According to the (Ali & Memon, 1995) living corals have seen by divers in the patch reefs on the rocky shore of Churna waters. The unblemished part of our sea is still the Balochistan Coast. The scientist of the Geological department of the University of Karachi visited the Churna Island for the collection of fossilized corals and some fossilized corals reported from the same area. This area is much more expanded and diversified for the corals (Kazmi & Kazmi, 1997). Astola Island is the only place in the whole coastal belt of Pakistan where such live corals are still thriving (Tourism Sector Analysis Report, 2008). It is a special moment in the history of Islamic Republic of Pakistan that recently Sindh Wildlife Department (SWD) has discovered vastly scattered coral reefs along the coastal belt of Baluchistan in 2009 (www.dailytimes.com). Amjad Ali, (2008) described 29 species of scleractinia 14 genera from Balochistan and Sindh coast. Siddiqui *et al*., (2011) described two families and eight genera of fossilized corals from the jiwani, Balochistan (Makran) coast, Pakistan. Similarly a large number of workers have described the corals intensively throughout the world right from 1893 till to date like Linnaeus (1758), Palls (1766), Ellis & Solander (1786), Esper (1789;1797), Lamarck (1801;1815; 1816), Oken (1815), Ehrenberg (1828; 1834), Milne-Edwards & Haime (1848; 1849; 1851; 1857), Bernard (1896; 1897; 1900; 1903; 1905; 1906), Gray (1859; 1860; 1867; 1869; 1870), Verrill (1901a; 1902; 1864; 1866; 1868), Moseley

(1876; 1881), Klunzinger (1879), Thurston (1895), Gardiner (1904; 1905), Hocksema (1989; 1990; 1991; 1992; 1993ab), Wijsman-Best (1972; 1976a; 1974), Scheer and Pillai (1974; 1976; 1983), Pillai and Scheer (1973; 1974; 1976), Veron and Pichon (1976; 1980; 1982), Pichon (1976), Cairns (1977;1979;1982;1991; 1998; 1999; 2002), Faure (1977), Veron *et al.* (1977;1996), Bayer (1956; 1956; 1981). Scheer (1984;1985), Veron (1985; 1986; 1990;1992; 1993; 1994; 2000; 2001; 2005),Wallace and Willis (1984), Wallace (1999), Ofwegen & Chou (2000), Fabricius & Alderslade (2000; 2001), Kleemann (2001), Amjad Ali (2008), Siddiqui *et al.* (2011), Aileen *et al.* (2011).

This work provides the checklist of soft and hard corals Present in the Zoological and Geological Museum of University of Karachi.

MATERIALS AND METHODS

The present study was under taken to A Taxonomic study of collections of scleractinian corals (Cnidaria; Anthozoa; Zoantharia), in the Zoological and Geological Museum of the Karachi University, Karachi. Some hard corals were collected with the help of fisherman from the coast of Balochistan, Pakistan. These corals also identified. The present research was aimed to identify the unidentified species from the collection of corals. The collections of corals were identified conformed and compared with the descriptive catalogue of corals and pertinent literature, keys. Photographs of family fungiidae and corals of coast of Balochistan, Pakistan is given in this checklist.

RESULTS AND DISCUSSION

In the present study, thirteen families are belonging order scleractinia; Acroporidae, Agariciidae, Caryophylliidae, Dendrophylliidae, Faviidae, Fungiidae, Meandrinidae, Mussidae, Oculinidae, Pocilloporidae, Poritidae, Rhizangiidae, Siderastreidae and nine families Isididae, Plexauridae, Gorgoniidae, Coralliidae, Melithaeidae, Tubiporidae, Renillidae, Pennatulidae of octocorallia (soft corals) totally 54 species of 40 genera belong to 21 families have been identified.

Phylum Cniadaria Hatschek, 1888
Class Anthozoa Erhenberg, l834
Subclass Octocorallia Haecke1, 1866
Order Alcyonacea Lamouroux, 1816
Suborder Calcaxonia (Grasshoff, 1999)
Family Isididae Lamouroux, 1812
Genus *Isis* Linnaeus, 1766
Species *Isis hippuris* (Linnaeus, 1766)
Order Gorgonacea Lamouroux, l816 (Emend.Verrill, l866)
Suborder Holaxonia Studer, 1887
Family Gorgoniidae Lamouroux, 1812
Genus *Gorgonia* Linnaeus, 1758
Species *Gorgonia flabellum* Linnaeus, 1758
Genus *Rumphella* Bayer, 1955
Species *Rumphella aggregata* (Nutting, 1910b)
Genus *Pterogorgia* Ehrenberg, l834
Species *Pterogorgia citrine* (Esper, 1792)
Family Plexauridae Gray, 1859
Genus *Eunicea* Lamouroux, l816
Species *Eunicea fusca* Duchassaing & Michelotti, 1860
Genus *Echinogorgia* Kolliker, 1865
Species *Echinogorgonia flora* Nuttting, 1910
Suborder Scleraxonia Studer, 1887
Family Corallidae Lamouroux, 1812
Genus *Corallium* Cuvier, 1798
Species *Corallium johnsoni* Gray, 1860

Fungia fungites

Fungia horrida

Ctenactis echinata

Herpolitha limax

Polyphyllia talpina

Cycloseris cyclolites

Plesiastrea versipora

Favites flexusoa

Fig.1. Some important corals deposited in Karachi University Museum, Zoology Department.

Family Melithaeidae Gray, 1870
Genus *Melithaea* Milne & Haime, 1857
Species *Melithaea ochracea* (Linnaeus, 1758)
Order Stolonifera Thomson & Simpson, 1909
Family Tubiporidae Ehrenberg, 1828
Genus *Tubipora* Linnaeus, 1758
Species *Tubipora musica* Linnaeus, 1758
Order Pennatulacea Verrill, 1865
Family Renillidae Gray, 1860
Genus *Renilla* Lamarck, 1816
Species *Renillia reniformis* (Pallas, 1766)
Family Pennatulidae Ehrenberg, 1834
Genus *Ptilosarcus* Verrill, 1865
Species *Ptilosarcus gurneyi* Gray, 1860
Subclass Hexacorallia Haeckel**,** 1896
Order Scleractinia Bourne, 1900
Family Acroporidae Verrill, 1902
Genus *Acropora* Oken, 1815
Species *Acropora digitifera* (Dana, 1846)
Acropora hyacinthus (Dana, 1846)
Acropora valida (Dana, 1846)
Acropora glauca (Brook, 1893)
Acropora cervicornis(Lamarck, 1816)
Acropora Formosa (Dana, 1846)
Family Agaricidae Gray, 1847
Genus *Agaricia* Lamarck 1801
Species *Agaricia tenuifolia* Dana, 1848
Agaricia agaricites (Linnaeus, 1758)
Genus Pavona Lamarck, 1801
Species *Pavona decussate* (Dana, 1846)
Family Carolophyllidae Gray, 1846
Genus *Eusmilia* Milne Edwards & Haime. 1848
Species *Eusmilia fastigiata* (Pallas, 1766)
Family Denderophyllidae Gray, 1847
Genus *Turbinaria* Oken, 1815
Species *Turbinaria mesenterina* (Lamarck, 1816)
Family Faviidae Gregory, 1900
Genus *Favia* Oken, 1815
Species *Favia pallida* (Dana, 1846)
Genus *Platygyra* Ehrenberg, 1834
Species *Platygyra daedalea* (Ellis and Solander, 1786)
Platygyra lamellina (Hemprich and Ehrenberg, 1834)
Genus *Leptoria* Milne Edwards & Haime (1848)
Species *Leptoria Phrygia*(Ellis & Solander, 1786)
Genus *Echinopora* Lamarck, 1816
Species *Echinopora lamilosa* (Esper, 1795)
Genus *Caulastrea* Dana, 1848
Species *Caulastrea tumida* Matthai, 1928
Genus *Diploria* Milne-Edwards, 1848
Species *Diploria labrinthiformis* (Linnaeus, 1758)
Genus *Plesiastrea* Milne Edwards and Haime, 1848
Species *Plesiastrea versipora* (Lamarck, 1816)
Genus *Favites* Link, 1807
Species *Favites flexusoa*(Dana, 1846)
Favites halicora (Ehrenberg, 1834)
Family Fungiidae Dana, 1846

Genus *Fungia* Lamarck, 1801
Species *Fungia fungites*(Linnaeus, 1758)
Fungia horrida Dana, 1846
Genus *Ctenactis* Verrill, 1864
Species *Ctenactis echinata(*Pallas, 1766)
Genus *Herpolitha* Eschscholtz, 1825
Species *Herpolitha limax*(Esper, 1797)
Genus *Polyphyllia* De Blainville, 1830
Species *Polyphyllia talpina*(Lamarck 1801)
Genus *Cycloseris* Milne Edwards & Haime, 1849
Species *Cycloseris cyclolites* (Lamarck) 1816
Family Meandrinidae Gray, 1847
Genus *Dichocoenia* Milne Edwards & Haime, 1848
Species *Dichocoenia stokesi* Milne- Edwards and Haime, 1848
Dichocoenia stellaris Milne Edwards & Haime, 1848
Genus *Dendrogyra* Ehrenberg, 1834
Species *Dendrogyra cylindricus* Ehrenberg, 1834
Family Mussidae Ortmann, 1890
Genus *Isophyllia* Milne Edwards & Haime, 1851
Species *Isophyllia sinuosa* (Ellis & Solander, 1786)
Isophyllia multiflora Verrill, 1902
Family Oculinidae Gray, 1847
Genus *Galaxea* Oken, 1815
Species *Galaxea fascicularis* (Linnaeus, 1767)
Genus *Madrepora* Linnaeus, 1758
Species *Madrepora oculata* Linnaeus, 1758
Family Pocilloporidae Gray, 1842
Genus *Pocillopora* Lamarck 1816
Species *Pocillopora verrucosa*(Ellis and Solander, 1786
Pocillopora capitata Verill, 1864
Genus *Palauastrea* Yabe and Sugiyama, 1941
Species *Palauastrea ramose* Yabe &Sugiyama, 1941
Genus *Madracis* Edwards &Haime, 1849
Species *Madracis Formosa* Wells, 1973
Family Poritidae Gray 1842
Genus *Porites* Link, 1807
Species *porites porites* (Pallas, 1766)
Porites cylindrical Dana, 1846
Family Rhizangiidae d'Orbigyn, 1851
Genus *Astrangia* Milne Edwards & Haime, 1848
Species *Astrangia haimei* Verrill, 1866
Family Siderastreidae Vaughan and Well, 1943
Genus *Siderastrae* de Blainville 1830
Species *Siderastrae siderea* (Palla, 1766)
Siderastrea radians (Ellis & Solander, 1786)

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