

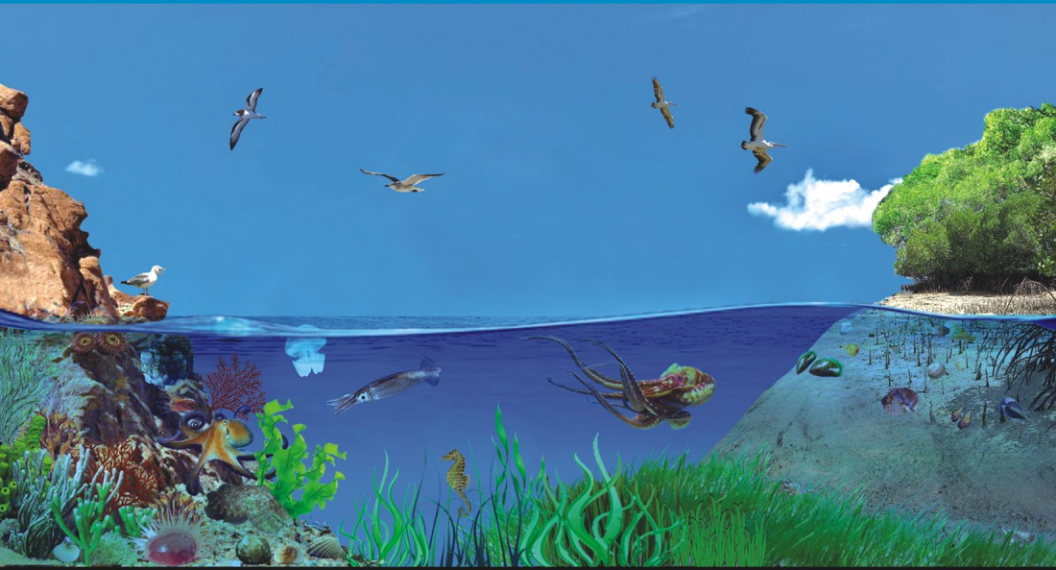
وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا



Marine Molluscan fauna of the Pakistani coastal waters

COMPILER

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Marine Reference Collection and Resource Centre
University of Karachi, Karachi - Pakistan

2018

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Dedication

This book is warmly dedicated by us to the memory of late Professor Dr.Nasima M.Tirmizi, an accomplished scientist - our inspirator, teacher and mentor .She loved and lived and died to illuminate this field of taxonomy for Pakistani people.

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PREFACE

Studying the phylum Mollusca in Pakistan is a very difficult task. The reason is very diverse habitats one has to deal with- a really heavy task to accomplish. Actually this book is a compilation of many scientists' endeavors in more than two hundred years on the taxonomy of this group. The compiler of this book has created a base for scientists interested in studying biodiversity of Mollusca in Pakistan, presenting the history of researches done, checklists and some good pictures of some important species.

The compiler examined her own samplings made in recent years, further she included those collected by other explorers and zoological museums.

A total of 1149 species in 5 classes were found. In Polyplacophora 9, in Scaphopoda 16, in Gastropoda 713, in Bivalvia 349 and in Cephalopoda 62 species.

Thirty seven new records were found. Of those 25 were found in Gastropoda and 12 in Bivalvia

ACKNOWLEDGMENTS

To,

Allah for his countless blessings

Thanks to a supportive and understanding husband Prof. Dr. M. Afzal Kazmi (Department of Zoology, University of Karachi) for helping the compiler to indulge her passion for Pakistani marine fauna. The compiler recognizes the contribution by Mr. M. Moazzam of WW-F, he shared his unpublished pictures of Pakistani molluscs for this inventory.

The compiler is grateful to Dr. David W. Behrens , American malacologist of CA for helping with aeolid nudibranchs , to Dr. Gary Rosenberg, Academy of Natural Sciences of Drexel University for identifying a gastropod species, to Dr. P. Bidgrain of France for confirming one species of nudibranchs, to Dr. K. R. Jensen of Denmark, to Dr. T. Gosliner of California, to Dr. Lin Guangyu of China for helping in identification of species, to Alberto Girod of Italian Malacological Society, Sorengo (Switzerland) for sending his unpublished list of the marine molluscs found on the prehistoric shell middens of Balochistan and Sindh, to Ms. Christina Piotrowski , Collection Manager, Invertebrate Zoology, California Academy of Science for

sending a photo of *Dendrodoris*, to Professor Dr. Itrat Zehra (CEMB, Pakistan) who has been generous in providing a photograph of nudibranch, to Miss Razia Naushaba, Mr. Qadeer Ali and Dr. Feroz Mangi (MRC University of Karachi), to Dr. Hina S. Baig (NIO, Pakistan) for helping in various ways. Image acknowledgments for illustrations appearing here other than authors own original illustrations are given as "From" before reporters' names. Some of the images are reproduced with the kind permission of the authorities. Compilers' acknowledgments are due to late Mr. Maqsood Zafar and late Mr. Amir Bux both field assistants (MRC) for their profound dedication and enthusiasm in the field work and finding many species. Collection trips to the coast have been mostly supported by Faculty of Science Grant (1991-1992), and ONR, USA Project 1993 (Grant No N00014-G-0229) and WWF-Pakistan Grant (2007) WWF-Pakistan is acknowledged for recommending Mr. Moazzam as reviewer of the MS.

GENERAL INTRODUCTION

The coastal belt of Pakistan extends 1,050 km, 250 km falling in Sindh province and 800 km in Balochistan. A checklist of coastal molluscs recorded from Pakistan is presented, 1149 species have been included into this annotated list, including the following informations: endemism, photographs /drawings of shells and living individuals whenever possible with remarks on their distribution, ecology, taxonomic status, and nomenclature (From literature data) including 37 new records.

The compiler examined her own samplings made in recent years, further she included those collected by other explorers, zoological museums and shown in different maps.



FIG.1.Coastline of Pakistan

PHYLUM MOLLUSCA-a brief introduction

The invertebrate phylum Mollusca represents such a varied range of body structures that it is difficult to find defining characteristics that apply to all modern groups. When a shell is present, may be consisting of one, two or more pieces or internal and cartilaginous it is made of proteins and chitin reinforced with calcium carbonate, and is secreted by a mantle that covers the whole upper surface. The underside of the animal consists of a single muscular "foot". The "generalized" mollusc's feeding system consists of a rasping "tongue" called radula and a complex digestive system.

The phylum is typically divided into nine or ten taxonomic classes, of which two are entirely extinct. The extant classes are: Aplousobranchia (Shell less worm-like organisms), Polyplacophora (Chitons), Monoplacophora (An ancient lineage of molluscs with cap-like shells), Gastropoda(All the snails and slugs including abalone, limpets, conch, nudibranchs, sea hares, sea butterflies) ,Cephalopoda (Squids, octopi, cuttlefish, nautilus), Bivalvia (Clams, oysters, scallops, geoducks, mussels) and Scaphopoda (Tusk shells). Of the extant classes five are present here.

Classification into higher taxa for these groups has been and remains problematic. Molluscs have more varied forms than any other animal phylum. The marine species live in the oceans, from the seashores to the abyssal zone; the information on pelagic molluscs is not yet complete, they spend their entire lives as part of the pelagic community. Molluscs are extremely diverse in tropical and temperate regions but can be found at all latitudes. They also exhibit an enormous range in size, from species which are almost microscopic to the largest of all invertebrates the giant squid which can weigh 270 kg. and measures up to 12

meters long in the body, with tentacles as much as another 50 meters in length.

This is a large phylum. About 93,000 named molluscan species are estimated, which include 23% of all named marine organisms (Haszprunar, 2001). According to a recent estimate the molluscan species-level diversity in the recent Mollusca ranges from 34,000 to 120,000 described species, with total diversity including undescribed species often cited as 200,000 while overall marine molluscan diversity is estimated at $43,600 \pm 900$ species (Rosenberg, 2014).

Molluscan diversity of Pakistan is rather remarkable. There is however, hitherto no functional malacofauna list or reliable estimates on the number of marine species found in Pakistan. Most of us would have at some point wondered about the approximate numbers or which species have been recorded in the past but have not been seen during the last 50 years. In practice, a species not definitely located in the wild life in the last 50 years may be argued that species might become extinct or species now endangered or threatened. As quoted from IUCN (2016) that 7.4% of all evaluated mollusc species are listed as endangered or near threatened.

The literature survey shows several pre-partition reports from areas now in Pakistan, by the Indian and British workers (Pakistan was under British rule till 1947):- Roding (1798); Reeve (1850); Woodwards (1856); Murray (1887); Sowerby (1895); Melvill (1893-1928); Melvill and Standen (1901-1906); Townsend (1928) and Winckworth (1930).

After partition Ranjha (1960) reported 73 species; Hasan (1960) worked on marine oysters and reported 3 species;

Ashraf (1969) reported 10 cephalopods; almost 67 marine Gastropoda from the then west Pakistan and 60 Pelecypoda were recorded by Khan and Dastagir (1971) and (1972) respectively; 9 species of Scaphopoda and 71 species of marine Gastropoda, belonging mostly to Prosobranchs were studied during a research project by the Pakistan Science Foundation, Dr.N.M. Tirmizi as Principal Investigator. Tirmizi and Zehra (1982) keyed out 135 marine molluscan genera, then 70 gastropods species were reported by Tirmizi and Zehra (1984); Nazneen (1994) focused on brackish water species; Marcus (1971) and Kilburn (1985) included material from Pakistan in their reports. Some recent works including taxonomic study in alphabetical order are: Afsar *et al* (2012); Bano *et al* (2011); Barkati and co-workers (1982-2011); Jahangir *et al* (2012); Kazmi and co-workers (1995-2016); Moazzam and co-workers (1994-2007); Olivier and Levin (2006); Siddiqui and Ahmed (2002) and Zehra and co-workers (2004-2015) have uncovered new records, as well as some obsolete names. Revisionary work regarding the molluscs of Pakistan is generally lacking, however, Zafar *et al* (2015) conducted partial sequence of the mitochondrial cytochrome oxidase study as taxonomic uncertainty existed in the identification of limpet species.

With the fundamental purposes of a working list being a form of information, as well as an aid for checking identifications, researchers will appreciate the availability of a checklist as a handy reference. By providing an overview of the species that have been recorded in Pakistan, a checklist can even be regarded as a launch pad to the study and understanding of the local malacofauna. These reasons have in part, given impetus to this work. It is also hoped that this updated checklist will aid in elucidating some aspects of our present knowledge of the molluscan diversity in Pakistan. The present annotated list is intended

to help the growing number of scientists in and outside Pakistan who are interested in our marine fauna, keeping them up to date as to what species are known, their current scientific names. As such, I have tried to keep the data within as current as possible.

It seems appropriate to point out that some species distributed in worlds' oceans- for example - *Scyllaea pelagica* (Linnaeus, 1758), a member of family Scyllaeidae Alder and Hancock, 1855, known as sargassum nudibranch, of about 10 mm., dull yellowish-brown or greenish-brown with some small white markings is of interest, distributed among floating seaweed in the world's oceans, is also expected to occur in Pakistani waters. Other species like *Elysia ornata* , *Sebadoris nubilosa* reported from Gowatre coast of Iran by Fatemi et al(2015) are most likely to occur here due to vicinity.

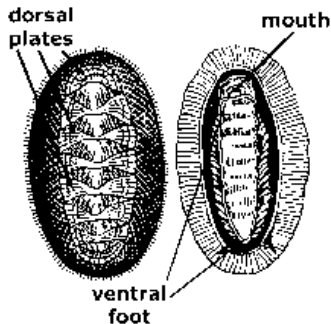
LAYOUT:

The extant Pakistani marine molluscan fauna is reviewed. For the included literature, the compiler has tried to ensure the taxonomic ones have all been included. Papers on other biological aspects are listed only when the species they treat include new records. In cases where only generic names were provided, I have chosen to omit these records unless the genus is a new record. This checklist is largely compiled from a review of available literature, accompanied with information from online databases and websites (see Literature Cited) including those with uncertain or unknown status. This checklist summarizes information on the Pakistani marine molluscs contained in the world literature dating from 1791 to the end of 2018. This may include species from Iranian coast of Mekran near Pakistani border. We accept no responsibility for the accuracy of these data. Errors in from publications and data-entry do occur. Users are advised to check the original publication. All species citations in the text are cited in full and arranged in chronological and alphabetical order, omitting the taxon authorities. The family classification essentially follows that proposed by the World Marine Register of Marine Species (WoRMS), or where WoRMS was not helpful International Taxonomic Information System (ITIS) or Wikipedia was followed, also for the authorities and years for most of the taxa, I mainly follow the same forms. In this compilation we present Pakistani records for 5 classes 1149 species, 9 included in the Polyplacophora, 16 in the Scaphopoda, 713 in the Gastropoda, 349 in the Bivalvia (Pelecypoda) and 62 in the Cephalopoda presented in phylogenetic order starting with Polyplacophora, based on those surveyed from the literature and new findings by us and unpublished taxonomic works from Pakistani theses (Fatima, 1972; Parveen, 1975; Bano, 1981; Zehra, 1981) and

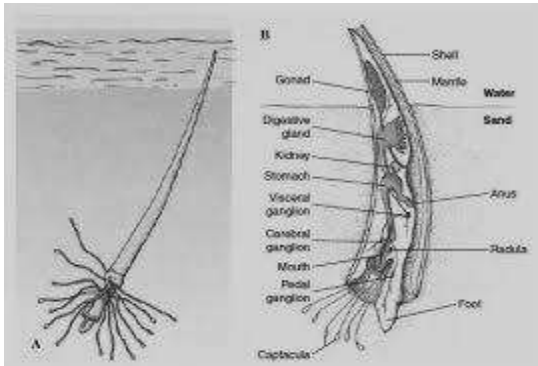
other manuscripts of the other Pakistani and non-Pakistani workers.

Entries follow the hierarchic system in this order - class, sub class, order, superfamily, family,(subfamilies are skipped to save space), genus/subgenus and species/sub species name (last three in italics), author(s) and year described all in bold.Each Pakistani record is given in template created as:-species name followed by information on common names,size, colour, habitat, biogeographical distribution, and figure(s)/photograph(s) where available .The basic data are not always entered consulting the original description, but from secondary forms,when no georeferenced data is available it is mentioned there or the blank is filled by an interrogative mark, followed by reference(s) in where the first ever or earliest entry was obtained from Pakistan in the literature. Taxon categorized as”inquirendum” is the name listed from a literature from but has not been recently evaluated by the experts and “nomen dubium”is the name which resisted revision by the experts because of deficient description.(WoRMS)

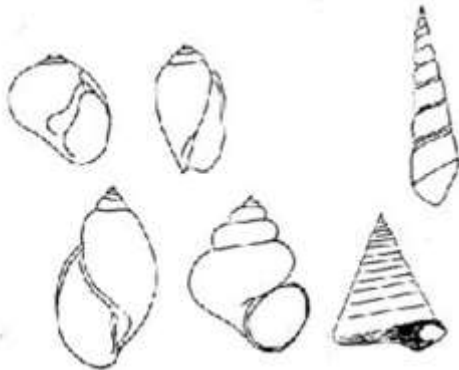
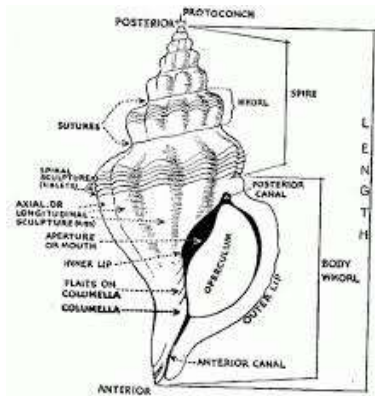
Several illustrations are not available so some entries are not provided with images.



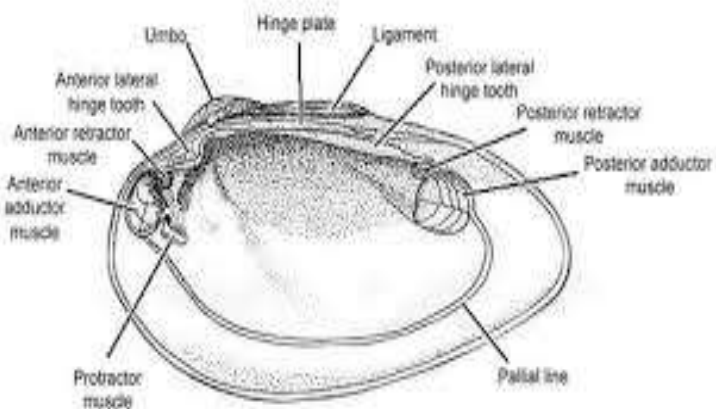
A.Generalized diagram of Class Polyplacophora



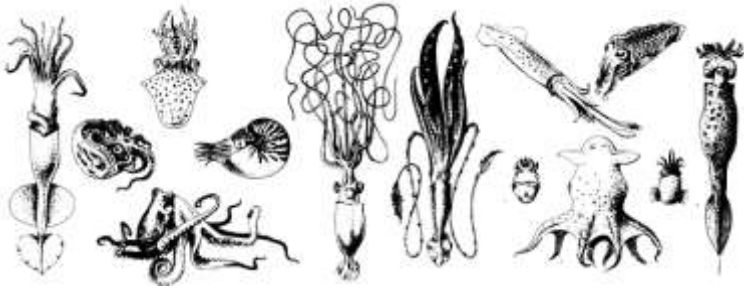
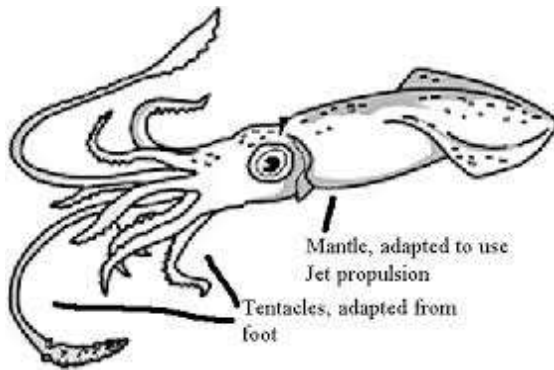
B. Generalized diagrams of Class Scaphopoda



C. Generalized diagrams of Class Gastropoda



D.Generalized diagrams of Class Bivalvia



E.Generalized diagrams of Class Cephalopoda

FIGS.2A-E .All groups dealt here to aid comprehension

ANNOTATED CHECK LIST

Phylum Mollusca Linnaeus, 1758
Class Polyplacophora Blainville, 1816
Order Chitonida Theil, 1909
Family Chitonidae Rafinesque, 1815
Genus *Chiton* Linnaeus, 1758

1. *Chiton peregrinus* Thiele, 1909. 30mm.
Reddish brown, consisting of dark red markings on a yellowish fawn ground ; the dark red predominates on the margins and in three bands across the centre and sides of the jugum, rest of the surface finely mottled. Under surface of the shell bluish green

Distribution: Rocky shores. Indian Ocean, Persian Gulf, Red Sea, Oman, Gulf of Aden.

Reported from Pakistan by Winckworth, 1930 as *Chiton latricus* Winckworth, 1930; Kaas, 1954 as *Chiton iatricus winckworthi*; Naushaba and Kazmi, 2004 as *Chiton (Chiton) peregrinus*; WMSDB, 2013 as *Rhyssoplax peregrinus*

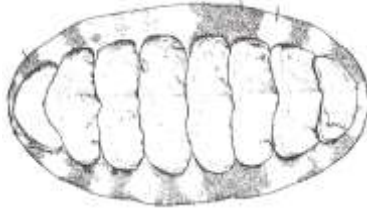


(From Winckworth, 1930)

Genus *Acanthopleura* Guilding, 1829

2. *Acanthopleura gemmata* (Blainville, 1825) 11 cm.
Distribution: Rocky, upper littoral rocks and cliffs. Indo-Pacific.

Reported from Pakistan by Tirmizi and Zehra, 1982



(From Tirmizi and Zehra, 1982)

Genus *Lucilina* Dall, 1882

3. *Lucilina fortilirata* (Reeve, 1847)

Distribution: Low tide (0.5 ft) rocks/sand, weed-covered

Reported from Pakistan by Steiner, 1973 *as Tonicia fortilirata* CAS: INVERT 19906.0

Family Acanthochitonidae Pilsbry, 1893

Genus *Craspedochiton* Shuttleworth, 1853

4. *Craspedochiton* sp.

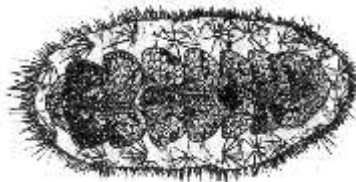
Reported from Pakistan by Steiner, 1973 CAS: INVERT;
Baig, 2014

Genus *Acanthochitona* Gray, 1821

5. *Acanthochitona mahensis* Winckworth, 1927 6.9-17.65 mm. Brown.

Distribution: Rocky shores. Seychelles, Bay of Bengal, Sri Lanka, India

Reported from Pakistan by Kazmi and Khan, 2014



Genus *Notoplax* H. Adams, 1862

6. *Notoplax arabica* Kaas and Van Belle, 1988

Distribution: Found on rocky coasts, usually under the larger boulders encrusted in sessile animals such as bryozoans, small barnacles and ascidians. Eastern Arabia
Reported from Pakistan by Kaas and Van Belle, 1988 as *Notoplax (Notoplax) arabica*

Family Ischnochitonidae Dall, 1889

Genus *Ischnochiton* Gray, 1847

7. *Ischnochiton yerburyi* (E. A. Smith, 1891) (Sea Cradles, Textile Chiton) Deep crimson

Distribution: From coarse sand and shells. Under small stones, Kuwait, Madagascar, Mozambique
Reported from Pakistan by Kaas, 1954 as *Ischnochiton haersoltei*; Biggs, 1971



(From Femorale)

8. *Ischnochiton bouryi* Dupuis, 1917 white colour 13x5.8 mm.

Distribution: Under rocks. Indian Ocean specifically Andaman Islands, Sri Lanka and Indonesia,
Reported from Pakistan by Kaas, 1954 as *Ischnochiton karachiensis* Kaas, 1954; Dell'Angelo, 2011



(From: Shell Encyclopedia)

9. *Ischnochiton comptus* (Gould, 1859)

Distribution: Intertidal to shallow subtidal, on rocks covered with profuse vegetation. Persian Gulf, Bay of Bengal, China, Korea, Japan

Reported from Pakistan by Kaas, 1954 as *Ischnochiton ranjhai* Kaas, 1954



Class Scaphopoda Bronn, 1862

Order Dentaliida De Costa, 1776

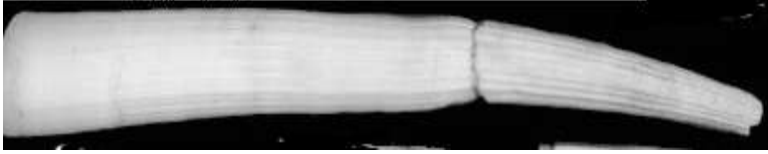
Family Dentaliidae Children, 1834 (Tusk shells)

Genus *Coccodentalium* Sacco, 1896

10. *Coccodentalium carduus* (Dall, 1889) (Yellow Tusk shell)

Distribution: No distribution data available

Reported from Pakistan by Gwannon.com as *Dentalium floridense* Henderson



Genus *Dentalium* Linnaeus, 1758

11. *Dentalium aprinum* Linnaeus, 1767 5-123 mm.

Greenish colour

Distribution: Living partly buried obliquely in the mud and sand. Lives in the Indo-Pacific zone.

Reported from Pakistan by USNM Invertebrate Zoology Mollusca Collection, 2014

12. *Dentalium tomlini* Melvill, 1918 28mm.

Distribution: Shallow water to off shore. Indo-Pacific, United Kingdom.

Reported from Pakistan by Melvill, 1918; Ludbrook, 1954 as *Dentalium (Dentalium) tomlini*

13. *Dentalium octangulatum* Donovan, 1804 24-30 mm.

Distribution: Shallow water to bathyal, 5-15m on sand and muddy sand. Indo-Pacific, Japan, Northern Australia.

Reported from Pakistan by Melvill and Standen, 1901



14. *Dentalium decemcostatum* Brazier, 1877 19 – 22 mm.

Distribution: Shelf, sandy mud. New Guinea.

Reported from Pakistan by Zehra, 1976



(From Zehra, 1976)

15. *Dentalium bisexangulaum* Sowerby, 1860 18-20 mm.

Distribution: Shallow and deep sand. Indo-Pacific.

Reported from Pakistan by Zehra, 1976; Richmond, 1997



(From Zehra, 1976)

16. *Dentalium javanum* Sowerby, 1860 23-46 mm.

Distribution: Shelf, 10-18m. Indo-Pacific.

Reported from Pakistan by Melvill and Standen, 1901



(From Zehra, 1976)

17. *Dentalium buccinulum* Gould, 1859

Distribution: Mangrove areas in the estuary. Indo-pacific
Reported from Pakistan by Girod, pers.corresp.



(From Femorale)

Genus *Paradentalium* Cotton and Godfrey, 1933

18. *Paradentalium hexagonum* (Gould, 1859) 25mm.

Distribution: Shelf. 16-296 m. Tropical Indo-West Pacific.
Reported from Pakistan by Zehra, 1976 as *Dentalium*
(*Paradentalium*) *hexagonum*



(From Zehra, 1976)

Genus *Tesseracme* Pilsbry and Sharp, 1898

19. *Tesseracme tesseragona* (Sowerby in Broderip and Sowerby, 1832) 22mm.

Distribution: Littoral, shelf. America, Mexico and Ecuador.

Reported from Pakistan by Zehra, 1976 as *Dentalium*
(*Tesseracme*) *tesseragonum*



(From Zehra, 1976)

20. *Tesseracme quadruplicalis* (Hanley in Sowerby, 1860)

24-29mm.

Distribution: Supratidal in sand, mesopelagic. Tropical
Indo-West Pacific.

Reported from Pakistan by Melvill, 1897 as *Dentalium*
conspicuum; WMSDB



(From Zehra, 1976)

21. *Tesseracme quadrangularis* (Sowerby 1, 1832) 18

mm.

Distribution: Littoral. America.

Reported from Pakistan by Zehra, 1976



(From Zehra, 1976)

Genus *Antalis* H. Adams and A. Adams, 1854

22. *Antalis longitrorsa* (Reeve, 1842) 7.3-18 mm.

Distribution: Muddy sand, 10-20 m. Philippines.

Reported from Pakistan by Moazzam and Moazzam, 2007 as *Laevidentalium longitrorsum* (Reeve)

23. *Antalis porcata* (Gould, 1859)

Distribution: Demersal; depth range 75 - 90 m. Indo-Pacific: Madagascar to Hong Kong

Reported from Pakistan by Melvill and Standen as *Dentalium porcatum* Gould, 1859



24. *Antalis pilsbryi* (Rehder, 1942)

Distribution: At 3-499 m. Indo-Pacific: Red Sea to China Sea and Australia.

Reported from Pakistan by Melvill and Standen, 1901 as *Dentalium pseudohehexagonum* Henderson, 1920



Genus *Graptacme* Pilsbry and Sharp, 1897

25. *Graptacme acutissima* (R. B. Watson, 1879)

Distribution: Lives in 1100-2350 m, mostly below 1800 m, shells from 700 m. Widely distributed through East Africa, Réunion to the Philippines, Indonesia, Papua New Guinea and New Caledonia

Reported from Pakistan by Scarabino, 2008

Order Gadilida Starobogatov, 1974

Suborder Gadilimorpha Steiner, 1992

Family Gadilidae Stoliczka, 1868

Genus *Cadulus* Philippe, 1844

26. *Cadulus euloides* Melvill and Standen, 1901

Distribution: Bathyal 183-630 m, in mud. Tropical Indo-West Pacific. Red Sea.

Reported from Pakistan by Melvill and Standen, 1901; Ludbrook, 1954 as *Dentalium (Gadila) euloides*; Steiner and Kabat, 2004.



Class Gastropoda Cuvier, 1797

Subclass Patellogastropoda Lindberg, 1986

Superfamily Patelloidea Rafinesque, 1815

Family Patellidae Rafinesque, 1815

Genus *Scutellastra* H. Adams and A. Adams, 1854

27. *Scutellastra granularis* (Linnaeus, 1758)

Distribution: On rocks, South Africa.

Reported from Pakistan by Ahmed and Hameed, 1999 as *Patella granularis*, misidentification fide Zafar *et al*, 2015

Superfamily Lottioidea Gray, 1840

Family Nacellidae Thiele, 1891

Genus *Cellana* Adams, 1889 (Limpets)

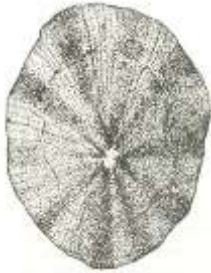
28. *Cellana radiata* (Born, 1778) (The rapid wheel limpet)

Distribution: Rocky shores, intertidal. Indo-SW.Pacific.
Reported from Pakistan by Dastagir and Khan, 1971 as *Cellana radiata* (Born, 1778); Zafar et al, 2015 different morphs



29. *Cellana toreuma* (Reeve, 1854)

Distribution: Rocky shores, intertidal. Indo-Pacific.
Reported from Pakistan by Dastagir and Khan, 1971



(From Dastagir and Khan, 1971)

30. *Cellana rota* (Gmelin, 1791) 47mm. Pale white with glaze, with prominent blood red streaks

Distribution: Rocky bottoms in inter-tidal and mid-littoral reef-associated coastal waters. Indo-Pacific.

Reported from Pakistan by Gmelin, 1791 as *Patella rota*; Winckworth, 1930 as *Patella karachiensis*;



(Photo contributed by Moazzam)

31. *Cellana ornata* (Dillwyn, 1817)

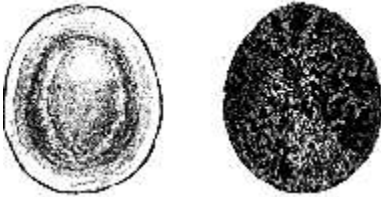
Distribution: Rocky shores. New Zealand

Reported from Pakistan by Rehman and Barkati, 2012

32. *Cellana testudinaria* (Linnaeus, 1758) (Tortoise shell)

Distribution: Benthic; depth range 2 - 7 m. Indo-West Pacific

Reported from Pakistan by Melvill and Standen, 1901 as *Helcioniscus testudinarius*



33. *Cellana capensis* (Gmelin, 1791)

Distribution: Rocky shores. Persian Gulf,

Natal, Madagascar, Sri Lanka and India

Reported from Pakistan by Gmelin, 1791 as *Patella capensis*

Subclass Neritimorpha Golikov and Starobogatov, 1975

Order Cycloneritida Bouchet, Rocroi, Hausdorf, Kano,

Nützel, Parkhaev, Schrödl and Strong, 2017

Superfamily Neritoidea Rafinesque, 1815
Family Neritidae Rafinesque, 1815
Genus *Clithon* Montfort, 1810

34. *Clithon bicolor* (Récluz, 1843)

Distribution: On rocks. Indo-Pacific

Reported from Pakistan by PSF (unpublished report),
1977 as *Nerita bicolor*

Genus *Nerita* Linnaeus, 1758

35. *Nerita adenensis* Mienis, 1978 10 - 16 mm.

Distribution: On intertidal rocks. Arabian Peninsula,
ranging from Aden, Yemen to Muscat, Oman

Reported from Pakistan by alacos.chez.com/htm/E30.HTM



36. *Nerita balteata* Reeve, 1855 (Lineated Nerite) 40mm.

Distribution: On rocks at low tide mark. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as
Nerita lineata



(From Khan and Dastagir, 1971)

37. *Nerita polita* Linnaeus, 1758 (Polished nerite). Height: 23.5mm. Colour variable, mottled grey, red or cream, sometimes with axial bands.

Distribution: On littoral rocks and wet fine sandy shore and breakwaters directly facing surf. Indo-Pacific

Reported from Pakistan by Khan and Dastagir, 1971



(From Khan and Dastagir, 1971)

38. *Nerita litterata* Gmelin, 1791

Distribution: On rocks. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Nerita rumphii* Recluz



(From Khan and Dastagir, 1971)

39. *Nerita planospira* Anton, 1838 (Flat-spined Nerite)

Distribution: Intertidal, mangroves; lower littoral .Indo-West Pacific: India , Bay of Bengal , Indonesia, Papua New Guinea, and the Philippines, Fiji; southern Japan to north-eastern Australia, Queensland

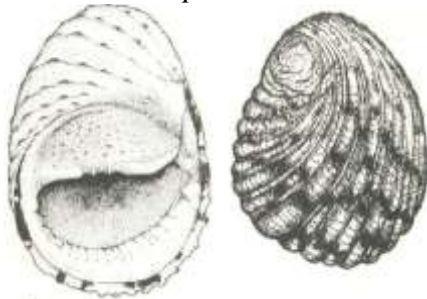
Reported from Pakistan by Melissa, 2012 in Neritopsine
Gastropods Life Desk

40. *Nerita textilis* Gmelin, 1791 (Textile nerite)

40mm. Dirty white with irregular black spots arranged in spiral rows

Distribution: On intertidal rocks with algae. Indo-West Pacific.

Reported from Pakistan by Ray, 1948; Khan and Dastagir, 1971 as *Nerita plexa* Chemnitz



(From Tirmizi and Zehra, 1984)

41. *Nerita undata* Linnaeus, 1758 23x20mm.

Distribution: On rocks. Oman, Persian Gulf. Red Sea. Australia, Queensland, China, Cook Islands, Ecuador, Ethiopia, Fiji, France, French Polynesia, Guam, Hong Kong, India, Indonesia, Japan, Kenya, Malaysia, Marshall Islands, Mayotte, Mexico, New Caledonia, Palau, Panama, Papua New Guinea, Philippines, Samoa, Seychelles, Singapore, Solomon Islands, South Africa, Tanzania, Vanuatu, Viet Nam

Reported from Pakistan by Tirmizi and Zehra, 1984



(From Tirmizi and Zehra, 1984)

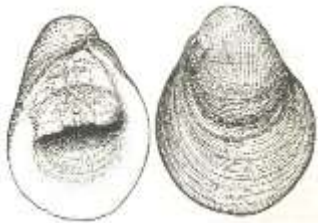
42. *Nerita chamaeleon* Linnaeus, 1758 (Chameleon Nerites). 20 mm.

Distribution: On rocks, gravel, intertidal. Indo-Pacific, Reported from Pakistan by Ali, 2006

43. *Nerita albicilla* Linnaeus, 1758 (Explate blotched nerite) 30mm. With white and black longitudinal bands

Distribution: Congregates on rocks and sand, on the reef flat hiding under stones at low tide. Indo-Pacific, Red Sea, United Arab Emirates, United States, Yemen.

Reported from Pakistan by Melvill and Standen, 1901 as *Theliostyla albicilla*; Khan and Dastagir, 1971



(From Tirmizi and Zehra, 1984)

44. *Nerita longii* Récluz, 1842

Distribution: Living intertidally on rocks and stones. Often on and under pebbles influenced by strong waves during

lowering of the tide. From the Gulf of Aden to the west coast of India, including the Arabian Gulf

Reported from Pakistan by Ghani et al, 2017

Genus *Neritina* Lamarck, 1816

45. *Neritina communis* (Quoy and Gaimard, 1832) unaccepted ID (Zigzag nerite) 20 mm. May be red, pink, black or yellow usually arranged in zigzag or banded patterns

Distribution: Mangrove swamps. Malaysia, Philippines, Indonesia

Reported from Pakistan by Tirmizi and Zehra, 1984



(From Tirmizi and Zehra, 1984)

Genus *Mienerita* Dekker, 2000

46. *Mienerita debilis* (Dufo, 1840)

Distribution: Intertidal rocks. Indian Ocean, Red Sea, southern Arabia, Kenya and the Seychelles

Reported from Pakistan by Melvill, 1898 as *Nerita* (*Heminerita*) *anodonta*; OBIS, 2004



Genus *Neripteron* Lesson, 1831

47. *Neripteron violaceum* (Gmelin, 1791)

Distribution: Brackish waters, mangroves, in upper mudflat, attached to pillars or in crevices of the bricks or rocks. Thailand and Indonesia to Hong Kong, the Philippine Islands, Papua New Guinea, Queensland, Solomon Islands, Fiji, India, and the southern salt marshes of in Iraq as well as the Karun River in Khuzestan, Iran
Reported from Pakistan by Melvill, 1901 as *Neritia* (*Dostia*) *crepidularia*

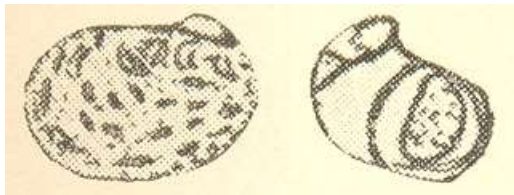


48. *Neripteron neglectum* (Pease, 1861) (Neglect Neritina)

Height: ½ inch yellowish black with white crooked lines, dots and mottlings.

Distribution: Intertidal, coral reef and rocks, under stones in brackish water along the shoreline, usually submerged. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Neritina neglecta* Pease, 1861



(From Khan and Dastagir, 1971)

Subclass/clade Vetigastropoda Salvini-Plawen, 1989

Superfamily Haliotoidea Rafinesque, 1815

Family Haliotidae Rafinesque, 1815

Genus *Haliotis* Linnaeus, 1758

49. *Haliotis asinina* Linnaeus, 1758 (Ass's ear abalone)
120mm. Iridescent nacre that lines the inside of the shell varies in colour from silvery white, to pink, red and green-red, to deep blue, green to purple

Distribution: On rocks, low tide marks down to a depth of few meters. Indo-West Pacific.

Reported from Pakistan by Dance, 1992



Superfamily Fissurelloidea Fleming, 1822

Family Fissurellidae Fleming, 1822

Genus *Diodora* Gray, 1821

50. *Diodora funiculata* (Reeve, 1850) (Corded Fissurella).

Height: 15mm. Greenish white with olive green rays.

Distribution: Delta, creeks, coral reefs, rocky and sandy shores below low tide. Central and Eastern Indian Ocean. India, Red Sea, Arabian Gulf, Mediterranean.

Reported from Pakistan by Reeve, 1850 as *Diodora indusica* Reeve, 1850



(From Tirmizi and Zehra, 1984)

51. *Diodora ticaonica* (Reeve, 1850) (Ticao Fissurella).
Height: 9.50mm.

Distribution: Creeks, rocky and sandy shores at low tide marks. Indo-China, Indo-Malaysia, Western Pacific, Eastern Indian Ocean.

Reported from Pakistan by Khan and Dastagir, 1971



(From Khan and Dastagir, 1971)

52. *Diodora ruppellii* (G. B. Sowerby I, 1835)

Distribution: On rocky intertidal zone; also on gravel bottoms dredged at 20-70 m. Red Sea, Mediterranean, European waters, Tanzania, Madagascar

Contributed from Pakistan by Moazzam, present study



53. *Diodora singaporensis* (Reeve, 1850)

Distribution: On rocky intertidal zone. Indian Ocean
Reported from Pakistan by Melvill, 1928 as *Diodora bombayana* (G. B. Sowerby II, 1862)

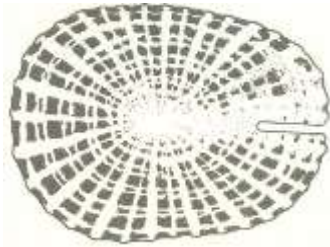


(Photo from WMSDB)

Genus *Emarginula* Lamarck, 1801

54. *Emarginula* sp.

Distribution: Offshore, from stony bottom.
Reported from Pakistan by PSF (Report, 1977)



(From Tirmizi and Zehra, 1984)

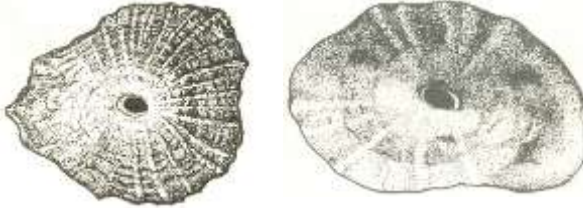
Genus *Fissurella* Bruguiere, 1789

55. *Fissurella virescens* Sowerby, 1835

Distribution: Attached to rocks. Atlantic and Indian Ocean.
Reported from Pakistan by PARC (Report, 1986)

Genus *Medusafissurella* McLean and Kilburn, 1986

56. *Medusafissurella salebrosa* (Reeve, 1850) 30mm.
Distribution: Intertidal stones and rocks. Indo-Pacific.
Reported from Pakistan by Reeve, 1850 as *Fissurella salebrosa* Reeve, 1850; Tirmizi and Zehra, 1984 as *Lucapinella salebrosa*



(From Tirmizi and Zehra, 1984)

Genus *Clypidina* Gray, 1847

57. *Clypidina notata* (Linnaeus, 1785)

Distribution: Rocky shores. Red Sea

Reported from Pakistan by Rahman and Barkati, 2012

Order Trochida Bouchet, Rocroi, Hausdorf, Kaim, Kano, Parkhaev, Schrödl and Strong, 2017

Superfamily Trochoidea Rafinesque, 1815

Family Trochidae Rafinesque, 1815 (Top shells)

Genus *Monilea* Swainson, 1840

58. *Monilea astrolabensis* Melvill, 1897 (Top snail)

Distribution: Intertidal and subtidal zones .Persian Gulf

Reported from Pakistan by Melvill, 1897

Genus *Umbonium* Link, 1807

59. *Umbonium moniliferum* (Lamarck, 1822) 20 mm.

Distribution: Intertidal rocks. Indo-Pacific.

Reported from Pakistan by Ahmed et al, 1982

60. *Umbonium vestiarium* (Linnaeus, 1758) (Common Button top). 12mm. Polished and brightly coloured

Distribution: Sandy beaches, intertidal. Indo-Pacific, Mediterranean Sea, Persian Gulf
Reported from Pakistan by Melvill and Standen, 1901

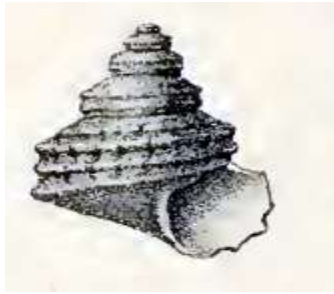


Genus *Conotalopia* Iredale, 1929

61. *Conotalopia musiva* (Gould, 1861) 10mm.

Distribution: Sub tidal mud. Gulf of Oman, Persian Gulf, Sri Lanka, Singapore

Reported from Pakistan by Melvill and Standen, 1901 as *Minolia* (*Conotrochus*) *holdsworthiana*; Melvill, 1918 *Minolia charmosyne*



Genus *Pseudominolia* Herbert, 1992

62. *Pseudominolia climacota* (Melvill, 1897) 14mm.

White-ochraceous or white-cenereous, lirae conspicuously sulcucose with triangular blotches of black-brown painting.

Distribution: On detritus and algae. Persian Gulf and Gulf of Oman.

Reported from Pakistan by Melvill, 1897

63. *Pseudominolia gradata* (G. B. Sowerby III, 1895) 3-8mm. White with radially large, brown spots

Distribution: On soft bottom. Red Sea and in the Eastern Indian Ocean and off Sri Lanka.
Reported from Pakistan by Sowerby, 1895



Genus *Gibbula* Risso, 1826

64. *Gibbula cineraria* (Linnaeus, 1758)

Distribution: Under rocks at low tide zone. West Pacific, Australia.

Reported from Pakistan by PARC (unpublished Report, 1986) as *Trochus lineatus* Gmelin

Genus *Jujubinus* Monterosato, 1884

65. *Jujubinus striatus* (Linnaeus, 1758) 13x10mm.

Distribution: Rocky shores, weedy rocks. Indian Ocean, Mediterranean

Reported from Pakistan by Tirmizi and Zehra, 1984 as *Trochus depictus* Deshayes



(From Tirmizi and Zehra, 1984)

Genus *Thalotia* Gray, 1847

66. *Thalotia beluchistana* Melvill, J. C.1897 (to be confirmed fide WoRMS)

Distribution: Mud flats at 7 fathoms. Gulf of Oman, Persian Gulf and Arabian Sea

Reported from Pakistan by Melvill, 1901

Genus *Priotrochus* P. Fischer, 1879

67. *Priotrochus kotschy* (Philippi, 1849) Whitish-ashen with chestnut stripes. 18-30mm.

Distribution: Persian Gulf, North western Indian Ocean

Reported from Pakistan by Melvill and Standen, 1901 as *Cantharidus kotschy*

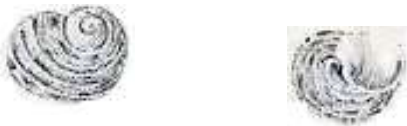


Genus *Pagodatrochus* Herbert, 1899

68. *Pagodatrochus variabilis* (H. Adams, 1873)

Distribution: Known from seamounts and knolls. Red Sea and in the western Indian Ocean.

Reported from Pakistan by Melvill, 1928 as *Minolia variabilis*



Genus *Agagus* Jousseume, 1894

69. *Agagus agagus* Jousseume, 1894

Distribution: On rocks, among sea weeds. Red Sea, Tanzania

Reported from Pakistan by Sowerby, 1895 as *Gibbula (Enida) townsendi* Sowerby

Genus *Trochus* Linnaeus, 1758

70. *Trochus erithreus* Brocchi, 1821 33-35 mm. Cinereous grayish or pinkish, striped and maculated above with reddish; unicoloured pinkish or radiately marked below

Distribution: In algal beds. Occurs in the Indian Ocean, the Red Sea, the Persian Gulf, and the Mediterranean Sea and in the Northern Atlantic Ocean.

Reported from Pakistan by Ghani et al, 2017 as *Trochus eurytheus*

71. *Trochus maculatus* Linnaeus, 1758 (Spotted Top shell). 65 mm. Whitish with oblique purple red rays

Distribution: Rocky shores at low tide. Indo-West Pacific.

Reported from Pakistan by Khan and Dastagir, 1971



(From Khan and Dastagir, 1971)

72. *Trochus radiatus* Gmelin, 1791 (Rayed top shell).

Distribution: Rocky shores, at low tides. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971



(From Khan and Dastagir, 1971)

73. *Trochus stellatus* Gmelin, 1791 18 -40 mm. Jagged striped pattern on a stone grey colour

Distribution: Rocky and sandy shores, river mouth. Indo-Pacific.

Reported from Pakistan by Khan et al, 1973



Genus *Clanculus* Montfort, 1810

74. *Clanculus ceylonicus* Nevill and Nevill, 1869

Distribution: Intertidal. Sri Lanka, Pacific

Reported from Pakistan by Rehman and Barkati, 2012

75. *Clanculus pharaonius* (Linnaeus, 1758) (Strawberry top shell) 13 - 25 mm.

Distribution: Intertidal zone. Madagascar, Red Sea, Gulf of Oman

Reported from Pakistan by Rehman and Barkati, 2012



(Photo Contributed by Moazzam)

76. *Clanculus depictus* Adams, 1854

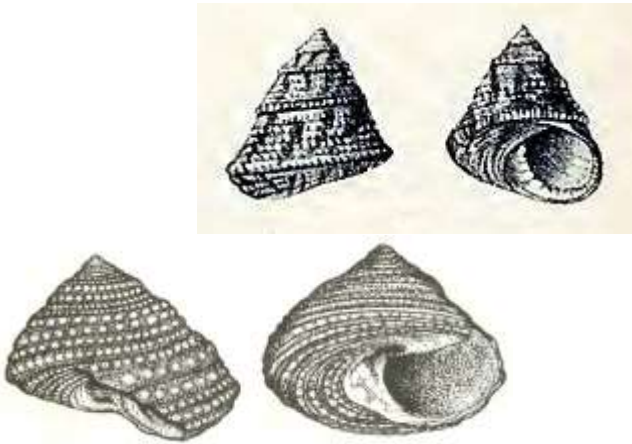
Distribution: Attached to the rocks. Gulf of Oman, Persian Gulf.

Reported from Pakistan by PARC (unpublished Report, 1986)

77. *Clanculus scabrosus* (Philippi, 1850) 22-20mm.

Distribution: Rocky shores, intertidal. Indo-Pacific.

Reported from Pakistan by Tirmizi and Zehra, 1984 as *Trochus scabrosus*



(From Tirmizi and Zehra, 1984)

78. *Clanculus microdon* Adam, 1853 (Microdon top shell).

Distribution: Attached to the rocks. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971

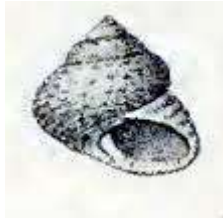


79. *Clanculus tonnerrei* (G. Nevill and H. Nevill, 1874)

White maculated with brown, black spots. 11mm.

Distribution: Sheltered intertidal and shallow sub tidal coral reef/lagoonal habitats, on/under coral blocks and boulders. Western Indian Ocean, Persian Gulf, Red Sea

Reported from Pakistan by Biggs, 1973 as *Euchelus bicinctus* (Philippi); Herbert, 1996



Genus *Monodonta* Lamarck, 1822

80. *Monodonta australis* (Lamarck, 1822) 32 x 30mm.

Distribution: On rocks and stones and weeds at low tide. Indo-Pacific.

Reported from Pakistan by Ahmed et al, 1982



(From Tirmizi and Zehra, 1984)

81. *Monodonta canalifera* Lamarck, 1801 18-30mm.

Distribution: On rocks, at low tide, littoral-supralittoral.
Indo West-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971; Afsar et al, 2012



(From Khan and Dastagir, 1971)

82. *Monodonta neritoides* (Philippi, 1849)

Distribution: On rocks. Indo-Pacific.

Reported from Pakistan by PARC (unpublished Report, 1986)

83. *Monodonta cf nebulosa* (Forsskal in Niebuhr, 1775)

15-22mm.

Distribution: Intertidal shallow sub tidal on or under rocks
.Red Sea

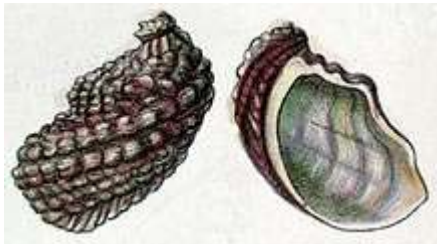
Contributed from Pakistan by Moazzam, present study



Genus *Stomatia* Helbling, 1779

84. *Stomatia phymotis* Helbling, 1779 (Swollen Mouth Shell). 30 mm. Red, marked at the suture, keel and base with olive or brown articulated with white.

Distribution: Off shore rock. Indo west Pacific
Reported from Pakistan by Dance, 1992



Family Calliostomatidae Thiele, 1924 (1847)

Genus *Calliostoma* Swainson, 1840

85. *Calliostoma scobinatum* (Adams in Reeve, 1863)

Distribution: On rocks with algae. Indian Ocean.

Reported from Pakistan by Ahmed et al, 1982

86. *Calliostoma ocellatum* (Reeve, 1863)

Distribution: Sea mounts. Mauritius

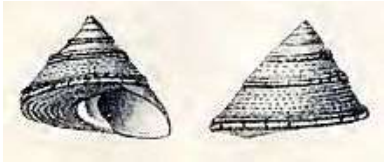
Reported from Pakistan by Horst and Schepman, 1908



87. *Calliostoma tranquebaricum* (Roding, 1798) 10-18mm. Pale coloured, almost white, minutely tessellated on the ribs with light brown

Distribution: Dredged from unknown depth. Off India, Sri Lanka and Vietnam

Reported from Pakistan by Femorale as *Calliostoma tranquebaricus*



Family Solariellidae Powell, 1951

Genus *Minolia* A. Adams, 1860

88. *Minolia eudeli* (Deshayes, 1863) 5 mm.

Distribution: Sea mounts and knolls. Indo-Pacific.

Reported from Pakistan by Melvill, 1928; OBIS, 2004



(From Femorale)

Family Conradiidae Golikov and Starobogatov, 1987

Genus *Conradia* Adams, 1860

89. *Conradia eutornisca* (Melvill, 1918)

Distribution: Sand between coral patches and seagrass. Indian Ocean, Red Sea

Reported from Pakistan by Melvill, 1918 as *Fossarus eutorniscus*; Saba and Moazzam, 2012 in Trochidae



Family Tegulidae Kuroda, Habe and Oyama, 1971

Genus *Tectus* Montfort, 1810

90. *Tectus virgatus* (Gmelin, 1791) (Striped Top shell).

Distribution: Rocky shores, attached to hard objects. Persian Gulf, Red Sea, West Africa.

Reported from Pakistan by Khan and Dastagir, 1971 as *Trochus virgatus* Gmelin



(From Khan and Dastagir, 1971)

91. *Tectus pyramis* (Born, 1778)

70 mm.

Distribution: Littoral and shallow sub littoral. Indo-Pacific.

Reported from Pakistan by Oliver, 2004



92. *Tectus fenestratus* (Gmelin, 1791) (Latticed top shell)

Distribution: Rocky shore. Central and West Pacific Ocean, Indo-China, Indo-Malaysia, New Guinea, New Caledonia and Australia.

Reported from Pakistan by Rahman and Barkati, 2012 as *Tectus crenulatus* Reeve

93. *Tectus dentatus* (Forsk., 1775) 80 mm.

Distribution: Between algae and on dead corals, in the intertidal and shallow sub tidal zone. Northern Indian Ocean.

Reported from Pakistan by Oliver and Nicholls, 2004



(Photo contributed by Moazzam)

Genus *Tegula* Lesson, 1832

94. *Tegula* sp.

Distribution: In tidepools, on rocks in the middle intertidal zone in protected coastal areas
Reported from Pakistan by Tirmizi and Zehra, 1982



(From Tirmizi and Zehra 1982)
Genus *Rochia* Gray, 1857

95. *Rochia niloticus* (Linnaeus, 1767) 50 -165mm. Body white, crimson, violet or reddish longitudinal stripes

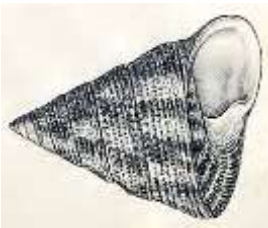
Distribution: Shallow water of tidal pools. Indo-Pacific.
Reported from Pakistan by Khan and Dastagir, 1971 as *Trochus niloticus*



(From Khan and Dastagir, 1971)

96. *Rochia conus* (Gmelin, 1791) (Cone-shaped top). 60mm.

Distribution: Indo-Pacific. Near coral reefs.
Reported from Pakistan by Dance, 1992 as *Tectsus conus*



Family Liotiidae Gray, 1850
Genus *Cyclostrema* Marryat, 1819

97. *Cyclostrema solariellum* Melvill, 1893 1.2-2.7mm. White colour

Distribution: Sandy. Persian Gulf, India.

Reported from Pakistan by Melvill and Standen, 1901

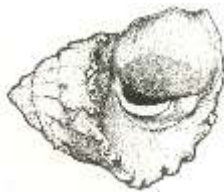


Superfamily Turbinoidea Bouchet and Rocroi, 2005
Family Turbinidae Rafinesque, 1815
Genus *Astraliium* Link, 1807

98. *Astraliium semicostatum* (Kiener, 1850) (Star shell) 27 x 20mm.

Distribution: Underside of rocks at low tide mark. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Astraea semicosta*



(From Tirmizi and Zehra, 1984)

99. *Astraliium stellare* (Gmelin, 1791) 45 x 30 mm.

Distribution: Rocky. Australia.

Reported from Pakistan by Ahmed and Hameed, 1999 as *Astraea stellar* Gmelin, 1791



Genus *Guildfordia* Gray, 1850

100. *Guildfordia triumphans* (Philippi, 1841) (Triumphet star turban). 50 mm.

Distribution: Offshore, Deep water. Indo-Pacific.

Reported from Pakistan by Dance, 1992



(From Wikipedia)

Genus *Bolma* Risso, 1826

101. *Bolma girgyllus* (Reeve, 1861) (Girgyllus star shell). 50 mm.

Distribution: Deep water. Indo-Pacific.

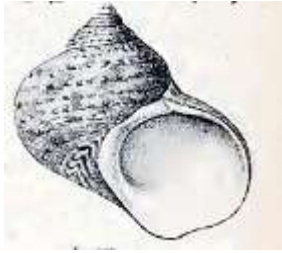
Reported from Pakistan by Dance, 1992



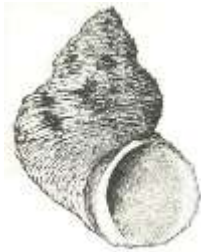
(Photo from JoJan)

Genus *Turbo* Linnaeus, 1758

102. *Turbo petholatus* Linnaeus, 1758 (Tapestry turban)
60 mm. Shining outer surface, bright green on the center,
the margins brown on one side, white upon the other
Distribution: Tropical Indo-Pacific. Shallow reefs.
Reported from Pakistan by Dance, 1992



103. *Turbo chryostomus* Linnaeus, 1758 70 x 60 mm.
Distribution: On rocks in weeds of sub tidal zone. Indo-
Pacific.
Reported from Pakistan by Tirmizi and Zehra, 1984 as
Turbo (Marmarostoma) chryostomus



(From Tirmizi and Zehra, 1984)

104. *Turbo intercostalis* Menke, 1846 (Intercotalis turbo).
25x15mm.
Distribution: Attached to the rocks or other substratum in
shallow water. Indo-Pacific.
Reported from Pakistan by Khan and Dastagir, 1971



(From Tirmizi and Zehra, 1984)

105. *Turbo argyrostomus* Linnaeus, 1758 (Silver mouth turban). 750 mm.

Distribution: Intertidal near coral reef. Tropical Indo-Pacific.

Reported from Pakistan by Dance, 1992



(From Hornell, 1911)

106. *Turbo bruneus* (Röding, 1798) (Little burnt turbo)

Distribution: On rocks. Gulf of Suez, Persian Gulf, Red Sea, Indo-Pacific

Reported from Pakistan by Roding, 1789; Ray, 1948 as *Turbo brunneus*



Genus *Lunella* Roding, 1798

107. *Lunella cinerea* (Born, 1778) 30 x 40 mm.

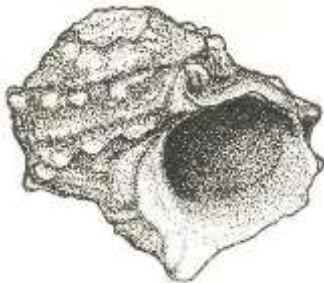
Distribution: Intertidal shallow water in reef or with seaweeds. Indo-Pacific.

Reported from Pakistan by PARC (unpublished report, 1986)

108. *Lunella coronata* (Gmelin, 1791) 31 x 34mm. Outer colour of shell variable, pale dull green to orange-yellow and flecked with brown or reddish grey, apex red; interior of aperture iridescent; exterior of operculum greenish.

Distribution: Attached on rocks in supra littoral zone with algae between tidal marks. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Turbo coronatus*



(From Tirmizi and Zehra, 1982)

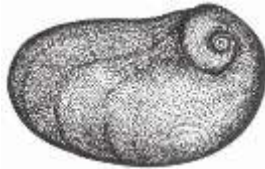
109. *Lunella correensis* (Récluz, 1853) 1934 12 - 27 mm.
Distribution: Attached on rocks in supra littoral zone with algae between tidal marks. Oman, Hong Kong, Malaysia, China.

Reported from Pakistan by WMSDB



Order Seguenziida Verril, 1884
Superfamily Seguenzioidea Verril, 1884
Family Chilodontaidae Wenz, 1938
Genus *Granata* Cotton, 1957

110. *Granata elegans* (Gray, 1847) 30 x 18mm.
Distribution: Under turnable rocks at low tide. Indo-Pacific.
Reported from Pakistan by Horst and Schepman, 1908 as *Stomatella elegans* Gray



(From Tirmizi and Zehra, 1984)

111. *Granata sulcifera* (Lamarck, 1822)
Distribution: Shallow water in coral reef and sand. Indo-Pacific.
Reported from Pakistan by Melvill, 1901 as *Stomatella sulcifera*



(From WMSDB)

Genus *Euchelus* Philippi, 1847

112. *Euchelus asper* (Gmelin, 1791) (Asper Topshell).

Height: 28.05mm. Dull ashen dotted with brown, rosy and black

Distribution: Intertidal, under rocks or in sand, mangroves. Indo-Pacific.

Reported from Pakistan by Melvill and Standen, 1901; Khan and Dastagir, 1971



(From Khan and Dastagir, 1971)

113. *Euchelus atratus* (Gmelin, 1791) (Blackish margarite) 5 mm and 21mm. Black, brown, or grayish-pink mm.

Distribution: Estuarine. Red Sea and in the Indian Ocean
Reported from Pakistan by Begum, 1998



(Photo from G.Poppe)

Genus *Vaceuchelus* Iredale, 1929

***114. Vaceuchelus foveolatus* (A. Adams, 1853)**

Distribution: Rocky shores. Tropical and temperate Indo-West Pacific

Reported from Pakistan by Melvill and Standen, 1901 as *Vaceuchelus angulatus* (Pease, 1867)



Genus *Perrinia* H. Adams and A. Adams, 1854

***115. Perrinia stellata* (A. Adams, 1864)** Initially whitish, with dark purplish or grayish brown spots appearing on cords during third whorl; subsequent whorls spotted, blotched or washed with similar shades, last whorl sometimes heavily so.

Distribution: common in the low intertidal and shallow subtidal down to -18 m., most often found under stones and dead coral blocks, in both sheltered and somewhat exposed

habitats; often where the rock rests on muddy sand and in anoxic conditions. Indo-West Pacific
Reported from Pakistan by Herbert, 2012

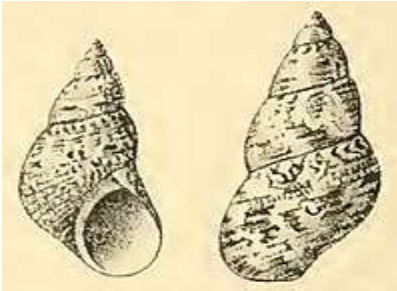


Family Phasianellidae Swainson, 1840
Genus *Phasianella* Lamarck, 1804

116. *Phasianella solida* (Born, 1778) (Variegated pheasant) 20mm.

Distribution: Intertidal depths among weeds. Indo-West Pacific.

Reported from Pakistan by Dance, 1992 as *Phasianella variegata*

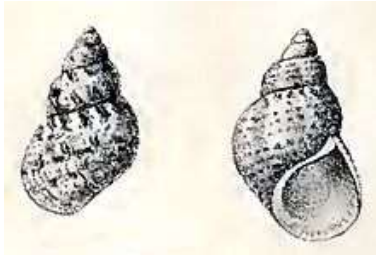


(From Wikipedia)

117. *Phasianella nivosa* Reeve, 1862

Distribution: Intertidal depths. Red Sea, tropical Indo-West Pacific.

Reported from Pakistan by Melvill and Standen, 1901 as *Phasianella variegata nivosa*



Family Angariidae Gray, 1857
Genus *Angaria* Röding, 1798

118. *Angaria sphaerula* (Kiener, 1838) (Kiener's Delphinula). 60 mm.

Distribution: Coral reefs in deeper waters. Indo-Pacific.

Reported from Pakistan by Dance, 1992



119. *Angaria vicdani* Kosuge, 1980 (Victor Dans Delphinula). 70 mm.

Distribution: Shallow corals. Indo-Pacific.

Reported from Pakistan by Dance, 1992



Family Areneidae McLean, 2012

Genus *Arene* H. Adams and A. Adams, 1854

***120. Arene* sp.**

Distribution: Weed associated

Reported from Pakistan by Baig, 2014

Subclass Caenogastropoda Cox, 1960

Order Caenogastropoda [unassigned]

Superfamily Triphoroidea Gray, 1847

Family Triphoridae Gray, 1847

Genus *Triphora* Blainville, 1828

***121. Triphora acuta* (Kiener, 1841) 2.5-5.6mm.**

Distribution: Sea mounts and knolls. Tropical Indo-West Pacific

Reported from Pakistan by Melvill and Staden, 1901



(From Tirmizi and Zehra, 1984)

***122. Triphora idonea* Melvill and Standen, 1901**

Distribution: Swamps and inundated forests .Persian Gulf

Reported from Pakistan by Melvill and Standen, 1901

Genus *Viriola* Jousseaume, 1884

123. *Viriola corrugata* (Hinds, 1843)

Distribution: **Swamps** and inundated forests .Australia, Philippines

Reported from Pakistan by Melvill and Standen, 1901 as *Triphora corrugata* Hinds, 1843



Family Cerithiopsidae H. Adams and A. Adams, 1853

Genus *Seila* A. Adams, 1861

124. *Seila hinduorum* (Melvill, 1898)

Distribution: Offshore in shell sand. Andaman Island, Persian Gulf, Reunion.

Reported from Pakistan by Melvill, 1898 as *Cerithiopsis* (*Seila*) *hinduorum* Melvill, 1898



(From Tirmizi and Zehra, 1982)

Genus *Cerithiopsis* Forbes and Hanley, 1850

125. *Cerithiopsis* spp.

Distribution: Lagoon area

Reported from Pakistan by Gondal et al, 2012

Superfamily Cerithioidea J. Fleming, 1822

Family Litiopidae Gray, 1847

Genus *Gibborissoia* Sacco, 1895

126. *Gibborissoia virgata* (Philippi, 1849) 3.5mm.

Distribution: sandy bottom, possibly with sea grass communities, deposited probably in the shallow sub-tidal zone. Mediterranean Sea, the Red Sea and in the Indian Ocean along Madagascar. Pacific Ocean

Reported from Pakistan by Melvill and Standen, 1901 as *Fenella virgata* (Philippi, 1849)



(From WMSDB)

Family Thiaridae Gill, 1871 (1823)

Genus *Melanoides* Olivier, 1804

127. *Melanoides tuberculata* (Muller, 1774)

Distribution: Rocky, brackish. Atlantic Ocean.

Reported from Pakistan by Ahmed and Hameed, 1999 as *Tiara tuberculata*

Family Scaliolidae Jousseume, 1912

Genus *Finella* A. Adams, 1860

128. *Finella purpureoapicata* Preston, 1905 2.5mm.

Distribution: Sandy beaches, lower sublittoral-bathyal, bathymetric range of 39-285 m. Indo-Pacific

Reported from Pakistan by Melvill, 1910 as *Obtortio elongella*; Houbrick, 1980 as *Argyropeza verecunda* Melvill and Standen; OBIS, 2006



(Photo taken by Raymond Huet)

129. *Finella tanyspira* Melvill and Standen, 1901

Distribution: Sandy beaches. Not outside type locality

Reported from Pakistan by Melvill and Standen, 1901 as *Fenella* (A. Ad.) *tanyspira*

Genus *Scaliola* A. Adams, 1860

130. *Scaliola arenosa* A. Adams, 1862 2-5mm.

Distribution: Intertidal and shallow, sub tidal sandy-mud-type substrates. Aldabra, Persian Gulf

Reported from Pakistan by Melvill and Standen, 1901



(Photo taken from Raymond Huet)

Family Cerithiidae Fleming, 1822 (Creepers or ceriths)

Genus *Cerithium* Bruguiere, 1789

131. *Cerithium caeruleum* Sowerby, 1855 30- 40mm.

Distribution: Under rocks, tide pools, intertidal, dead shells frequently inhabited by hermit crabs and encrusted by coralline red algae, forming rhodoliths .E.Africa, Arabian Sea, Red Sea, Kuwait

Reported from Pakistan by Tirmizi and Zehra, 1984 as *Clypeomorus caeruleum*



(From Tirmizi and Zehra, 1984) (Photo contributed by Moazzam)

132. *Cerithium citrinum* Sowerby, 1855 (Citrgon cerithium). 17-50mm. Colour citron

Distribution. Intertidal to subtidal reef environments, generally occurs in sand-rubble habitats behind off-shore reefs and in well-oxygenated lagoons .Indo-Pacific, Red Sea, Mediterranean

Reported from Pakistan by Khan and Dastagir, 1971



133. *Cerithium punctatum* Bruguière, 1792

Distribution: Rocky shores with weeds or in sand. Indian Ocean, Red Sea.

Reported from Pakistan by PARC (Report, 1986) as *Cerithium pipatritum* Sowerby

134. *Cerithium scabridum* Philippi, 1848 10-25mm.

Distribution: 3 m. Intertidal, oyster rocks. Red Sea, Mediterranean, Arabian Sea, and Persian Gulf

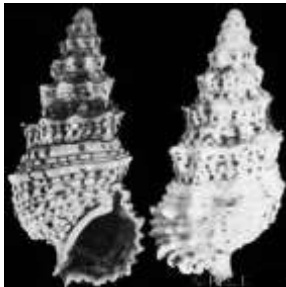
Reported from Pakistan by Houbrick, 1992



135. *Cerithium echinatum* Lamarck, 1822

Distribution: Coral patches, rock bottoms and reef slopes at 15-30m of water. Southern African coast, Red Sea, New Zealand

Reported from Pakistan by Nasreen et al, 2000 as *Cerithium rubus*



Genus *Colina* Adams and Adams, 1854

136. *Colina pinguis* Adams, 1855

Distribution: Intertidal zone at the water's edge at a mean distance from sea level of 308 meters in coral and sand with algae. Indo-Pacific, Persian Gulf, East Africa, Red Sea.

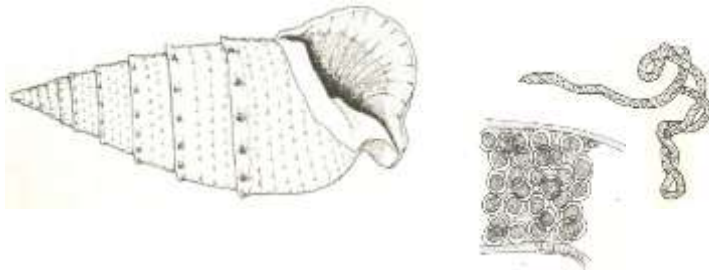
Reported from Pakistan by Melvill, 1903 as *Cerithium pingue* Adams; OBIS, 2004

Genus *Rhinoclavis* Swainson, 1840

137. *Rhinoclavis sinensis* (Gmelin, 1791) 38 x 13mm.

Distribution: Eulittoral and sub tidal zone in sand, weedy rocks. Indo-Pacific.

Reported from Pakistan by Gmelin, 1791; Khan and Dastagir, 1971 as *Cerithium sinensis*



Shell (From Tirmizi and Zehra, 1984) Egg ribbon (From Barkati and Ahmed, 1984)

138. *Rhinoclavis aspera* (Linnaeus, 1758) (Rough cerite). 60mm.

Distribution: Sandy areas. Indo-Pacific.

Reported from Pakistan by Dance, 1992



139. *Rhinoclavis articulata* (Adams and Reeve, 1850)

Distribution: Rocky shores with weeds or in sand. East Africa, East India, West Pacific.

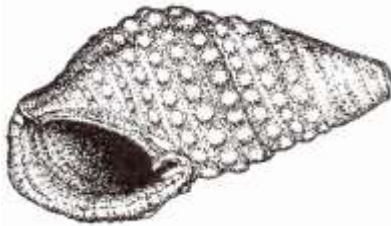
Reported from Pakistan by PARC (Report, 1986) as *Cerithium articulatus* Adams and Reeve

Genus *Clypeomorus* Jousseume, 1888

140. *Clypeomorus nympa* Houbriick, 1985 16 x 09mm.

Distribution: Rocky shores, sub tidal zone. Indo-Pacific.

Reported from Pakistan by Tirmizi and Zehra, 1984 as *Clypeomorus variegatum* Quoy and Gaimard



(From Tirmizi and Zehra, 1984)

141. *Clypeomorus bifasciata* (Sowerby II, 1855) 27mm.

Distribution: Rocky shore with weeds. Indo-Pacific, Red Sea, Persian Gulf

Reported from Pakistan by Khan and Dastagir, 1971 as *Cerithium morus* Lamarck



Genus *Bittium* Gray, 1847

142. *Bittium atramentarium* Melvill and Standen, 1901 (Small Needle Whelk). Shell reddish-brown to light chestnut-brown in colour.

Distribution: sandy and muddy shores, often with *Zostera* and other seagrasses, at depths up to 250 m. Indo-Pacific. Atlantic

Reported from Pakistan by Melvill and Standen, 1901

Family Batillariidae Thiele, 1929

Genus *Batillaria* Benson, 1842

143. *Batillaria sordida* (Gmelin, 1791)

Distribution: Rocky shores with weeds or in sand, salt marsh, mud flats. Indo-Pacific.

Reported from Pakistan by Ahmed and Hameed, 1999 as *Cerithium carbonarium* Philippi

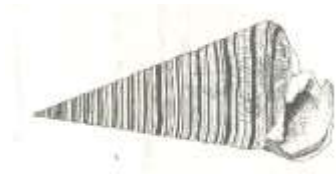
Family Potamididae Adams and Adams, 1854

Genus *Telescopium* Montfort, 1810

144. *Telescopium telescopium* (Linnaeus, 1758) (Horn shell, mud whelks). 100 mm. Ribs alternately dark brown and light brown

Distribution: Mangrove swamp, near river mouth. Tropical Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971



(From Tirmizi and Zehra, 1982)

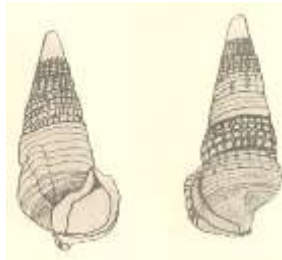
Genus *Terebralia* Swainson, 1840

145. *Terebralia palustris* (Linnaeus, 1767) (Mud creeper)

120 mm. Colour dark brown

Distribution: Salt marshes, mangroves, rocky. Indo-Pacific.
Red Sea

Reported from Pakistan by Khan and Dastagir, 1971



Egg ribbon (From Barkati and Tirmizi, 1987)

Shells (From Khan and Dastagir, 1971)

Genus *Cerithidea* Swainson, 1840

146. *Cerithidea obtusa* (Lamarck, 1822) (Obtuse Horn Shell) 50mm.

Distribution: Muddy coastal area. Indo west Pacific.

Reported from Pakistan by Oliver, 2004



Genus *Pirenella* Gray, 1847

147. *Pirenella cingulata* (Gmelin, 1791) (Girdled Horn Shell). 40 mm.

Distribution: Mangrove swamps, mud intertidal sand. Tropical Indo-Pacific, Persian Gulf, Red Sea.

Reported from Pakistan by Gmelin, 1791, as *Murex cingulatus*; Khan and Dastagir 1971 as *Cerithidea fluviatilis* Potiez and Michaud, 1838



(From Khan and Dastagir, 1971)

Family Planaxidae Gray, 1850

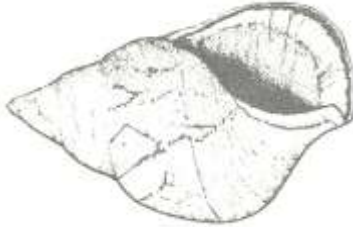
Genus *Planaxis* Lamarck, 1822

148. *Planaxis sulcatus* (Born, 1778) (Furrowed planaxis)

13- 35 mm. Colour purplish-brown with a white pattern

Distribution: Intertidal rocks, mangroves. Tropical Indo-Pacific. Red Sea

Reported from Pakistan by Timizi and Zehra, 1982
(From Tirmizi and Zehra, 1982)



Family Turrítellidae Lovén, 1847
Genus *Turrítella* Lamarck, 1799

149. *Turrítella cochlea* Reeve, 1849 (Turret or screw shell). 45mm.

Distribution: On rocks and sand at low-tide marks. Indian Ocean, Red Sea. Persian Gulf

Reported from Pakistan by Tirmizi and Zehra, 1984



(From Tirmizi and Zehra, 1984)

150. *Turrítella terebra* (Linnaeus, 1758) (Tower screw shell). 140 mm.

Distribution: On rocks on sandy mud at low tide. Indo-Pacific

Reported from Pakistan by Tirmizi and Zehra, 1984



(From Tirmizi and Zehra, 1984)

151. *Turritella duplicata* (Linnaeus, 1758) (Duplicate turritella). 150mm.

Distribution: Sandy mud. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971



(From Tirmizi and Zehra, 1984)

152. *Turritella trisulcata* Lamarck, 1822 Whitish, tinged with violet towards apex, obliquely painted with a very few irregular-brown flames

Distribution: Rocky cum sandy. Indo-Pacific. Red Sea

Reported from Pakistan by Reeve, 1849; Khan and Dastagir, 1971



153. *Turritella torulosa* Kiener, 1843

Distribution: On rocks below low-tide line. West Africa, Gulf of Oman, Red Sea

Reported from Pakistan by Melvill and Standen, 1910



(From Femorale)

154. *Turretella columnaris* Kiener, 1843

Distribution: On muddy cum sandy, rocks below low-tide line .Red Sea, Persian Gulf and Bay of Bengal.

Reported from Pakistan by Moazzam and Moazzam, 2007



(From Femorale)

155. *Turretella fultoni* Melvill and Standen, 1901 (Taxon inquirendum)

Distribution: Sublittorally, down to 220 m, on soft bottoms. Persian Gulf, Gulf of Oman.

Reported from Pakistan by Melvill, 1898 as *Trochus radiatus fultoni* Melvill



(Photo contributed by Moazzam)

156. *Turretella bicingulata* Lamarck, 1822 39mm.

Ornamented with profusely flamed, variegated with reddish brown markings

Distribution: Sublittoral. India, Atlantic
Reported from Pakistan by Reeve, 1860



157. *Turritella maculata* Reeve, 1849

Distribution: On rocks at low-tide marks; in coral sand, muddy sand with sea grass and coral patches. Indo-Pacific. Reported from Pakistan by Reeve, 1849; Ahmed *et al.*, 1982



(Photo contributed by Moazzam)

Family Modulidae P. Fischer, 1884 (Buttonsnail)
Genus *Indomodulus* Landau, Vermeij and Reich, 2014

158. *Indomodulus tectum* (Gmelin, 1791) (Knobby Snail).
250 mm

Distribution: Sand with weeds. Indo-Pacific.
Reported from Pakistan by Dance, 1992 as *Modulus tectum* (Gmelin, 1791).

Order Littorinimorpha Golikov and Starobogatov, 1975
Superfamily Vermetoidea Rafinesque, 1815
Family Vermetidae Rafinesque, 1815

Genus *Vermetus* Daudin, 1800

159. *Vermetus* sp. (Worm shell).

Distribution: On rocks and flat surface

Reported from Pakistan, present study

Superfamily Rissooidea Gray, 1847

Family Rissoinidae Stimpson, 1865

Genus *Phosinella* Mörch, 1876

160. *Phosinella clathrata* (A. Adams, 1853) 8 - 12 mm.

Distribution: At depth. Red Sea and in the Indian Ocean off Madagascar. Indo-Pacific

Reported from Pakistan by Melvill and Standen, 1901 as *Rissonia clathrata* A. Adams



Family Zebinidae Coan, 1964

Genus *Zebina* H. Adams and A. Adams, 1854

161. *Zebina* sp.

Distribution: In Sargassum weed

Reported from Pakistan by Baig and Zehra, 2006

Genus *Stosicia* Brusina, 1870

162. *Stosicia paschalis* (Melvill and Standen, 1901)

Distribution: Intertidal pools and shell sand. Indo-Pacific.

Reported from Pakistan by Melvill and Standen, 1901 as *Rissoina (Phosinella) paschalis*, OBIS, 2004



(From Shell catalogue)

163. *Stosicia annulata* (Dunker, 1859)

Distribution: Intertidal pools and shell sand. India, Sri Lanka, Persian Gulf, Japan, Hong Kong

Reported from Pakistan by Melvill, 1898 as *Iravadia trochlearis*



Genus *Schwartziella* G. Nevill, 1881

164. *Schwartziella triticea* (Pease, 1861)

Distribution: Live and dead coral, weed, sand and rocks. Red Sea. Indian Ocean, Philippines, Taiwan

Reported from Pakistan by Moazzam and Moazzam, 2007 as *Rissoina rissoi* Weinkauff

Genus *Rissoina* d'Orbigny, 1840

165. *Rissoina applanata* Melvill, 1893

Distribution: Littoral. India



Reported from Pakistan Melvill, 1883 as *Rissoina (Zebina) applanata* Melvill

166. *Rissoina distans* (Anton, 1838) nomen dubium 5-8mm.

Distribution: Sandy or gravel bottoms among algae. Japan, Taiwan, Philippines

Reported from Pakistan by Melvill and Standen, 1901

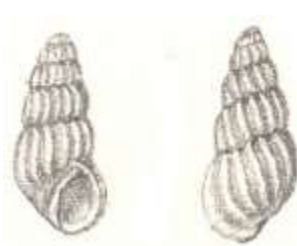


(From WMSDB)

167. *Rissoina crassa* Angas, 1871 8mm.

Distribution: Subtidal down to 18 m. Indo-Pacific

Reported from Pakistan by Fulton in Horst and Schepman, 1908



Family Barleeiidae Gray, 1857

Genus *Barleeia* Clark, 1853

168. *Barleeia* sp.

Distribution: Weed associated

Reported from Pakistan by Baig, 2014

Superfamily Littorinoidea Children, 1834

Family Littorinidae Children, 1834

Genus *Littoraria* Gray, 1833

169. *Littoraria angulifera* (Lamarck, 1822) . (Angulata periwinkle). Height 1". whitish, orange, red brown to black with darker wavy vertical oblique stripes.

Distribution: On rocks, mangroves, between tidal marks. Australia, Atlantic.

Reported from Pakistan by Khan and Dastagir, 1971 as *Littorina angulifera* Lamarck and as *Littorina angulifera lineata* Gmelin



(From Khan and Dastagir, 1971)

170. *Littoraria strigata* (Philippi, 1846) (Striped Periwinkle)

Distribution: Mangroves, rocks. Indo-Pacific

Reported from Pakistan by Reid, 1986; OBIS, 2004

171. *Littoraria melanostoma* (Gray, 1839) (Black-mouth mangrove periwinkle snail) 30 mm.

Distribution: Mangroves. Indo-Pacific.

Reported from Pakistan by Tirmizi and Barkati, 1985 as *Littorina melanostoma*

172. *Littoraria scabra* (Linneaus, 1758) (Mangrove winckle). 35 mm. Outer surface with a pattern of irregular dark stripes, brown shell colour matches bark.

Distribution: Mangrove leaves and bark. Indo-Pacific, South Africa.

Reported from Pakistan by Dance, 1992 as *Littorina scabra* Linneaus



173. *Littoraria undulata* (Gray, 1839) 25mm.

Distribution: On rocks. Indo-Pacific.

Reported from Pakistan by PSF (unpublished report, 1977) as *Littorina undulata*

174. *Littoraria carinifera* (Menke, 1830)

Distribution: Back of mangrove forest. Malaysia, Indonesia, Phillipines

Reported from Pakistan by Rosewater, 1973



Genus *Echinolittorina* Habe, 1956

175. *Echinolittorina ziczac* (Gmelin, 1791)

Distribution: On rocks, upper tidal marks. Indo-Pacific, America.

Reported from Pakistan by PSF (unpublished report, 1977) as *Littorina ziczac* Gmelin



176. *Echinolittorina omanensis* Reid, 2007 Grey or black with white nodules

Distribution: Occurs in the littoral fringe on rocks and cliffs, on sheltered and more commonly on wave-exposed coasts, sedimentary or estuarine. Indian Ocean.

Reported from Pakistan by Reid, 2007

177. *Echinolittorina leucosticta* (Philippi, 1847)

(Biangular prickly-winkle) 9mm. Blackish brown, paler at suture and on base; ribs and suture marked by prominent white dashes or spots, rarely fusing to form axial flames of brown and white or a finely marbled pattern; aperture dark brown, pale band at base; columella dark purple-brown, inner lip purplish.

Distribution: Benthic, rocky- cum sandy shores. Indian Ocean.

Reported from Pakistan by Barkati and Ahmed, 1984 as *Nodilittorina leucosticta leucosticta* Reeve, 1857;

misidentification, perhaps of *Littoraria intermedia* (Philippi, 1846) fide Reid, 2007

178. *Echinolittorina vidua* (Gould, 1859) 10mm.

Distribution: Shore rocks, above high tide. Indo-Pacific
Reported from Pakistan by Barkati and Ahmed, 1984 as *Nodilittorina picta* Philippi, 1846, may be a misidentification perhaps of *Echinolittorina vidua* (Gould, 1859) fide Reid, 2007

Genus *Nodilittorina* Martens, 1897

179. *Nodilittorina pyramidalis* (Quoy and Gaimard, 1833)

(Pyramid Periwinkle) Less than 1 cm. pale grey in colour, with two rows of nodules on the central whirl of its body pale buff colour

Distribution: Shore rocks, above high tide in crevices. Indo-Pacific, European waters

Reported from Pakistan by Rajagopal and Mookherjee, 1982



(From Poppe, 2016)

Genus *Peasiella* Nevill, 1885

180. *Peasiella infracostata* (Issel, 1869) 1mm. Suture and periphery with alternating brown and opaque white spots; sutural and peripheral spots sometimes connected by oblique brown lines; spiral brown line sometimes placed

just above suture on spire whorls; base unmarked or with peripheral brown line.

Distribution: Upper tidal rocks among barnacles, tide pools in sand between coral patches and in the mangrove. NW Indian Ocean, East Africa.

Reported from Pakistan by Reid, 1989; OBIS, 2004



(From WMSDB)

181. *Peasiella isseli* (Semper in Issel, 1869)

Distribution: Mostly at higher tide levels on rocky shores on rocks, or on concrete and wood in bays, sometimes in salt marshes. Red Sea

Reported from Pakistan by Reid, 1989



Superfamily Truncatelloidea Gray, 1840

Family Vitrinellidae Bush, 1897

Genus *Circulus* Jeffreys, 1865

182. *Circulus cingulifera* (Adams, 1850) 55 mm.

Distribution: Coral reef. Indo-Pacific.

Reported from Pakistan by Melvill, 1916 as *Cyclostrema cinguliferum*



(From WMSDB)

Genus *Vitrinella* Adams, 1850

183. *Vitrinella* sp.

Distribution: Oyster reefs; rocky

Reported from Pakistan by Rehman and Barkati, 2011

Family Tornidae Sacco, 1896 (1884)

Genus *Pseudoliotia* Tate, 1898

184. *Pseudoliotia micans* (A. Adams, 1850) 3.5mm.

Distribution: Lives subtidally under rocks and stones. Red Sea, the Indo-West Pacific and off Australia

Reported from Pakistan by Melvill, 1910, as *Cyclostrema micans*



Family Iravadiidae Thiele, 1928

Genus *Pellamora* Iredale, 1943

185. *Pellamora densilabrum* (Melvill, 1912)

Distribution: Under coral blocks at low tide, innermost part of large bays; on mud flats intertidal, in damp habitat under rotting vegetation, very close to the edge of the sea. Indo-Pacific.

Reported from Pakistan by Melvill, 1912 as *Rissoa densilabrum*

Genus *Iravadia* Blanford, 1867

186. *Iravadia ictriella* (Melvill, 1910) 5mm.

Distribution: Intertidal. Indo-Pacific, Red Sea, Persian Gulf
Reported from Pakistan by Melvill, 1910 as *Iravadia*
(*Pseudonoba*) *ictriella*, OBIS, 2004.



Superfamily Cypraeoidea Rafinesque, 1815

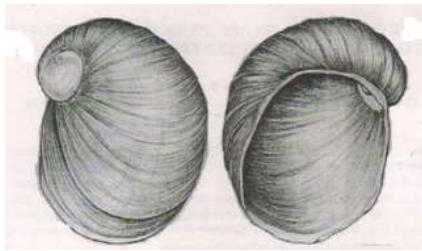
Family Velutinidae Gray, 1840

Genus *Lamellaria* Montagu, 1815

187. *Lamellaria perspicua* (Linnaeus, 1758)

Distribution: Prefers muddy bottom, in shell sand,
uncommon in rocks, associated with
coelentrates. Worldwide.

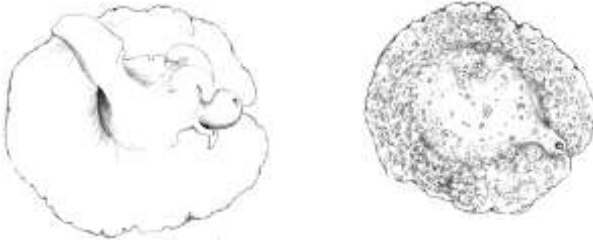
Reported from Pakistan by Kazmi, 1995 in Lamellariidae



Shell



Rachidian and lateral tooth



Animal, Ventral and dorsal views
Superfamily Capuloidea Fleming, 1822
Family Capulidae Fleming, 1822
Genus *Lippistes* Montfort, 1810

188. *Lippistes cornu* (Gmelin, 1791) 12mm.
Distribution: Intertidal pools and shell sand. Indo-Pacific.
Reported from Pakistan by Melvill and Standen, 1895 as
Lippistes grayi A. Ad



Family Lironobidae Ponder, 1967
Genus *Merelina* Iredale, 1915

189. *Merelina petronella* (Melvill and Standen, 1901)
Distribution: Intertidal. Indo-Pacific.
Reported from Pakistan by Melvill and Standen, 1901 as
Rissoa petronella Melvill and Standen, 1901



Superfamily Stromboidea Rafinesque, 1815

Family Strombidae Rafinesque, 1815

Genus *Gibberulus* Jousseaume, 1888

190. *Gibberulus gibberulus* (Linnaeus, 1758) (Humpback Cone shell) 30- 70 mm.

Distribution: Intertidal shallow water in sand or mud. Indo-Pacific, South East Africa, Red Sea, Australia.

Reported from Pakistan by Khan and Dastagir, 1971 as *Strombus gibberulus* Linnaeus



(From Khan and Dastagir, 1971)

Genus *Canarium* Schumacher, 1817

191. *Canarium mutabile* (Swainson, 1821) (Flower Stromb) 35mm. Whitish background, and brown markings organized to form irregular flames, more intense along several spiral bands

Distribution: At 40m.depth, in sheltered back-reef areas.. Red Sea, the Indian Ocean, the Mediterranean Sea; the Pacific Ocean along the Philippines.

Reported from Pakistan by Mookherjee, 1985 as *Strombus (Canarium) mutabilis* Swainson

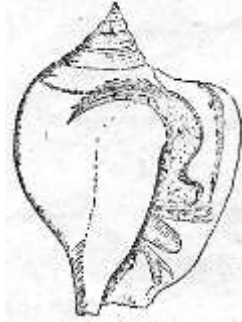


Genus *Laevistrombus* Abbott, 1960

192. *Laevistrombus canarium* (Linnaeus, 1758) (Dog Conch) 30-105 mm.

Distribution: On muddy sand bottoms among algae and sea grass beds on insular and continental shores. India, Sri Lanka, Western central Pacific

Contributed from Pakistan by Moazzam, present study



(From Hornell, 1951)

Genus *Conomurex* Bayle in P. Fischer, 1884 (True conch)

193. *Conomurex fasciatus* (Born, 1778) (The lined conch) 25 mm - 50 mm.

Distribution: Benthic on algae. Red Sea, Iran

Reported from Pakistan by Samaie, 1997



(Photo contributed by Moazzam as *Strombus fasciatus*)

194. *Conomurex persicus* (Swainson, W.A., 1821)

Distribution: On rocks. Persian Gulf

Reported from Pakistan by Melvill, 1898 as *Strombus belutschiensis*



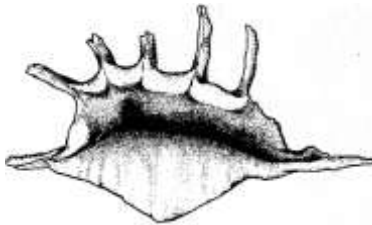
(From William Swainson)

Genus *Lambis* Roding, 1798

195. *Lambis truncata sebae* (Kiener, 1843) 220 - 330 mm.

Distribution: Reef flats and coral-rubble bottoms in shallow water from low tide levels to depths of 5m.

Reported from Pakistan by Tirmizi and Zehra, 1982 as *Lambis*.



(From Tirmizi and Zehra, 1982)

Genus *Margistrombus* Bandel, 2007

196. *Margistrombus succinctus* (Linnaeus, 1767)

33mm. Yellowish-brown with fine reticulated and arrow-shaped lines, body whorle with spiral white bands.

Distribution: Found close to the low tide mark on sandy beach with algal vegetations. India, Sri Lanka, Singapore
Reported from Pakistan by Abbot, 1960 as *Strombus* (*Dolomena*) *marginatus succinctus*



(From malacos.chez.com/htm/E98G1.HTM)

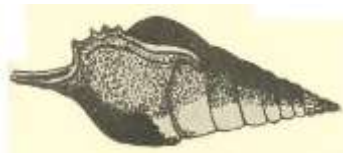
Family Rostellariidae Gabb, 1868

Genus *Tibia* Roding, 1798

197. *Tibia curta* (Sowerby, 1842) (Short quaked tibia). Brown colour

Distribution: On rocks. Red Sea.

Reported from Pakistan by Sowerby, 1842; Khan and Dastagir, 1971





(Photo contributed by Moazzam as *Tibia insulaechorab curta*, present study)

198. *Tibia fusus* (Linnaeus, 1758) (Shin bone tibia)

Distribution: Intertidal, Indo-Pacific.

Reported from Pakistan by Reeve, 1851 as *Tibia unicornis* Dillwyn, 1817



Genus *Rostellariella* Thiele, 1929

199. *Rostellariella delicatula* (Nevill, 1881) 45-110mm.

Distribution: Oxygen minimum zone. Indo-Pacific

Reported from Pakistan by Ramirez-Llodra and Olabarria, 2005 as *Tibia delicatula* Nevill.



Superfamily Xenophoroidea Troschel, 1852
Family Xenophoridae Troschel, 1852 (1840)
Genus *Xenophora* Waldheim, 1807

200. *Xenophora corrugata* (Reeve, 1842) 50mm.
Pale yellowish-brown to yellowish-white, sometimes with a few pale brown spots or collabral streaks on base

Distribution: Intertidal muddy cum sandy. Madagascar, East Africa, South Africa, Persian Gulf, Sri Lanka.

Reported from Pakistan by Reeve, 1842



(From Tirmizi and Zehra, 1982)(Photo contributed by Moazzam)

201. *Xenophora pallidulla* (Reeve, 1842) (Pallid carrier shell). 75mm.

Distribution: Deep water .Indo-Pacific, South Africa, Japan.

Reported from Pakistan by Dance, 1992



202. *Xenophora mekranensis* (Newton, 1905)

Distribution: Dredged at depth.Persian Gulf

Reported from Pakistan by Newton, 1905 as *Tugurium mekranense* Newton, 1905(? fossil)

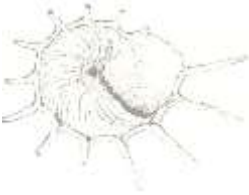


s

Genus *Stellaria* Möller, 1832

203. *Stellaria solaris* (Linnaeus, 1764) (Solar Carrier Shell, sunburst carrier shell). 90mm. Yellow

Distribution: Muddy-cum sandy, deep water, on the continental shelf at 18-200 m. Persian Gulf, Gulf of Oman. Northern Indian Ocean, Red Sea, and central Indo-Pacific. Reported from Pakistan by Khan and Dastagir, 1971 as *Xenophora solaris*



(From Tirmizi and Zehra, 1982)

Superfamily Calyptraeidea Lamarck, 1809

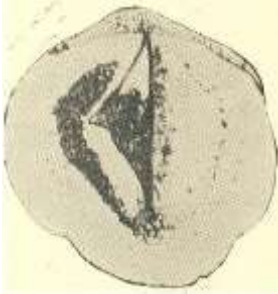
Family Calyptraeidae Lamarck, 1809

Genus *Desmaulus* Rehder, 1943

204. *Desmaulus extintorium* (Lamarck, 1822) (Cup and Saucer Limpet). Half inch in diameter, interior glossy white or pale yellow

Distribution: Occasionally found attached to hard substrates, also in sand or mud. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Calyptraea extintorium* Lamarck, 1822



(From Khan and Dastagir 1971)

Genus *Calyptraea* Lamarck, 1799

205. *Calyptraea spinifera* (Gray, 1867)

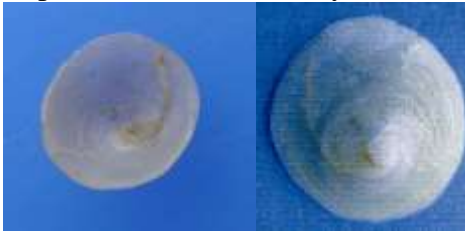
Distribution: Benthic. Oman

Reported from Pakistan by Melvill and Standen, 1895 as *Calyptraea (Trochita) spinifera* (Gray)

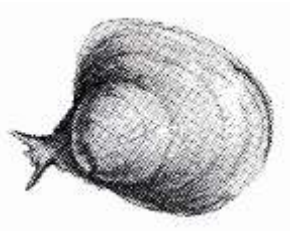
206. *Calyptraea pellucida* (Reeve, 1859)

Distribution: Sub tidal. Tropical Indo-West Pacific

Reported from Pakistan by Melvill and Standen, 1895



Shell



Shell with animal

Genus *Crucibulum* Schumacher, 1817

207. *Crucibulum* sp.

Distribution: Low tide (0.5 ft), rocks/sand, "weed covered"

Reported from Pakistan by Steiner, 1973 15726.0



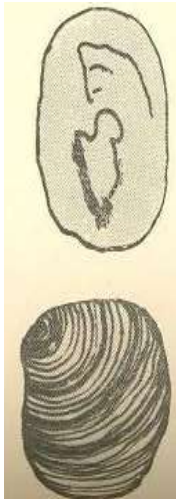
(From Tirmizi and Zehra, 1982)

Genus *Crepidula* Lamarck, 1799

208. *Crepidula plana* Say, 1822 (White slipper shell) 1-1/2 inch.

Distribution: Associated with other gastropods, on muddy bottom. Indo-Pacific, East America.

Reported from Pakistan by Khan and Dastagir, 1971



In empty *Tonna* shell

(From Khan and Dastagir, 1971)

Genus *Ergaea* H. Adams and A. Adams, 1854

209. *Ergaea walshi* (Reeve, 1859) .

Distribution: Associated with other gastropods. Indo-Pacific

Reported from Pakistan by Fatima et al., 2003 as *Crepidula walshi* Reeve



On *Placuna* valve

Superfamily Vanikoroidea Gray, 1840

Family Hipponicidae Troschel, 1861

Genus *Hipponix* DeFrance, 1819

210. *Hipponix* sp.

Distribution: Attached to substrate or other shells.

Reported from Pakistan by PSF (unpublished Report, 1977)

Genus *Cheilea* Modeer, 1793

211. *Cheilea equestris* (Linnaeus, 1758) (Hoof-snail)

Distribution: On coral reefs and usually remain attached to the under surface of coral mass taking up the formation of the substratum

Reported from Pakistan by Mookherjee, 1985



(From Naturalis Biodiversity Center)

Family Eulimidae Philippi, 1853

Genus *Niso* Risso, 1826

212. *Niso venosa* G. B. Sowerby III, 1895 11mm.

Distribution: Moderately shallow water .SE Asia; Reunion, Oman

Reported from Pakistan by Melvill and Standen, 1895



(Photo contributed by Moazzam)

Genus *Parvioris* Warén, 1981

213. *Parvioris styliferoides* (Melvill and Standen, 1901)

Distribution: Ectoparasitic. Australia

Reported from Pakistan by Melvill and Standen, 1901 as *Eulima styliferoides* Melvill and Standen, 1901

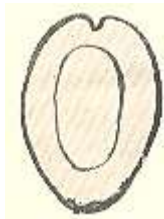
Family Cypraeidae Rafinesque, 1815

Genus *Monetaria* Troschel, 1863

214. *Monetaria annulus* (Linnaeus, 1758) (Annular cowry). 30 mm. white or creamy with a regular oval outline and yellow ring around top

Distribution: Under rocks and corals. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Cypraea annulus* Linnaeus

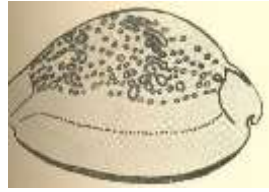
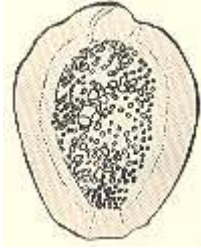


(From Khan and Dastagir, 1971)

215. *Monetaria caputserpentis* (Linnaeus, 1758) (Snake's Head cowry). 40 mm. Broad brown margin with pale top with brown net work

Distribution: Under rocks in shallow waters. Tropical Indo-Pacific, Japan.

Reported from Pakistan by Khan and Dastagir, 1971 as *Cypraea caputserpentis* Linnaeus



(From Khan and Dastagir, 1971) (Photos contributed by Moazzam)

216. *Monetaria obvelata* (Lamarck, 1810) (Tahiti gold ringed cowry) 25.00mm.

Distribution: On rocks, in coral rubble. Pacific.

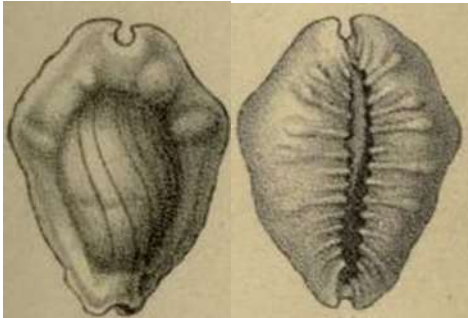
Reported from Pakistan by Bano, 1981, unpublished thesis as *Cypraea obvelata*

217. *Monetaria moneta* (Linnaeus, 1758) (Money cowry). 40.00 mm. Shell with base and margin white and unspotted, dorsum yellowish-green. A black transverse line crosses the

dorsum almost centrally. Some specimens show a thin yellow ring encircling the dorsum.

Distribution: Sandy mudflats under rocks. Tropical Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Cypraea moneta* Linnaeus, 1758.



Genus *Mauritia* Troschel, 1863

218. *Mauritia arabica* (Linnaeus, 1758) (Arab cowry). 80 mm. dorsal white patches

Distribution: On rocks at low tides. Indo-Pacific, South East Africa, Gulf and Hawaii.

Reported from Pakistan by Melvill and Standen, 1910 as *Cypraea arabica* Linnaeus



Shell (From Tirmizi and Zehra, 1984)

Egg case (From Barkati and Ahmed, 1984)

219. *Mauritia arabica asiatica* Schilder and Schilder, 1939 25-89mm.

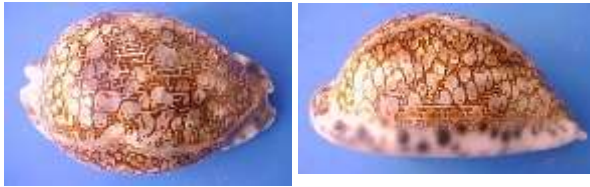
Distribution: On rocks at low tides. Indo-Pacific
Reported from Pakistan by Femorale as *Cypraea arabica asiatica*



220. *Mauritia eglantina* (Duclos, 1833) 770 mm.

Distribution: Among exposed rocks and coral reef at low tide. Central Indo-Pacific.

Reported from Pakistan by PARC (unpublished Report, 1986) as *Cypraea eglantina* Duclos



(Photo contributed by Moazzam)

221. *Mauritia grayana* Schilder, 1930 (Gray's Arabica Cowry) 44–52 mm dorsum surface light gray-brown, with several gray spots and many thin longitudinal lines. In the middle of dorsum a wide longitudinal stripe present. Close to the edges a grayish wide frame with several dark brown spots present; base pale brown, with a wide aperture and fine dark brown teeth on outer and inner lips, mantle quite grayish and almost transparent.

Distribution: shallow waters, mainly at about 2–5 metres.
Red Sea and in the Western Indian
Ocean along Eritrea, Somalia.
Reported from Pakistan by Lorenz and Hubert, 2000



(Photo contributed by Moazzam)

Genus *Lyncina* Troschel, 1861

222. *Lyncina carneola* (Linnaeus, 1758) (Carnelian cowry). 50 mm.

Distribution: Among rocks and corals. Indo-Pacific.
Reported from Pakistan by Bano, 1981, unpublished thesis
as *Cypraea carneola* Linnaeus

223. *Lyncina lynx* (Linnaeus, 1758) (Eyed cowry) 30.00 mm. whitish mottled faintly with irregular brown spots

Distribution: Among rocks and coral. Indian, west and central Pacific Oceans

Reported from Pakistan by Melvill, 1903 as *Cypraea lynx* Linnaeus.



(Photo contributed by Moazzam)

Genus *Callistocypraea* Schilder, 1927

224. *Callistocypraea aurantium* (Gmelin, 1791) (Golden Cowry). 2 mm. Yellowish brown to reddish orange on the dorsum, with white to cream coloured margins, mantle a

combination of dark gray with translucent spots and patches that the orange colour of the shell shows through ; scattered branching papillae brownish gray, often white at the bases and tips.

Distribution: Sandy shores, on the reef, at depths of 30 to 100 feet .Tropical waters of the west-central to south-central Pacific Ocean

Reported from Pakistan by Khan et al, 1973 as *Callistocypraea aurantiana*



Genus *Macrocypraea* Schilder, 1930

225. *Macrocypraea cervus* (Linnaeus, 1771) (Pacificus deer cowry). 60x38mm.

Distribution: In mud and sand, under coral slabs. Tropical Indo-Pacific.

Reported from Pakistan by Dance, 1992 as *Lyncina curvus* (Linnaeus, 1758)



Genus *Notocypraea* Schilder, 1927

226. *Notocypraea declivis* (Sowerby II, 1870) 28mm.

Distribution: Among rocks. South Australia, Tasmania.
Reported from Pakistan by Bano, 1981, unpublished thesis
as *Cypraea declivis* Sowerby

Genus *Purpuradusta* Schilder, 1939

227. *Purpuradusta gracilis* (Gaskoin, 1849) 25mm.

Distribution: Intertidal under rocks. Indo-Pacific.

Reported from Pakistan by PSF (unpublished report, 1977)
as *Cypraea gracilis* Gaskoin

228. *Purpuradusta microdon* (Gray, 1828) 18x11mm.

Distribution: Intertidal rocks. Indo-Pacific.

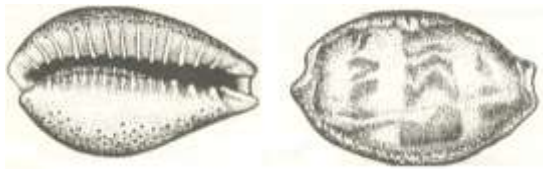
Reported from Pakistan by Bano, 1981, unpublished thesis
as *Cypraea microdon* Gray

Genus *Palmadusta* Iredale, 1930

**229. *Palmadusta lentiginosa buhariensis* (Jonklaas
and Nicolay, 1977) (Freckled Cowry) 32mm.** Light
blue, central blue band, bright dark blotch and two
small blotches at apex, base cream

Distribution: Muddy rocks at low tide. Red Sea and
the waters bordering the Arabian Peninsula, the
Persian Gulf, India

Reported from Pakistan by Jonklaas and Nicolay,
1977; Tirmizi and Zehra, 1984 as *Cypraea
lentiginosa* Gray



(From Tirmizi and Zehra, 1984)

Genus *Naria* Gray, 1837

230. *Naria nebrites* (Melvill, 1888) 35.00 mm.

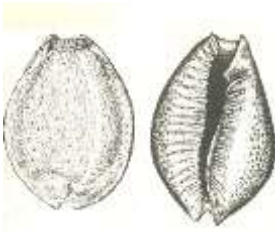
Distribution: Under rocks. Indian Ocean, Red Sea, Gulf of Aden, Persian Gulf, Gulf of Oman.

Reported from Pakistan by Bano, 1981, unpublished thesis as *Cypraea nebrites* Melvill

231. *Naria ocellata* (Linnaeus, 1758) (Eyed cowry).
13- 314mm. dorsally fulvous or raw sienna, flecked with close round white spots

Distribution: Among muddy stones and rocks at low tide. Indo-Pacific, Gulf of Oman.

Reported from Pakistan by Melvill and Standen, 1904 as *Cypraea ocellata pelidna*

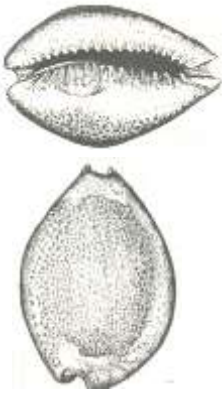


(From Tirmizi and Zehra, 1984)

232. *Naria turdus* (Lamarck, 1810) (Turdus cowry).
50 mm. Dark cinereous brown

Distribution: Rocky shores at low tides. East Africa, Red Sea, Gulf of Oman, Suez Canal, Persian Gulf ; Sri Lanka, Indonesia Red Sea, Gulf of Aden, North Somalia, South of Arabian Peninsula, Northwest India

Reported from Pakistan by Melvill and Standen, 1901; Khan and Dastagir, 1971 as *Cypraea turdus*



(From Tirmizi and Zehra, 1984) (Photo contributed by Moazzam)

233. *Naria lamarckii* (J.E. Gray, 1825) 18-53mm.

Distribution: Shallow water inside caves on rocky bottom. Central and Eastern Indian Ocean

Reported from Pakistan by Femorale, 2011 as *Cypraea lamarckii* Gray, 1825

234. *Naria marginalis* (Dillwyn, 1817) 14-38mm.
Back olive green-blue

Distribution: Coastal. SE Africa; W Indian Ocean; Gulf of Oman; Sri Lanka

Reported from Pakistan by Femorale, 2011 as *Cypraea marginalis pseudocellata* (Schilder and Schilder, 1938)



Genus *Erronea* Troschel, 1863

235. *Erronea onyx* (Linnaeus, 1758) (Onyx cowry).
40 mm.

Distribution: On rocks and crevices in fragments of large shells. Indo-Pacific.

Reported from Pakistan by Bano, 1981, unpublished thesis *Cypraea succincta*; Oliver 2004, Ali, 2006 as *Cypraea onyx succincta* Linnaeus; www.idscaro.net/sci/01_coll/plates/gastro/pl_cypraei_dae_1.htm as *Adusta onyx succincta* (Linnaeus, 1758)



236. *Erronea caurica* (Linnaeus, 1758)

Distribution: On rocks. Red Sea, Indo-pacific

Reported from Pakistan by Melvill and Standen, 1904 as variety *cairnsiana* of *Cypraea caurica* Linnaeus.



237. *Erronea pallida* (J. E. Gray, 1824) (Pale cowry). 31x21mm. Dorsum surface usually pale brown or greyish, with a darker brown area in the middle, base whitish.

Distribution: At low tide under rocks in mud. Gulf of Oman, N.Indian Ocean to Indonesia.

Reported from Pakistan by Khan et al, 1973 as *Cypraea pallida* Gray, 1824



238. *Erronea ovum* (Gmelin, 1791) (Egg cowry)

20mm .Snow white

Distribution: At 7 meter depth. Indo-Pacific

Reported from Pakistan by Ali, 2006 as *Cypraea ovum*

239. *Erronea adusta persica* Schilder and Schilder, 1938 35-50mm.

Distribution: in shallow subtidal water.Persian Gulf, India

Reported from Pakistan by Femorale

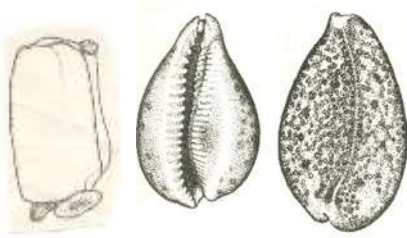
Genus *Cypraea* Linnaeus, 1758

240. *Cypraea tigris* Linnaeus, 1758 (Tiger Cowry)

100 mm. Dorsally white or pale reddish-brown with large dark brown spots, and sometimes a reddish longitudinal stripes

Distribution: Under coral and boulders in shallow or deep water. Indo-Pacific, Atlantic, Persian Gulf and Gulf of Oman.

Reported from Pakistan by Tirmizi and Zehra, 1984



Egg case (From Barkati and Ahmed, 1984) Shell
 (From Tirmizi and Zehra, 1984)

Genus *Contradusta* Meyer, 2003

241. *Contradusta walkeri* (Sowerby I, 1832)

(Walker's Cowry) .30 mm.

Distribution: On rocks and crevices. Seychelles. Srilanka, Maldives, Malaya, Singapore, Australia, Japan
 Reported from Pakistan by Bano, 1981, unpublished thesis as *Cypraea walker* Sowerby, 1832.

Genus *Zonaria* Jousseume, 1984

242. *Zonaria zonaria* (Gmelin, 1791)

Distribution: Sandy shores. West Africa

Reported from Pakistan by Khan et al, 1973



(From Joop Trausel and Frans Slieker)

243. *Zonaria pyrum* (Gmelin, 1791) (Pear

cowrie)32-38mm. Orange-brown, with many brown spots and two or three clear trasversal bands; base, the margins and the teeth orange or pinkish.

Distribution: Usually up to 15–50 m.,hidden under

rocks or coral slabs and caves. Tropical and subtropical

Reported from Pakistan by Lorenz and Hubert, 2000.



Genus *Cypraeovula* Gray, 1824

244. *Cypraeovula fuscorubra* (Shaw, 1909) Mantle variable in colour from beige and mauve to grey, white to black and orange to pink and red, with a finely granular surface, with an overlay of densely spaced reddish brown spots, black and white markings on small papillae along the mantle edges

Distribution: on reefs from 15 to over 80 metres depth, often on the sides of large granite boulders .South Africa

Reported from Pakistan by Femorale, 2011 as *Cypraea erosa similis* Gmelin, 1791

Genus *Luria* Jousseaume, 1884

245. *Luria pulchra* (Gray, 1824)

Distribution: Shallow lagoons.Red Sea,Gulf of Oman,Arabian Gulf

Reported from Pakistan by Femorale, 2011 as *Cypraea pulchra* Gray, 1824



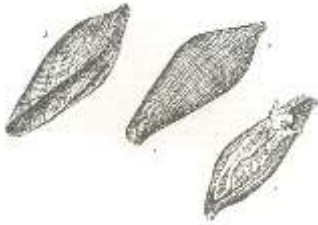
Family Ovulidae Fleming, 1822

Genus *Crenavolva* Cate, 1973 (Spindle cowry)

246. *Crenavolva* sp.

Distribution: Rocky shores, at very low tide on gorgonia.

Reported from Pakistan by Kazmi and Naushaba, 2000



Genus *Primovula* Thiele, 1925

247. *Primovula tropica* Schilder, 1931

Distribution: Intertidal rocks at very low tide to offshore on corals. Indo-Pacific.

Reported from Pakistan by OBIS, 2004



Family Eratoidae Gill, 1871

Genus *Eratopsis* R. Hoernes, 1880

248. *Eratopsis olivaria* (Melvill, 1899) 4mm.

Distribution: Offshore and beached. Tropical Indo-Pacific.

Reported from Pakistan by Melvill, 1899 as *Erato olivaria* Melvill, 1899



(From WMSDB)

Family Triviidae Troschel, 1863

Genus *Trivirostra* Jousseume, 1884

249. *Trivirostra oryza* (Lamarck, 1810) (Rice Grain Bean Cowry) Up to 13 mm in length. Pure white colour.

Distribution: On intertidal coral reefs, under stones and dead coral.

Reported from Pakistan by Melvill and Standen, 1904



(From Femorale)

Superfamily Naticoidea Guilding, 1834

Family Naticidae Guilding, 1834

Genus *Natica* Scopoli, 1777

250. *Natica marochiensis* (Gmelin, 1791)

(Moroccan/Ribboned Moon Snail)

Distribution: Intertidal sand, from 0-94m. Atlantic, Indian, Mediterranean, Gulf of Mexico, Caribbean
Reported from Pakistan by Moazzam and Moazzam, 2007 as *Glypheapithema marochiensis*



251. *Natica queketti* Sowerby III, 1894

Distribution: Intertidal sand .South Africa, East Africa
Reported from Pakistan by Melvill and Standen, 1901



(From J. Trausel and F. Slieker)

252. *Natica cincta* Récluz, 1850

Distribution: Intertidal. South Africa
Reported from Pakistan by Moazzam and Moazzam, 2007 as *Natica pulicaris* Philippi, 1852



(Photo contributed by Moazzam)

253. *Natica vitellus* (Linnaeus, 1758) 19 x 28mm. Burnt orange with few white blotches
Distibution: Sandy and rocky shores. Indo-Pacific.
Reported from Pakistan by Khan and Dastagir, 1971; Tirmizi and Zehra, 1984



Shell drawing (From Tirmizi and Zehra, 1984)

254. *Natica forata* Reeve, 1855

Distribution: Sandy and rocky shores .South Africa
Reported from Pakistan by Melvill and Standen, 1901



(From Wikimedia)

Genus *Notocochlis* Powell, 1933

255. *Notocochlis tigrina* (Röding, 1798) (Tiger Natica). 8-20mm. Purple brown spots all over outer surface

Distribution: Sandy and rocky shores, river mouth. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Natica tigrina* Roding, 1798

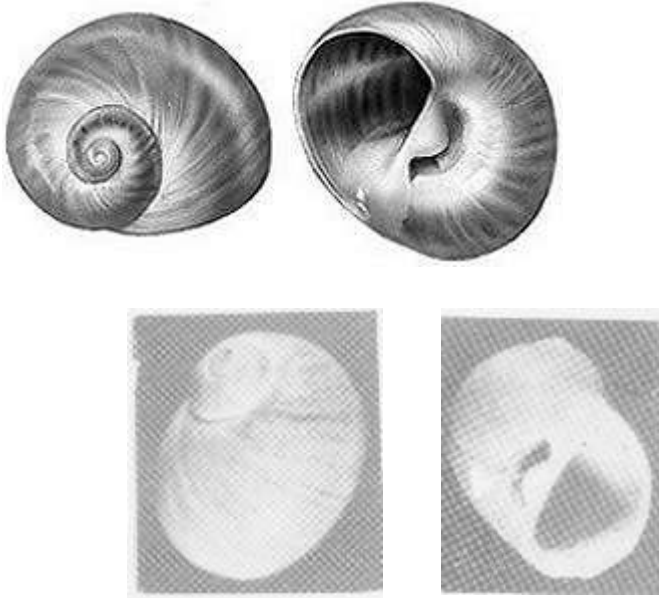


(From Khan and Dastagir, 1971)

256. *Notocochlis gualtieriana* (Récluz, 1844)10-20mm. Whitish, marked with brown, straight and curved streaks muddy sand

Distribution: Lives in shallow water, in depressions lined with muddy sand, occasionally on sparse seagrass beds.Indo-Pacific, Red sea

Reported from Pakistan by Begum and Nazneen, 1992 as *Natica gualtieriana* Recluz



Genus *Naticarius* Duméril, 1805

257. *Naticarius onca* (Röding, 1798) (China Moon Snail)

Distribution: Sandy bottoms. Indian Ocean, Red Sea

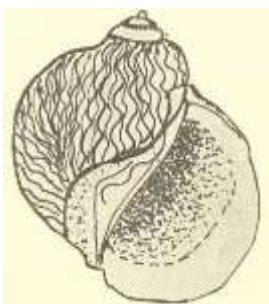
Reported from Pakistan by Rahman and Barkati, 2012 as
Natica onca

Genus *Tanea* Marwick, 1931

258. *Tanea lineata* (Röding, 1798) (Lined Moon Snail) 2-2 1/2".

Distribution: Sandy/muddy. Indo-Pacific

Reported from Pakistan by Melvill, 1901; Khan and
Dastagir, 1971 as *Natica lineata*



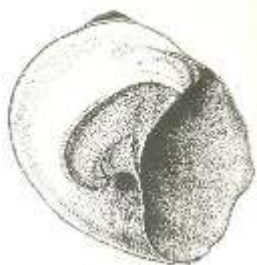
(From Khan and Dastagir, 1971)

Genus *Neverita* Risso, 1826

259. *Neverita josephinia* Risso, 1826 36mm.

Distribution: Sand flats, quite deep water. Mediterranean, Portugal and Indian Ocean.

Reported from Pakistan by Tirmizi and Zehra, 1984 as *Natica* (*Neverita*) *josephinae*



(From Tirmizi and Zehra, 1984)

260. *Neverita didyma* (Roding, 1789) 10.48-58.2 mm x 11.45-50.3 mm. Blue-grey or fawn

Distribution: Intertidal, mud, sand bottom. Indo-Pacific.

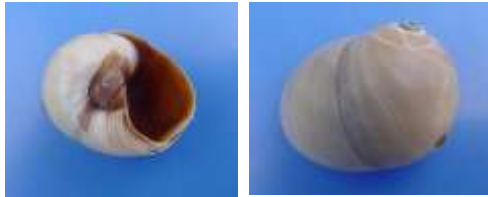
Reported from Pakistan by Khan and Dastagir, 1971 as *Natica didyma*; Barkati and Rehman, 2005 as *Natica lamarckii*



Egg collar
1984)



Shell (From Tirmizi and Zehra,



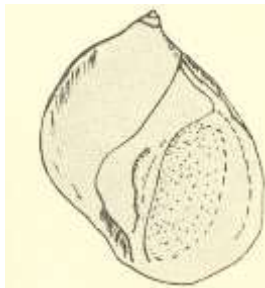
(Photo contributed by Moazzam)

Genus *Polinices* Montfort, 1810

261. *Polinices mammilla* (Linnaeus, 1758) (Milky bull eye). Ivory white

Distribution: Sandy shores, muddy flats at low tide. Indo-Pacific.

Reported from Pakistan by Melvill and Standen, 1901 as *Natica mamilla*



(From Khan and Dastagir, 1971)

Genus *Mammilla* Schumacher, 1817

262. *Mammilla fibrosa* (Gray, 1850) (Tony shell)

Distribution: Benthic. Philippines

Reported from Pakistan by Moazzam and Moazzam, 2007
as *Polinices fibrosa* (Eydoux and Souleyet)



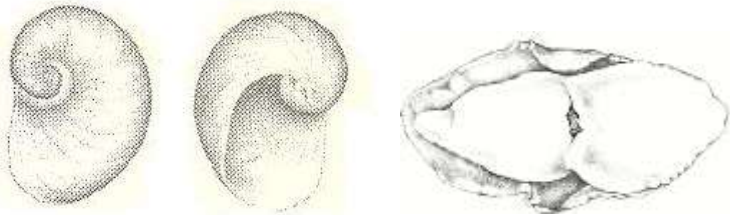
(From Femorale)

Genus *Sinum* Roding, 1798

263. *Sinum haliotoideum* (Linnaeus, 1758) Shell 9 x 12.5mm

Distribution: Muddy bottom, in fish nets, beached.
Okinawa, Philippines, Malaysia, Papua New Guinea,
Solomon Islands, Bay of Bengal, New Caledonia, Australia,
south Africa, Europe.

Reported from Pakistan by Tirmizi and Kazmi, 1995



Shell

Animal

264. *Sinum neritoideum* (Linnaeus, 1758)

Distribution: 0-60m. Bay of Bengal, Malaysia, Indonesia

Reported from Pakistan by Rao et al, 1991; Moazzam and Moazzam, 2007



265. *Sinum planulatum* (Récluz, 1843)

Distribution: At depth, benthic. Tanzania

Reported from Pakistan by Moazzam and Moazzam, 2007.



Genus *Eunaticina* P. Fischer, 1885

266. *Eunaticina papilla* (Gmelin, 1791) (Papilla moon snail) 8-35mm.

Distribution: Benthic. Madagascar, Red Sea, Tanzania. Pacific

Reported from Pakistan by Begum and Nazneen, 1992; Moazzam and Moazzam, 2007



(From Poppe, 2007)

Genus *Sigatica* Meyer and Aldrich, 1886

267. *Sigatica pomatiella* (Melvill, 1893)

Distribution: At 200 - 300m. North Pacific Ocean.

Reported from Pakistan by Melvill, 1893 as *Eunaticina pomatiella*

Family Vanikoridae Gray, 1840

Genus *Vanikoro* Quoy and Gaimard, 1832

268. *Vanikoro cancellata* (Lamarck, 1822) 7-25mm.

Distribution: Intertidally or in the shallow sub tidal hidden under embedded rocks. India, Persian Gulf; Tanzania; Zanzibar; Maldives; Mauritius; Seychelles; Bourbon; Malgasy.

Reported from Pakistan by Melvill and Standen 1901 as *Turton cancellata*; Cernohorsky, 1972



(From

http://www.idscaro.net/sci/01_coll/plates/gastro/pl_vanikoridae_1.htm)

269. *Vanikoro cuvieriana* (Récluz, 1844) (Striated baby's ear). Grey in colour

Distribution: Muddy sand flats. Europe.

Reported from Pakistan by Khan and Dastagir, 1971 as *Sinum cuvierianum* Recluz.



(From Khan and Dastagir, 1971)

Genus *Constantia* A. Adams, 1860

270. *Constantia standeni* Melvill, 1899

Distribution: Intertidal.Persian Gulf

Reported from Pakistan by Melvill, 1899 as *Scala*
(*Constantia*) *standeni* Melvill



Superfamily Tonnoidea Suter, H., 1913 (1825)

Family Cassidae Latreille, 1825

Genus *Semicassis* Morch, 1852

271. *Semicassis bisulcata* (Schubert and Wagner, 1829)

(Japanese Bonnet; Globular Helmet) 25 - 85 mm.

Background colouration white, cream, pink or blue-grey,
sometimes with 4 or 5 spiral bands of brown spots;
columella and outer lip white

Dtribution: Intertidal sand, deep water. Indo-W.Pacific.

Reported from Pakistan by Abdullah M. El-Husseini, 1963
as *Phalium bisulcatum*



(From Tirmizi and Zehra, 1984)

Family Bursidae Thiele, 1925

Genus *Tutufa* Jousseume, 1881

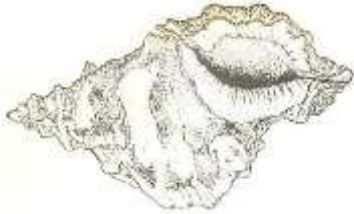
272. *Tutufa bardeyi* (Jousseume, 1884)

Distribution: Among rocks.Indo-West Pacific

Reported from Pakistan by Ghani et al, 2018(fossilized specimen fide Moazzam, pers.corresp.)

273. *Tutufa bufo* (Röding, 1798) (Red mouth Frog shells).64 mm.

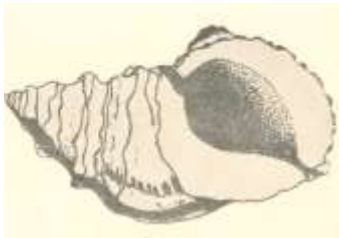
Distribution: Among rocks.Indo-West Pacific
Reported from Pakistan by PSF (unpublished report, 1974-77).



(From Tirmizi and Zehra, 1984)

274. *Tutufa bubo* (Linnaeus, 1758) (Lamp frog shell).

Distribution: On rocks. South Africa, Red Sea
Reported from Pakistan by Khan and Dastagir, 1971 as
Bursa lampus Linnaeus



(From Khan and Dastagir, 1971)

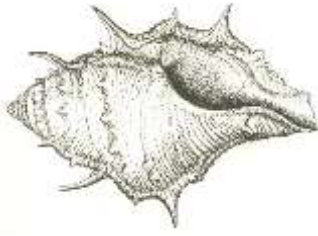
275. *Tutufa oyamai* Habe, 1973 40-105mm.

Distribution: Intertidal sand. Eastern Arabia, W.E. Indian Ocean to W. Pacific

Reported from Pakistan by Habe, 1973

Genus *Bufonaria* Schumacher, 1817

276. *Bufonaria echinata* (Link, 1807) (Spiny frog shell).
64x53mm. Light brown mottled with darker shade
Distribution: Rocky / muddy cum sandy shores. Indo-Pacific, Red Sea
Reported from Pakistan by Khan and Dastagir, 1971;
Tirmizi and Zehra, 1984 as *Bursa spinosa* Lamarck, 1816.



(From Tirmizi and Zehra, 1984)

277. *Bufonaria rana* (Linnaeus, 1758)
Distribution: Mangroves. Tropical Indo-West Pacific
Reported from Pakistan by Reeve, 1844 as *Ranella albivaricosa* Reeve, 1844; Tirmizi and Barkati, 1985; Rehman and Barkati, 2012 as *Bursa subgranosa* Sowerby

278. *Bufonaria crumena* (Lamarck, 1816) 59.1 mm.
Distribution: Mangroves. Indian Ocean
Reported from Pakistan by Femorale, 2011

279. *Bufonaria elegans* (Sowerby, 1836) (Elegant frog shell) 50-80-mm.
Distribution: Deep water. Thailand; Andaman and Nicobars, Taiwan
Reported from Pakistan by Femorale, 2011



280. *Bufo naria perelegans* Beu, 1987 (Near-elegant Frog Shell) 65- 70 mm x 96 -120 mm

Distribution: Offshore.Pacific waters

Reported from Pakistan by Femorale, 2011



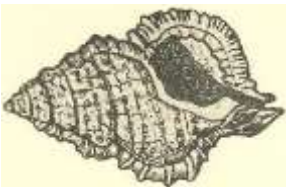
(From Wikimedia)

Genus *Bursa* Roeding, 1798

281. *Bursa granularis* (Roding, 1798) (Granulated frog shell). 2''.Orange-brown with 3 narrow white bands

Distribution: Rocky shores, Bay of Bengal.

Reported from Pakistan by Khan and Dastagir, 1971.



(From Khan and Dastagir, 1971).

Family *Cymatidae* Iredale, 1913

Genus *Cymatium* Röding, 1798

282. *Cymatium ranzani* (Bianconi, 1850) 120-250 mm.

Distribution: Clinging to rocks. Mozambique, Somalia, N.Arabian Sea, Oman, Red Sea

Reported from Pakistan by Emerson and D'Attilio, 1962, United States National Museum as *Triton ranzani*



(Photo contributed by Moazzam)

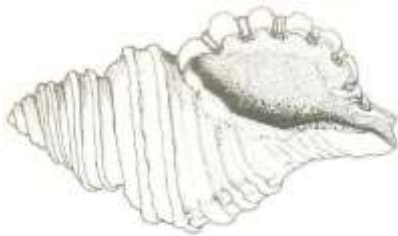
Genus *Monoplex* Perry, 1810

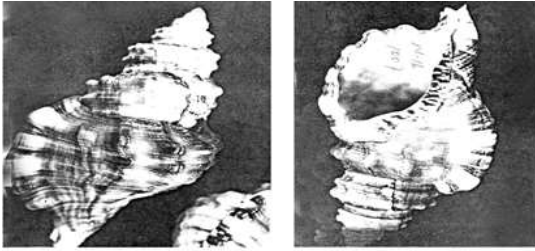
283. *Monoplex parthenopeus* (Salis-Marschlins, 1793)

10 cm.

Distribution: Offshore, under rocks stony habitat. Cosmopolitan, most warm seas.

Reported from Pakistan by Tirmizi and Zehra, 1982 as *Linatella* sp





284. *Monoplex pilearis* (Linnaeus, 1758) (Hairy triton).
2-6". Pale brown exterior streaked with white revolving
bands and folds

Distribution: Muddy shores, Intertidal, rock pools and
offshore. Indo-Pacific, Atlantic, East Pacific.

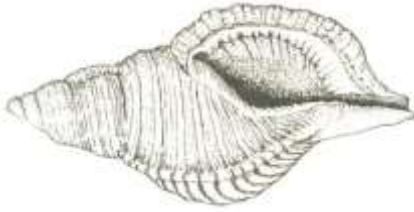
Reported from Pakistan by Khan and Dastagir, 1971 as
Cymatium (Septa) pileare; Tirmizi and Zehra, 1984 as
Septa pileare



(From Tirmizi and Zehra, 1984)

285. *Monoplex nicobaricus* (Röding, 1798) 59 x 30mm.
Distribution: Low water mark in algal turf, offshore. Indo-
Pacific.

Reported from Pakistan by Tirmizi and Zehra, 1984 as
Cymatriton nicobaricum

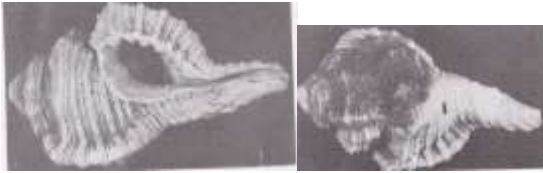


(From Tirmizi and Zehra, 1984)

286. *Monoplex tripus* Lamarck, 1822 (Tripus Triton) 50-105 mm.

Distribution: Muddy shores at low tide. N.Indian Ocean, Thailand

Reported from Pakistan by Begum and Nazneen, 1992 as *Cymatium tripus*



Genus *Lotoria* Emerson and Old, 1963

287. *Lotoria perryi* (Emerson and Old, 1963)

Distribution: Muddy shores at low tide. Indo-Pacific

Reported from Pakistan by Femorale, 2011



Genus *Gyrineum* Link, 1807

288. *Gyrineum natator* (Roeding, 1798) 30mm.

Distribution: Muddy shores at low tide. Indo-West Pacific.
Reported from Pakistan by Ray, 1948; Tirmizi and Zehra, 1984



(From Tirmizi and Zehra, 1984)

Genus *Ranella* Lamarck, 1816

289. *Ranella olearium* (Linnaeus, 1758) (Olive vessel triton). 90-240mm. Light brown, spotted

Distribution: Muddy and sandy shores at minimum depth of 100m. Mediterranean; Atlantic; Indian Ocean; S.W. Pacific
Reported from Pakistan by Khan and Dastagir, 1971 as *Cymatium clearium* Linnaeus



(From Khan and Dastagir, 1971)

290. *Ranella australasia* (Perry, 1811)

Distribution: Rocky shores. S.E. Africa, South Australia, New Zealand.

Reported from Pakistan by PARC (unpublished report, 1986) as *Cymatium aAustralasia*

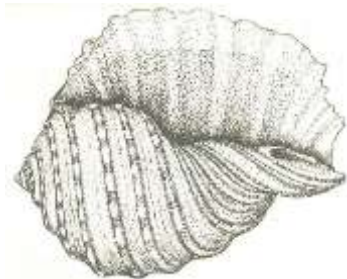
(From Tirmizi and Zehra, 1982 as *Cymatium*)



Family Tonnidae Suter, 1913 (1825) (Tun shells)
Genus *Tonna* Brunnich, 1771

291. *Tonna dolium* (Linnaeus, 1758) 78 x 62mm. White with quadrate or rectangular reddish brown spots on ribs
Distribution: Sandy. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Tonna maculatum* Lamarck, 1822; Tirmizi and Zehra, 1984 as *Tonna (Dolium) maculata*



(From Tirmizi and Zehra, 1984)

292. *Tonna luteostoma* (Kuster, 1857) 68 x 50mm.
Distribution: Offshore, usually beached. West-Pacific, Japan and east coast of Korea to New Zealand.
Reported from Pakistan by Melvill and Standen, 1901



(From Tirmizi and Zehra, 1984)

293. *Tonna rosemaryae* Vos, 1999 124.5mm. Deep amber golden aperture

Distribution: Offshore dredging. China, Gulf of Aden, Somalia

Contributed from Pakistan by Moazzam, present study



294. *Tonna galea* (Linnaeus, 1758)

Distribution: 0 m- 2359 m depth. Atlantic, Mediterranean, Indian Oceans

Contributed from Pakistan by Moazzam as *Tonna olearium*, present study



Family Personidae Gray, 1854
Genus *Distorsio* Röding, 1798

295. *Distorsio reticularis* (Linnaeus, 1758) 40 - 94 mm.
Distribution: Dredged. Tanzania, Indo-West Pacific
Contributed from Pakistan by Moazzam, present study

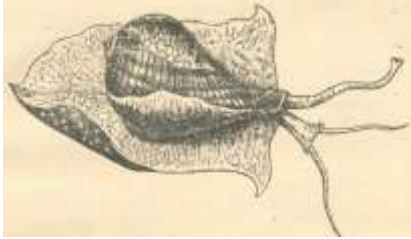


Superfamily Ficoidea Meek, 1864
Family Ficidae Meek, 1864 (1840)
Genus *Ficus* Röding, 1798

296. *Ficus ficus* (Linnaeus, 1758) (Paper fig shell). 100mm.

Distribution: Sandy shores. Indo-Pacific. Eastern coast of North America, ranging from North Carolina through the Caribbean Sea to the Gulf of Mexico

Reported from Pakistan by Khan and Dastagir, 1971

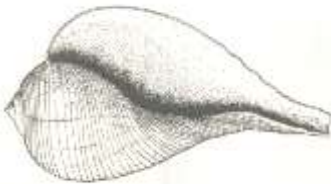


(From Owen, 1832)

297. *Ficus gracilis* (Sowerby, 1825) 150mm.

Distribution: Deep water, offshore, beached. Indo-Pacific.

Reported from Pakistan by Ahmed et al, 1982

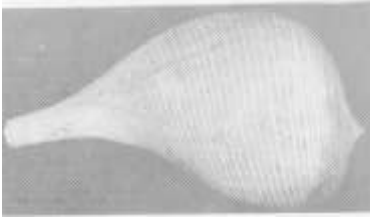


(From Tirmizi and Zehra, 1984)

298. *Ficus variegata* Röding, 1798 40-120mm.

Distribution: Benthic. India; Persian Gulf; Iran, Red Sea, Mauritius, Malagasy, Tanzania, Sri Lanka, Myanmar; Singapore, Gulf of Thailand, Indonesia, Philippines, China, Japan.

Reported from Pakistan by Mookherjee, 1985; Begum and Nazneen, 1992



Superfamily Epitonioidea Berry, 1812

Family Epitoniidae Berry, 1910 (Wentletraps)

Genus *Amaea* H. Adams and A. Adams, 1853

299. *Amaea minor* (Sowerby II, 1873)

Distribution: Eulittoral and deeper .India, Gulf of Oman, South Africa, China, Vietnam

Reported from Pakistan by Barnard, 1963 as *Acrilla acuminata* and *Acrilla gracilis* H. Adams, 1860



Genus *Epitonium* Roding, 1798

300. *Epitonium scalare* (Linnaeus, 1758) (Precious wentletrep) 45mm.

Distribution: Offshore, beached. Indo-Pacific.

Reported from Pakistan by PSF (unpublishes report, 1977); Dance, 1992



301. *Epitonium lacrima* Kilburn, 1985 4.5mm.

Distribution: Shallow dredging. South Africa

Reported from Pakistan by Kilburn, 1985 as *Epitonium (Foliaceiscale) lacrima*

302. *Epitonium pyramidale* (Sowerby, 1844) (Pyramidal wentletrep)

Distribution: On rocks, associated with sea anemones, zoanthids and stony corals. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971 as *Epitonium pyramidalis*



303. *Epitonium melior* (Melvill and Standen, 1903)

7mm. White colour

Distribution: Intertidal, associated with coelenterates. Indo-Pacific.

Reported from Pakistan by Melvill and Standen, 1903 as *Scala melior* Melvill and Standen, 1903



304. *Epitonium eclecticum* (Melvill and Standen, 1903)

Distribution: Intertidal. Tropical Indo-West Pacific:
Reported from Pakistan by Melvill and Standen, 1903 as
Scala eclecticica Melvill and Standen, 1903 as *Scala
electica*; OBIS, 2004



305. *Epitonium zatrephes* (Melvill, 1910)

Distribution: Intertidal. Persian Gulf, Indo-Pacific.
Reported from Pakistan by Melvill, 1910



306. *Epitonium pallasii* (Kiener, 1838)

Distribution: In sand 7-156 fathoms. Tropical Indo-West
Pacific

Reported from Pakistan by Melvill and Standen, 1903 as
Scala pallasii



307. *Epitonium emiliae* (Melvill and Standen, 1903) 10
mm. Reddish- or yellowish-brown with white ribs and base
Distribution: in sand near sea anemones or corals, 3
fathoms. South Africa.

Reported from Pakistan by Melvill and Standen, 1903 as
Scala emiliae



308. *Epitonium clathrus* (Linnaeus, 1758) 5 mm. Shiny white to cream-coloured, often with brown spots

Distribution: Usually lives in sand near sea anemones or corals. Iran, eastern Atlantic coast, the Mediterranean and the Black Sea

Reported from Pakistan by Melvill and Standen, 1903 as
Scala (Clathrus) clathrus



309. *Epitonium malcolmense* (Melvill, 1898)

Distribution: 24 fathoms. Oman

Reported from Pakistan by Melvill and Standen, 1903 as
Scala (Clathrus) malcolmense



(From Poppe, 2018)

310. *Epitonium muricatum* (Risso, 1826)

Distribution: Usually lives in sand near sea anemones or corals. Mediterranean

Reported from Pakistan by Melvill and Standen, 1903 as
Scala aculeata

311. *Epitonium lineolatum* (G. B. Sowerby, 1844)

Distribution: Usually lives in sand near sea anemones or corals. Indo-Pacific

Reported from Pakistan by Melvill and Standen, 1903 as *Scala lineolata*

312. *Epitonium deificum* (Melvill and Standen, 1903)

Distribution: Usually lives in sand near sea anemones or corals Red Sea, Gulf of Oman and Hawaii, Chile.

Reported from Pakistan by Melvill and Standen, 1903 as *Scala deifica*

313. *Epitonium amathusium* (Melvill and Standen, 1903)

Distribution: Usually lives in sand near sea anemones or corals

Reported from Pakistan by Melvill and Standen, 1903 as *Scala amathusia*



314. *Epitonium bulbulum* (G. B. Sowerby II, 1844)

Distribution: usually lives in sand near sea anemones or corals. India

Reported from Pakistan by Melvill and Standen, 1903 as *Scala bulbulus*



315. *Epitonium umbilicatum* (Pease, 1869)

Distribution: usually lives in sand near sea anemones or corals at any depth, usually found empty. White occasionally with brown splashes. Hawaii
Reported from Pakistan by Melvill and Standen, 1903 as *Scala confuse*

316. *Epitonium tryoni* (de Boury, 1913) Shell height 3-20mm. White, glossy

Distribution: Indo-Pacific, Mediterranean
Reported from Pakistan by Huang and Lee ,2016 as *Epitonium (Sodaliscala) tryoni* (de Boury, 1913)

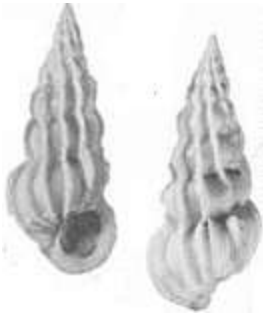


Genus *Gyroscale* de Boury, 1887

317. *Gyroscale lamellosa* (Lamarck, 1822)

Distribution: Intertidal among algae. Mediterranean, India, Iran, Pacific.

Reported from Pakistan by Melvill and Standen, 1901 as *Epitonium (Gyroscale) lamellosum* (Lamarck, 1822)



Genus *Opalia* H. Adams and A. Adams, 1853

318. *Opalia hidryma* (Melvill, 1899)

Distribution: Known from seamounts and knolls. Red Sea
Reported from Pakistan by Melvill, 1899 as *Scala hidryma*



Genus *Cirsotrema* Mörch, 1852

319. *Cirsotrema varicosum* (Lamarck, 1822) Colour white

Distribution: Benthic; depth range 2 - 160 m.
Underneath anemones. Japan, Philippines, South east Africa

Reported from Pakistan by Melvill, 1897 as *Scalaria fimbriolata*

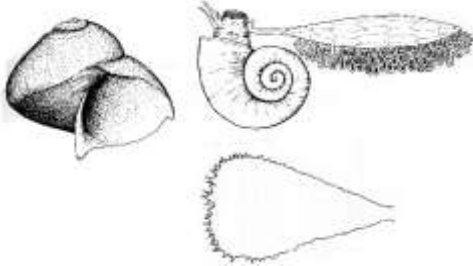


Genus *Janthina* Roding, 1798

320. *Janthina janthina* (Linnaeus, 1758) (Common Purple Sea-snail). 40mm. Purplish white upper portion, purplish violet lower portion

Distribution: Pelagic, in creeks, associated with pleustonic siphonophores and sea anemones, on *Sargassum*. Worldwide in warm seas.

Reported from Pakistan by Khan and Dastagir, 1971

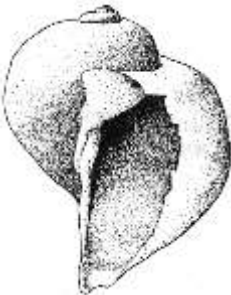


Shell (From Tirmizi and Zehra, 1984) Female with floating egg capsules. A single egg capsule (From Zehra)

321. *Janthina globosa* Swainson, 1822 (Globe Purple Sea-snail). 27x23mm. Violet throughout

Distribution: Planktonic, creek. Worldwide in warm seas.

Reported from Pakistan by Khan and Dastagir, 1971



(From Tirmizi and Zehra, 1984)

Genus *Recluzia* Petide la Saussaye, 1853

322. *Recluzia lutea* (Bennett, 1840) (Brown Janthina)

Distribution: Pelagic, associated with pleustonic sea anemone. Indo-Pacific, Mexico, Caribbean.

Reported from Pakistan by Fatima, 1988 as *Recluzia rollandiana* Petit de la Saussaye, 1853

Superfamily Pterotracheoidea Rafinesque, 1814

Family Pterotracheidae Rafinesque, 1814

Genus *Firoloida* Lesueur, 1817

323. *Firoloida desmarestia* Lesueur, 1817 Transparent .40 mm.

Distribution: Hoploplanktonic, surface-145 m. Circum global warm water, bisubtropical.

Reported from Pakistan by Aravindakshan, 1977

Genus *Pterotrachea* Forsskål, 1775

324. *Pterotrachea coronata* Forsskål in Niebuhr, 1775

(Sea elephant) 260 mm.

Distribution: Floating, mesopelagic, epipelagic. Arabian Sea, Andaman Sea, Red Sea, European waters, Gulf of Mexico.

Reported from Pakistan by Aravindakshan, 1973



(From Murray and Hjort, 1912)

Superfamily Turbinelloidea Rafinesque, 181

Family Costellariidae MacDonald, 1860 (The ribbed miters)

Genus *Vexillum* Röding, 1798

325. *Vexillum obeliscus* (Reeve, 1844)

Distribution: Intertidal, among coarse sand and stones. Indo- West Pacific

Reported from Pakistan by Ray, 1956 as *Mitra obeliscus*
Reeve

326. *Vexillum daedalum* (Reeve, 1845) 9-30mm.

Distribution: Silt or silty clay. Indian and Pacific oceans

Reported from Pakistan by Reeve, 1845 as *Mitra daedalum*

Superfamily Neogastropoda [unassigned]

Family Marginellidae Fleming, 1828 (Margin shells)

Genus *Bullata* Jousseaume, 1875

327. *Bullata shoplandi* (Melvill, 1897) Transparent and exceedingly polished and shining

Distribution: In shell gravel or mixed sediments around rocky areas. Persian Gulf

Reported from Pakistan by Melvill, 1897 as *Marginella* (*Cryptospira*) *shoplandi*



Genus *Cryptospira* Hinds, 1844

328. *Cryptospira* aff. *strigata* (Dillwyn, 1817)

Distribution: In shell gravel or mixed sediments around rocky areas

Reported from Pakistan by Femorale, 2011



Superfamily Muricoidea Rafinesque, 1815

Family Muricidae Rafinesque, 1815 (Rock snails)

Genus *Indothais* Claremont, Vermeij, Williams and Reid, 2013

329. *Indothais blanfordi* (Melvill, 1893)

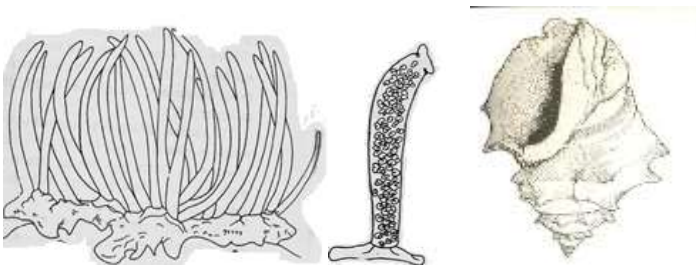
Distribution: On rocks. Indo-Pacific

Reported from Pakistan by Melvill, 1893 as *Purpura blanfordi*

330. *Indothais lacera* (Born, 1778) 23-70mm. Outside of shell pale grey, cream or yellowish brown, often with quadrangular brown mottling; aperture flesh-coloured inside, becoming pale cream on margin

Distribution: Attached to rocks, and jetty piles in river mouths. Indo-Pacific.

Reported from Pakistan by Lamarck, 1822 as *Purpura carinifera*; Cooke, 1919; Tirmizi and Zehra, 1981 as *Cymia carinifera*; Afsar et al, 2012 as *Thais casrinifera*



Shell (From Tirmizi and Zehra, 1984) Egg Capsules

331. *Indothais sacellum* (Gmelin, 1791)

Distribution: Rocky. SE. Asia to India, to Red Sea. Eastern Mediterranean .

Reported from Pakistan by Ahmed and Hameed, 1999 as *Thais sacellum* (Gmelin)

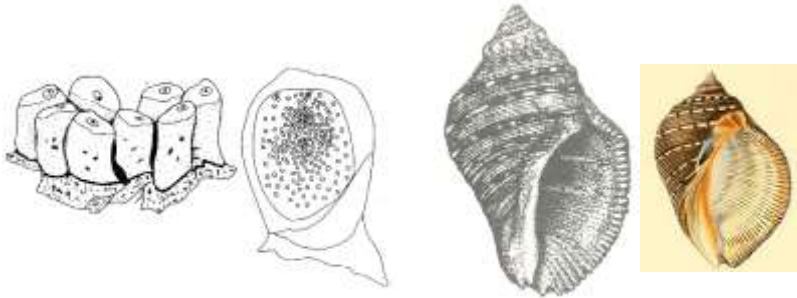
Genus *Purpura* Bruguière, 1789

332. *Purpura persica* (Linnaeus, 1758) 30-78mm.

Chocolate brown with white spaces between beads on beaded cords; aperture and columella white

Distribution: Rocky shore below low tide mark. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971; Afsar et al, 2012 as *Thais rudolphi* (Chemnitz, 1788).



Egg capsules A single egg capsule (From Barkati and Ahmed ,1983) Left Shell (From Tirmizi and Zehra, 1984)

333. *Purpura panama* (Röding, 1798) Chestnut brown alternate with white; tubercles more prominent on the spire; aperture light orange, outer lip margin with dark brown

Distribution: On rocks .India, Sri Lanka, Philippines.

Reported from Pakistan by Rao and Dey, 1991

334. *Purpura bufo* Lamarck, 1822 (Bufo Thais) 22-66 mm.

Distribution: On rocks of sub-littoral zone and on inner surface of the boulders. Indo-Pacific

Reported from Pakistan by Khan and Dastagir, 1971 as *Thais bufo* (Lamarck)



Egg capsules (From Barkati and Ahmed,1982) Shell
(From Tirmizi and Zehra,1984)

Genus *Reishia* Kuroda and Habe, 1971

335. *Reishia bitubercularis* (Lamarck, 1822)
(Bituberculate Rock Shell).

Distribution: At the outer edge of fringing reefs. Tanzania, East Indies

Reported from Pakistan by Cooke, 1919 as *Thais bitubercularis* (Lamarck)



Genus *Tenguella* Arakawa, 1965

336. *Tenguella granulata* (Duclos, 1832) 20 mm. Dark grey to black, tubercles on white back ground, aperture violet, posterior part of columella with dark brown patch, teeth on outer margin bluish white.

Distribution: Muddy-cum-sandy to rocky, below low-tide mark. Indo-Pacific.

Reported from Pakistan by Cernohorsky, 1967; Khan and Dastagir, 1971 as *Drupa tuberculata* (de Blainville, 1832); Tirmizi and Zehra, 1984 as *Drupa granulata* Duclos, 1832; Afsar et al, 2012 as *Morula granulata*



(From Tirmizi and Zehra, 1984)

Genus *Drupella* Thiele, 1925

337. *Drupella margariticola* (Broderip, in Broderip and Sowerby, 1833)

Distribution: Rocky, coral associated. China Sea.

Reported from Pakistan by Khan et al, 1973 as *Drupa margariticola* Broderip



(From Tirmizi and Zehra, 1984)

338. *Drupella rugosa* (Born, 1778) (Rugose drupe) 35mm.

Distribution: Muddy rocks, inshore. *Acropora* spp and pocilloporid corals, Indo-Pacific.

Reported from Pakistan by Khan et al, 1973 as *Thais rugosa* (Born, 1778).

Genus *Orania* Pallary, 1900

339. *Orania subnodulosa* (Melvill, 1893)

Distribution: On rocks. Myanmar, India

Reported from Pakistan by Melvill, 1893 as *Ricinula (Sistrum) subnodulosa* Melvill, 1893

Genus *Ergalatax* Iredale, 1931

340. *Ergalatax junionae* Houart, 2008

Distribution: Under intertidal rocks. Indo-Pacific.

Reported from Pakistan by OBIS, 2004 as *Morula martensi* Schepman, 1892

341. *Ergalatax contracta* (Reeve, 1846)

Distribution: Found on rocks between tides. Indo-Pacific.

Reported from Pakistan by Cemohorsky, 1967 as *Cronia (Ergalatax) contracta*

Genus *Morula* Schumacher, 1817

342. *Morula uva* (Röding, 1798)

Distribution: Rocky shores, intertidal. Indo-Pacific.

Reported from Pakistan by Fatima et al, 1999 as *Morula uva* Roeding

343. *Morula anaxares* (Kiener, 1836) Dirty grey to light brown with white bands, nodules white, aperture light violet streaked with white band, columella light violet in colour, sometimes with white markings. Red Sea, Indian Ocean, the Indo-West Pacific; off Australia

Reported from Pakistan by Ray, 1977



(Taken by Raymond Huet)

Genus *Cronia* H. and A. Adams, 1853

344. *Cronia amygdala* (Kiener, 1835) 25mm.

Distribution: Found on rocks between tides. Indo-Pacific.
Reported from Pakistan by Tirmizi and Zehra, 1984 as
Morula amygdala



(From Tirmizi and Zehra, 1982)

Genus *Rapana* Schumacher, 1817

345. *Rapana rapiformis* (Born, 1778) 61mm.

Distribution: Deep water on sand. Western Indian Ocean,
Red Sea to Gulf of Oman.
Reported from Pakistan by Tirmizi and Zehra, 1984 as
Rapana bulbosa



(From Tirmizi and Zehra, 1984)

346. *Rapana bezoar* (Linnaeus, 1767) (Bezoar Rapa Whelk) 25 - 178 mm.

Distribution: Dredged on soft sea bottom. Japan - SE Asia, S Africa, India

Contributed from Pakistan by Moazzam, present study



Genus *Tylothais* Houart, 2017

347. *Tylothais savignyi* (Deshayes, 1844) Ochraceous brown from outside, inner margin of the outer lip purplish

Distribution: Found among rocks and boulders on rocky shores. Red Sea

Reported from Pakistan by Nasreen et al, 1999

Genus *Semiricinula* Martens, 1904

348. *Semiricinula tissoti* (Petit de la Saussaye, 1852) Reddish brown

Distribution: On rocks, intertidal. Red Sea, Eastern Arabia.

Reported from Pakistan by Khan et al, 1973



Egg capsules(from Barkati and Ahmed,1983)

349. *Semiricinula konkanensis* (Melvill, 1893) Dark chocolate brown tubercles, cords white, aperture light violet with chocolate margin and dark brown lines interior, teeth white

Distribution: India, Sri Lanka, Persian Gulf, Sri Lanka.

Reported from Pakistan by Melvill and Standen, 1893 as *Sistrum konkanensis* Melvill, 1893

Genus *Mancinella* Link, 1807

350. *Mancinella echinulata* (Lamarck, 1822)

Distribution: Rocky. Indo-Pacific, E.Africa to W. Pacific.

Reported from Pakistan by Cooke, 1919; Ahmed et al, 1982 as *Thais echinulata* Lamarck



Egg ribbon

Shell (From Tirmizi and Zehra, 1982)

351. *Mancinella alouina* (Röding, 1798) (Alou rock shell)
30-61mm.

Distribution: Coral reef, at low tide. Throughout tropical Indo-Pacific

Reported from Pakistan by Cernohorsky, 1972

Genus *Hexaplex* Perry, 1810

352. *Hexaplex kusterianus* (Tapperone- Canefri, 1875)

90mm.

Distribution: Found on sand flat or mud. Persian Gulf, Gulf of Oman.

Reported from Pakistan by PSF (unpublished report, 1974-77); Tirmizi and Zehra, 1984



(From Tirmizi and Zehra, 1984)

353. *Hexaplex duplex* (Röding, 1798) 30 - 229 mm.

Distribution: Benthic. Red Sea and in the Atlantic Ocean, the Mediterranean Sea

Reported from Pakistan by Rao and Rao, 1993 as *Murex (Phyllonotus) turbinatus* Lamarck, 1822. Identity needs confirmation.

354. *Hexaplex trunculus* (Linnaeus, 1758) 4 - 10 cm.

Distribution: 3-12 m. depth. Mediterranean

Reported from Pakistan, present study (as deposited in MRC)



Genus *Haustellum* Schumacher, 1817

355. *Haustellum langleitae* Houart, 1993

Distribution: Offshore. Indo-Pacific

Reported from Pakistan by Houart, 1999 as *Haustellum kurodai langleitae*; OBIS, 2004

Genus *Vokesimurex* Petuch, 1994

356. *Vokesimurex dolichourus* (Ponder and Vokes, 1988) Creamy white; faint brown spiral bands at shoulder and base of body whorl; spiral cords lightly topped with reddish brown lines, colour strongest where crossing varices; aperture white

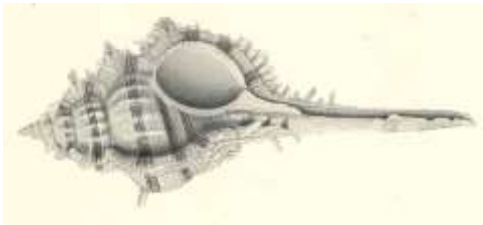
Distribution: Offshore. Indo- West Pacific

Reported from Pakistan by Ponder and Vokes, 1988 as *Haustellum dolichourus* Ponder and Vokes, 1988

357. *Vokesimurex malabaricus* (E. A. Smith, 1894)

Distribution: Offshore. Indo- West Pacific

Reported from Pakistan by Ponder and Vokes, 1988 as *Haustellum malabaricus*



Genus *Chicoreus* Montfort, 1810

358. *Chicoreus brunneus* (Link, 1807) (*Adusta murex*, Brunt Murex).

Distribution: Muddy cum sandy shores. East Africa, West Pacific, India.

Reported from Pakistan by Khan and Dastagir, 1971 as *Murex adustus* Lamarck.



(Photo contributed by Moazzam)

359. *Chicoreus virgineus* (Röding, 1798) (*Virgin murex*)
60 mm - 160 mm.

Distribution: In the intertidal or shallow subtidal zone, among rocks and corals. Red Sea to Bay of Bengal

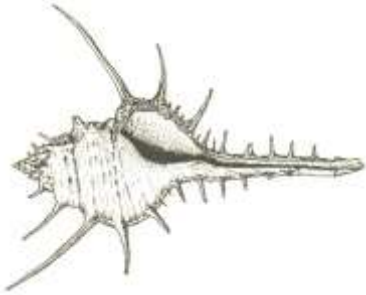
Reported from Pakistan by Khan et al, 1973 as *Murex virgineus*

Genus *Murex* Linnaeus, 1758

360. *Murex ternispina* Lamarck, 1822 (*Thin spine murex*). 50-150 mm.

Distribution: Offshore, in sandy rocky bottom. Indo-Pacific.

Reported from Pakistan by Khan and Dastagir, 1971



(From Tirmizi and Zehra, 1984)

361. *Murex carbonnieri* (Jousseaume, 1881) Creamy white to light tan; in the intervarical areas conspicuous, slightly elongated brown spots between lighter nodes on spiral cords; aperture white, marked by conspicuous brown spots at notches extending into interior of shell as dark brown lines on lighter brown background.

Distribution: Offshore, in sandy bottom. S. Afric. Persian Gulf, India, Indonesia

Reported from Pakistan by Melvill and Standen, 1898 as *Murex tribulus*



362. *Murex pecten* Lightfoot, 1786 (Venus comb murex)

Yellowish shell, up to 15 cm..

Distribution: Offshore, in sandy bottom at 36-55m. Indo-West Pacific

Reported from Pakistan by Melvill and Standen, 1901.



Genus *Lataxiena* Jousseaume, 1883

363. *Lataxiena bombayana* (Melvill, 1893) 13-35 mm.

Light brown, aperture white.

Distribution: Rocky. India, Persian Gulf, Myanmar, Andamans

Reported from Pakistan by Ahmed and Hameed, 1999 as *Ocinebra bombayana*

Superfamily Turbinelloidea Rafinesque, 1815

Family Turbinellidae Swainson, 1840

Genus *Turbinella* Lamarck, 1799

364. *Turbinella pyrum* (Linnaeus, 1767) (Shank shell).

4''x6''.

Distribution: Shallow water. Indian Ocean.

Reported from Pakistan by Khan and Dastagir, 1971 as *Xancus pyrum*



Left Shell and Egg ribbon (From Hornell, 1951)

Superfamily Volutoidea Rafinesque, 1815

Family Cancellariidae Forbes and Hanley, 1851

Genus *Cancellaria* Lamarck, 1799

365. *Cancellaria (Pyruclia) bulbulus* Sowerby, 1832

Distribution: Loose rocks and sand mud. 7 fathoms India, Persian Gulf

Reported from Pakistan by Melvill and Standen, 1903

Superfamily [unassigned] Neogastropoda

Family Babyloniidae Kuroda, Habe and Oyama, 1971

Genus *Babylonia* Schlueter, 1838

366. *Babylonia formosae* (Sowerby, 1866)

Distribution: Shallow water on muddy sand. Indo-Pacific.

Reported from Pakistan by PSF (unpublished report, 1977)

367. *Babylonia japonica* (Reeve, 1842)

Distribution: Shallow water on muddy sand. Indo-Pacific.

Reported from Pakistan by PARC (unpublished report, 1986)

368. *Babylonia kirana* Habe, 1965

Distribution: Shallow water on muddy sand. Indo-Pacific.

Reported from Pakistan by PSF (unpublished report, 1977) as *Babylonia pallida* Perry

369. *Babylonia valentiana* (Swainson, 1822) (Spiral ivory shell). 65mm.

Distribution: Muddy rocks and sand, offshore. Indo-Pacific

Reported from Pakistan by Khan and Dastagir, 1971



370. *Babylonia spirata* (Linnaeus, 1758) (Spiral ivory whelk)

Distribution: Intertidal at Om .India, Indonesia

Reported from Pakistan by Khan and Dastagir, 1971



(From Hornell, 1951)

Superfamily Conoidea Fleming, 1822

Family Clathurellidae H. Adams and A. Adams, 1858

Genus *Etrema* Hedley, 1918

371. *Etrema spurca pasniensis* (Melvill, J.C., 1917)

Distribution: Subtidal. Gulf of Oman

Reported from Pakistan Melvill, 1917 as *Lienardia spurca pasniensis*

372. *Etrema crassilabrum* (Reeve, 1843)

Distribution: Continental shelf .Phillipines, Fiji

Reported from Pakistan by Reeve, 1843 as *Lienardia crassilabrum* Reeve, 1843

Genus *Lienardia* Jousseaume, 1884

373. *Lienardia cardinalis* (Reeve, 1845) Whitish, encircled by three narrow violet brown bands.10 mm.

Distribution: Continental shelf. Indo-Pacific

Reported from Pakistan by Reeve, 1845 as *Pleurotoma cardinalis*

374. *Lienardia obtusicostata* (E. A. Smith, 1882)

Distribution: Demersal .Japan,Arabian Gulf

Reported from Pakistan by Melvill and Standen, 1901 as *Pleurotoma (Glyphostoma) obtusicostata*

375. *Lienardia rugosa* (Mighels, 1845)

Distribution: 3- 15 fathoms amongst loose stones and muddy sand. Gulf of Oman, Muscat, Hawaii.

Reported from Pakistan by Melvill, 1916

376. *Lienardia soror* (Smith, E.A., 1882)

Distribution: 5-20 fathoms, among loose stones and muddy sand .Bushire, Hinderabi Island, Galig, and Kishm Islands.

Gulf of Oman, Muscat

Reported from Pakistan by Melvill and Standen, 1903 as *Clathurella opsimathes*



(From Femorale)

Genus *Paraclathurella* Boettger, 1895

377. *Paraclathurella gracilentia* (Reeve, 1843)

Distribution: Sublittoral, on sand or clayi bottoms.Philippines

Reported from Pakistan by Reeve, 1843 as *Pleurotoma gracilentia*



Genus *Glyphostoma* Gabb, 1873

378. *Glyphostoma polynesiensis* (Reeve, 1845) Colour white

Distribution: Sublittoral, on sandy or clayi bottoms.Persian Gulf, Red Sea,Fiji

Reported from Pakistan by Melvill and Standen,1897 as *Clathurella polynesiensis*

Genus *Clathurella* Carpenter, 1857

379. *Clathurella smithi* G. Nevill & H. Nevill, 1875 taxon inquirendum .Chestnut or horny brown

Distribution: On sandy bottom. European waters and in the Mediterranean Sea

Reported from Pakistan by Melvill, 1917 as *Clathurella smithii*

Family Raphitomidae Bellardi, 1875

Genus *Daphnella* Hinds, 1844

380. *Daphnella tetartemoris* (Melvill, 1910)

Distribution: At very low tide .Indo-Pacific, Persian Gulf
Reported from Pakistan by Melvill, 1910

381. *Daphnella axis* (Reeve, 1846)

Distribution: Amongst broken shell and coral sand .Indo-Pacific, Persian Gulf

Reported from Pakistan by Reeve, 1846 as *Pleurotoma axis* Reeve, 1846

Genus *Pseudodaphnella* Boettger, 1895

382. *Pseudodaphnella tincta* (Reeve, 1846)

Distribution: At very low tide, amongst mud and weed on rocks.Indo-Pacific, Persian Gulf

Reported from Pakistan by Reeve, 1846 as *Clathurina tincta*



(From David Kirsh)

383. *Pseudodaphnella lemniscata* (G. and H.Nevill, 1869)

Distribution: Sublittoral in habitat but may be washed up on the shore. Sri Lanka

Reported from Pakistan by Nevill, 1875 as

Clathurella lemniscata

Genus *Kermia* Oliver, 1915

384. *Kermia albicaudata* (E. A. Smith, 1882)

Distribution: On rocks amongst weeds at low tide. Persian Gulf

Reported from Pakistan by Melvill, 1916 as *Clathurina albicaudata* Smith

385. *Kermia daedalea* (Garrett, A., 1873)

Distribution: Under rocks, lower shore. Persian Gulf

Reported from Pakistan by Melvill, 1897 as *Gibbula (Cantharidella) phaedra*

386. *Kermia foraminata* (Reeve, 1845) nomen dubium

Distribution: Demersal. Indo-Pacific

Reported from Pakistan by Melvill, 1898 as *Clathurina foraminata camacina*



387. *Kermia receptoria* (J.C. Melvill and R. Standen, 1901)

Distribution: No Georeferenced data available

Reported from Pakistan by Melvill and R. Standen, 1901 as *Daphnella receptoria*

Superfamily Buccinoidea Rafinesque, 1815

Family Pisaniidae Gray, 1857

Genus *Pisania* Bivona-Bernardi, 1832

388. *Pisania tritonoides* (Reeve, 1846)

Distribution: Rocky shores. Indo-Pacific

Reported from Pakistan by Rehman and Barkati, 2012

Genus *Cantharus* Roding, 1798

389. *Cantharus spiralis* Gray, 1839 46mm.

Distribution: Loose muddy rocks from half-tide to low-water mark. Indo-Pacific.

Reported from Pakistan by Tirmizi and Zehra, 1984



(From Tirmizi and Zehra, 1984)

Genus *Pollia* Gray, 1834

390. *Pollia undosa* (Linnaeus, 1758) 35mm.

Distribution: Muddy rocks from half tide to low-tide mark. Indo-Pacific.

Reported from Pakistan by Ray, 1948; Khan and Dastagir, 1971 as *Cantharus undosus* Linnaeus, 1758



(From Tirmizi and Zehra, 1984)

391. *Pollia rubiginosa* (Reeve, 1846) 30mm.

Distribution: Rocky shores. Red Sea, Tanzania, New Guinea

Reported from Pakistan by Rehman and Barkati, 2012 as *Cantharus rubiginosus*

Genus *Prodotia* Dall, 1924

392. *Prodotia townsendi* (Melvill, 1918)

Distribution: Intertidal .Tropical Indo-West Pacific

Reported from Pakistan by Melvill, 1918 as *Pisania townsendi* Melvill, 1918

Genus *Engina* Gray, 1839

393. *Engina zea* Melvill, 1893 18mm.

Distribution: Intertidal muddy rocks. Indo-West Pacific.

Reported from Pakistan by Melvill, 1893



394. *Engina mendicaria* (Linnaeus, 1758) (Bumble bee snail) 10 mm and 20 mm. White or yellowish background with a few transversal black bands

Distribution: Shallow rocky shores. Tropical Indo-Pacific

Reported from Pakistan by Kenoyer, 1995



(From Zell,2018)

395. *Engina turbinella* (Kiener, 1836) Dark brown, with a central white band

Distribution: In weeds. Atlantic Ocean, Tanzania

Reported from Pakistan by Baig and Zehra, 2006 as *Engina zonata*

Family Melongenidae Gill, 1871.(Crown Conchs)

Genus *Volegalea* Iredale, 1938

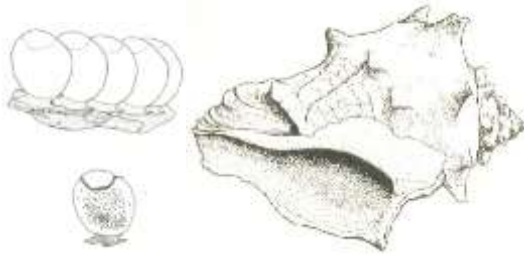
396. *Volegalea cochlidium* (Linnaeus, 1758) 60-150mm.

Body uniform dark or light brown, cream, yellowish, aperture and columella yellowish brown

Distribution: Creeks and sand at low tide. Indo-Pacific Indian Ocean along Southern Indian coast, Bangladesh, in the west Pacific Ocean around the Philippines, Singapore and in Northern Australia

Reported from Pakistan by Khan and Dastagir, 1971 as *Hemifusus pugilinus* (Born, 1778); Kazmi and Khan, 2014





Egg capsules (Tirmizi and Zehra, 1983)

Shell (From Tirmizi and Zehra, 1984)

Genus *Volema* Röding, 1798

397. *Volema myristica* Röding, 1798

Distribution: On rocks below low tide mark. Indo-Pacific.

Reported from Pakistan by Tirmizi and Zehra, 1984 as

Thais hippocastanum (Linnaeus, 1758).



(From Tirmizi and Zehra, 1984)

Family Fasciolaridae Gray, 1853 (spindle snails)

Genus *Fusolatirus* Kuroda and Habe, 1971

398. *Fusolatirus pagodaformis* (Melvill, 1899)

Distribution: Subtidal, sandy muddy bottoms. Africa, Bangladesh

Reported from Pakistan by Femorale, 2011 as *Latirus pagodaformis* Melvill, 1899

Genus *Filifusus* Snyder, Vermeij and Lyons, 2012

399. *Filifusus filamentosus* (Röding, 1798) (Filamentous Horse Conch). 60 - 180 mm.

Distribution: shallow rocks or sea grass areas. Indo-Pacific

Contributed from Pakistan by Moazzam as *Pleuroploca filamentosa*.,present study



Genus *Fusinus* Rafinesque, 1815

400. *Fusinus colus* (Linnaeus, 1758) (Spindle shell) 75-200mm. Outer surface usually whitish, but may be yellowish, brown or reddish in colour.

Distribution: River Delta, Mangroves. Indo-Pacific
Reported from Pakistan by Australian Museum, 1930

401. *Fusinus townsendi* (Melvill, 1899)

Distribution: Benthic. Persian Gulf
Reported from Pakistan by Melvill, 1899 as *Fusus townsendi*



402. *Fusinus forceps* (Perry, 1811) (Forceps spindle)

Distribution: Benthic; depth range 0 - 40 m. Indo-Pacific
Contributed from Pakistan by Moazzam, present study



Genus *Peristernia* Mörch, 1852

403. *Peristernia pulchella* (Reeve, 1847)

Distribution: River Delta, Mangroves. Indo_Pacific

Reported from Pakistan by Australian Museum, 1930



Genus *Marmorofusus* Snyder and Lyons, 2014

404. *Marmorofusus nicobaricus* (Röding, 1798) (Nicobar spindle) 75-180mm.

Distribution: Muddy deep water .Bay of Bengal, Japan, New Guinea, Hawaii

Reported from Pakistan by Femorale, 2011 as *Fusinus nicobaricus* (Roding, 1798)

Family Nassariidae Iredale, 1916(1835)

Genus *Nassaria* Link, 1807

405. *Nassaria acuminata* (Reeve, 1844)

Distribution: In shallow water, on sandy or muddy substratum. Indian Ocean: India, Sri Lanka, China Sea.

Reported from Pakistan by Melvill and Standen, 1897 as *Nassaria suturalis*; Vredenburg, 1925 as *Cantharus erythrostromus mekranicus*

406. *Nassaria pusilla* (Röding, 1798) (White Phos) 15-45mm.

Distribution: In shallow water, on sandy or muddy substratum Indian Ocean, S.E. Asia
Reported from Pakistan by OBIS, 2006

Genus *Cyllene* Gray, 1834

407. *Cyllene fuscata* A. Adams, 1851

Distribution: In mid. India. Iran, Malaysia: Malacca, Singapore, Cape and China
Reported from Pakistan by Ray, 1968



Genus *Nassarius* Dumeril, 1805 (Dog whelk)

408. *Nassarius pullus* (Linnaeus, 1758) (Black nassa; olive dog whelk; ribbed dog whelk) 10 mm and 25 mm. whitish, ash or bluish, sometimes without spots or bands, at other times with two or three deeper bands which surround the whorls.

Distribution: Rocky and sandy shores. Indian Ocean
Reported from Pakistan by Khan et al, 1973 as *Nassa thersites* Bruguiere

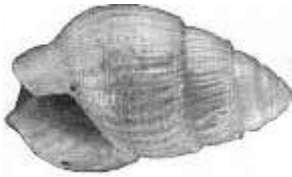


409. *Nassarius himeroessa* (Melville and Standen, 1903)

Distribution: Mud flats or sand flats, intertidally or subtidally, offshore, burrow into substrates. Tropical Indo-

West Pacific, From the Persian Gulf to the Philippines and the Kermadec Islands

Reported from Pakistan by Melvill and Standen, 1903 as *Nassa (Alectryon) himeroessa* Melvill and Standen, 1903



410. *Nassarius jactabundus* (Melvill, 1906) White to cream with smoke-grey to dark brown markings, columella and outer lip white

Distribution: Intertidal.subtidal sand. Tropical Indo-West Pacific

Reported from Pakistan by Melvill, 1906 as *Nassa (Alectryon) jactabunda* Melvill, 1906



411. *Nassarius sinusigerus* (Adams, 1852)

Distribution: Muddy. Red Sea, off Madagascar and in the central Pacific Ocean

Reported from Pakistan by Melvill and Standen, 1901 as *Nassa (Lam.) collaticia* (Alectryon)



412. *Nassarius reeveanus* (Dunker, 1847)

Distribution: Rocky. Persian Gulf, Muscat.

Reported from Pakistan by Melvill Tomlin, 1932; Ahmed and Hameed, 1999 as *Nassarius lentiginosus*.



413. *Nassarius leptospira* (Adams, 1852)

Distribution: Sub tidal. Indo-Pacific

Reported from Pakistan by Cernohorsky, 1984. OBIS, 2004

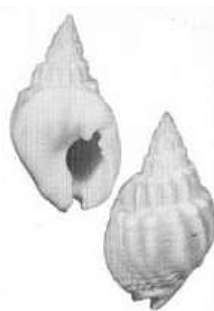


414. *Nassarius persicus* (von Martens, 1874)

18mm. Cream to grayish, may be banded

Distribution: Intertidal mud/ sand. Indo-Pacific

Reported from Pakistan by Cernohorsky, 1984, OBIS, 2004



415. *Nassarius perpinguis* (Hinds, 1844)

Distribution: Sub tidal. Indo-Pacific.

Reported from Pakistan by Melvill, 1918 as *Nassarius gwatkinianus*.OBIS, 2004



416. *Nassarius fenistratus* (Marrat, 1877)

Distribution: Subtidal.Indo-Pacific.

Reported from Pakistan by Cernohorsky, 1984; OBIS, 2004

417. *Nassarius graphiterus* (Hombron and Jacquinot, 1848)

Distribution: Known From seamounts and knolls. Tropical Indo-West Pacific

Reported from Pakistan by Cernohorsky, 1984 as *Nassarius luridus* (Gould, 1850; OBIS, 2006



418. *Nassarius limnaeiformis* (Dunker, 1847)

Distribution: Sandy shore. South Africa, Indonesia, Japan and Samoa Islands

Reported from Pakistan by Cernohorsky, 1984; OBIS, 2006



419. *Nassarius mammilliferus* (Melvill, 1897)

Distribution: Seamounts and knolls. Tropical Indo-West Pacific

Reported from Pakistan by Melvill, 1897



420. *Nassarius ischnus* (Melvill, 1899)

Distribution: Sub tidal. Persian Gulf, Gulf of Oman, Tropical Indo-Pacific

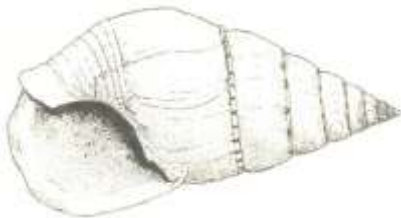
Reported from Pakistan by Cernohorsky, 1984.



421. *Nassarius sufflatus* (Gould, 1860) 26x12mm.

Distribution: Sand and in crevices of rocks. Indo-Pacific.

Reported from Pakistan by Tirmizi and Zehra, 1984 as *Alectrion sufflatus*.



(From Tirmizi and Zehra, 1982)

422. *Nassarius obesus* (Nevill and Nevill, 1875)

Distribution: Mud flats or sand flats, intertidally or subtidally. Sri Lanka

Reported from Pakistan by Melvill-Tomlin, 1903; Moazzam, present study as *N. eranea*



423. *Nassarius marmoreus* (Adams, 1852) 17-25mm.

Distribution: sand flats or in mud flats. Arab Emirates, western Indian Ocean, Persian Gulf

Reported from Pakistan by OBIS; Ghani et al, 2017 as *Nassarius armoris*



(Photo contributed by Moazzam)

424. *Nassarius gemmuliferus* (A. Adams, 1852)

Distribution: Subtidal, Indo-Pacific

Contributed from Pakistan by Moazzam, present study



(Photo contributed by Moazzam)

425. *Nassarius coronatus* (Bruguiere, 1789)

Distribution: Muddy shore. Indo-Pacific

Reported from Pakistan by Melvill-Tomlin, 1930



(Photo contributed by Moazzam)

426. *Nassarius livescens* (Philippi, 1849)

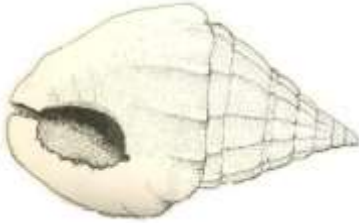
Distribution: Muddy bottom. Indian Ocean

Reported from Pakistan by Rehman and Barkati, 2012.



427. *Nassarius deshaysianus* (Issel, 1866) (The nassa mud snail, dog whelk) 15mm.

Distribution: Found on hard muddy sand and also under turnable rocks of the intertidal zone. Indo-Pacific, Red Sea
Reported from Pakistan by Tirmizi and Zehra, 1984 as *Nassarius obockiensis* (Jousseume, 1888); Ghani et al, 2017

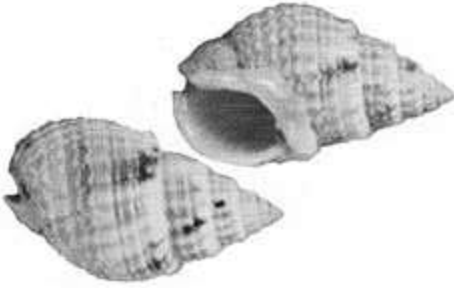


(From Tirmizi and Zehra, 1984)

428. *Nassarius fissilabris* (A. Adams, 1852) 12mm. Very pale greyish with light brown bands parietal sheath white with brownish blotch, outer lip white
Distribution: Benthic. Philippines
Reported from Pakistan by Ghani et al, 2017

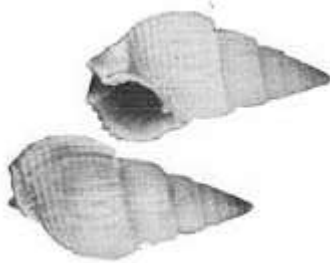


429. *Nassarius protrusidens* (Melvill, 1918)
Distribution: Subtidal to 280 m., western Japan Sea; China, South China Sea, Indonesia, northeastern Australia, Madagascar.
Reported from Pakistan by Melvill, 1918 as *Alectrion (Hima) protrusidens*



430. *Nassarius frederici* (Melvill and Standen, 1901) 16 mm.

Distribution: Muddy. Malaysia, Western Indian Ocean
 Reported from Pakistan by Melvill, 1897 as *Nassa (Hima) townsendi* Melvill, 1897; Melvill and Standen, 1901 as *Nassa (Hima) frederici* Melvill



431. *Nassarius foveolatus* (Dunker, 1847) 22mm. Grey, cream-white

Distribution: Inter-tidal mud flats mangrove. Malaysia, Thailand, India
 Reported from Pakistan by OBIS



432. *Nassarius nodulosus* (Marrat, 1873) 18mm. Whitish tinged reddish-brown, with dark brown spots in bands on the nodules; columella white, aperture dark

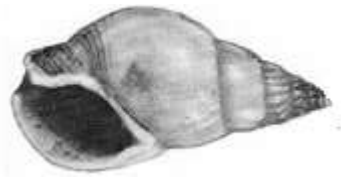
Distribution: Sandy, shallow subtidal. Tropical Indo-West Pacific.

Reported from Pakistan by OBIS



433. *Nassarius comptus* (A. Adams, 1852) 15-24mm.

Distribution: Sandy, shallow subtidal. Tropical Indo-West Pacific. Red Sea



Reported from Pakistan by OBIS

434. *Nassarius arcularia* (Linnaeus, 1758) (The casket nassa or the little box dog whelk) 1.5cm.

Distribution: On reefs and sandy bottom, on the shore on stones, at from 10—20 fathoms, mostly muddy sand-bottom. East Indian Archipelago, Amboina, West coast of New Guinea, Kei Is.; Aru Is., N. of Timor, Sumba and Larentuka, Flores; Paternoster Is., E. of Madura, Java, Southern Celebes, Borneo; Banka, Persian Gulf, Viti Is., Philippines, Muscat, Oman, Gulf of Aden, Perim-island,

Red Sea, Gulf of Suez,,Jibuti; Zanzibar, Seychelles and Amirantes, Mauritius ,Réunion, Madagascar, Nossi-Bé, Mozambique

Reported from Pakistan by Melvill and Standen,1910 as *Nassa arcularia*



(From Wikimedia)

Genus *Reticunassa* Iredale, 1936

435. *Reticunassa paupera* (Gould, 1850) 16mm. Colour variable; fawn to dark brown, usually with a central brown spiral band on the body whorl. Columella callus and aperture white, often edged with brown

Distribution: Sandy, estuarine, on tidal sand flats, in rock pools, eel-grass and muddy sand, from low tide to 70 m. ,shallow subtidal.Tropical Indo-West Pacific.

Reported from Pakistan by Cernohorsky, 1984 as *Nassarius pauperus* (Lamarck, 1822); OBIS, 2006.

436. *Reticunassa zanzibarensis* (Kool and Dekker, 2007)
5.5 - 11.5 mm

Distribution: Living between sea grasses in sand intertidally to few meters deep. Mozambique to Kenya, Zanzibar

Reported from Pakistan by Kool and Dekker, 2007 as *Nassarius zanzibarensis*, needs confirmation

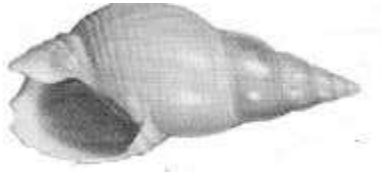


Genus *Bullia* Gray, 1835

437. *Bullia indusica* Melvill, 1898 14 - 20 mm.

Distribution: Sandy. Indo-Pacific.

Reported from Pakistan by Melvill, 1898



438. *Bullia kurrachensis* Angas, 1877 Shell size 30 - 50 mm. Pale brownish becoming whitish on body whorl

Distribution: Sandy. Shallow water. India

Reported from Pakistan by Angas, 1877, Khan and Dastagir, 1971



439. *Bullia mauritiana* Gray, 1839 Shell size 30 - 75 mm.

Distribution: Intertidal and offshore sand. Indian Ocean. Red Sea.

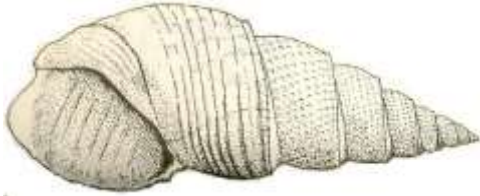
Reported from Pakistan by Ahmed and Hameed, 1999



440. *Bullia persica* Smith, 1878 25mm.

Distribution: Found on loose stones and sandy mud. Indo-Pacific.

Reported from Pakistan by Tirmizi and Zehra, 1984



(From Tirmizi and Zehra, 1984)

441. *Bullia melanoides* (Deshayes, 1832) 16 - 28 mm

Distribution: Sandy. Horn of Africa. Arabian Gulf to E .India

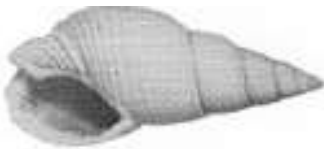
Reported from Pakistan by Khan and Dastagir, 1971 as *Bullia strenaria* Melvill



442. *Bullia tranquebarica* (Röding, 1798) 18 - 38 mm.

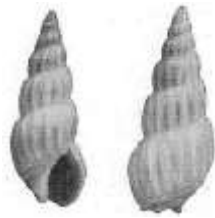
Distribution: Sandy beaches along the surf zone, low on the shore from middle tidal zone seawards .Oman, Bay of Bengal, Sri Lanka, India

Reported from Pakistan by Ghani et al, 2017

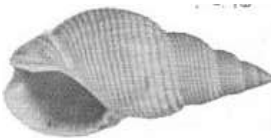




- 443. *Bullia ceroplasta* Melvill, 1898** Pale yellowish
 Distribution: Sandy beaches along the surf zone, low on the shore from middle tidal zone seawards .Arabian Gulf, Indian Ocean
 Reported from Pakistan by Melvill, 1898



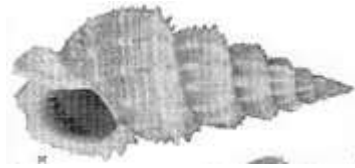
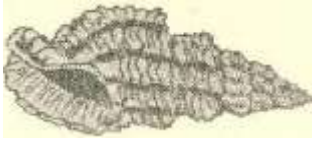
- 445. *Bullia othaeitensis* (Bruguère, 1789)** 40-50 mm.Sparse orange-brown axial flammules
 Distribution: Inhabits sandy bottoms of shallow waters down to about 15m.Oman.
 Reported from Pakistan by Avon, 2016



Genus *Phos* Montfort, 1810

- 446. *Phos senticosus* (Linnaeus, 1758)** (Thorny Phos)
 Distribution: Rocky shores at very low tide at 25 m. Indo-Pacific

Reported from Pakistan by Khan and Dastagir, 1971



(From Khan and Dastagir, 1971)

447. *Phos gladysiae* Melvill and Standen, 1901

Distribution: Offshore mud with algae and other shells.
Indo-Pacific

Reported from Pakistan by Melvill and Standen, 1901



Family Columbellidae Swainson, 1840 (Dove shell)
Genus *Aesopus* Gould, 1860

448. *Aesopus urania* Melvill and Standen, 1901

Distribution: On rocks. Shallow water. Arabian Gulf
Reported from Pakistan by Melvill and Standen, 1901

Genus *Anachis* H. Adams and A. Adams, 1853

449. *Anachis* cf. *fauroti* (Jousseaume, 1888)

Distribution: Rocky shores Tropical Indo-West Pacific,
Red Sea, Oman

Reported from Pakistan by Melvill and Standen, 1901 as
Mitrella zebra Gray; Ghani et al, 2017



(Photo contributed by Moazzam)

450. *Anachis terpsichore* (G. B. Sowerby II, 1822)

Distribution: Rocky shores. Indo-Pacific, Persian Gulf, Red Sea

Reported from Pakistan by Trew, 1987 as *Mitrella terpsichore* Sowerby



451. *Anachis miser* (G. B. Sowerby II, 1844) 16mm.

Distribution: Rocky shores in weeds. Indo-west Pacific

Reported from Pakistan by Baig and Zehra, 2006 as *Pyrene*



miser

Genus *Mitrella* Risso, 1826

452. *Mitrella nomadica* (Melvill and Standen, 1901) 14 mm.

Distribution: Mid littoral. Oman, Hawaii

Reported from Pakistan by Melvill and Standen 1901 as *Columbella* (*Mitrella*) *nomadica* Melvill and Standen



453. *Mitrella blanda* (Sowerby, 1844) 3.8-11 mm.

Distribution: Midlittoral to 20m. Indo-Pacific

Reported from Pakistan by Melvill and Standen, 1901



(Photo contributed by Moazzam)

454. *Mitrella astolensis* (Melvill and Standen, 1901)

Distribution: Persian Gulf

Reported from Pakistan by Melvill and Standen 1901 as

Columbella astolensis Melvill and Standen, 1901

Genus *Zafra* A. Adams, 1860

455. *Zafra melitoma* (Melvill and Standen, 1901) shell

light brown with a white spiral band just below the suture and a second band in the middle of the body whorl
Distribution: In 15-30 m water depth. Indo-Pacific.Mediterranean

Reported from Pakistan by Melvill and Standen, 1901 as
Columbella (Seminella) melitoma Melvill and Standen
1901



(From Monsecour and Kohler,2006)

456. *Zafra townsendi* (Melvill and Standen, 1901)

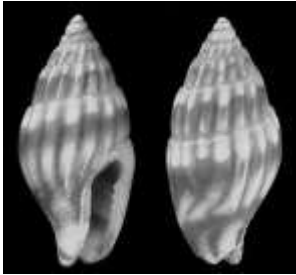
Distribution: Depth range 50 - 70 m.Indo-Pacific

Reported from Pakistan by Melvill and Standen, 1901 as
Columbella (Seminella) townsendi

457. *Zafra selasphora* (Melvill and Standen, 1901) Pale tan with a darker spiral band along the whorls, another band around basal part of body whorl with a few flames spurring down towards the canal. Ribs whitish

Distribution: In estuaries, including the seaward side of mangrove swamps, under stones and litter and on sea grass; intertidal .Mediterranean, Aldabra

Reported from Pakistan by Melvill and Standen, 1901 as
Columbella (Seminella) selasphora.



458. *Zafra phaula* (Melvill and Standen, 1901)

Distribution: Coral reef. Gulfs

Reported from Pakistan by Melvill and Standen, 1901 as
Columbella phaula



(Photo contributed by Moazzam)

Genus *Pyrene* Roeding, 1798

459. *Pyrene flava* (Bruguiere, 1789) 21x10mm

Distribution: Abundant on mud-covered rocks. Indo-Pacific.
Reported from Pakistan by Tirmizi and Zehra, 1984



(From Tirmizi and Zehra, 1982)

460. *Pyrene splendidula* (G. B. Sowerby I, 844) (Splendid Pyrene). 20 - 30 mm.

Distribution: Rocky shores .Indo-Pacific.
Reported from Pakistan by Melvill, 1884.



461. *Pyrene punctata* (Bruguère, 1789) (Telescoped dove shell) 14-26mm.

Distribution: Rocky shores. Western Pacific, Australia
Reported from Pakistan by Rehman and Barkati, 2012

Genus *Pictocolumbella* Habe, 1945

462. *Pictocolumbella ocellata* (Link, 1807) (Lighting Dove snail). 10x20mm. Monochromatic black or red-brown on white, with a lilac stain around the aperture edge.

Distribution: Intertidally, on and under rocks and on mangroves. Indo-Pacific

Reported from Pakistan by Ali, 2006 as *Pyrene fulgurans* Lamarck

Genus *Parviterebra* Pilsbry, 1904

463. *Parviterebra thyraea* (Melvill, 1897)

Distribution: Subtidal. Madagascar, Oman

Reported from Pakistan by Melvill and Standen, 1897 as *Terebra thyraea* Melvill and Standen



(Photo contributed by Moazzam)

Genus *Decipifus* Olsson and McGinty, 1958

464. *Decipifus consanguineus* (G. B. Sowerby III, 1897)

Distribution: 7 fathoms. Ochraceous colour, with brown tinge around the centre of the whorls

Reported from Pakistan by Melvill and Standen, 1901



Family Harpidae Bronn, 1849

Genus *Harpa* Röding, 1798

465. *Harpa cabriti* Fischer, 1860

Distribution: Intertidal sand, coral reef pools. Indo-Pacific.

Reported from Pakistan by PSF (unpublished report, 1977) as *Harpa ventricosa* Lamarck



(From Hornell., 1951)

Superfamily Mitroidea Swainson, 1831

Family Mitridae Swainson, 1831

Genus *Atrimitra* Dall, 1918

466. *Atrimitra caliginosa* (Reeve, 1844)

Distribution: Muddy rocks at low-tide mark. Indian Ocean.

Reported from Pakistan by Tirmizi and Zehra, 1984 as

Mitra caeligena



(From Tirmizi and Zehra, 1984)

Genus *Pseudonebularia* Fedosov, Herrmann, Kantor and Bouchet, 2018

467. *Pseudonebularia proscissa* (Reeve, 1844)

Distribution: Rocks, Coral reef and muddy areas. Indo-

Pacific, Gulf of Oman to China Sea and the Fiji Islands

Queensland south to Townsville.

Reported from Pakistan by Reeve, 1844 as *Mitra proscissa*

OBIS, 2004



Genus *Strigatella* Swainson, 1840

468. *Strigatella subruppeli* (Finlay, 1927) 27 x 12mm

Distribution: Intertidal. Indopacific.

Reported from Pakistan by Sowerby, 1914 as *Mitra*

multisulcata; Cernohorsky, 1976.

469. *Strigatella scutulata* (Gmelin, 1791) Orange-brown to black orange in colour, ornamented with narrow white wavy axial streaks.

Distribution: On coral reef, under coral. from the intertidal zone to a depth of about 6m. Mauritius, Elphinstone Island Bay, Andamans, Borneo, off Sumatra, Australia, New Caledonia, Gulf of Siam, Fiji, Philippines
Reported from Pakistan by Lt.-Col. A. J. Peile, 1932 as *Mitra amphorella* Lamarck, 1811

470. *Strigatella ambigua* (Swainson, 1829)

Distribution: Muddy rocks at low-tide mark. Indian Ocean
Reported from Pakistan by Rehman and Barkati, 2012 as *Mitra ambigua*

Superfamily Olivoidea Latreille, 1825

Family Olividae Latreille, 1825

Genus *Oliva* Bruguiere, 1789

471. *Oliva bulbosa* (Roding, 1798) (Inflated Olive) 21 - 60 mm.

Distribution: Sandy substrates intertidally and subtidally. Indian Ocean, Red Sea
Reported from Pakistan by Femorale, 2011



472. *Oliva australis* Duclos, 1835

Distribution: Intertidal shallow water, in sand. Australia.
Reported from Pakistan by PSF (unpublished report, 1977)

473. *Oliva elegans* Lamarck, 1811 30mm. Yelloish brown marked by longitudinal grayish brown wavy somewhat zigzag lines

Distribution: Loose stones and mud at low tide. Central Indo-Pacific realm

Reported from Pakistan by Tirmizi and Zehra, 1984



Empty shell (From Tirmizi and Zehra, 1984)

Shell occupied by hermit crab (From Kazmi,2016)

474. *Oliva mustelina* Lamarck, 1811

Distribution: Intertidal sand just below the surface. Indo-Pacific.

Reported from Pakistan by PSF (unpublished report, 1977)

475. *Oliva oliva* (Linnaeus, 1758) 19 - 46 mm.

Distribution: Intertidal sand just below the surface. Tropical Indo-Pacific.

Reported from Pakistan by Khan et al, 1973



476. *Oliva oliva stellata* (Duclos, 1835) 19-35mm.

Distribution: Intertidal sand just below the surface. Indonesia, Indian Ocean.

Reported from Pakistan by Femorale, 2011



(From Joop Trausel and Frans Slieker)

477. *Oliva reticulata* (Roding, 1798)

Distribution: Intertidal sand just below the surface. Indo-Pacific.

Reported from Pakistan by PARC (unpublished report, 1986)

478. *Oliva sericea* (Roding, 1798)

Distribution: Intertidal sand just below the surface. Indo-Pacific

Reported from Pakistan by PARC (unpublished report, 1986)

Genus *Miniaceoliva* Petuch and Sargent, 1986

479. *Miniaceoliva tremulina* (Lamarck, 1811)

Distribution: Intertidal sand. Indian Ocean

Reported from Pakistan by Rehman and Barkati, 2012 as *Oliva tremulina*

Genus *Agaronia* Gray, 1839

480. *Agaronia gibbosa* (Born, 1778) (Gibbous olive). 2-3''.

Distribution: Intertidal sand just below the surface. Indo-West Pacific

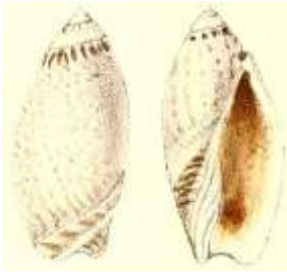
Reported from Pakistan by Ray, 1948 as *Oliva nebulosa*; Khan and Dastagir, 1971 as *Oliva gibbosa* Lamarck, 1822



(From Hornell, 1951)
(Photo contributed by Moazzam)

481. *Agaronia pallida* (Swainson, 1832)

Distribution: River mouth. West Africa
Reported from Pakistan by Reeve, 1850 as
Oliva indusica Reeve, 1850



482. *Agaronia ancillarioides* (Reeve, 1850)

Distribution: Estuarine, Tropical Atlantic
Reported from Pakistan by Reeve, 1850 as *Oliva*
ancillarioides Reeve, 1850



Family Ancillaridae Swainson, 1840

Genus *Ancilla* Lamarck, 1799

483. *Ancilla castanea* (G. B. Sowerby I, 1830) 30mm.
Distribution: Intertidal, subtidal sandy shores, Coral reef.
Persian Gulf. N.W. Indian Ocean, Red Sea.
Reported from Pakistan by Burch and Burch, 1958 as
Ancilla ventricosa,erronrous record fide Kilburn, 1981.



484. *Ancilla boschi* Kilburn, 1980
Distribution: Intertidal, subtidal sandy shores.Red Sea
Reported from Pakistan by Kilburn, 1980



485. *Ancilla scaphella* (G. B. Sowerby II, 1859) 40mm.
Distribution: Intertidal, subtidal sandy shores.Arabian Gulf,
Gulf of Oman
Reported from Pakistan by Femorale, 2011



(From Natural History Museum, Rotterdam)

486. *Ancilla farsiana* Kilburn, 1981 15mm.

Distribution: Subtidal mud. Indo-Pacific, Persian Gulf, Eastern Arabia.

Reported from Pakistan by Kilburn, 1981 as *Sparella farsiana* (Kilburn, 1981); OBIS, 2004



487. *Ancilla ovalis* (G. B. Sowerby II, 1859) Shell size 10 - 18 mm.

Distribution: Subtidal mud. Red Sea; Arabian Gulf, India
Reported from Pakistan by Kilburn, 1980



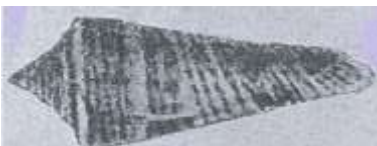
Family Conidae Fleming, 1828

Genus *Conus* Linnaeus, 1758

488. *Conus quercinus* [Lightfoot, 1786] Ground colour pale yellow; a paler mid-body band visible. Spire uniformly yellowish white, early whorls dark brown. Aperture white.

Distribution: Sand or mud to at least 250 feet. Juveniles prefer deep water. Red Sea Mauritius, Madagascar.

Reported from Pakistan by Melvill-Tomlin, 1930



489. *Conus biliosus* (Roding, 1798)

Distribution: Intertidal, shallow subtidal, muddy shores and coral. Indo-Pacific.

Reported from Pakistan by Edgar, 1903 as *Conus piperatus* Dilwyn, 1817.



Egg capsules (From Barkati and Ahmed, 1985; Zehra and Perveen, 1991)



(Photo contributed by Moazzam)

490. *Conus coronatus* Gmelin, 1791 Pinkish to violet, with pale fluish spiral bands below shoulder and centre. Spiral bands of variously sized brown and black markings on either side of sub-central band, overlaying the two solid colour bands. Spire similar to body colour. Aperture pale grey, edges tinged dark violet

Distribution: Mid tidal zone of rocky shore. Arabian Sea, Gulf of Manaar

Reported from Pakistan by Khan and Dastagir, 1971 as *Conus (Virroconus) coronatus*



Egg capsule (From Zehra and Perveen, 1991)
Shell (From Animal Base)

491. *Conus buxeus lotoisii* Kiener, 1846

Distribution: Subtidal sand. Indo-Pacific.

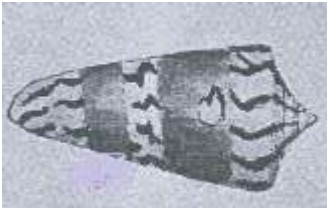
Reported from Pakistan by Sowerby, 1895; OBIS, 2004



492. *Conus generalis* Linnaeus, 1767

Distribution: Subtidal, Coral reef and sand. Indo-Pacific

Reported from Pakistan by OBIS, 2004.



493. *Conus milneedwardsi* Jousseaume, 1894 (Glory of India) Body colour white. Body whorl generally with reddish brown reticulated lines forming small to large triangles and with similarly coloured triangular spots to variably shaped blotches concentrated in two spiral bands, within basal third, and just above centre. Spire whorls with large reddish brown regular blotches. Aperture white
Distribution: Subtidal. Indo-Pacific, Sri Lanka, Red Sea, East Africa.

Reported from Pakistan by OBIS, 2004



494. *Conus milneedwardsi clytospira* Melvill and Standen, 1899 180 mm.

Distribution: Rocky .Sri Lanka

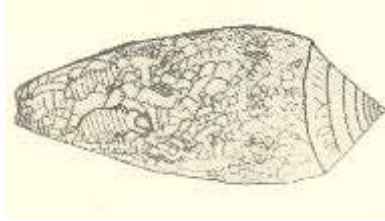
Reported from Pakistan by Melvill and Standen, 1899



495. *Conus textile* Linnaeus, 1758 Body whorl generally with network of light to dark brown lines edging tiny to moderately large tents. Yellowish-brown flecks and blotches arranged in two to three interrupted to solid spiral bands on both sides of the centre and often below shoulder; bands interspersed with broad, dark brown, straight to wavy axial lines, shows wide variations in colour patterns.

Distribution: Rocky. Indo-Pacific, Persian Gulf, Eastern Arabia, India.

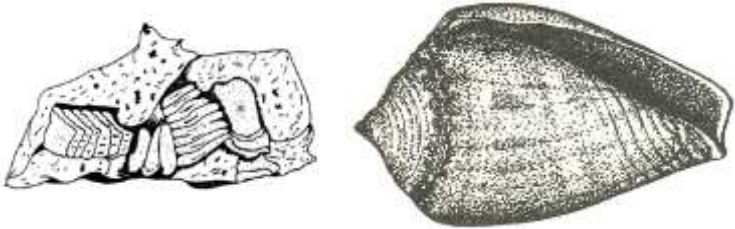
Reported from Pakistan by Khan and Dastagir, 1971 as *Conus textile*



(From Hornell,1951)

496. *Conus catus* Hwass, 1792 37x24mm.

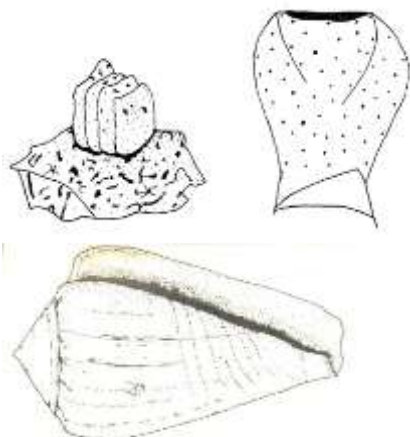
Distribution: On rocks at low tide. Red Sea, Indo-Pacific.
Reported from Pakistan by Tirmizi and Zehra, 1984



Shell (From Tirmizi and Zehra, 1984) Egg capsules

497. *Conus magus* Linnaens, 1758 44x24mm.

Distribution: Abundant on rocks at low-tide. World wide.
Reported from Pakistan by Tirmizi and Zehra, 1984



Egg capsules single egg capsule shell (From Tirmizi and Zehra, 1984)

498. *Conus locumtenens* Blumenbach, 1791 (Vice admiral cone) 30 -66 mm. Shell yellowish or pink-white, with a network of chestnut or chocolate, sometimes indistinctly banded, with lines of spots on the bands.

Aperture generally rose-tinted

Distribution: Rocky. Red Sea, Gulf of Aden, N.W. Indian Ocean.

Reported from Pakistan by Khan et al, 1973 as *Conus acuminatus* Hwass, 1797.



499. *Conus ebraeus* Linnaeus, 1758

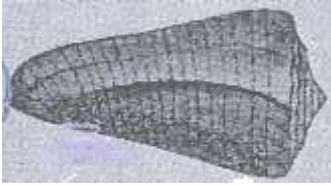
Distribution: On rocks. Indo-Pacific.

Reported from Pakistan by PARC (unpublished report, 1986)

500. *Conus emaciatus* Reeve, 1849

Distribution: Intertidal, Indo-Pacific.

Reported from Pakistan by Reeve, 1849.



501. *Conus flavidus* Lamarck, 1810

Distribution: Intertidal, Indo-Pacific.

Reported from Pakistan by Shah et al., 2003.



502. *Conus chaldaeus* (Roding, 1789)

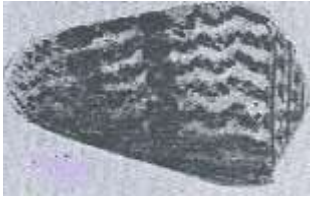
Distribution: Intertidal, Indo Pacific.

Reported from Pakistan by Shah et al., 2003

503. *Conus arenatus* Hwass in Bruguiere, 1792

9 inches. Body white. Body whorl with spiral rows of widely spaced brown dots, clustered in two interrupted spiral bands, and one above centre and the other near the base; dotted areas often with underlying grey shadows, most conspicuous within spiral bands. White dashes often irregularly alternating with brown dots. Early spire whorls white. Spire with radial clusters of brown dots. Aperture white

Distribution: Intertidal, Indo-Pacific.

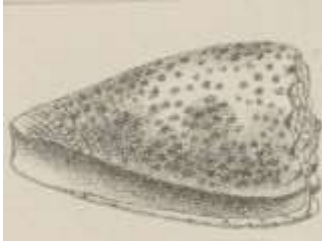


Reported from Pakistan by Shah et al., 2003

504. *Conus vautieri* Kiener, 1847

Distribution: Intertidal. Pacific.

Reported from Pakistan by Shah et al., 2003



505. *Conus nussatella* Linnaeus, 1758 50mm. Light cream with spiral rows of small dark brown spots and variably sized orange brown axial blotches coalescing axially as well as spirally, especially concentrating above and below the centre. Aperture white.

Distribution: Beached. Indo-Pacific.

Reported from Pakistan by Shah et al., 2003



506. *Conus tessulatus* Born, 1778 55mm. Body white. Body whorl with spiral rows of mostly bright orange

rectangular spots or bars, often alternating with white markings

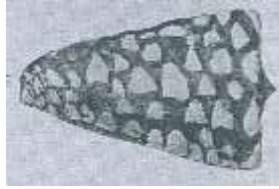
Distribution: Intertidal, Indo-Pacific.

Reported from Pakistan by Shah et al., 2003

507. *Conus marchionatus* Hinds, 1843

Distribution: Intertidal. Indo-Pacific.

Reported from Pakistan by Shah et al., 2003



508. *Conus luteus* Sowerby, 1833

Distribution: Intertidal. Indo-Pacific.

Reported from Pakistan by Shah et al., 2003



509. *Conus tenuistriatus* Sowerby, 1858

Distribution: Intertidal. Pacific.

Reported from Pakistan by Shah et al., 2003

510. *Conus coffeae* Gmelin, 1791

Distribution: Intertidal, Indo-Pacific

Reported from Pakistan by Shah et al., 2003 as *Conus scabriusculus* Dillwyn



511. *Conus frigidus* Reeve, 1848 Shell tan, with paler transverse bands at shoulder and centre, base violet. Aperture purple. Exterior colour band visible as a band along interior border of lip. Peristracum yellowish brown, thick, opaque with numerous axial ridges

Distribution: Red Sea and in the Indian Ocean off East Africa; in the Pacific Ocean and off Australia

Reported from Pakistan by Shah et al., 2003



512. *Conus marmoreus* Linnaeus, 1758 (Marmorated Cone). 60mm. Dull-coloured, uniformly greenish or with spiral bands of alternating chestnut brown and grey spots; interior of aperture silvery white; exterior of operculum whitish

Distribution: At 3-5m depth. Indo-Pacific

Reported from Pakistan by Ali, 2006

513. *Conus inscriptus* Reeve, 1845 Body pale brown to dark brown to rusty brown. Body whorl with spiral rows of orange to dark brown dots, spots, bars or axial streaks fusing into axial flames and blotches and forming interrupted spiral bands below shoulder and within ad apical and abapical thirds. Sub-shoulder band less prominent than anterior bands. Aperture white. Periostracum brown

Distribution: Red Sea, Indian Ocean, western Thailand.

Reported from Pakistan by Melvill-Tomlin, 1903



(Photo contributed by Moazzam)

514. *Conus bengalensis* (Okutani, 1968) (Bengal Cone)
60-148mm.

Distribution: 50-130m. On mud and sand bottoms.
Myanmar, Thailand, Andaman Sea,
Reported from Pakistan by Femorale, 2011

515. *Conus vicweei* Old, 1973

Distribution: 50-130m. On mud and sand bottoms.
Myanmar, Thailand, Andaman Sea, Thailand (W), Sri
Lanka
Reported from Pakistan by OBIS



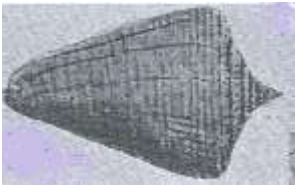
516. *Conus maldivus* Hwass in Bruguière, 1792 18 - 83
mm. Shell encircled by distant revolving lines of small
spots, sometimes irregularly clouded with white, not
forming bands.



Distribution: W Indian Ocean; Red Sea, Sri Lanka
Reported from Pakistan by OBIS

517. *Conus geographus* Linnaeus, 1758 Up to 166 mm.
Colour creamy white, with orange or reddish-brown bands or blotches. Aperture bluish-white or pink
Distribution: Around shallow reefs. Tropical Indo-Pacific
Reported from Pakistan by OBIS
Genus *Conasprella* Thiele, 1929

518. *Conasprella aculeiformis* (Reeve, 1844) Body cream.
Body whorl with spiral rows of brown squarish to rectangular spots on ribbons, often fused into an interrupted spiral band on each side of the centre. Aperture pale brown.
Distribution: Sub tidal. India, Persian Gulf and Gulf of Oman, Indo-Pacific.
Reported from Pakistan by Melvill, 1901; OBIS, 2004



519. *Conasprella stocki* (Coomans and Moolenbeek, 1990) 45 mm. Colouration variable, dark brown as well as light brown specimens occur, and also the pattern is variable
Distribution: Shallow subtidal among rocks. Indo-Pacific, Gulf of Oman, Masirah Is.
Reported from Pakistan by OBIS as *Conus stocki*



520. *Conasprella dictator* (Melvill, 1898) Colour cream. Body whorl with orange to brown axial streaks or flammules, generally fusing in three spiral bands, within the basal third, near centre and below the shoulder. Aperture white marginally, violet within; basal portion often orange

Distribution: Intertidal, subtidal coral and sand. Indo-Pacific, Gulf of Oman, Persian Gulf and S.E. India, and N. W. Sumatra.

Reported from Pakistan by Melvill, 1898 as *Conus* (*Leptoconus*) *dictator*; OBIS, 2004

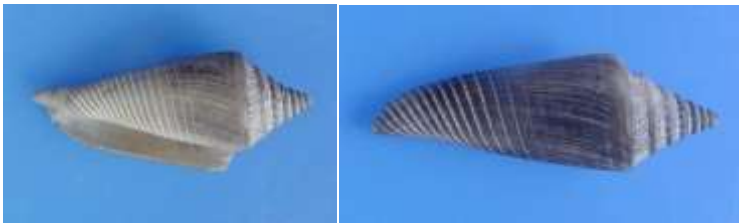


(From Allen Kohn)

521. *Conasprella elegans* (G. B. Sowerby III, 1895)

Distribution: On intertidal benches and subtidal coral reef platforms Natal, Persian Gulf, Australia

Reported from Pakistan by Coomans and Moolenbeek, 1986 as *Conus elegans* G. B. Sowerby III, 1895



(Photo contributed by Moazzam as *Conus cf elegans*)

Family Borsoniidae Bellardi, 1875

Genus *Tomopleura* Casey, 1904

522. *Tomopleura vertebrata* (E. A. Smith, 1875) 20mm.

Distribution: At depth .South Africa; Arabian Gulf; Japan. India, Indonesia, New Zealand, Australia.

Reported from Pakistan by Australian Museum, 1897; Melvill, 1916 as *Turris (Tomopleura) vertebrata* (Smith)



523. *Tomopleura nivea* (Philippi, 1851) 15 - 30 mm.

Distribution: 3-7 fathoms, muddy sand, loose stones. South Africa, Japan

Reported from Pakistan by Melvill, 1917 as *Turris (Tomopleura) nivea*



524. *Tomopleura reevii* (C. B. Adams, 1850)

Distribution: Loose stones and mud, 3-7 fathoms. Red Sea, Japan, Philippine, Australia New Guinea; Indonesia,

Reported from Pakistan by Melvill, 1917



525. *Tomopleura pouloensis* (Jousseume, 1883) 8 mm and 17 mm

Distribution: Sri Lanka, the Philippines and Hong Kong
Reported from Pakistan by Melvill, 1917 as *Pluerotoma pouloensis*

Genus *Microdrillia* T. L. Casey, 1903



526. *Microdrillia patricia* (Melvill, 1904) 6x2.mm. Pale violet

Distribution: 40 fathoms Gulf of Oman to South Africa
Reported from Pakistan by Melvill, 1917 as *Turris*
(*Tomopleura*) *patricia*



Family Pseudomelatomidae Morrison, 1966

Genus *Crassispira* Swainson, 1840

527. *Crassispira sinensis* (Hinds, 1843) Shell yellowish or flesh-brown, sometimes narrowly dark-banded at the suture and base, interior yellowish.

Distribution: 5-25 fathoms. Persian Gulf, China, Philippines, Queensland

Reported from Pakistan by Melvill, 1917 as *Drillia sinensis*
Hinds



(From Naturalis Biodiversity Center/Wikimedia Commons)

Genus *Inquisitor* Hedley, 1918

528. *Inquisitor intertinctus* (E. A. Smith, 1877)

Distribution: Benthic .Western Central Pacific.

Reported from Pakistan by Melvill, 1917 as *Drillia intertincta*



529. *Inquisitor variabilis* (E. A. Smith, 1877) Pale, freckled with pale brown

Distribution: Coral sand, oyster bed, soft mud, river mouth. 10-20 fathoms. Gulf of Oman. Muscat

Reported from Pakistan by Tryon, 1884 as *Drillia turris*; Melvill, 1917as *Drillia variabilis*



Genus *Ptychobela* Thiele, 1925

530. *Ptychobela baynhami* (E. A. Smith, 1891)

Distribution: Demersal.Red Sea

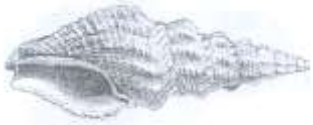
Reported from Pakistan by Melvill, 1917 as *Drillia baynhami*



531. *Ptychobela nodulosa* (Gmelin, 1791) 34-50mm

Distribution: at 20 m.India, Australia, Viet Nam, Philippines

Reported from Pakistan by Melvill, 1917 as *Drillia crenularis*



Family Drillidae Olsson, 1964
Genus *Splendrillia* Hedley, 1922

532. *Splendrillia persica* (E. A. Smith, 1888) 9mm.

Distribution: Thick clayey mud. Persian Gulf, Gulf of Man, Somalia, Australia

Reported from Pakistan by Melvill, 1917 as *Drillia persica*



Genus *Drillia* Gray, 1838

533. *Drillia major* (Reeve, 1843)

Distribution: 10-20 fathoms. Gulf of Oman, Muscat, India, Persian Gulf, Sri Lanka

Reported from Pakistan by Reeve, 1843

534. *Drillia griffithii* (Reeve, 1843)

Distribution: Deepsea, Indian Ocean, Japan

Reported from Pakistan by Reeve, 1843 as *Pleurotoma griffithii* Reeve

Genus *Clavus* Montfort, 1810

535. *Clavus obliquatus* (Reeve, 1845) 33mm. Yellowish brown, within and without, with a narrow lighter band on the periphery, may be with a row of white dots on the ribs a little below the middle of the body whorl

Distribution: Among loose stones. Persian Gulf, Sri Lanka, Singapore, Japan, Australia

Reported from Pakistan by Melvill, 1917as *Drillia obliquata*



Genus *Fenimorea* Bartsch, 1934

536. *Fenimorea fucata* (Reeve, 1845) 10-27 mm.
Yellowish white, banded and maculated with yellowish or orange-brown.

Distribution: Loose stones and mud. South Africa, Japan, New Caledonia, USA

Reported from Pakistan by Melvill, 1917as *Drillia (Tylotia) fucata*

Family Terebridae Adams and Adams, 1854 (Auger snail)

Genus *Duplicaria* Dall, 1909

537. *Duplicaria duplicata* Linnaeus, 1758. 90mm.

Distribution: Sand between rocks. Indo-West-Pacific.

Reported from Pakistan by Cernohorsky, 1969; Khan and Dastagir, 1971



(From Tirmizi and Zehra, 1984)

538. *Duplicaria similis* (E. A. Smith, 1873) 28-

45mm. Pale ochraceous yellow to fawn colour

Distribution: sublittoral. S Africa; Indian Ocean; NW Australia

Reported from Pakistan by Melvill and Standen, 1895 as *Terebra (Euterebra) similis*

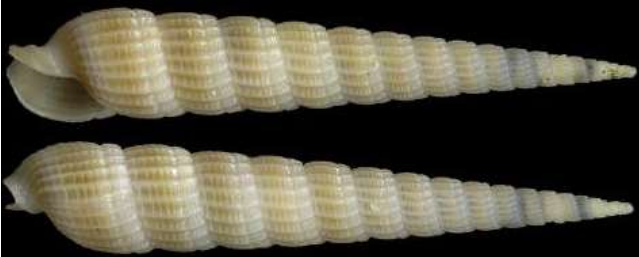


539. *Duplicaria spectabilis* (Hinds, 1844) taxon inquirendum Rich brown and cream stripes
Distribution: 9 fathoms. Indonesia, Philippines, Hong Kong
Reported from Pakistan by Melvill, 1898 as *Terebra edgarii*



Genus *Terebra* Bruguiere, 1789

540. *Terebra trismacaria* Melvill, 1917 10-57 mm.
Distribution: At depths of 0.5 to 40 m on coral reefs, coral rubble and in fine sand with algae. Red Sea and Arabian Gulf to Fiji
Reported from Pakistan by Melvill, 1917



(From E.Hardy)

541. *Terebra cognata* Smith, 1877
Distribution: Subtidal. Indo-Pacific.
Reported from Pakistan by Australian Museum, 1913;
OBIS, 2004



542. *Terebra polygyrata* Deshayes, 1859 16-33mm. Pale yellowish with reddish and white markings below suture
Distribution: subtidal. Australia, Philippines, Gulf of Oman, Iran, Mozambique
Reported from Pakistan by Melvill, 1912 as *Terebra ambrosia*



(From Femorale)

Genus *Euterebra* Cotton and Godfrey, 1932

543. *Euterebra capensis* (E. A. Smith, 1873)

Distribution: in the sand to a depth usually not exceeding the shell length. South Africa, India

Reported from Pakistan by Melvill and Standen, 1901 as *Terebra capensis*, probably a misidentification



(From Turton, 1932)

544. *Euterebra severa* (Melvill, 1897) Colour brown 15 mm.

Distribution: In the sand to a depth usually not exceeding the shell length. Oman, Persian Gulf, India

Reported from Pakistan by Melvill, 1897 as *Terebra severa*



(From Femorale)

Genus *Impages* E. A. Smith, 1873

545. *Impages nana* (Deshayes, 1859)

Distribution: River delta, mangroves. Persian Gulf to the Arabian Sea

Reported from Pakistan by Deshayes, 1898 as *Terebra nana*



546. *Impages nassoides* (Hinds, 1844)

Distribution: River delta, mangroves. Madagascar

Reported from Pakistan by Australian Museum, 1898 as *Hastula nassoides* (Hinds)



Genus *Hastula* H. Adams and A. Adams, 1853

547. *Hastula matheroniana* (Deshayes, 1859) 20 mm - 44 mm

Distribution: Delta. In the tropical Indo-Pacific

Reported from Pakistan by Deshayes, 1859 as *Terebra modesta*



(From Wikipedia)

Genus *Granuliterebra* Oyama, 1961

548. *Granuliterebra bathyrhapse* (E.A.Smith, 1875)

Distribution: River Delta, Mangroves 14 - 35 mm, Arabian Gulf ,Sri Lanka, Japan and Australia.

Reported from Pakistan by Australian Museum, 1913 as *Terebra bathyrhapse*



549. *Granuliterebra tricincta* (E. A. Smith, 1877)

Distribution: 10-50m .India; Persian Gulf, Singapore, Indonesia, Japan

Reported from Pakistan by Ray, 1968

Genus *Myurella* Hinds, 1845

550. *Myurella cinctella* (Deshayes, 1859) 31mm.

Distribution: Small crevices and small lodges of sloping rocks. Australia, Arabian Sea

Reported from Pakistan by Melvill and Abercrombie ,1893 as *Terebra cinctella*

Family Clavatulidae Gray, 1853

Genus *Clavatula* Lamarck, 1801

551. *Clavatula* sp. 34.5mm

Distribution: Offshore.

Reported from Pakistan by Tirmizi and Zehra, 1982



(From Tirmizi and Zehra, 1982)

Family Turridae H. Adams & A. Adams, 1853 (1838)

Genus *Turris* Batsch, 1798

552. *Turris amicta* (Smith, 1877) 65mm. Uniform white, with a persistent yellowish-olive periostracum.

Distribution: Shallowly subtidal in marine grassflats. Gulf of Aden, India and Sri Lanka.

Reported from Pakistan by Melvill, 1917 as *Surcula cingulifera* var. *amicta*; OBIS, 2004 in Vitrinellidae.



(From Kilburn et al,2012)

Genus *Turricula* Schumacher, 1817

553. *Turricula javana* (Linnaeus, 1767) 75mm.

Distribution: Rocky shore. Indian Ocean and South China Sea, Java, Philippines.

Reported from Pakistan by Melvill, 1917 as *Surcula javana*; Khan and Dastagir, 1971.



(From Tirmizi and Zehra,1984)

554. *Turricula tornata fulminata* (Kiener, 1839) 48 - 69 mm. Reddish brown

Distribution: Subtidal. NW Indian Ocean, Persian Gulf
Reported from Pakistan by Kiener, 1839 as *Pleurotoma fulminata*



555. *Turrricula nelliae* (E. A. Smith, 1877)

Distribution: Rocky beach. Persian Gulf, S. Africa
Reported from Pakistan by Melvill, 1917 as *Pleurotoma tuberculata* Gray, 1839; Moazzam as *Turrricula spuria nelliae*



Genus *Gemmula* Weinkauff, 1875

556. *Gemmula speciosa* (Reeve, 1843) (Splendid gem Turrid Shell) 40 – 80 mm.

Distribution: Sandy open shores, deep sea at 70 fathoms. South China Sea, Nansha Islands; Arabian Sea, Japan, Philippines.

Reported from Pakistan by Melvill, 1917 as *Turris (Gemmula) guadurensis*

Family Horaiclavidae Bouchet, Kantor, Sysoev and Puillandre, 2011

Genus *Paradrillia* Makiyama, 1940

557. *Paradrillia inconstans prunulum* (Melvill and Standen, 1901) 15mm. Pale straw to chocolate brown.

Distribution: Subtidal to offshore. Gulf of Oman, Persian Gulf, Arabian Sea, Kuwait Indo-Pacific.

Reported from Pakistan by Melvill and Standen, 1901 as *Drillia prunulum*, OBIS, 2004



558. *Paradrillia melvilli* Powell, 1969 10mm.

Distribution: Subtidal, shelf. Indo-Pacific. Persian Gulf
Reported from Pakistan by Melvill, 1917 as *Drillia pyramidula* Melvill, 1917; OBIS, 2004



(From Lowtide Shell)

Genus *Epideira* Hedley, 1918

559. *Epideira multiseriata* (E. A. Smith, 1877)

Distribution: Sandy open shores, in corals. South China Sea, South Africa, Arabian Gulf.

Reported from Pakistan by Melvill and Standen, 1895 as *Turris* (*Gemmula*) *multiseriata* Smith.



Family Mangeliidae Fischer, 1884

Genus *Eucithara* P. Fischer, 1883

560. *Eucithara turricula* (Reeve, 1846) 12.5 mm. shell whitish, sometimes with a central brown band, with fine brown revolving lines

Distribution: In shallow water. Indo_Pacific

Reported from Pakistan by Melvill, 1917 as *Mangelia turricula*



Genus *Mangelia* Risso, 1826

561. *Mangelia horneana* Smith, 1884

Distribution: Amongst weed and rocks at low tide, Sri Lanka, Chennai, Persian Gulf, Yemen

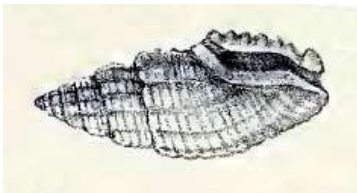
Reported from Pakistan by Melvill, 1917



562. *Mangelia myrmecodes* Melvill and Standen, 1901

Distribution: Mud. Persian Gulf

Reported from Pakistan by Melvill and Standen, 1901



563. *Mangelia theskeloides* Melvill, 1889

Distribution: No Georeferenced data available

Reported from Pakistan by Melvill, 1889



564. *Mangelia albolabiata* E.A. Smith, 1882 5mm.

Distribution: Intertidal, on sandy bottom. Persian Gulf and in the Indian Ocean

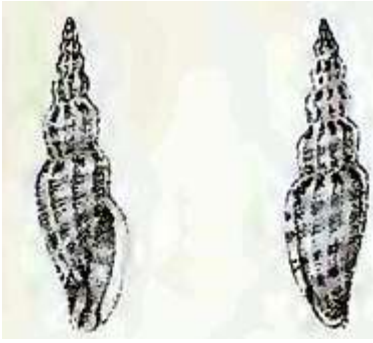
Reported from Pakistan by Melvill, 1899 as *Mangelia chilosema* ; Melvill, 1917



Genus *Citharomangelia* Kilburn, 1992

565. *Citharomangelia townsendi* (Sowerby, 1895) 13x3.8 mm. Yellowish white, suffused with greyish green, with transverse lines of light brown, and a dark brown band, Distribution: Demersal and offshore, at low water mark. Indo-Pacific.

Reported from Pakistan by Sowerby, 1895 as *Mangilia townsendii*; OBIS, 2004.



Genus *Pseudoraphitoma* Boettger, 1895

566. *Pseudoraphitoma averina* (Melvill and Standen, 1901) 50-90mm.

Distribution: At depth. Indo-Pacific.

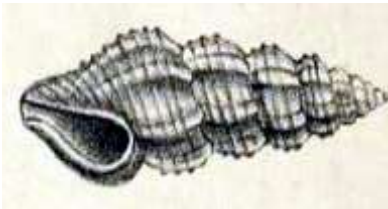
Reported from Pakistan by Melvill and Standen, 1901 as *Mangilia averina* Melvill and Standen, 1901



567. *Pseudoraphitoma perlonga* (Melvill, 1899)

Distribution: 50-90m. Muscat, Indo-Pacific.

Reported from Pakistan by Melvill, 1899 as *Mangilia perlonga*



568. *Pseudorhaphitoma fairbanki* (G. Nevill and H. Nevill, 1875) 4.48-6.70 mm., Brown

Distribution: At depth. Sri Lanka, both coasts of India, Taiwan

Reported from Pakistan by Melvill, 1913 as *Mangilia fairbanki*



569. *Pseudorhaphitoma ditylota* (Melvill, 1912)

Distribution: 3-10 fathoms. Persian Gulf, India

Reported from Pakistan by Melvill, 1912 as *Lienardia ditylota* (Melvill)



570. *Pseudorhaphitoma scitula* (Smith, 1884)

Distribution: 10-156 fathoms. Muscat, Gulf of Oman, Iran

Reported from Pakistan by Melvill, 1917 as *Mangilia scitula* (Smith, 1884).



Sub Class Heterobranchia Gray, 1840

Superfamily Amphiboloidea Gray, 1840

Family Amphibolidae J. E. Gray, 1840

Genus *Salinator* Hedley, 1900

571. *Salinator fragilis* (Lamarck, 1822)

Distribution: Epibenthic in salt-marshes, estuaries and mangrove ecosystems, Australia, Melanesia and India
Reported from Pakistan by Bosh *et al.* 1995



Order Pleurobranchoidea Bouchet and Racroi, 2005
Superfamily Pleurobranchoidea Gray, 1827
Family Pleurobranchidae Gray, 1827
Genus *Pleurobranchus* Cuvier, 1804

572. *Pleurobranchus peronii* Cuvier, 1804 Background colour From a pale translucent white, through yellow and brown to a deep purple, mantle small tubercles each outlined by deeper in colour

Distribution: In shallow lagoons, reefs crests and pools. Indo-Pacific

Reported from Pakistan by White, 1946 as

Pleurobranchus karachiensis and *Susania karachiensis*
White (dubious synonymy)

573. *Pleurobranchus forskalii* Rüppell and Leuckart, 1828 Light, mottled orange-brown or dark red. Tubercles outlined with white arcs in dark animals and dark arcs in light animals.

Distribution: Intertidally and in shallow subtidal .Tanzania, the Red Sea, Australia, Fiji, New Guinea, Indonesia, Philippines, Guam, Japan, and Australia

Reported from Pakistan by White, 1946 as? *Susania karachiensis*

Superfamily Pyramidelloidea Gray, 1840
Family Amathinidae Ponder, 1987

Genus *Amathina* Gray, 1842

574. *Amathina* sp. 26mm.

Distribution: Lives as an ecosymbiont on bivalves

Reported from Pakistan by Tirmizi and Zehra, 1982



(From Tirmizi and Zehra, 1982)

Family Pyramidellidae Gray, 1840

Genus *Turbonilla* Risso, 1826

575. *Turbonilla templaris* Melvill, 1898

Distribution: Offshore. Tropical Indo-West Pacific.

Reported from Pakistan by Melvill, 1898 as *Turbonilla* (*Pyrgostelis*) *templaris* Melvill.

576. *Turbonilla mumia* (A. Adams, 1861)

Distribution: Offshore. Tropical Indo-West Pacific

Reported from Pakistan by Melvill, 1898 as *Turbonilla manorae* Melvill

577. *Turbonilla exilispira* Melvill, 1918

Distribution: Offshore. Tropical Indo-West Pacific.

Reported from Pakistan by Melvill, 1918 as *Turbonilla* (*Pyrgostelis*) *exilispira*.

578. *Turbonilla julia* Melvill, 1910

Distribution: Offshore. Tropical Indo- West Pacific.

Reported from Pakistan by Melvill, 1910.

579. *Turbonilla umbrina* Melvill, 1918.

Distribution: Offshore. Tropical Indo-West Pacific.

Reported from Pakistan by Melvill, 1918; OBIS, 2004.

580. *Turbonilla candida* (Adams, 1855)

Distribution: Offshore. South Africa, Gulf of Suez and the Philippines, Japan

Reported from Pakistan by Adams, 1855 as *Chemnitzia candida* A. Adams, 1855



581. *Turbonilla uncinata* Melvill, 1910

Distribution: Offshore. Persian Gulf

Reported from Pakistan by Melvill and Standen, 1901

582. *Turbonilla stegastris* Melvill and Standen, 1901

Distribution: Epifaunal. Worldwide

Reported from Pakistan by Melvill and Standen, 1901

583. *Turbonilla charbarensis* Melvill and Standen, 1901

Distribution: Epifaunal. Persian Gulf

Reported from Pakistan by Melvill and Standen, 1901

Genus *Cingulina* A. Adams, 1860

584. *Cingulina spina* (Crosse and Fischer, 1864)

Distribution: In association with other molluscs and tubicolous polychaetes. Persian Gulf, Gulf of Oman and the Arabian Sea, to Tasmania, Australia.

Reported from Pakistan by Melvill, 1901 as *Turitella spina*



585. *Cingulina secernenda* Melvill, 1918

Distribution: Tidal flats. The northern portion of the Indian Ocean, Asia

Reported from Pakistan by Melvill, 1918; OBIS

Genus *Odostomia* Fleming, 1813

586. *Odostomia major* Melvill and Standen, 1901.

Distribution: Coastal areas and sandy shores Tropical Indo-West Pacific

Reported from Pakistan by Melvill and Standen, 1901

587. *Odostomia antelia* Melvill, 1896

Distribution: Brackish. Tropical Indo-West Pacific

Reported from Pakistan by Melvill, 1896

588. *Odostomia* sp.

Distribution: Mangroves

Reported from Pakistan during present study



Genus *Pyrgulina* A. Adams, 1863

589. *Pyrgulina pyrgomella* (Melvill, 1896)

Distribution: On rocks at low tide. Reunion, India

Reported from Pakistan by Melvill and Standen, 1901 as *Odostomia* (*Pyrgulina*) *pyrgomella*.

590. *Pyrgulina casta* (A. Adams, 1861)

Distribution: Most likely ectoparasites. Amongst weed, mud, and loose stones at low tide. Indo-Pacific, Persian Gulf

Reported from Pakistan by Melvill, 1901

591. *Pyrgulina epentromidea* Melvill, 1899 2mm.

Distribution: Intertidal. Gulf of Oman, Red Sea, off Vietnam and in the Gulf of Thailand.

593. *Pyrgulina pirinthella* Melvill, 1910

Distribution: Benthic habitats both soft and hard substrata. European waters, Mediterranean

Reported from Pakistan by Melvill, 1910



592. *Pyrgulina milicha* Melvill, 1911

Distribution: Intertidal. Tropical Indo-West Pacific: Central and East Indian Ocean: Indo-Arabia, Persian Gulf

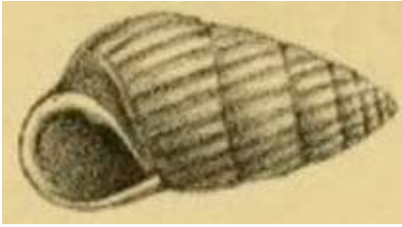
Reported from Pakistan by Melvill, 1911



Genus *Babella* Dall and Bartsch, 1906

594. *Babella glycisma* (Melvill, 1899) 3mm.

Distribution: Deep sea. Persian Gulf



Reported from Pakistan by Melvill, 1899 as *Pyrgulina glycisma* Melvill

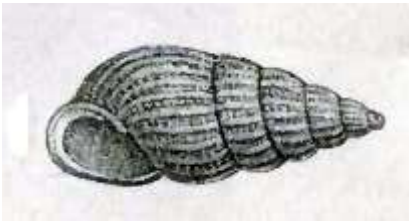
(From Annals & Magazine of Natural History)

Genus *Chrysallida* Carpenter, 1856

595. *Chrysallida decorata* (Philippi, 1849)

Distribution: Live specimens in the intertidal zone; shells on beaches. Red Sea

Reported from Pakistan by Melvill, 1899 as *Pyrgulina decorata* (Philippi)



Genus *Tropaeas* Dall and Bartsch, 1904

596. *Tropaeas brunneomaculata* (Melvill, 1897)

Mahogany-coloured dashes on the pure-white ground

Distribution: Muddy and sandy, offshore. Persian Gulf and Gulf of Oman.

Reported from Pakistan by Melvill, 1897 as *Elusa brunneomaculata*; OBIS, 2004.

597. *Tropaeas strigulata* (A. Adams, 1863)

Distribution: Muddy and sandy, offshore. Persian Gulf. Indo-Pacific

Reported from Pakistan by Melvill, 1911 as *Elusa strigillata* A. Adams, 1862

Genus *Syrnola* A. Adams, 1860

598. *Syrnola karachiensis* Melvill, 1897 Ochraceous-brown

Distribution: Not outside type locality

Reported from Pakistan by Melvill, 1897

599. *Syrnola metria* Melvill, 1896

Distribution: Ectoparasitic. India

Reported from Pakistan by Melvill, 1910

600. *Syrnola elegans* A. Adams, 1860

Distribution: Not outside type locality

Reported from Pakistan by Adams, 1860

601. *Syrnola cinctella* A. Adams, 1860 9-10 mm. in length. White-yellowish with a brown spiral band near the suture.

Distribution: Ectoparasitic. European waters, Turkey, Red Sea, Mediterranean Sea, Indo-Pacific, From Korea and Japan to the Persian Gulf and the Red Sea

Reported from Pakistan by Melvill, 1910

602. *Syrnola brunnea* (A. Adams, 1854) 9 - 16 mm.

Distribution: Among detritus. South Africa, Philippines, Vietnam

Reported from Pakistan by Melvill, 1910



603. *Syrnola mekranica* Melvill and Standen, 1904

10mm.

Distribution: Ectoparasitic .Persian Gulf

Reported From Pakistan by Melvill and Standen, 1904



(From Raymond Huet)

Genus *Mumiola* A. Adams, 1863

604. *Mumiola spirata* (A. Adams, 1860) 7mm. Shell white covered under a yellowish or brownish epidermis

Distribution: Intertidal. Pacific Ocean off the Philippines and Japan

Reported from Pakistan by A. Adams, 1860.



Genus *Miralda* Adams, 1863

605. *Miralda opephora* Melvill, 1898

Distribution: On beach. Gulf of Oman, and North. Arabian Sea, Persian Gulf

Reported from Pakistan by Melvill, 1898

606. *Miralda gemma* (A. Adams, 1861) 3mm.

Distribution: Sea mounts. Madagascar, South East Asia, Japan

Reported from Pakistan by Melvill, 1896 as *Odostomia gemma* (Adams, 1861)



Genus *Oscilla* A. Adams, 1861

607. *Oscilla tornata* (A. E. Verrill, 1884) 3mm.

Distribution: At depths between 27 m and 260 m. India, North West Atlantic

Reported from Pakistan by Melvill, 1896.

Genus *Hinemoa* W. R. B. Oliver, 1915

608. *Hinemoa indica* (Melvill, 1896) 2.8mm. Cream, blotched with gray

Distribution: in beach drift. Live animals occasionally in tide pools and shallow rocky habitats. Widely distributed in the Indo-Pacific

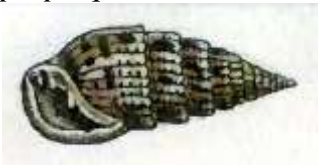
Reported from Pakistan by Melvill, 1896 as *Oscilla indica*

Genus *Otopleura* Fischer, 1885

609. *Otopleura mitralis* (Adams, 1855)

Distribution: Sand dweller, occasionally found in protected mixed habitats and *Halimeda* beds at depths of 1-10 M. Red Sea, Indo-Pacific

Reported from Pakistan by Melvill, 1911 as *Pyramidella propinqua* A. Adams, 1853



Genus *Pyramidella* Lamarck, 1799

610. *Pyramidella maculosa* Lamarck, 1822

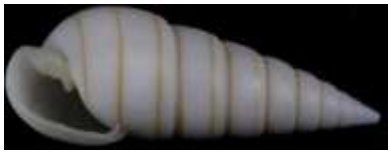
Distribution: Moderately deep water in sand .Persian Gulf, Australia, French Polynesia, United States, Japan, Cook Islands



Reported from Pakistan by Melvill, 1910.
(From Naturalis Biodiversity Center/Wikimedia Commons ;Wikipeda.com)

611. *Pyramidella dolabrata* (Linnaeus, 1758) (Giant Atlantic pyram)

Distribution: Benthic; depth range 0 - 57 m. Indo-Pacific; Senegal; SE Florida, USA, E Brazil; Jamaica
Reported from Pakistan by Pilsbry and Johnson, 1903



(From Wikimedia Commons)

Genus *Monotygma* G. B. Sowerby II, 1839

612. *Monotygma fulva* (A. Adams,1853) 5-7mm.

Brownish, with a lighter colouration near the columellar zone

Distribution: Dredged.Indo-Pacific, Mediterranean
Reported from Pakistan by Melvill and Standen, 1901 as *Adelactaeon fulvus*



(From G. Buzzuro - E. Greppi)

Superfamily Architectonicoidea Gray, 1840

Family Architectonicidae Gray, 1850 (Sundials)

Genus *Architectonica* Roeding, 1798

614. *Architectonica arcana* Bieler, 1993

Distribution: Sublittoral, depth records between 67 and 103 m . Indo-Pacific, Persian Gulf.

Reported from Pakistan by Bieler, 1993; OBIS, 2004

615. *Architectonica laevigata* (Lamarck, 1816)

30mm.(Smooth sundial)

Distribution: Soft sediment of intertidal zone, River mouth. Red Sea, Persian Gulf, South Africa, Queensland, Australia , Philippines, Sri Lanka,Bay of Bengal, Madagascar, India. Reported from Pakistan by Melvill, 1864 ; Sowerby, 1896 as *Solarium laevigatum* Lamarck.



616. *Architectonica nobilis* Roding, 1798 (Granulated sundial).

Distribution: seamounts and knolls .Atlantic Ocean.

Reported from Pakistan by Khan and Dastagir, 1971;

Oliver, 2004 as *Architectonica granulata* Lamarck



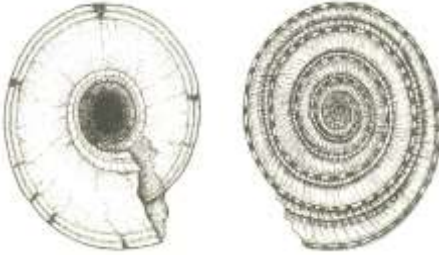
(From Khan and Dastagir, 1971)

617. *Architectonica perspectiva* (Linnaeus, 1758)

(Oriental sundial). 50cm. White to yellowish brown lighter at the edges and beneath. Operculum horny and dark brown

Distribution: Sandy areas, fine sand in lower eulittoral zone. Tropical Indo- Pacific.

Reported from Pakistan by Melvill and Sanden, 1903 as



(From Tirmizi and Zehra, 1984)

618. *Architectonica maxima* (Phillipi, 1849) 60mm.

Distribution: Shallow sands. Indowest Pacific

Reported from Pakistan by Oliver and Nicholls, 2004



619. *Architectonica stellata* (Philippi, 1849) (Staircase shell)

Distribution: Sub littoral epth records from 45 to 285 m. Sandy beaches. Known from the northern Indian Ocean and Indonesia.

Reported from Pakistan by Beiler, 1993

620. *Architectonica purpurata* (Hinds, 1844)

Distribution: Sub littoral. Northern Indian Ocean to New Guinea in the western Pacific. Records from eastern Indian Ocean and from Hawaiian Islands in need of verification.

Reported from Pakistan by Beiler, 1993

Genus *Adelphotectonica* Bieler, 1987

621. *Adelphotectonica kuroharai* (Kuroda and Habe in Habe, 1961)

Distribution: Sandy beaches. Indo-Pacific.

Reported from Pakistan by PARC (unpublished report, 1986) as *Architectonica kuroharai* Kuroda and Habe.

Genus *Haliacus* Orbigny, 1842

622. *Haliacus variegatus* (Gmelin, 1791) (Variegated sundial).

Distribution: At low tide, offshore and beached. Eastern Arabia.

Reported from Pakistan by Khan and Dastagir, 1971 as *Torinia variegata*



(From Khan and Dastagir, 1971)

623. *Heliacus cerdaleus* (Melvill and Standen, 1903)

Distribution: Subtidal .Indo-Pacific

Reported from Pakistan by Melvill and Standen, 1903



624. *Heliacus implexus* Mighels, 1845

Distribution: Subtidal, occasionally encountered intertidally, on colonies of zoanthinarian polyps but major habitat apparently sublittoral (most records from below 20 m. Africa to EasterIsland

Reported from Pakistan by Barnard, 1963 as *Heliacus dorsuosus* (Hinds).



625. *Heliacus stramineus* (Gmelin, 1791)

Distribution: Subtidal .Indo-Pacific

Reported from Pakistan by Rehman and Barkati, 2012

Genus *Granosolarium* Sacco, 1892

626. *Granosolarium asperum* (Hinds, 1844)

Distribution: Sublittoral and upper bathyal, muddy, sandy, and rubble substrates, depth records between 50 and 100 m. Subtropical and tropical Indian Ocean to central Pacific

Reported from Pakistan by Bieler, 1993



(From Poppe, 2015)

Genus *Pseudotorinia* Sacco, 1892

627. *Pseudotorinia amoena* (Murdoch & Suter, 1906)

Distribution: Sublittoral, live records from 68-80 m; mud, sand and coral rubble substrates. Indian Ocean and western Pacific.

Reported from Pakistan by Bieler, 1993

628. *Pseudotorinia gemmulata* (Thiele, 1925)

Distribution: Sublittoral to upper bathyal, live records from throughout that range. Indo-West Pacific, Atlantic

Reported from Pakistan by Bieler, 1993

629. *Pseudotorinia delectabilis* (Melville, 1893) Up to 5.3 mm. in diameter. colour white sometimes translucent

Distribution: Shallow water to upper bathyal (685 m), live records from "under rocks, in shallow water. Indowest-Pacific.

Reported from Pakistan by Bieler, 1993



(After Poppe)

Infraclass Pulmonata Cuvier in Blainville, 1814

Order Systellomatophora Pilsbry, 1948

Superfamily Pupilloidea W. Turton, 1831

Family Pupillidae Turton, 1831

Genus *Pupoides* Pfeiffer, 1854

630. *Pupoides karachiensis* Peile, 1929

Distribution: Beach sand. No Georeferenced data available

Reported from Pakistan by Peile, 1929



Superfamily Onchidioidea Rafinesque, 1815

Family Onchidiidae Rafinesque, 1815

Genus *Onchidella* Gray, 1850

631. *Onchidella* sp.

Distribution: Attached on rocks

Reported from Pakistan by Barkati et al., 1990



Egg mass Animal

Genus *Onchidium* Buchanan, 1800

632. *Onchidium daemelli* Semper, 1885

Distribution: Intertidal. Indo-pacific

Reported From Pakistan by Rahman and Barkati, 2004.



Genus *Peronia* Fleming, 1822

633. *Peronia peronii* (Cuvier, 1804) (Mangrove Onch Slug)

Distribution: supralittoral. Mozambique, Madagascar,

Reported from Pakistan, present study



634. *Peronia verruculata* (Cuvier, 1830)

Distribution: Rocky shore. Indian Ocean

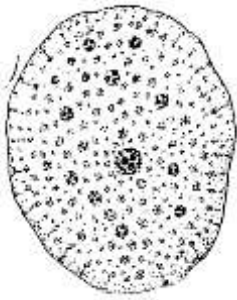
Reported from Pakistan by Zehra and Shamim, 2004 as *Onchidium verruculatum* (Cuvier, 1930).

Genus *Wallaconchis* Goulding & Dayrat, 2018 nomen dubium

635. *Wallaconchis simrothi* (Plate, 1893) 14x15mm.

Distribution: Mangrove mud, Indian Ocean

Reported from Pakistan by Marcus, 1971 as *Onchidium simrothi* (Plate)



(From Marcus, 1971)

Superfamily Ellobioidea L. Pfeiffer, 1854 (1822)

Family Ellobiidae L. Pfeiffer, 1854 (1822) (Hollow shelled snails)

Genus *Laemodonta* Philippi, 1846

636. *Laemodonta sykesii* (Melvill, 1897) Horny yellow

Distribution: Salt marsh. Arab Emirates, Singapore

Reported from Pakistan by Melvill, 1897 as *Plecotrema sykesii* Melvill



637. *Laemodonta concinnum* (H. and A. Adams, 1853)

Distribution: Salt marsh, brackish.?

Reported from Pakistan by Melvill, 1897 as *Plecotrema concinnum* H. and A. Adams, 1853

Genus *Melampus* Montfort, 1810

638. *Melampus taeniolatus* Hombron and Jacquinot, 1851 16mm.

Distribution: In the intertidal zone of mangroves amongst the roots and branches. Pacific

Reported from Pakistan by Habe, 1964



639. *Melampus castaneus* (Megerle von Mühlfeld, 1816) Brown colour

Distribution: In the intertidal zone of mangroves amongst the roots and branches under stones. Indo-Pacific

Reported from Pakistan by Bosh *et al.* 1995

Genus *Ellobium* Röding, 1798

640. *Ellobium opportunatum* Gould, A.A., 1859

Distribution: In the intertidal zone of mangroves amongst the roots and branches, halophilic. Indo-Pacific

Reported from Pakistan by Habe, 1964



Order Siphonariida Gray, 1827

Superfamily Siphonarioidea Gray, 1827

Family Siphonariidae Gray, 1840

Genus *Siphonaria* Sowerby, 1823 (The false limpet)

641. *Siphonaria rosea* Hubendick, 1943 13x10x6v mm.

Distribution: Found on rocks very near to high tide level.
Indian Ocean, Northern Arabian Sea and Persian Gulf.
Reported from Pakistan by Tirmizi and Zehra, 1984.



(From Tirmizi and Zehra, 1984)

642. *Siphonaria javanica* (Lamarck, 1819)

Distribution: On boulders near the high water mark.
Indonesia; Vietnam; Philippines, South Africa, Atlantic
Reported from Pakistan by Melvill and Standen, 1901.



(Photos contributed by Moazzam)

643. *Siphonaria atra* Quoy and Gaimard, 1833

Distribution: Intertidal rocks, on large boulders near reefs
.Singapore, Australia
Reported from Pakistan by Melvill and Standen, 1901 as
Siphonaria lecanium a misidentification of *atra*, fide
Hubendick, 1946



644. *Siphonaria belcheri* Hanley, 1858

Distribution: Intertidal rocks. Oman, Bahrain

Reported from Pakistan by Bano et al, 2011



(From Bano et al, 2011)

645. *Siphonaria asghar* Biggs, 1958

Distribution: Intertidal rocks. Oman.

Reported from Pakistan by Winckworth, 1924, unpublished.



(Photo contributed by Moazzam)

646. *Siphonaria kurracheensis* Reeve, 1856

Distribution: Rocky shores. European waters, Red Sea, Turkey, Indo-Pacific.

Reported from Pakistan by Reeve, 1856; Bano et al, 2011



(Photo contributed by Moazzam)

647. *Siphonaria savignyi* Krauss, 1848

Distribution: on rocks?

Reported from Pakistan by Ghani et al, 2017



(Photo contributed by Moazzam as *Siphonaria cf savignyi*)

648. *Siphonaria basseinensis* Melvill, 1893

Distribution: Among Oyster shells.India

Reported from Pakistan by Siddiqui and Ahmed, 2001

Superfamily Ringiculoidea Philippi, 1853

Family Ringiculidae Philippi, 1853

Genus *Ringicula* Deshayes, 1838

649. *Ringicula propinquans* Hinds, 1844 3-4mm.

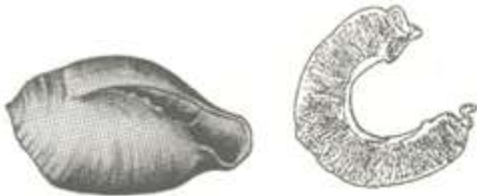
Distribution: Off shore, deep Sea .Indo-Pacific, Persian Gulf

Reported from Pakistan by Melvill and Standen, 1901



(From <http://www.nmr-pics.nl/Ringiculidae>)
Superfamily Acteonoidea d'Orbigny, 1843
Family Acteonidae Orbigny, 1835
Genus *Pupa* Roding, 1798

650. *Pupa solidula* (Linnaeus, 1767). 15-35 mm. shell with a white background, covered with horizontally spiraling bands of dark brown to light brown patterns;
Distribution: Shallow water on sand of rocky shores.
Tropical and Indo-Pacific.
Reported from Pakistan by Kazmi et al, 1996.



Egg ribbon (From Tirmizi, 1985 unpublished)

651. *Pupa sulcata* (Gmelin, 1791) (Furrowed Pupa) 10-25 mm. light brown shell with horizontal darker bands, where the darkest parts form a vertical band.
Distribution: Shallow water on sand: intertidal and up to depths of 30 m, burrowing in the sand. Indo-Pacific.
Reported from Pakistan by Kazmi et al, 1996.



^

(From Femorale)

652. *Pupa affinis* (Adams, 1855)

Distribution: 5-15m. On muddy sand. Indo-pacific.
Reported from Pakistan by Melvill and Standen, 1901.



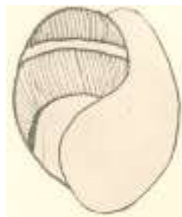
(Photos contributed by Moazzam)

Family Aplustridae Gray, 1847

Genus *Hydatina* Schumacher, 1817

653. *Hydatina albocincta* (van der Hoeven, 1839) Five or more dark bands.

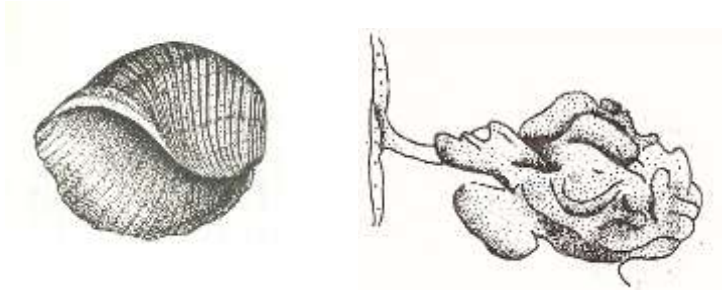
Distribution: Offshore. Indo-Pacific.
Reported from Pakistan by Kazmi et al, 1996.



654. *Hydatina physis* (Linnaeus, 1758) 23mm.

Distribution: Rocky shores in small pools on silty sand. Circumtropical and known from all warm oceans of the world.

Reported from Pakistan by Khan and Dastagir, 1971.



Spawn mass (From Zehra and Perveen, 1992)

655. *Hydatina zonata* (Lightfoot, 1786) 25mm. Shell ivory coloured, encircled by one white band bordered with black. Among stones in sand at low tide.

Distribution: South Africa, Arabian Gulf, northern Arabian Sea and Pacific Ocean.

Reported from Pakistan by Khan and Dastagir, 1971 as *Hydatina velum* (Gmelin, 1791)



(From Khan and Dastagir, 1971) animal (From Hornell, 1951 as *Hydatina velum* (Gmelin, 1791)

Order Cephalaspidea Fischer, 1883 (Headshield snails)
Superfamily Bolloidea Gray, 1827

Family Tornatinidae P. Fischer, 1883

Genus *Acteocina* Gray, 1847

656. *Acteocina crithodes* (Melvill and Standen, 1901)

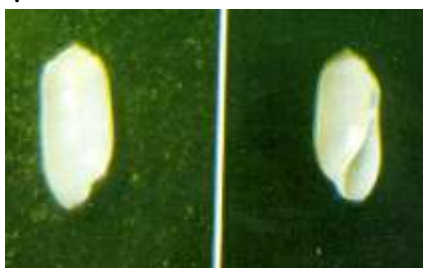
Distribution: No Georeferenced data available

Reported from Pakistan by Melvill and Standen, 1901 as *Tornatina* (A. Ad.) *crithodes*

657. *Acteocina townsendi* Melvill, 1898. 2-4mm.

Distribution: Sandy beaches. Persian Gulf, Indian Ocean

Reported from Pakistan by Melvill, 1898 as *Tornatina townsendi* Melvill, 1898. 2-4mm.



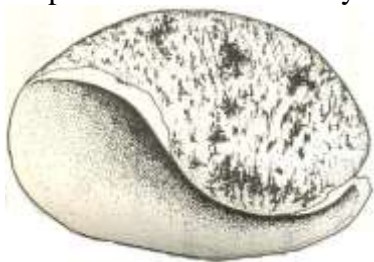
Family Bullidae Rafinesque, 1815

Genus *Bulla* Linnaeus, 1758. (Bubble Shell)

658. *Bulla ampulla* Linnaeus, 1758 Cream-coloured with blotches of dark, purple-brown

Distribution: Sublittoral. In rock and tidal pools association with seaweed, near mangroves. Indo-west Pacific

Reported from Pakistan by Melvill and Standen, 1901



(From Tirmizi and Zehra, 1984)

659. *Bulla arabica* Malaquias and Reid, 2008 Orange-yellow with bright white dots scattered over cephalic shield, cephalic and parapodial lobes and foot
Distribution: Low intertidal in sheltered lagoons .Red Sea and Arabian Peninsula, Mediterranean, Atlantic
Reported from Pakistan by Malaquias and Reid, 2008



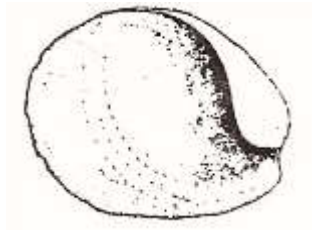
Superfamily Philinoidea Gray, 1850
Family Aglajidae Pilsbry, 1895 (1847)
Genus *Chelidonura* A. Adams, 1850

660. *Chelidonura electra* Rudman, 1970 .up to 11 cm long. Pure white with bright yellow margins and edging,
Distribution: Shallow sandy areas, possibly associated with *Porites* species of hard coral. Indo-Pacific.
Reported from Pakistan by Ali, 2006.

Family Philinidae Gray, 1850
Genus *Philine* Ascanius, 1772

661. *Philine lima* (Brown, 1827) (File paper bubble).
Distribution: Sandy Beach. European waters, Indian Ocean
Reported from Pakistan by Ahmed and Hameed, 1999 as *Bullia lineolata* (Wood).

662. *Philine kurodai* Habe, 1946.
Distribution: Shallow waters on soft wet sandy beaches, burrowing. Indo-Pacific.
Reported from Pakistan by Tirmizi and Zehra, 1982.

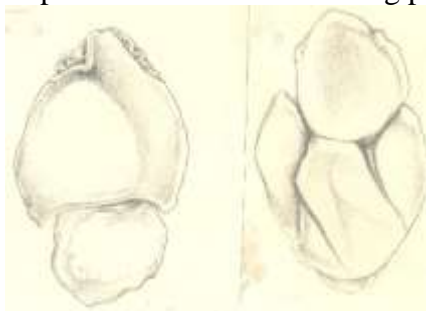


Shell and animal Shell

663. *Philine asperta* (Linnaeus, 1767) (Sand slug) shell translucent, white to pale yellow, with white dots

Distribution: subtidally to several hundreds of meters underwater. Northern Europe to South Africa, the Pacific and Indian Oceans.

Reported from Pakistan during present study



Superfamily Haminoeioidea Pilsbry, 1895

Family Haminoeidae Pilsbry, 1895

Genus *Haminoea* Turton and Kingston, 1830

664. *Haminoea tenera* (Adams, 1850) Shell uniformly pale greenish white in colour.

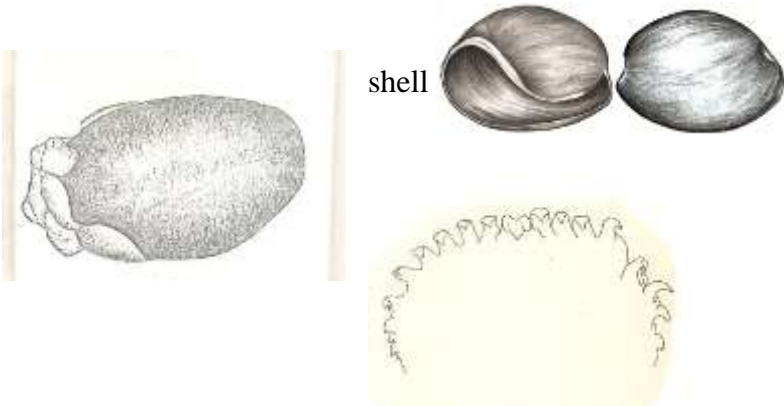
Distribution: Muddy-cum-sandy shores. Indian Ocean.

Reported from Pakistan by Khan et al, 1973

665. *Haminoea natalensis* (Krauss, 1848).*species inquirenda.* Shell and body green, irregular patches and spots of darker shades of green.

Distribution: Shallow pools in the rocky area with weeds.
Indian Ocean.

Reported from Pakistan by Kazmi et al, 1996



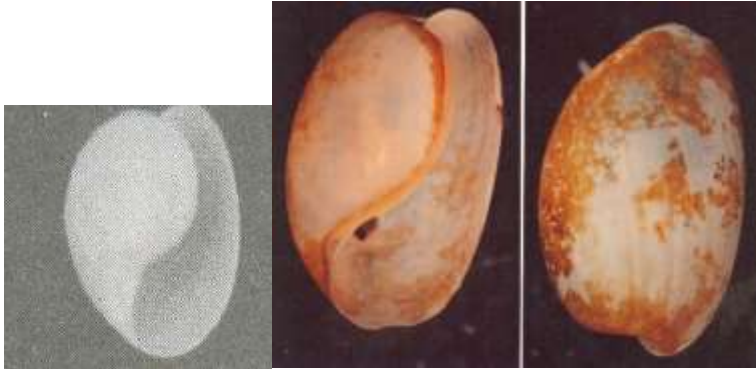
Egg spawn

Radula

666. *Haminoea elegans* (Gray, 1825)

Distribution: Rocky shores.India, Europe

Reported from Pakistan by Iffat, 2005 as *Haminea elegans*.



667. *Haminoea japonica* Pilsbry, 1895

Distribution: Mangroves, in sheltered waters, mudflats,tide pools. Indo-Pacific, Europ, USA

Reported from Pakistan by Barkati and Rahman, 2005.

Genus *Aliculastrum* Pilsbry, 1896

668. *Aliculastrum cylindricum* (Helbling, 1779) . 30 mm.
Distribution: Littoral, sandy. Indo-Pacific
Reported from Pakistan by Kazmi and Moazzam, 2014 as
Atys cf *cylindrica* Hinds, 1779



Genus *Bullacta* Bergh, 1901

669. *Bullacta exarata* (Philippi, 1849) (Korean mud snail)
Distribution: Mangroves near shore, intertidal, supratidal
and subtidal.
Reported from Pakistan by Ullah et al,2015;Hamdard et al,
2016 as *Haminoea exarata*, probably a
misidentification,needs reassessment since suggested
endemic to the north-eastern Chinese and western South
Korean coastlines fideTchang, 1934



Order Aplysiida Pelseneer, 1906
Superfamily Aplysioidea Lamarck, 1809
Family Aplysiidae Lamarck, 1809 (Sea Hares)

Genus *Aplysia* Linnaeus, 1767

670. *Aplysia argus* Rüppell and Leuckart, 1830.

Distribution: Rocky shore. Indo-Pacific

Reported from Pakistan by Kazmi et al, 1996 as *Aplysia benedicti* Eliot, 1899

671. *Aplysia oculifera* Adams and Reeve, 1850.

Distribution: Rock pools. Widely distributed throughout the Indo-West Pacific as far the Hawaii Islands.

Reported from Pakistan by Kazmi et al, 1999.



672. *Aplysia parvula* Mörch, 1863 40mm. Occurs consistently in at least two forms, the larger pale-coloured and the tiny black one although other colour forms recorded

Distribution: shallow water associated with algae, reef.

Circumtropical

Reported from Pakistan during present study



673. *Aplysia* sp.1

Distribution: in weeds

Reported from Pakistan, present study



674. *Aplysia* sp.2

Distribution: in weeds

Reported from Pakistan , present study



675. *Aplysia juliana* Quoy and Gaimard, 1832 Brownish form with pale spots , most common form, other one with a uniform black colouration

Distribution: in algal tide pools .Circumglobal, found in all warm water regions of the world

Reported from Pakistan by Eales, 1957



(Photo Rudman, 1999)

Genus *Syphonota* Adams and Adams, 1854

676. *Syphonota geographica* (Adams and Reeve, 1850)

(Geographic seahare). 150mm.

Distribution: At 5m depth, lagoons, bays on sandy beaches. Indo-Pacific, Mediterranean, Red Sea, Atlantic.

Reported from Pakistan by Ali, 2006

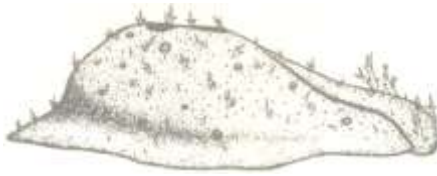
Family Notarchidae Eales and Engel, 1935

Genus *Bursatella* Blainville, 1817 (Ragged seahare)

677. *Bursatella leachii* Blainville, 1817 Large eye like spots scattered over body, each spot peacock green in centre

Distribution: Mid-tidal zone with seaweeds. Circumtropical species, including the Mediterranean Tyrrhenian and Adriatic Seas.

Reported from Pakistan by Eales, 1944 as *B. l. africana*



(From Tirmizi and Zehra, 1982 as *Notarchus*)

Super Order Sacoglossa Ihering, 1876

Superfamily Plakobranchoidea Gray, 1840

Family Plakobranchidae Gray, 1840.(Fold Gilled nudibranchs)

Genus *Elysia* Risso, 1818

678. *Elysia grandifolia* Kelaart, 1858 10cm or more .

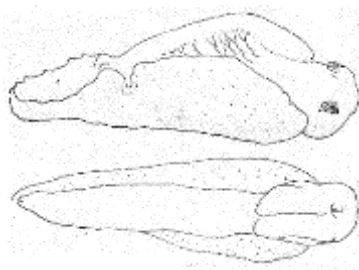
Body green with opaque white and black spots, parapodia with black and orange bands at the edge, not separated by white.

Distribution: 8 m. In tidal pools with green algae. Widespread in the Indo-West Pacific, also Atlantic, Israel. Reported from Pakistan by Kazmi et al, 1996 as *Elysia marginata* Pease; Baig and Zehra, 2006.



679. *Elysia expansa* (O'Donoghue, 1924) Body deep green to pale yellow, depending upon its feeding state, large green parapodia margined by a black line. Rhinophores pale brown and tubular. Distribution: Usually found on *Caulerpa* beds. Indo-west Pacific

Reported from Pakistan, present study



Radula
view

Dorsal views, ventral

680. *Elysia* near *maoria* Powell, 1937 15 mm. Grass green with white spots, Tips of tail black.

Distribution: Among weeds on lower shores. Indo-Pacific, New South Wales, Rottneest Island and Western Australia. Reported from Pakistan by Kazmi et al, 1996

Family Hermaeidae H. Adams and A. Adams, 1854

(Finger gilled nudibranchs)

Genus *Polybranchia* Pease, 1860

681. *Polybranchia orientalis* (Kelaart, 1858)

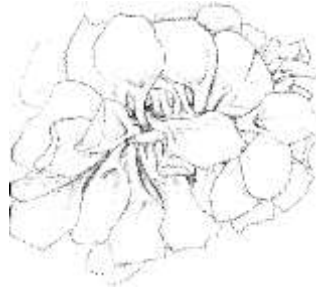
Grayish Yellow with chocolate brown mottling, highly variable in colour, the variation in colour between individuals likely related to the last algae.

Distribution: Rocky shores. Widely distributed throughout the Indo-Pacific. '*P. orientalis*' highly polymorphic, possibly encompassing multiple cryptic species (Gosliner et al., 2015)

Reported from Pakistan by Kazmi et al, 1996



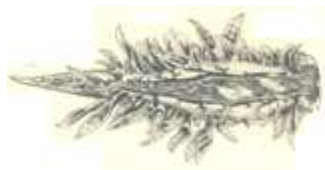
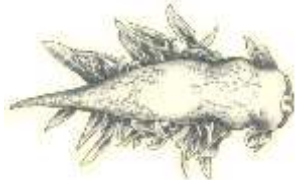
Single ceras



682. *Polybranchia* sp.

Distribution: Associated with green alga *Caulerpa faridii* on rocky shores.

Reported from Pakistan by Kazmi et al, 1996





Single sera

Genus *Caliphylla* A. Costa, 1867

683. *Caliphylla viridis* (Deshayes, 1857) Green-brown with white specks.

Distribution: Rocky cum muddy shores, with *Caulerpa*. Indo-Pacific, Atlantic. Mediterranean

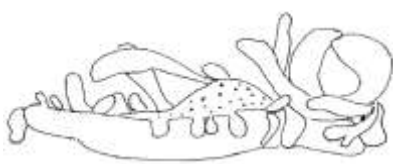
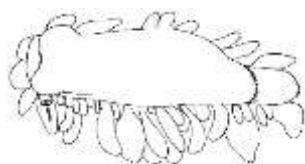
Reported from Pakistan by Kazmi et al, 1996 as *Polybranchia viridis* (Deshayes, 1857). .

Genus *Cycerce* Bergh, 1871

684. *Cycerce* sp. 5.8 mm. Yellow body with green specks

Distribution: Associated with green seaweed.

Reported from Pakistan, present study



Ventral view

Lateral view

Family Limapontiidae Gray, 1847

Genus *Placida* Trinchese, 1876

685. *Placida daguilarensis* Jensen, 1990

Distribution: Associated with green algae. Indo-Pacific

Reported from Pakistan by Kazmi and Khan, 2014



(Animal photo courtesy I.Zehra) single cera

Order Pleurobranchomorpha Pelsener, 1906

Superfamily Pleurobrancoidea Gray, 1827

Family Pleurobranchidae Gray, 1827

Genus *Berthellina* Gardiner, 1936

686. *Berthellina citrina* (Ruppell and Leuckart, 1828)

Distribution: In rock pools attached to under surface of stones. Atlantic Coast of Cape Peninsula to Mozambique, Suez, Red Sea, throughout the Indo-Pacific to Hawaii.

Reported from Pakistan by Kazmi et al, 1996.



Animal and Egg ribbon

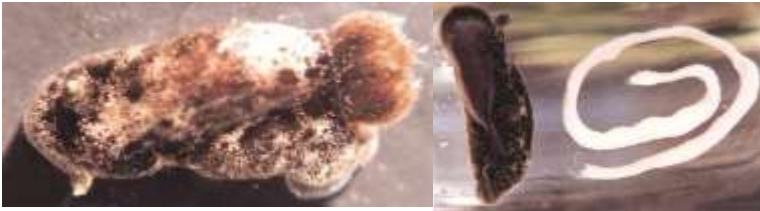
Genus *Berthella* Blainville, 1824

687. *Berthella stellata* (Risso, 1826) Translucent with opaque white markings.
Distribution: Mid-intertidal zone under rocks.
Circumtropical, subtropical and temperate.
Reported from Pakistan by Kazmi et al, 1996 as *Berthella tupala* Marcus, 1957



Order Nudibranchia Cuvier, 1817
Superfamily Onchidoridoidea Gray, 1827
Family Goniodorididae H. and A. Adams, 1854
Genus *Goniodoris* Forbes and Goodsir, 1839

688. *Goniodoris modesta* Alder and Hancock, 1864
12mm. Dark brown more or less mottled, gills light brown.
Distribution: shallow water offshore, down to 25 m. rarely in the inter-tidal zone. Indo-Pacific.
Reported From Pakistan by Eliot, 1905



With egg ribbon

689. *Goniodoris* sp. Brown, yellow and orange,
Reported from Pakistan by Kazmi et al, 1996



Genus *Okenia* Menke, 1830

690. *Okenia* sp.1

Distribution: Under small stone, muddy cum sandy.

Reported from Pakistan by Kazmi et al, 1996



691. *Okenia* sp.2

Distribution: In weeds

Reported from Pakistan, present study



692. *Okenia* sp.3

Distribution: in weeds

Reported from Pakistan, present study

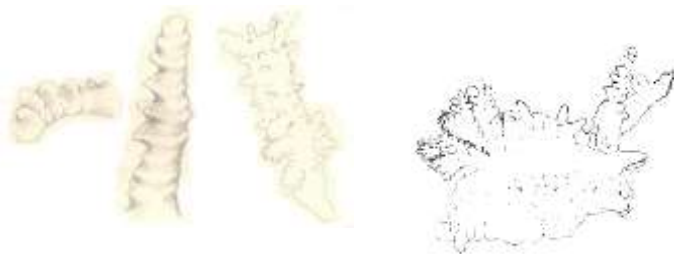


Genus *Ancula* Loven, 1846

693. *Ancula* sp. Brown dots.

Distribution: Associated with coelenterate colonies in back waters.

Reported from Pakistan, present study



Rhinophore magnified

Superfamily Polyceroidea Alder and Hancock, 1845

Family Polyceridae Alder and Hancock, 1845

Genus *Thecacera* Fleming, 1828

694. *Thecacera peningera* (Montagu, 1813) 6mm. Foot yellow, and spotted with tiny orange and black spots. Body light flesh colour, appears speckled with white dots/rodlets. Rhinophore sheath and gills covered by orange and black spots.

Distribution: Occurs From intertidal boundary to 15m. Widespread, with a seemingly cosmopolitan distribution, known From Europe, Brazil, South Africa,

India, Japan, Australia and New Zealand. Korea, Senegal, Israel, West Africa,
Reported from Pakistan by Eliot, 1905 as *Thecacera maculata*



(Photo by Bernard Picton - Own work, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=36848025>)

Genus *Kalinga* Alder and Hancock, 1864

695. *Kalinga ornata* Alder and Hancock, 1864 130 mm.

Distribution: In the deep coastal waters to tide pools, within intertidal zone; in subtidal waters, and on rocky shores, prefers sandy or silty substrate.

Reported From Pakistan by Moazzam *et al.*, 2016



(Photo contributed by Moazzam)

Genus *Tambja* Burn, 1962

696. *Tambja morosa* (Bergh, 1877) (Gloomy nudibranch).60-75 mm. Black body with blue lines and spots in many variations on the body and the tips of the gills.

Distribution: Tidal pools to 8m. depth, reef, bryozoans colonies, in moderately exposed to highly exposed rocky habitats particularly shaded cliffs. Indo-Pacific.

Reported from Pakistan by Ali, 2006

Superfamily Doridoidea Rafinesque, 1815

Family Dorididae Rafinesque, 1815

Genus *Doris* Linnaeus, 1758

697. *Doris cameroni* (Allan, 1947) 190mm. Brown with scattered brown blotches of different shades.

Distribution: Sandy. Intertidal. Indo-Pacific, New South Wales, Victoria, W. Australia.

Reported from Pakistan by Kazmi et al, 1996



Genus *Artachaea* Bergh, 1881

698. *Artachaea* sp. Brownish mottled. .

Distribution: Intertidal rocks. Indian Ocean.

Reported from Pakistan by Kazmi et al., 1996



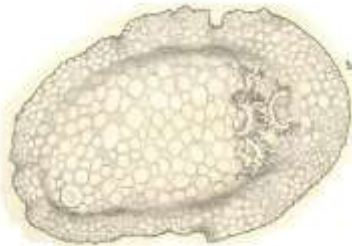
Family Discodorididae Bergh, 1891

Genus *Sebadoris* Er. Marcus and Ev. Marcus, 1960

699. *Sebadoris fragilis* (Alder and Hancock 1864) 15-80 mm

Distribution: Intertidal. Indian Ocean, Australia, Philippines, Red Sea, Japan, South Africa, Thailand, Hawaii, New Caledonia.

Reported from Pakistan by Kazmi et al., 1996 as *Discodoris concinna* Alder and Hancock, 1864



Egg ribbon

Genus *Jorunna* Bergh, 1876

700. *Jorunna funebris* (Kelaart, 1859) White body with black spots.

Distribution: Rock pools, attached to underside of stones, intertidal to subtidal. Indo-west Pacific, Persian Gulf.

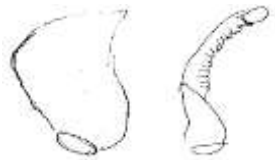
Reported from Pakistan by Kazmi et al., 1996 as *Jorunna zania* Marcus



Egg ribbon

Animal

701. *Joruna tomentosa* (Cuvier, 1804). 2mm. Yellow brown body with dark brown spots.
 Distribution: Along with seaweed. Cosmopolitan.
 Reported from Pakistan, present study



Radular teeth

Genus *Rostanga* Bergh, 1879

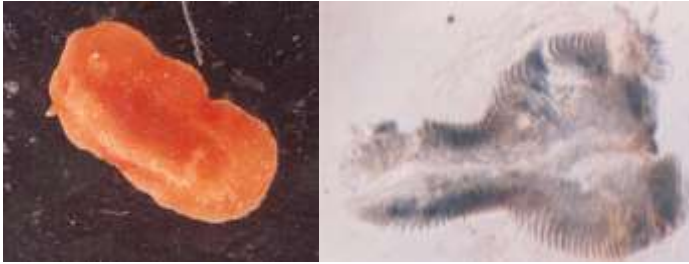
702. *Rostanga muscula* (Abraham, 1877) Red orange colour with dark markings on entire body.
 Distribution: Under rocks in midintertidal zone. Indo-Pacific, tropics.
 Reported from Pakistan by Kazmi et al., 1996



703. *Rostanga calumus* Rudmann and Avern, 1989 44 mm. Yellow-orange with black spots on yellow central part of notum.

Distribution: Associated with red sponge. Tasmania, New South Wales and Western Australia

Reported from Pakistan, present Study



Radula

Family Chromodorididae Bergh, 1891

Genus Goniobranchus Pease, 1866

704. *Goniobranchus* near *tumuliferus* (Collingwood, 1881) Yellowish orange, deep violet spots.

Distribution: Rocky shores, dwells in crevices, 2m. Red Sea, Suez and Polynesia.

Reported from Pakistan by Kazmi, 1992; Kazmi et al., 1996 as *Chromodoris aspersa*



705. *Goniobranchus petechialis* (Gould, 1852) 11mm.

Edge bright orange, deep crimson spots.

Distribution: external slopes of coral reefs. Indo-Pacific.

Reported from Pakistan by Eliot, 1905 as *Chromodoris petechialis* (Gould)



706. *Goniobranchus kuniei* (Pruvot-Fol, 1930).

Distribution: Subtidal. Tropical Indo-west Pacific.

Reported from Pakistan by Ali, 2006 as *Chromodoris kuniei*

Genus *Hypselodoris* Stimpson, 1855

707. *Hypselodoris pulchella* (Ruppell and Leuckart, 1830) Brown body with yellow spots, margin bright violet.

Distribution: Rocky shores in crevices, associated with sponges and weeds. Widely distributed throughout the tropical Indo-Pacific, Red Sea.

Reported from Pakistan by Kazmi et al., 1996 as *Risbecia pulchella*.



708. *Hypselodoris infucata* (Ruppell and Leuckart, 1830) 17-21mm. Body covered with black and yellow spots of varying sizes, broken lines of purple spots along the margins, gills white and orange.

Distribution: Rocky areas. Indo-Pacific.

Reported from Pakistan by Eliot, 1905 as *Chromodoris semperi* Bergh, 1877.



animal

branchia

Super family Phyllidioidea Rafinesque, 1814

Family Dendrodorididae O'Donoghue, 1924 (1864)

Genus *Dendrodoris* Ehrenberg, 1831

709. *Dendrodoris krusensternii* (Gray, 1850) 80-90mm. Background colour beige, brown and white tubercles with vivid blue spots in between tubercles. Gills axes dark brown and numerous white dots on outer face, rhinophores brown with white tips

Distribution: Low tidal zone. Wide spread throughout the Indo-West Pacific

Reported from Pakistan by Khanum and Kazmi, 2016



710. *Dendrodoris nigra* (Stimpson, 1855)

Distribution: On mudflats in intertidal region. Indian Ocean, Red Sea, Suez Canal and Pacific Ocean.

Reported from Pakistan by Kazmi et al, 1996



711. *Dendrodoris nigromaculata* (Cockerell, 1905)

Translucent white with chocolate brown blotches

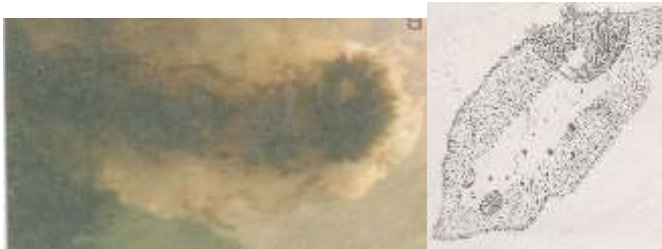
Distribution: Rocky shores. Suez and Atlantic.

Reported from Pakistan by Tirmizi and Zehra, 1988

712. *Dendrodoris fumata* (Ruppell and Leuckart, 1830)

8-60 mm. Rhinophores have white tips. Gills are tri-pinnate, number of colour. Morphs From pale brown to deep orange in specimens around 8-20 mm to pale brown with patches of dark brown or vice versa in specimens around 20-40 mm; and to pale brown with dark brown or blackish patches in specimens around 40-60 mm

Reported from Pakistan by Eliot, 1905 as *Doridopsis rubra*



Genus *Doriopsilla* Bergh, 1880

713. *Doriopsilla miniata* (Alder and Hancock, 1864)

23mm. Pale with center of back black

Distribution: Intertidal.Mediterranean Sea, India, S. Africa, Australia and Japan.

Reported from Pakistan by Eliot, 1905 as *Doridopsis miniata*



Superfamily Polyceridea Alder and Hancock, 1845
Family Hexabanchidae Bergh, 1891
Genus *Hexabanchus* Ehrenberg, 1828

714. *Hexabanchus sanguineus* (Rüppell and Leuckart, 1830) 40cm.

Distribution: In caves or around rocks. Phillipines, Red Sea, Tanzania

Reported from Pakistan, present study



Family Polyceridae Alder and Hancock, 1845
Genus *Crimora* Alder and Hancock, 1862

715. *Crimora* sp. 35mm.

Distribution: Rocky shores in shallow water.

Reported from Pakistan, present study



Order Nudibranchia Cuvier, 1817

Superfamily Dendronotoidea Allman, 1845

Family Dotidae Gray, 1853

Genus *Doto* Gray, 1853

716. *Doto* cf *kya* Marcus, 1961 3mm. Body with irregular, brown-black patches, on yellow ground colour.

Distribution: Shallow water, floating among hydroids.

Reported from Pakistan by Kazmi and Khan, 2014



Family Bornellidae Bergh, 1874

Genus *Bornella* Gray, 1850

717. *Bornella stellifer* (Adams and Reeve in Adams, 1848). Deep reddish-brown with white patches, tips of cerata and papillae with a red band.

Distribution: Rocky shores, reefs. Indo-West Pacific: South China Sea, Australia, Korea, Indian Ocean, South Africa, East Africa, Philippines, Arafura Sea, China Sea, Japan, Hong Kong, Tahiti, New Caledonia, Taiwan, Thailand, Marshall Islands and Papua New Guinea

Reported from Pakistan by Eliot, 1905 as *Bornella digitata* Adams and Reeve.



**Superfamily Arminoidea Iredale and O'Donoghue,
1923 (1841)**

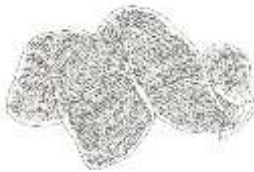
Family Arminidae Rafinesque, 1814

Genus *Armina* Rafinesque, 1814

718. *Armina* cf. *babai* (Tchang, 1934) 50 mm. General ground color of live specimens ashy, with two large purplish spots on the notum; head veil ashy with dark brown papillae, some papillae below rhinophores, and the anterior gills yellowish white; posterior gills dark purple; sole yellow

Distribution: Rocky-cum-muddy shores, burrow in the sediment, live mainly in deep water. China, Japan.

Reported from Pakistan by Kazmi and Tirmizi, 1997



Egg ribbon



Tooth



Animal

719. *Armina* cf. *punctilopsis* Lin, 1992

Distribution: Muddy bottom. Hong Kong.

Reported from Pakistan by Kazmi and Tirmizi, 1996



(From Guangyu, 1992)

720. *Armina cara* Marcus, 1971 5 x 27mm. Pale brown, yellow mottling

Distribution: Sandy beach, low water zone. Not outside type locality.

Reported from Pakistan by Marcus, 1971

Unassigned Cladobranchia

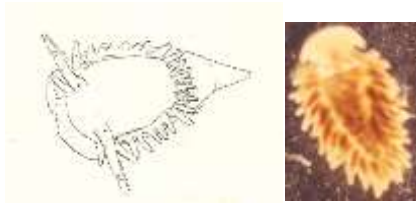
Family Madrellidae Preston, 1911

Genus *Madrella* Alder and Hancock, 1864

721. *Madrella* sp.

Distribution: Intertidal pools

Reported from Pakistan during present study



Superfamily Fionoidea Gray, 1857

Family Trinchesiidae F. Nordsieck, 1972

Genus *Catriona* Winckworth, 1941

722. *Catriona* aff. *columbiana* (O'Donoghue, 1922)

20mm. Head with triangle orange blotch. Oral tentacles with orange and white stripes, rhinophores orange.

Distribution: Low water zone. Atlantic Ocean, Pacific coast of N. America, Japan and S. Africa.

Reported from Pakistan by Kazmi and Khan, 2014 as

Cuthona aff. *columbiana*



Animal



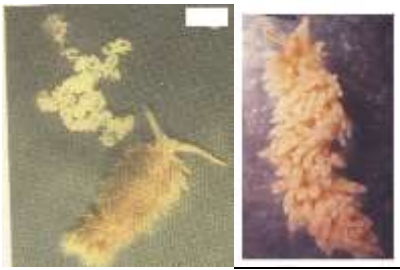
cerata

Super family Aeoliodiidea Gray, 1827
Family Facelinidae Bergh in Carus, 1889
Genus *Phidiana* Gray, 1850

723. *Phidiana militaris* (Alder and Hancock, 1864).

Distribution: Intertidal zone. Japan.

Reported from Pakistan by Kazmi et al., 1996 as *Caloria militaris*.

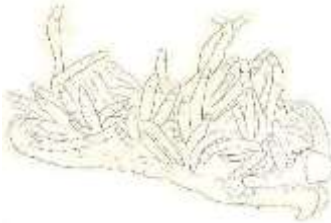


Genus *Cratena* Bergh, 1864

724. *Cratena* sp. 7mm. body off-white, oral tentacles bright orange, cerata off white, with sub apical maroon and orange bands.

Distribution: Intertidal zone with weeds.

Reported from Pakistan, present study



Family Aeolidiidae Gray, 1827
Genus *Anteaeolidiella* M. C. Miller, 2001

725. *Anteaeolidiella indica* (Bergh, 1888).

Distribution: Under rocks. Indian Ocean, Mediterranean Sea, Japan,

Reported from Pakistan by Kazmi and Khan, 2014 as *Aeolidiella indica*



Animal with egg ribbon

Order Pteropoda Cuvier, 1804 (Sea Butterflies)

Superfamily Cavolinioidea Gray, 1850

Family Creseidae Rampal, 1973

Genus *Creseis* Rang, 1828

726. *Creseis clava* (Rang, 1828) 17mm.

Distribution: Epiplanktonic, from 100 m up to 2,000 m.

Gulf of Thailand, South China Sea, Persian Gulf, Gulf of Aden, Bay of Bengal, Mozambique channel

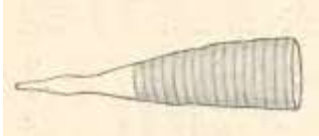
Reported from Pakistan by Stubbing, 1933, Nayeem and Zehra, 1995 as *Creseis acicula* Rang, 1828.



(From Burnett, 2012)

727. *Creseis chierchiae* (Boas, 1886) 2.5mm.

Distribution: Epiplanktonic. Gulf of Thailand, South China Sea, Persian Gulf, Gulf of Aden, Mediterranean, Panama, Florida.



Reported from Pakistan by Sakthivel, 1972 as *Creseis bulgia*; Nayeem and Zehra, 1995 also *Creseis virgula constricta*.

728. *Creseis virgula* (Rang, 1828) (Curved Needle-Pteropod) 4-12mm.

Distribution: Epiplanktonic. Circum tropical.

Reported from Pakistan by Stubbings, 1938



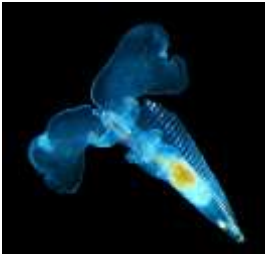
(From CMarZ)

Genus *Hyalocylis* Fol, 1875

729. *Hyalocylis striata* (Rang, 1828) 1.1 x 6.0 mm.

Distribution: Holoplanktonic. Circumtropical. Warm waters (40°N – 30°S) in all oceans.

Reported from Pakistan by Stubbings, 1938, Frontier, 1968



Family Cavoliniidae Gray, 1850 (1815)

Genus *Clio* Linnaeus, 1767

730. *Clio pyramidata* Linnaeus, 1767 9mm.

Distribution: Pelagic, known to be an intermediate host for parasitic copepods that eventually infests fish, temperate, tropical.

Reported from Pakistan by Sakthivel, 1972.



(From McGowan, 1968)

Genus *Styliola* Gray, 1847

731. *Styliola subula* (Quoy and Gaimard, 1827) (Keeled clio) 3 x 7.5mm. Shell transparent, visceral mass rose or red, wings rose-coloured

Distribution: Holoplanktonic, shells moderately rare in sand samples. All oceans between 40°N-40°S.

Reported from Pakistan by Stubbings, 1938

Genus *Diacavolinia* Van der Spoel, 1987

732. *Diacavolinia flexipes* Van der Spoel, Bleeker and Kobayasi, 1993. 4 x 5.5 mm.

Distribution: Planktonic. Gulf of Thailand, South China Sea, Red Sea.

Reported from Pakistan by Stubbings, 1938 as *Cavolina longirostris* Blainville.



Genus *Diacria* Gray, 1840

733. *Diacria costata* (Pfeffer, 1879) taxon inquirendum. 25mm.

Distribution: Planktonic. Indo-Pacific

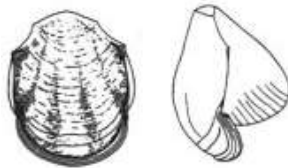
Reported from Pakistan by Leyen and Spoel, 1982



734. *Diacria quadridentata* (Lesueur, 1821) (Four-toothed Cavoline) 3 mm x 1.8 to 2.5 mm.

Distribution: Planktonic. Circumglobal. Red Sea, Madagascar, Gulf of Mexico, Japan.

Reported from Pakistan by Stubbings, 1938



Superfamily Cymbulioidea Gray, 1840

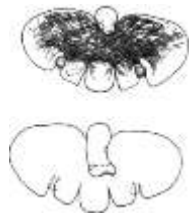
Family Desmopteridae Chun, 1899

Genus *Desmopterus* Chun, 1889

735. *Desmopterus papilio* Chun, 1889 (Butterfly snail)

Distribution: Pelagic .All faunal centres of the Indian Ocean including the Red Sea, Pacific Ocean and occurs in the entire warmer Atlantic Ocean.

Reported from Pakistan by Frontier, 1968.



Superfamily Limacinoidea Gray, 1840

Family Limacinidae Gray, 1840

Genus *Limacina* Bosc, 1817

736. *Limacina trochiformis* (d'Orbigny, 1836)
(Trochiform Pteropod). 7 x 8mm.

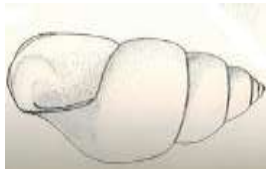
Distribution: Planktonic common in sand samples, Caribbean, Costa Rica, Cuba, European waters, Greek, Gulf of Maine, Gulf of Mexico, North West Atlantic, Venezuela

Reported from Pakistan by Stubbings, 1938

737. *Limacina bulimoides* (d'Orbigny, 1835) 12 x1.3mm.

Distribution: Holoplanktonic or beached. Indo-Pacific

Reported from Pakistan by Stubbings, 1938.



Genus *Heliconoides* d'Orbigny, 1835

738. *Heliconoides inflatus* (d'Orbigny, 1834) 0.5 x 1.5mm.

Distribution: Epipelagic, in the upper 150m. Indo-Pacific
Reported from Pakistan by Frontier, 1968 as *Limacina inflata* (d'Orbigny, 1836).



Class Bivalvia Linnaeus, 1758 (Clams, Mussels, Shipworms, etc.)

Subclass Protobranchia Pelseneer, 1889

Order Nuculida Dall, 1889

Superfamily Nuculoidea Gray, 1824 (Nut shells)

Family Nuculidae Gray, 1824

Genus *Ennucula* Iredale, 1931

739. *Ennucula layardii* (A. Adams, 1856) 12mm.

Distribution: Intertidal in mud. Persian Gulf, Gulf of Oman, Arabian Sea

Reported from Pakistan by Melvill et al. 1906 as *Nucula layardii*



Order Nuculanida Carter, Campbell, and Campbell, 2000

Superfamily Nuculanoidea H. Adams and A. Adams, 1858 (1854)

Family Nuculanidae H. Adams and A. Adams, 1858 (1854)

Genus *Saccella* Woodring, 1925

740. *Saccella bellula* (A. Adams, 1856) 7.8mm

Distribution: Benthic in faunal. Indo-West Pacific and Persian Gulf.

Reported from Pakistan by Melvill et al., 1906 as *Leda bellula*



Family Yoldiidae Dall, 1908

Genus *Orthoyoldia* Verrill and Bush, 1897

741. *Orthoyoldia lepidula* (A. Adams, 1856)

Distribution: Offshore muddy and sandy bottom ; depth range 50 - 100 m. Indo-West Pacific, Persian Gulf and South China Sea, Borneo, Taiwan.

Reported from Pakistan by Melvill et al. 1906 in Nuculidae as *Yoldia lepidula* Adams, 1856.



(From Poppe, 2008)

Genus *Scissileda* Kilburn, 1994

742. *Scissileda tropica* (Melvill, 1897) 18 mm.

Distribution: 15 fathoms, offshore mud. Arabian Sea, Gulf of Oman.

Reported from Pakistan by Melvill et al., 1906 as *Yoldia tropica* Melvill, 1897 in Nuculidae.



Subclass Pteriomorphia Beurlen, 1944

Order Mytilida Ferussac, 1822

Superfamily Mytiloidea Rafinesque, 1815

Family Mytilidae Rafinesque, 1815 (Mussels)

Genus *Perna* Philipsson, 1788

743. *Perna viridis* (Linnaeus, 1758) (Green mussel) 70 - 150 mm. Brownish-green

Distribution: Rocks, creeks, Found attached in shallow intertidal and sub tidal. Indo-West Pacific, Persian Gulf, Gulf of Oman.

Reported from Pakistan by Melvill et al.1906 as *Mytilus* (*Chloromya*) *smaragdinus*; Hornell, 1951; Khan and Dastagir, 1972 as *Mytilus viridis*.



(From Khan and Dastagir, 1972)

744. *Perna perna* (Linnaeus, 1758) (Brown mussel).

Distribution: Rocky shores, also attaches to submerged man-made objects. Tropical and sub-tropical regions of the Atlantic Ocean, off the west coast of Africa and the coast of South America up to the Caribbean, Chile, Peru, South Africa accidentally introduced to the coast of Texas.

Reported from Pakistan by Melvill and Standen, 1906 as *Mytilus* (*Chloromya*) *pictus*



(Photo Contributed by Moazzam as *Perna cf picta*)

Genus *Modiolus* Lamarck, 1799 (Weaving Mussels)

745. *Modiolus auriculatus* (Krauss, 1848) 70 mm.

Distribution: Intertidal rocks and stones. Indo-West Pacific.
Mediterranean Sea, Red Sea, Arabian Gulf.

Reported from Pakistan by Shah et al., 2003

746. *Modiolus hanleyi* Dunker, 1882

Distribution: Intertidal zone in mud. Indo-West Pacific.

Reported from Pakistan by PSF (unpublished report, 1977).

747. *Modiolus moduloides* (Röding, 1798)

Distribution: Subtidal zone on sand and mud .Red Sea,
Indo-West Pacific.

Reported from Pakistan by PSF (unpublished report, 1977)
as *Modiolus metcalfei* Hanley, 1843.

Genus *Botula* Morch, 1853

748. *Botula cinnamomea* (Gmelin, 1791) 23-35 mm.

Distribution: Infaunal, boring in soft rocks, corals and
shelly bottom. Indo-West Pacific, Arabian Sea, Red Sea.
Persian Gulf.

Reported from Pakistan by Melvill et al., 1906 as
Lithodomus cinnamomeus, OBIS, 2006.

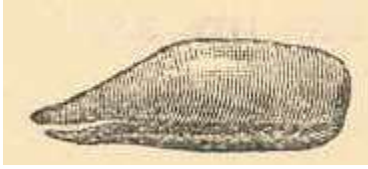


Genus *Leiosolenus* Carpenter, 1857 (Date Mussels)

749. *Leiosolenus malaccanus* (Reeve, 1857)

Distribution: Rocky shores, in soft rocks, intertidal region
.Aldabra, Red Sea

Reported from Pakistan by Reeve, 1857 as *Lithodomus malaccanus* Reeve



750. *Leiosolenus attenuatus* (Deshayes, 1836)

Distribution: On rocks. Persian Gulf, Tropical West America

Reported from Pakistan by Melvill et al. 1906 as *Lithodomus attenuatus*



751. *Leiosolenus bisulcatus* (d'Orbigny, 1853) (Mahogany Date Mussel)

Distribution: Rocky shores, boring in soft rocks. Indo-West Pacific, America.

Reported from Pakistan by PSF (unpublished report, 1977) as *Lithophaga bisulcata* d'Orbigny, 1842



Genus *Lithophaga* Roding, 1798

752. *Lithophaga lithophaga* (Linnaeus, 1758) 70 mm.

Distribution: Rocky shores, boring in soft rocks and corals. Indo-West Pacific, West Africa. Mediterranean

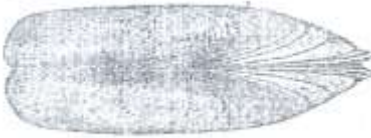
Reported from Pakistan by PSF (unpublished report, 1977).



753. *Lithophaga teres* (Philippi, 1846) (Black date mussel). 45-80 mm. Glossy black brown.

Distribution: Rocky shores, in soft rocks, intertidal region. Tropical Indo-West Pacific

Reported from Pakistan by Khan and Dastagir, 1972; Ahmed et al, 1982.



(From Khan and Dastagir, 1972)

754. *Lithophaga nigra* (d'Orbigny, 1853) (Black date mussel)

Distribution: Rocky shores, in soft rocks, intertidal region. Tropical Indo-West Pacific

Reported from Pakistan by Khan and Dastagir, 1972

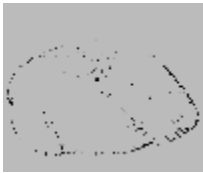


Genus *Musculus* Roding, 1798

755. *Musculus discors* (Linnaeus, 1767) 15mm.

Distribution: Intertidal mud and rocks. Indo-West Pacific.

Reported from Pakistan by PSF (unpublished report, 1977) as *Musculus laevigatus* (Gray, 1824)



(From Tirmizi and Zehra, 1982)

756. *Musculus cumingianus* (Reeve, 1857) (Three-area Mussel) 40 mm. Shiny dark brown or pale brown colour.

Distribution: Intertidal with squirts and sponges, 3 to 7 fathoms . South Australia. Oman, Persian Gulf.

Reported from Pakistan by Melvill et al., 1906 as *Modiolaria cumingiana*, OBIS, 2006.

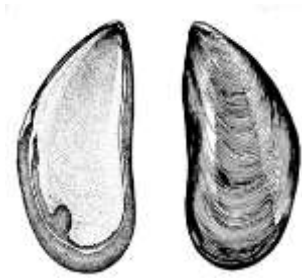


Genus *Mytilus* Linnaeus, 1758 (Common mussels)

757. *Mytilus edulis* Linnaeus, 1758 100 mm.

Distribution: Brown and black, attached to intertidal rocks.
Cosmopolitan.

Reported from Pakistan by PSF (unpublished report, 1977)



Genus *Septifer* Reculz, 1848

758. *Septifer excisus* (Wiegmann, 1837) 10-15 mm. Straw to dark purple

Distribution: Intertidal rocks and corals. Indo-West Pacific, Red Sea

Reported from Pakistan by Melvill et al. 1906; Siddiqui and Aslam, 2017



Genus *Brachidontes* Swainson, 1840

759. *Brachidontes pharaonis* (Fischer, 1870)

Distribution: On loose stones and rocks at low tide. Arabian Sea. South Africa

Reported from Pakistan by Melvill et al., 1906 as *Mytilus variabilis*; *Brachyodontes karachiensis*



Genus *Solamen* Iredale, 1924

760. *Solamen persicum* (Smith, 1906) 10 mm.

Distribution: Sand, deep water. Persian Gulf, Gulf of Oman.

Reported from Pakistan by Melvill et al., 1906 as *Crenella adamsiana*.



Order Arcida Stoliczka, 1871

Superfamily Arcoidea Lamarck, 1809

Family Noetiidae Stewart, 1930 (Ark Shell)

Genus *Arcopsis* Koenen, 1885

761. *Arcopsis sculptilis* (Reeve, 1844)

Distribution: Creeks, rocky shores. South Africa.

Reported from Pakistan by Melvill and Standen, 1906 as *Barbatia (Acar) sculptilis*.



(From Poppe, 2015)

Genus *Didimacar* Iredale, 1939

762. *Didimacar tenebrica* (Reeve, 1844) 6.75mm-15.25mm

Distribution: Creeks, benthic, intertidal zone on rocks, under stones in lower shore. Persian Gulf, Japan; Korea; southeastern Asia; northeastern Australia.

Reported from Pakistan by Melvill et al, 1906 as *Barbatia (Acar) tenebrica*.



(Photo contributed by Moazzam)

Family Arcidae Lamarck, 1809

Genus *Verilarca* Iredale, 1939

763. *Verilarca bivia* Iredale, 1939

Distribution: Intertidal. Thailand, Philippines and Hong Kong.

Reported from Pakistan by Oliver, 1985 as *Verilarca sinensis* Thiele and Jaeckel, 1931.

Genus *Arca* Linnaeus, 1758

764. *Arca avellana* Lamarck, 1819 30mm.

Distribution: Rocky shores, intertidal. Indo-West Pacific.

Reported from Pakistan by PARC Report, 1986 as *A. arabica* Philippi, 1847, OBIS, 2006



765. *Arca navicularis* Bruguiere, 1789 30 mm.

Yellowish

Distribution: Sandy shores, attached to marine algae. Indo-West Pacific.

Reported from Pakistan by Khan and Dastagir, 1972



(From Khan and Dastagir, 1972)

766. *Arca imbricata* Bruguière, 1789 (Mossy ark) 80 mm.

Brown.

Distribution: Subtidal mud, rocks and rubbles. Cosmopolitan.

Reported from Pakistan by Melvill et al, 1906 as *Barbatia imbricata*. ITIS



Genus *Anadara* Gray, 1847

767. *Anadara rufescens* (Reeve, 1844)

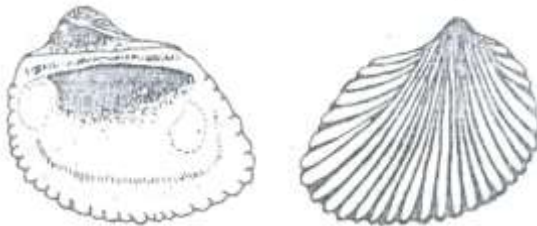
Distribution: Subtidal. Arabian Sea, Red Sea, Persian Gulf.
Reported from Pakistan by Melvill et al, 1906 as *Arca rufescens*, OIBS, 2006.



768. *Anadara gubernaculum* (Reeve, 1844) (Rudder Ark shell) Colour variable, orange or red with darker radial streaks or purplish with lighter radial streaks.

Distribution: coral reef, creek rocks at depth of 0.8-1.6 m in intertidal zone. Indo-West Pacific.

Reported from Pakistan by Khan and Dastagir, 1972 as *Arca gubernaculum*s.



(From Khan and Dastagir, 1972)

769. *Anadara antiquata* (Linnaeus, 1758) 100mm.

Distribution: Offshore and in muddy sand, intertidal, mangrove roots. Indo-West Pacific

Reported from Pakistan by Moazzam and Ahmed, 1994



(Photo contributed by Moazzam as *Anadara cf antiquata*)

770. *Anadara oceanica* (Lesson, 1831) 60 mm.

Distribution: Subtidal zone, in mud and sand. Indo-West Pacific.

Reported from Pakistan by PARC (unpublished report, 1986) as *A. (Scapharca) maculosa*.



771. *Anadara satowi* (Dunker, 1882)

Distribution: Offshore sand. Indo-West Pacific.

Reported from Pakistan by PARC (unpublished report, 1986).

772. *Anadara troscheli* (Dunker, 1882)

Distribution: Offshore sand. Indo-West Pacific.

Reported from Pakistan by PARC (unpublished report, 1986) as *A. (Scapharca) troscheli*, OBIS, 2006.

773. *Anadara uropigimelana* (Bory, 1827)

Distribution: Intertidal rocks and crevices. Tropical Indo-Pacific.

Reported from Pakistan by Dance, 1992; Niazi, 2001



774. *Anadara rhomboidalis* (Schumacher, 1817)

Distribution: Creeks, sandy muddy. Arabian Sea.

Reported from Pakistan by Khan and Dastagir, 1972 as *Arca rhomboidalis* Linnaeus, 1758



775. *Anadara cymbaeformis* Reeve, 1844

Distribution: Sandy Shore. Arabian Sea.

Reported from Pakistan by Melvill et al, 1906 as *Barbatia cymbaeformis*.



776. *Anadara inaequalvis* (Brugière, 1789) (Unequal Ark) .30mm. Periostracum blackish-brown in colour; inner shell surface white in colour

Distribution: Sandy, muddy bottoms of coastal areas, till depths of about 10m below water surface. Indo-West Pacific.

Reported from Pakistan by Khan and Dastagir, 1972 as *Arca inaequalvis*.



(From Khan and Dastagir, 1972)

777. *Anadara indica* (Gmelin, 1791) 40mm.

Distribution: Shallowly buried in sand and silt. Japan, Atlantic Ocean

Reported from Pakistan by Reeve, 1844; Khan and Dastagir, 1972 as *Arcas indica*



778. *Anadara kagoshimensis* (Tokunaga, 1906)

Distribution: Offshore sand. Indo-West Pacific

Reported from Pakistan by PARC (unpublished report, 1986) as *A. (Scapharca) subcrenata*, OBIS, 2006.

Genus *Tegillarca* Iredale, 1939

779. *Tegillarca rhombea* (Born, 1778)

Distribution: Littoral. Antigua and Barbuda, Jamaica, Indo-West Pacific

Reported from Pakistan by PSF (unpublished report, 1977) as *Anadara rhombea*, OBIS, 2006.

780. *Tegillarca granosa* (Linnaeus, 1758) (Bloody cockle)
53 mm.

Distribution: Backwaters and estuaries, muddy bottoms of intertidal, subtidal, backwaters and coastal waters. Indo-West Pacific.

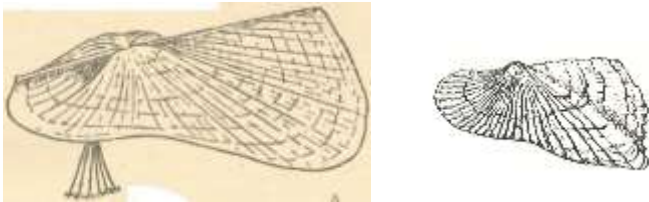
Reported from Pakistan by PSF (unpublished report, 1977) as *Anadara granosa* Linnaeus, 1758.

Genus *Trisidos* Roding, 1798

781. *Trisidos tortuosa* (Linnaeus, 1758) 120mm. Colour white.

Distribution: Sandy, dirty muddy bottom, loose rocks, offshore, 3- 17 fathoms. Indo-Pacific, Persian Gulf.

Reported from Pakistan by Melvill and Standen, 1906 as *Parallelipipedum tortuosum*



Left (From Hornell, 1951)

Genus *Acar* Gray, 1857

782. *Acar plicata* (Dillwyn, 1817)

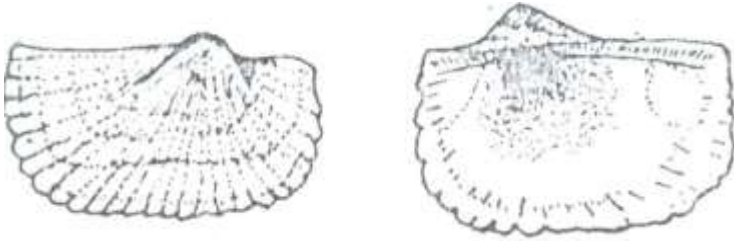
Distribution: Shallow subtidal, sand rocky bottom, 50-150m. Red Sea to throughout Indo-West Pacific.

Reported from Pakistan by Shah et al., 2003 as *Arca plicata*, OBIS, 2006.

Genus *Mesocibota* Iredale, 1939

783. *Mesocibota bistrigata* (Dunker, 1866) 33-38mm.

Distribution: On rocks at low tide. Indo-West Pacific.



Reported from Pakistan by Melvill et al, 1906 as *Arca bistrigata*, OBIS, 2006.

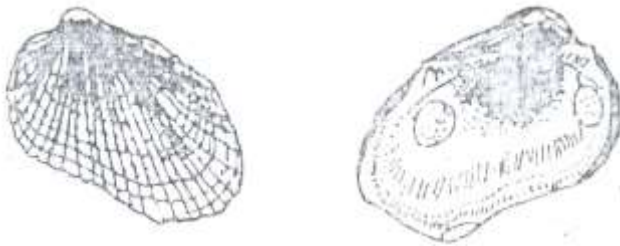
(From Khan and Dastagir, 1972)

Genus *Barbatia* Gray, 1842

784. *Barbatia complanata* (Bruguière, 1789) 25-40mm. Surface brownish white

Distribution: Rocky shores, attached to the underside of rocks. Indo-West Pacific, Angola.

Reported from Pakistan by Khan and Dastagir, 1972 as *Arca complanata*, OBIS, 2006.



(From Khan and Dastagir, 1972)

785. *Barbatia virescens* (Reeve, 1944)

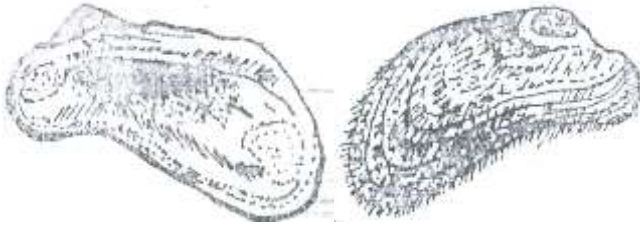
Distribution: Rocky shores, attached to the rocks in crevices. Indo-West Pacific.

Reported from Pakistan by PARC (unpublished report, 1986); OBIS, 2006.

786. *Barbatia obliquata* (Wood, 1828) 60 mm.

Distribution: Littoral, sublittoral, attached to the rocks and crevices. Indo-West Pacific, Persian Gulf

Reported from Pakistan by Hornell, 1951, Khan and Dastagir, 1972.



(From Khan and Dastagir, 1972).

787. *Barbatia amygdalumtostum* (Roding, 1798)

Distribution: Under rocks and corals. Tropical Indo-Pacific.

Reported from Pakistan by Dance, 1992.



788. *Barbatia foliata* (Forskal, 1775) (Decussate ark)

Distribution: Under rocks. Littoral and sublittoral .Tropical Indo-Pacific, Red Sea ,Tanzania, South Africa.

Reported from Pakistan by Dance, 1992.



Family Glycymerididae Dall, 1908 (1847) (The bittersweet clams)

Genus *Glycymeris* Da Costa, 1778

789. *Glycymeris taylori* (Angas, 1879)

Distribution: on shallow seabed in heterogeneous-grained sediments. Persian Gulf, Gulf of Oman.

Reported from Pakistan by Melvill et al, 1906 as *Pectunculus taylorianus*

790. *Glycymeris spurca* Reeve, 1843 nomen dubium

Distribution on shallow seabeds in heterogeneous-grained sediments: Indo-Pacific

Reported from Pakistan by Melvill and Standen, 1907 as *Pectunculus spurcus*

791. *Glycymeris livida* (Reeve, 1843) 65 mm.

Distribution: Sandy beaches. Indo-West Pacific, Red Sea.

Reported from Pakistan by Melvill et al, 1906 as *Pectunculus lividus* in Arcidae, OBIS, 2006



(Source Femorale)

(Source SWMDB)

792. *Glycymeris reevei* (Mayer, 1868) (Reeve's bittersweet) Outside of shell brown, with irregular whitish flecks on the umbones and posterior third of

valves, posterodorsal margin often more or less tinged blackish brown. Interior white, variably tinged with purplish brown posteriorly

Distribution: Shallow water sand, benthic; depth range 5 - 50 m. Tropical Indo-West Pacific.

Reported from Pakistan by Dance, 1992.



Genus *Tucetona* Iredale, 1939

793. *Tucetona pectunculus* (Linnaeus, 1758)

Distribution: Found at and just below the surface of coarse sand or fine gravel substrate .Philippines

Reported from Pakistan by Melvill et al, 1906 as *Pectunculus (Axinea) pectiniformis*



Genus *Striarca* Conrad, 1862

794. *Striarca symmetrica* (Reeve, 1844) 3mm.

Distribution: Creeks, rocky shores. Attached by byssus to rock or stone in shallow water. Tropical Indo-West Pacific

Reported from Pakistan by Melvill et al, 1906 as *Barbatia (Acar) symmetrica* ;Khan, et. al. 1973 as *Arca symmetrica*, OBIS, 2006.



Family Cucullaeidae Stewart, 1930
Genus *Cucullaea* Lamarck, 1801

795. *Cucullaea labiata* (Lightfoot, 1786) (False ark shell)
10cm

Distribution: Indo-Pacific, found buried in sandy or muddy substrates.

Contributed from Pakistan by Moazzam, present study



Order Ostreida Ferussac, 1822
Superfamily Pterioidea Gray, 1847 (1820)
Family Pteriidae Gray, 1847
Genus *Pteria* Scopoli, 1777 (Winged oyster)

796. *Pteria peasei* (Dunker 1872)

Distribution: Attached by byssus to whip corals or debris.
Tropical Indo-West Pacific, Australia

Reported from Pakistan by PSF (unpublished report, 1977)



797. *Pteria heteroptera* (Lamarck, 1819) 3-8mm

Distribution: Attached by byssus on zoophytes. Indo-Pacific

Reported from Pakistan by Khan and Dastagir, 1972 as *Pteria inquinata* Reeve



(From Khan and Dastagir, 1972)

798. *Pteria penguin* (Röding, 1798)

Distribution: Intertidal zone, on rock and coral usually with gorgonia. Red Sea

Reported from Pakistan by Shah et al. 2003 as *Pteria macroptera* Lamarck, 1819.

799. *Pteria avicular* (Holten, 1802)

Distribution: With gorgonia. China

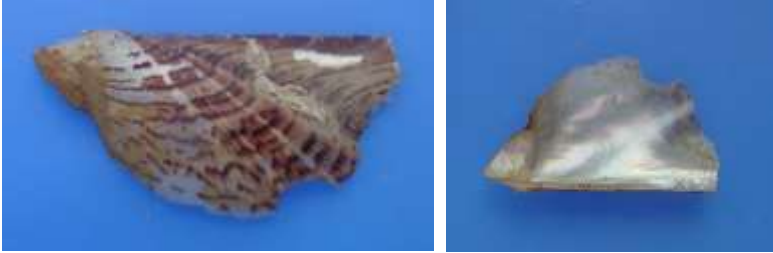
Reported from Pakistan by Kazmi and Naushaba, 2002 as ? *Pteria chinensis* Leach, 1814, could be *Pteria tortirostris*



800. *Pteria tortirostris* (Dunker, 1849) 29mm.

Distribution: Benthic; depth range 0 - 180 m .Pacific

Contributed from Pakistan by Moazzam , present study



**Genus *Pterelectroma* Iredale,
1939**

801. *Pterelectroma physoides* (Lamarck, 1819) 6-

10mm. Brown and white stripes. (Zebra wing shell)

Distribution: Upon a zoophyte *Halichornaria*. Tropical Indo- W. Pacific

Reported from Pakistan by Khan and Dastagir, 1972 as *Pteria zebra*



(From Khan and Dastagir, 1972)

Genus *Isognomon* Lightfoot, 1786

802. *Isognomon legumen* (Gmelin, 1791) (Irregular Toothed Oyster)

Distribution: Intertidal to subtidal. Sedentary, epifauna. Red Sea, Madagascar, Australia, Japan

Contributed from Pakistan by Moazzam, present study



Genus *Pinctada* Röding, 1798

803. *Pinctada margaritifera* (Linnaeus, 1758) (Black-lip pearl oyster) Shade of green on dark ground colour with radial lines of white spots

Distribution: coral reefs. Baja California across the Indo-Pacific basin to the Red Sea, and northwards into the Eastern Mediterranean Sea.

Reported from Pakistan by Melvill and Standen ,1900



804. *Pinctada imbricata* Röding, 1798 50-

80mm. Greenish-brown

Distribution: low tide mark, intertidal rocks, stones. Indo-West Pacific.

Reported from Pakistan by Khan and Dastagir, 1972 as *Pinctada vulgaris* Schumacher



(From Khan and Dastagir, 1972)

Family Malleidae Lamarck, 1819 (Hammer oyster)

Genus *Malleus* Lamarck, 1799

805. *Malleus legumen* Reeve, 1858

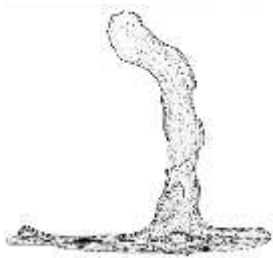
Distribution: Intertidal rocks. Indo-West Pacific.

Reported from Pakistan by PSF (unpublished report, 1977) as *Malleus irregularis* Jousseume, 1894.

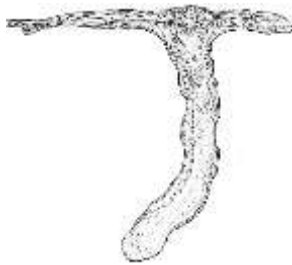
806. *Malleus albus* Lamarck, 1819

Distribution: Shallow water sand. Indo-West Pacific.

Reported from Pakistan by Dance, 1992.



Right valve



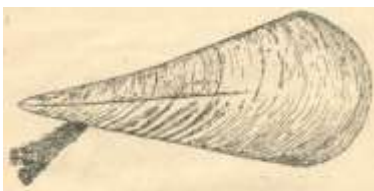
Left valve

807. *Malleus regula* (Forsskål in Niebuhr, 1775) 70mm
 .Colour pattern variable, brown-purple throughout to greyish-yellow with purple brown spots to greyish yellow
 Distribution: at depths 1.5-59 m, in rock crevices or under stones. Attached by byssus among rocks, stones and coral debris. Tropical Indo-Pacific, including Persian Gulf and Red Sea; Suez Canal , Mediterranean:
 Contributed from Pakistan by Moazzam,present study as *Malvafundus regula* (Forsskal, 1775)



Superfamily Pinnoidea Leach, 1819
Family Pinnidae Leach, 1819
Genus *Pinna* Linnaeus, 1758

808. *Pinna atropurpurea* Sowerby, 1825
 Distribution: Intertidal sand or mud, in soft substratum.
 Indo-West Pacific.
 Reported from Pakistan by Khan and Dastagir, 1972



(From Hornell,1951)

809. *Pinna bicolor* Gmelin, 1791 200-250 mm.

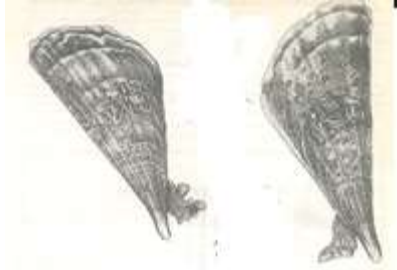
Distribution: Creeks, sandy mud and gravel in shallow water below low tide. Indo-West Pacific, Persian Gulf. Reported from Pakistan by Ranjha, 1960.



(From Zehra, 2001)

810. *Pinna muricata* Linnaeus, 1758 186-340 mm.

Distribution: Buried in sand or silty mud among rocks in shallow water. Indo-West Pacific, Japan. Reported from Pakistan by Tirmizi and Kazmi, 1994 as host pinnid; Zehra, 2001.



(From Tirmizi and Kazmi, 1994)

Genus *Atrina* Gray, 1842

811. *Atrina fragilis* (Pennant, 1777) (Fan mussel) 220-347 mm., Half of shell besides dorsal margin dark brown and half adjacent to ventral margin blackish brown, yellowish to dark brown with blackish patches

Distribution: shells buried in muddy substratum. Attached.
Indian Ocean, Europe, Mediterranean
Reported from Pakistan by PSF (unpublished report, 1977);
Sultana and Jamil, 2012 as *Pinna fragilis*.

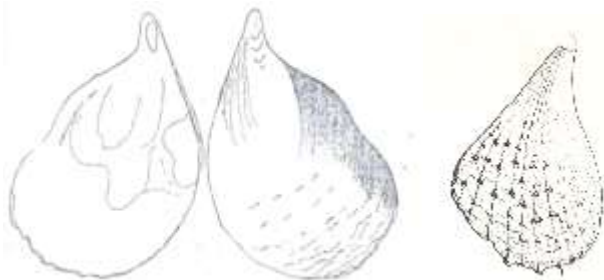


(From Wikipedia)

812. *Atrina vexillum* (Born, 1778) 350-450 mm.

Distribution: Intertidal zone, 50 m in sand and mud. Indo-West Pacific, Res Sea, Philippines, China Sea.

Reported from Pakistan by Melvill, et.al, 1906 as *Pinna (Atrina) vexillum*; Ranjha, 1960 as *P.vexillum* and *P. nigra*.

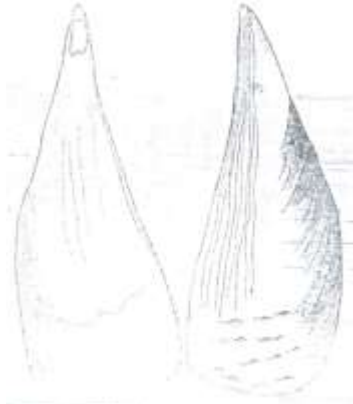


(From Khan and Dastagir, 1972)

(From Tirmizi and Zehra, 1982)

813. *Atrina pectinata* (Linnaeus, 1767) Up to 37 x 20 cm.
Yellow-horn to darker brown, occasionally with few darker patches.

Distribution: Offshore, in mud, sand or fine gravel; from LWM to 150 m depth. North Sea, Atlantic Indo-Pacific. All usages of "*Pinna*" *pectinata* or *Atrina pectinata* for a European species erroneous. (fide WoRMS)
Reported from Pakistan by Khan and Dastagir, 1972



(From Khan and Dastagir, 1972)

Superfamily Ostreoidea Rafinesque, 1815

Family Ostreidae Rafinesque, 1815

Genus *Magallana* Salvi and Mariottini, 2016

814. *Magallana bilineata* (Roding, 1798) 40-85mm.

Distribution: Creeks, at low tide, attached to dead shells or other hard objects and stones. Bay of Bengal
Reported from Pakistan by Ahmed, 1971 as *C. virginica* Gmelin; Ansari and Ahmed, 1972 as *C. elongata*.; Khan and Dastagir, 1972 as *Crassostrea madrasensis* Preston, 1916.



815. *Magallana belcheri* (G. B. Sowerby II, 1871)

Distribution: Intertidal rocks. Indo-West Pacific.

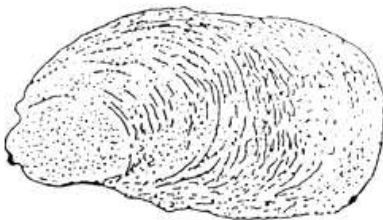
Reported from Pakistan by Hasan, 1960 as *Crassostrea belcheri* Sowerby, 1871.



816. *Magallana rivularis* (Gould, 1861) taxon inquirendum. 50-150 mm.

Distribution: Low tide marks, attached either to dead shells or other hard objects or stones, in mangrove forests attached to mangrove roots and trunks, in littoral zone of coastal areas. Indo-West Pacific, China, Japan, Africa, America, Kenya.

Reported from Pakistan by Rai, 1932 as *Ostrea discoidea*; Asif, 1979 as *Crassostrea rivularis* Gould, 1961; Khan and Dastagir, 1972 as *Crassostrea discoidea*



817. *Magallana gryphoides* (Schlotheim, 1820) taxon inquirendum 6 - 7 inches.

Distribution: Subtidal and low tide area in muddy creeks. Indian Ocean

Reported from Pakistan by Ranjha, 1960 as *Ostrea gryphoides*; Ali, 2012.



Genus *Dendostrea* Swainson, 1835

818. *Dendostrea sandwichensis* (Sowerby in Reeve, 1871)
(Rock oyster)

Distribution: Mid to low-tide zone; attached to pier pilings, corals and rocks. Indo-West Pacific, Australia the Mediterranean.

Reported from Pakistan by Siddiqui and Ahmed, 2002 as *Ostrea nomads*



Left picture (From Hornell, 1951) (Photo contributed by Moazzam as *Alectryonella crenulifera*)

819. *Dendostrea folium* (Linnaeus, 1758)

Distribution: Shallow subtidal. Indo-West Pacific, China Sea, Australia

Reported from Pakistan by Ranjha, 1960 as *Ostrea folium*.



Genus *Pustulostrea* Harry, 1985

820. *Pustulostrea australis* (Lamarck, 1819)

Distribution: Rocky shores. Indo-West Pacific

Reported from Pakistan by Ranjha, 1960 as *Saccostrea tuberculatum*



Genus *Saccostrea* Dollfus and Dautzenberg, 1920

821. *Saccostrea cucullata* (Born, 1778) 40 mm

Distribution: Attached to rocks. Subtropical and tropical Indo-West Pacific.

Reported from Pakistan by Ranjha, 1960 as *Ostrea cucullata*.



822. *Saccostrea echinata* (Quoy and Gaimard, 1832)

(Spiny rock oyster)

Distribution: Subtidal rocks and gravel. Indo-West Pacific
Reported from Pakistan by Siddiqui and Ahmed, 2002.

823. *Saccostrea scyphophilla* (Peron and Lesueur, 1807)

Distribution: Attached to rocks. Indo-West Pacific
Reported from Pakistan by PSF (unpublished report, 1977)
as *Saccostrea mordax* Gould, 1850.

824. *Saccostrea glomerata* (Gould, 1850) (Sydney rock oyster)

Distribution: Low tide marks on rocks. Pacific.
Reported from Pakistan by Hasan, 1960 as *Ostrea glomerata*.



Genus *Lopha* Röding, 1798

825. *Lopha cristagalli* (Linnaeus, 1758) (Cockscomb oyster)

Distribution: Shallow subtidal, attached, coral reef, mangrove. Indo-West Pacific, Red Sea, Persian Gulf, Japan, Australia.

Reported from Pakistan by Siddiqui and Ahmed, 2002 as *Ostrea cristagalli*.



Genus *Hyotissa* Stenzel, 1971

826. *Hyotissa quercina* (G. B. Sowerby II, 1871) (Honeycomb oyster, foam oyster)

Distribution: Benthic. Atlantic, India

Reported from Pakistan by Hasan, 1960 as *Ostrea quercina* Sowerby, 1871

Order Limida Moore, 1952

Superfamily Limoidea Rafinesque, 1815

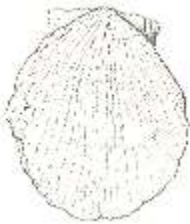
Family Limidae Rafinesque, 1815

Genus *Lima* Bruguiere, 1797

827. *Lima vulgaris* (Link, 1807)

Distribution: Shallow waters tropical Indo-Pacific

Reported from Pakistan by Dance, 1992.



828. *Lima* sp.

Distribution: Under rocks.

Reported from Pakistan by Kazmi, 1993



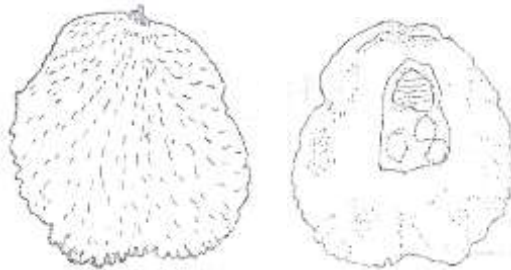
Order Pectinida Gray , 1854

Superfamily Anomioidea Rafinesque, 1815

Family Anomiidae Rafinesque, 1815
Genus *Anomia* Linnaeus, 1758

829. *Anomia achaeus* Gray, 1850 45mm. Translucent reddish-brown

Distribution: Attached to the rocks and any hard object in intertidal region, parasitic on *Placenta*. Indo-West Pacific
Reported from Pakistan by Melvill et al., 1906.



(From Khan and Dastagir, 1972)

830. *Anomia chinensis* Philippi, 1849

Distribution: On intertidal rocks. Cosmopolitan.
Reported from Pakistan by PARC (unpublished report, 1986).

Genus *Isomonina* Dautzenberg and Fischer, 1897

831. *Isomonina umbonata* (Gould, 1861)

.Distribution: Intertidal rocks and mangroves. East China Sea. Japan, Hong Kong
Reported from Pakistan by Tirmizi and Barkati, 1985 as *Moina umbonata*.



Genus *Enigmonia* Iredale, 1918 (Jingle clam)

832. *Enigmonia aenigmatica* (Holten, 1802) (Saddle oyster)

Distribution: Intertidal, occurs on the leaves and exposed roots of mangroves over an uncertain area. Tropical Indo-West Pacific

Reported from Pakistan by Melvill et.al, 1906 as *Anomia* (*Aenigma*) *aenigmatica*.



(From Poppe, 2015)

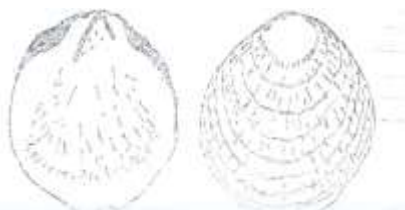
Family Placunidae Rafinesque, 1815

Genus *Placuna* Lightfoot, 1786

833. *Placuna placenta* (Linnaeus, 1758) (Window pane Oyster). 80-100mm. Body shining cream or pearly pink and gray lines

Distribution: Inhabits muddy bottom of land-locked bays and creeks. Tropical Indo-West Pacific

Reported from Pakistan by Melvill et al., 1906 as *Placuna orbicularis* in Family Anomiidae; Hornell, 1951.



(From Khan and Dastagir, 1972)

Superfamily Pectinoidea

Family Propeamussiidae Abbott, 1954

Genus *Propeamussium* de Gregorio, 1884

834. *Propeamussium caducum* (Smith, 1885) 29mm.

Distribution: soft substrata of mud or muddy sand at a bathyal range of -90–1500 m. Tropical Indo-West Pacific
Reported from Pakistan by Melvill et al. 1906 as *Amusium caducum* in Pectinidae.



Family Pectinidae Rafinesque, 1815 (Scallops)

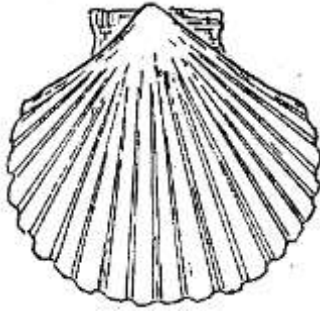
Genus *Mimachlamys* Iredale, 1929

835. *Mimachlamys sanguinea* (Linnaeus, 1758)

Brilliantly iridescent green

Distribution: Shallow subtidal on all substrate. Rocks at low tide zone. Indo-West Pacific, Japan, Hong Kong, Red Sea, Persian Gulf

Reported from Pakistan by Melvill et al, 1906 as *Pecten layardi* and *P. senatorius*; PARC (unpublished report, 1986) as *Chlamys senatorius* Gmelin, 1791 .



(From Harnoll, 1911)

836. *Mimachlamys crassicostata* (Sowerby, 1842)

Distribution: Rocks at low tide zone. Indo-West Pacific, Japan, Hong Kong.

Reported from Pakistan by PARC (unpublished report, 1986) as *Chlamys crassicostatus*, OBIS, 2006.

837. *Mimachlamys townsendi* (Sowerby III, 1895) 60-110 mm. Reddish brown

Distribution: On subtidal sand/rocky area. Tropical Indo-West Pacific, Red Sea, Persian Gulf

Reported from Pakistan by Winckworth, 1948 as *Pecten townsendi*.



(From Khan and Dastagir, 1972)

838. *Mimachlamys crassicostata* (Sowerby II, 1842) (Noble scallop)

Distribution: Below littoral .India

Reported from Pakistan by Fatima, 1972 as *Pecten crassicostatus* G. B. Sowerby II, 1842

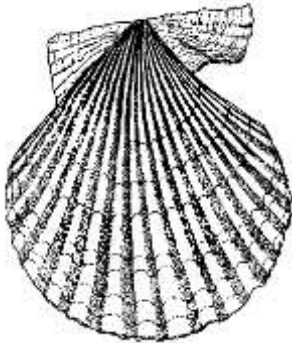


Genus *Argopecten* Monterosato, 1889

839. *Argopecten gibbus* (Linnaeus, 1758)

Distribution: Rocks at low tide zone. East America. 90mm.

Reported from Pakistan by PSF (unpublished report, 1977) as *Chlamys gibbus* Linnaeus, 1758.



(From Tirmizi and Zehra, 1984)

Genus *Paschinnites* Dijkstra and Raines, 1999

840. *Paschinnites coruscans* (Hinds, 1845)

Distribution: Low tide zone. South Africa

Reported from Pakistan by Shah et al. 2003 as *Chlamys coruscans* Hinds, 1845.

Genus *Decatopecten* Sowerby, 1839

841. *Decatopecten amiculum* (Philippi, 1851) Very colourful

Distribution: Shallow subtidal mud and sand. Tropical Indo-West Pacific, Red Sea, East Africa

Reported from Pakistan by Melvill et al, 1906 as *Pecten flabelloides*



842. *Decatopecten plica* (Linnaeus, 1758) 37mm.

Distribution: Shallow subtidal mud and sand .Philippines, India

Reported from Pakistan by Melvill et al, 1906 as *Pecten plica*



(Source WMSDB)

843. *Decatopecten radula* (Linnaeus, 1758)

Distribution: Low tide area.Indo-West Pacific, Australia.

Reported from Pakistan by Shah et al. 2003 as *Comptopallium radula* Linnaeus, 1758.

Genus *Scaeoclamys* Iredale, 1929

844. *Scaeoclamys lemniscata* (Reeve, 1853)

Distribution: Rocks and corals. Tropical Indo-West Pacific, Red Sea.

Reported from Pakistan by Melvill et al, 1906 as *Pecten luculentus*.



Genus *Haumea* Dall, Bartsch and Rehder, 1938

845. *Haumea minuta* (Linnaeus, 1758)

Distribution: Subtidal rocks, continental shelf. Tropical Indo-West Pacific.

Reported from Pakistan by Shah et al. 2003 as *Chlamys inaequalvis*, OBIS, 2006.

Genus *Gloripallium* Iredale, 1939

846. *Gloripallium pallium* (Linnaeus, 1758)

Distribution: Attached, intertidal rocks, mud, corals. Tropical Indo-West Pacific, Australia

Reported from Pakistan by Shah et al. 2003, OBIS, 2006.

847. *Gloripallium spiniferum* (Sowerby, 1835)

Distribution: Attached, Intertidal rocks. Tropical Indo-West Pacific.

Reported from Pakistan by Shah et al. 2003.

Family Spondyliidae Gray, 1826 (Thorny oysters)

Genus *Spondylus* Linnaeus, 1758

848. *Spondylus layardi* Reeve, 1856

Distribution: rocky shores, corals. Indian Ocean, Red Sea, Gulf of Aden, East Africa.

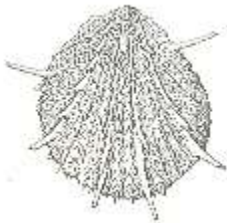
Reported from Pakistan by Melvill et al. 1906; Khan and Dastagir, 1972.



849. *Spondylus candidus* Lamarck, 1819

Distribution: Intertidal rocks and coral. Indo-West Pacific, Australia, Red Sea, Japan, Gulf of Aqaba

Reported from Pakistan by PSF (unpublished report, 1977).



(From Tirmizi and Zehra, 1982)

850. *Spondylus linguafelis* Sowerby, 1847

Distribution: Corals. Indo-Pacific.



Reported from Pakistan by Dance, 1992.

851. *Spondylus exilis* Sowerby III, 1895 Shell orange and pink near umbo.

Distribution: Deep water, adhering to rocks. Indo-Pacific.

Reported from Pakistan by Sowerby, 1895



(From Khan and Dastagir, 1972)

852. *Spondylus gloriandus* Melvill and Standen, 1907

Distribution: Deep water, adhering to rocks. Persian Gulf
Reported from Pakistan by Melvill and Standen, 1907
;OBIS



Superfamily Plicatuloidea Gray, 1854

Family Plicatulidae Gray, 1854 (Kitten's paws)

Genus *Plicatula* Lamarck, 1801

853. *Plicatula australis* Lamarck, 1819

Distribution: Attached to a hard surface by the right valve
.Arabian Sea, Red Sea, Indo-Pacific
Reported from Pakistan by Melvill et al. 1906 as *Plicatula*
depressa Lamarck in Spondylidae.



Subclass Heterodonta Neumayr, 1884
Superfamily Gastrochaenoidea Gray, 1840
Family Gastrochaenidae Gray, 1840
Genus *Gastrochaena* Spengler, 1783

854. *Gastrochaena cuneiformis* Spengler, 1783 10-25mm. reddish brown

Distribution: At low tide in mud and sand. Indo-Pacific

Reported from Pakistan by Khan and Dastagir, 1972 as *Gastrochaena lamellosa*



Line drawings (From Khan and Dastagir, 1972)

Order Lucinida Gray, 1854
Superfamily Thyasiroidea Dall, 1900 (1895)
Family Thyasiridae Dall, 1900 (1895)
Genus *Leptaxinus* Verrill and Bush, 1898

855. *Leptaxinus indusarium* Oliver and Levin, 2006

Distribution: Low oxygen zone. Not outside type locality

Reported from Pakistan by Oliver and Levin, 2006.

Superfamily Galeommatoidea J.E. Gray, 1840
Family Basterotiidae Cossmann, 1909

Genus *Basterotina* Coan, 1999

856. *Basterotia arcula* Melvill, 1898

Distribution: Commensals with burrowing echiuran worms
.Queensland, Australia, Red Sea
Reported from Pakistan by Melvill, 1898



Superfamily Lucinoidea Fleming, 1828

Family Lucinidae Fleming, 1828

Genus *Codakia* Scopoli, 1777

857. *Codakia punctata* (Linnaeus, 1758). 25-

30mm. White, yellowish within, deep rose round the edge

Distribution: Intertidal sand, corals. Indo-West Pacific,
Great Barrier Reef, Australia.

Reported from Pakistan by Khan and Dastagir, 1972 OBIS,
2006.

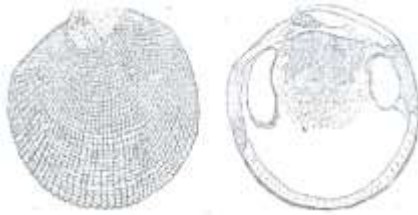


(From Khan and Dastagir, 1972)

858. *Codakia tigerina* (Linnaeus, 1758). 60-120mm.dull white

Distribution: Intertidal sand, coral reef. Indo-West Pacific, Red Sea, Great Barrier Reef, Australia

Reported from Pakistan by Khan and Dastagir, 1972 as *Codakia tigerina* and *C. exasperata*, OBIS, 2006.



(From Khan and Dastagir, 1972)

859. *Codakia paytenorum* (Iredale, 1937)

Distribution: Intertidal sand.Indo-Pacific

Reported from Pakistan by PARC (unpublished report, 1984) as *C. paytenorum*,OBIS, 2006.

Genus *Ctena* Morch, 1861

860. *Ctena divergens* (Philippi, 1850) 10-20mm.Pale yellow

Distribution: Intertidal sand, gravel, coral. Tropical Indo-West Pacific.

Reported from Pakistan by Khan and Dastagir, 1972 as *Codakia divergen*.



(From Khan and Dastagir, 1972)

861. *Ctena bella* (Conrad, 1837) (Divergent lucine) 3.5 cm.

Distribution: Reef-associated; depth range 10 - 50 m. in shelly sand. Indo-Pacific

Reported from Pakistan by Reeve, 1850 as *Lucina fibula*



(Source FAO)

Genus *Pegophysema* Stewart, 1930

862. *Pegophysema bialata* (Pilsbry, 1895)

Distribution: Muddy bottom. Indo-West Pacific.

Reported from Pakistan by PARC (unpublished report, 1986) as *Anodontia stearnsiana* Oyama, 1954. .

Genus *Anodontia* Link, 1807

863. *Anodontia edentula* (Linnaeus, 1758) Nomen dubium

Distribution: Muddy bottom, mangroves. Indo-West Pacific, South Africa, Madagascar, Red Sea.

Reported from Pakistan by SEAFDEC Newsletter, 2000.



(Photo contributed by Moazzam)

Genus *Cardiolucina* Sacco, 1901

864. *Cardiolucina semperiana* (Issel, 1869)

Distribution: Subtidal in shells, sand.

Indo-West Pacific, Persian Gulf, Red Sea, East Africa

Reported from Pakistan by Melvill et al., 1906 as *Lucina* (*Cyclas*) *semperiana*, OBIS, 2006

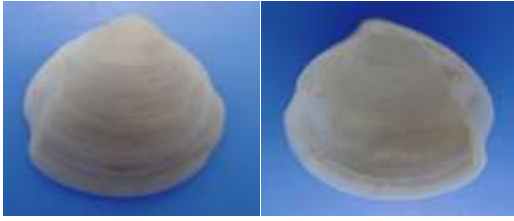


Genus *Scabrilucina* J. D. Taylor and Glover, 2013

865. *Scabrilucina victorialis* (Melvill, 1899) Colour white

Distribution: Subtidal, offshore mud. Arabian Sea, Persian Gulf.

Reported from Pakistan by Melvill et al., 1906 as *Loripes victorialis* Melvill, 1899.



Genus *Pillucina* Pilsbry, 1921

866. *Pillucina vietnamica* Zorina, 1978

Distribution: Intertidal to shallow water, benthic in sand and silt on the fringes of mangroves. Tropical Indo-West Pacific from Red Sea to China and southern Queensland
Reported from Pakistan by Melvill, 1918 as *Divaricella cypselis*; Glover and Taylor, 2001



867. *Pillucina angela* (Melvill, 1899)

Distribution: Muddy sand or gravel at or below low tide mark. Oman, Indo-Pacific
Reported from Pakistan by Melvill, 1899 as *Lucina (Codakia) angela*

Order Carditida Dall, 1889

Superfamily Carditoidea Férussac, 1822

Family Carditidae Férussac, 1822 (False cockles)

Genus *Cardiocardita* Anton, 1838

868. *Cardiocardita tankervillei* (W. Wood, 1828)

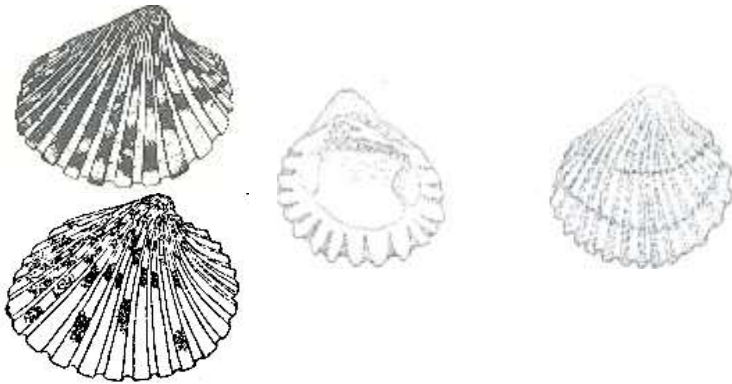
Distribution: intertidal sand. Western Africa
Reported from Pakistan by Melvill et al. 1906 as *Cardita tankervillei*



Genus *Cardites* Link, 1807

869. *Cardites bicolor* (Lamarck, 1819). Outer surface with unevenly spotted with dark red on yellowish background
Distribution: Course sand or gravelly bottom. Tropical Indo-West Pacific, Australia.

Reported from Pakistan by Khan and Dastagir, 1972 as *Cardita bicolor*, OBIS, 2006



(From Gravely, 1941; Tirmizi and Zehra, 1984, Khan and Dastagir, 1972)

870. *Cardites canaliculatus* (Reeve, 1843)

Distribution: Coral sand bottom. Gulf of Oman, Muscat.

Reported from Pakistan by Melvill et al. 1906 as *Cardita canaliculata*, OBIS, 2006.



Genus *Cardita* Bruguiere, 1792

871. *Cardita variegata* Bruguière, 1792 15-50mm. Dull white

Distribution: Attached, among rocks, coral. Tropical Indo-West Pacific, Red Sea, Gulf of Aqaba, South Africa.

Reported from Pakistan by Melvill et al. 1906 as *Mytilocardia variegata*, OBIS, 2006.



(From Khan and Dastagir, 1972)

872. *Cardita crassicosta* Lamarck, 1819 (Large-ribbed cardita) 3mm.

Distribution: among rocks, coral Benthic; depth range 17 - 77 m. Indian Ocean: Qatar and Australia

Contributed from Pakistan by Moazzam, present study



Genus *Beguina* Röding 1798

873. *Beguina gubernaculum* (Reeve, 1843) (Rudder Cardita)

Distribution: Attached on hard substrates. Red Sea, East Africa.

Reported from Pakistan by PSF (unpublished report, 1977).



Genus *Carditellopsis* Iredale, 1936

874. *Carditellopsis concinna* (Melvill, 1918)

Distribution: muddy and sandy seabed. No Georeferenced data available

Reported from Pakistan by Melvill, 1918 as *Carditella concinna*

Superfamily Arcticoidea Newton, 1891 (1844)

Superfamily Ungulinoidea Gray, 1854

Family Ungulinidae Gray, 1854

Genus *Diplodonta* Bronn, 1831

875. *Diplodonta rotundata* (Montagu, 1803)

Distribution: Subtidal sandy mud, muddy sand at sublittoral and shallow shelf depths Arabian Sea, Persian Gulf, Mediterranean.

Reported from Pakistan by Melvill et al., 1906 in Lucinidae.



Genus *Timothyus* Harris and Palmer, 1946

876. *Timothyunus holosphaerus* (Melvill, 1899)

Distribution: Rocky shores at very low tide. Arabian Sea, Persian Gulf, Gulf of Oman.

Reported from Pakistan by Melvill et al., 1906 as *Diplodonta* (*Timothyunus*) *holosphaera* Melvill, 1899 in Lucinidae.

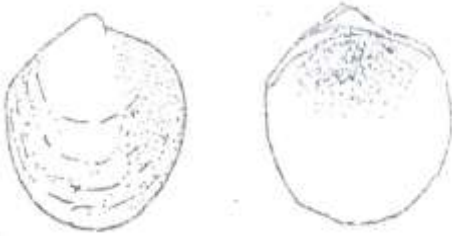
Genus *Transkeia* M. Huber, 2015

877. *Transkeia globosa* (Forsskål in Niebuhr, 1775)

(Globe bladder shell). 10-12mm. Bluish-white

Distribution: sandy shore at backwater .Mediterranean, Aegian Sea

Reported from Pakistan by Khan and Dastagir, 1972 as *Diplodonta globosa* (Forsskal, 1775)



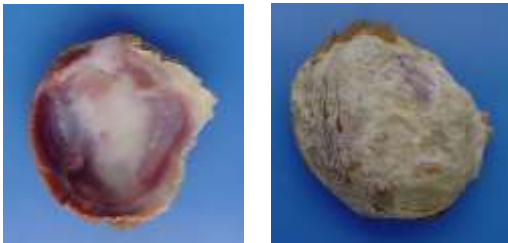
(From Khan and Dastagir, 1972)

Genus *Felania* Récluz, 1851

878. *Felania diaphana* (Gmelin, 1791)

Distribution: Subtidal sandy mud. Arabian Sea.

Reported from Pakistan by Melvill et al., 1906 in Lucinidae.



(Photo contributed by Moazzam)

Superfamily Chamoidea Lamarck, 1809

Family Chamidae Lamarck, 1809

Genus *Chama* Linnaeus, 1758

879. *Chama pacifica* Broderip, 1835

Distribution: Benthic; depth range 0 - 30 m. on rocky shore.

Indo-Pacific and the Mediterranean Sea

Reported from Pakistan by Khan and Dastagir, 1972 as *Chama reflexa* Reeve, 1846;

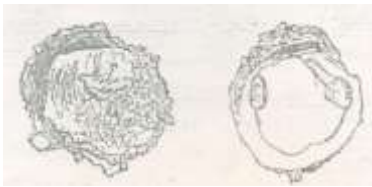
Moazzam, this study as *Chama douvillei*



880. *Chama fragum* Reeve, 1847 nomen dubium

Distribution: Rocky. Indo-West Pacific, Red Sea, Japan, East China Sea, Australia.

Reported from Pakistan by Ahmed, 1973.



881. *Chama asperella* Lamarck, 1819 5x7 cm.

Distribution: Rocky, shallow water. East America, Red Sea.

Reported from Pakistan by Ahmed and Hameed, 1999 as *Chama spinosa* Broderip, 1835



882. *Chama pulchella* Reeve, 1846.

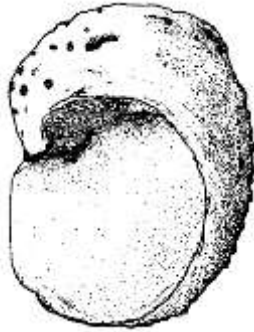
Distribution: Sandy distribution: Shallow subtidal. Indo-West Pacific, South Africa, Western Australia
Reported from Pakistan by Khan et al 1973 as *Pseudochama cristella* Lamarck, OBIS, 2006.



Genus *Pseudochama* Odhner, 1917

883. *Pseudochama corrugata* (Broderip, 1835)

Distribution: Subtidal. West America.
Reported from Pakistan by PSF (unpublished report, 1977).



(From Tirmizi and Zehra, 1982)

Order Cardiida Ferussac, 1822

Superfamily Cardioidea Lamarck, 1809

Family Cardiidae Lamarck, 1809

Genus *Vasticardium* Iredale, 1927

884. *Vasticardium assimile lacunosum* (Reeve, 1845)

30-60mm. Shell pinkish

Distribution: Rocky shores in sand at low-water mark.

Indo-West Pacific, East Africa, Red Sea, Arabian Gulf

Reported from Pakistan by Melvill e. al., 1906 as *Cardium*

(*Trachycardium*) *assimile*, Khan and Dastagir, 1972 as

Cardium assimile, OBIS, 2006.



(From Khan and Dastagir, 1972)

885. *Vasticardium pectiniforme* (Born, 1780)

Distribution: Rocky shores in sand at low-water mark.
Indo-West Pacific, East Africa, Red Sea, Arabian Gulf
Reported from Pakistan by Hylleberg, 1996



886. *Vasticardium orbita* (Broderip and Sowerby I, 1833)

Distribution: Intertidal. Pacific
Reported from Pakistan by Shah, et al 2003 as *Cardium orbitum*.

Genus *Acrosterigma* Dall, 1900

887. *Acrosterigma attenuatum* (G. B. Sowerby II, 1841) (Egg cockle) Pastel yellow to orange

Distribution: Shallow waters. Tropical Indo-West Pacific.
Reported from Pakistan by Dance, 1992 as *Laevicardium attenuatum* Sowerby, 1840.

888. *Acrosterigma impositum* (Sowerby, 1834)

Distribution: Intertidal sand, gravel, shelly sand, 5–6 m.
Tropical Indo-West Pacific, Persian Gulf, Sri Lanka, Australia
Reported from Pakistan by Lemche, 1955 collected as *Cardium impositum* G. B. Sowerby II, 1834; Hylleberg, 1996



(From WoRMS)

889. *Acrosterigma maculosum* (W. Wood, 1815)

Distribution: Intertidal sand. Tropical Indo- Pacific, Red Sea

Reported from Pakistan by Vidal, 1999



(Source Poppe, 2015)

Genus *Vepricardium* Iredale, 1929

890. *Vepricardium asiaticum* (Bruguière, 1789) 40-60 mm.

Distribution: Intertidal mud flats. Indo-West Pacific, Red Sea, Japan, China, Andaman Sea, Philippine

Reported from Pakistan by Melvill et al., 1906 as *Cardium* (*Acanthocardium*) *asiaticum*, OBIS, 2006.

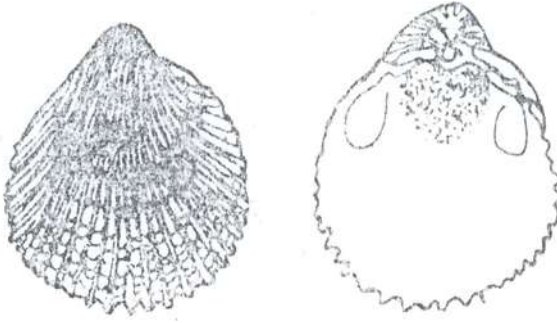


(Source:Natural History Museum Rotterdam)

891. *Vepricardium coronatum* (Schröter, 1786) (Setosum

cockle) 16-60 mm. Yellow with concentric brownish patches

Distribution: muddy water along low tide mark. India: Persian Gulf; Iran; Sri Lanka, Myanmar; Indonesia
Reported from Pakistan by Khan and Dastagir, 1972 as *Cardium coronatum*



(From Khan and Dastagir, 1972)

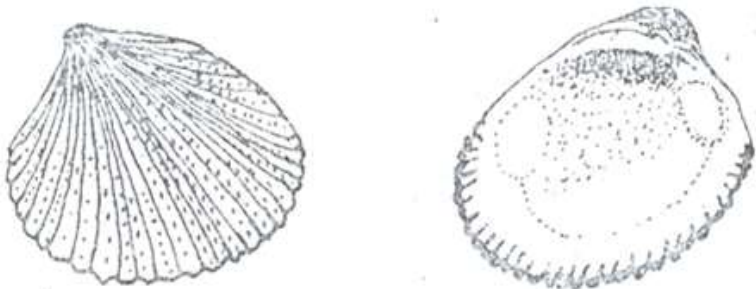
Genus *Maoricardium* Marwick, 1944

892. *Maoricardium pseudolima* (Lamarck, 1819)

Distribution: Offshore sand. Tropical Indo-West Pacific.
Reported from Pakistan by PSF (unpublished report, 1977)
as *Cardium pseudolima*, OBIS, 2006.

893. *Maoricardium setosum* (Redfield, 1846)

Distribution: Littoral sand and mud. Tropical Indo-West Pacific.
Reported from Pakistan by Melvill et al., 1906 as *Cardium* (*Cerastoderma*) *latum*, Khan and Dastagir, 1977 as *Cardium setosum*, OBIS, 2006.



(From Khan and Dastagir, 1972)

Genus *Fulvia* Gray, 1853

894. *Fulvia laevigata* (Linnaeus, 1758) (Eggcockle)

Distribution: Sandy and muddy beaches. Tropical Indo-West Pacific, Australia

Reported from Pakistan by Melvill et al., 1906 as *Cardium (Acanthocardia) pallidum* Reeve and *Cardium (Papyridea) papyraceum*, OBIS, 2006.



895. *Fulvia fragilis* (Forsskål in Niebuhr, 1775) (Fragile cockle)

Whitish yellow externally, with a purple stain only on the umbo and internally white with purple at the posterior third and sometimes at the umbonal cavity

Distribution: In shallow waters, prefers soft muddy substrates. Mediterranean Sea, Aegean Sea

Reported from Pakistan by Lemche Tr. 8, st 13 – ZM, 1951 collected not identified; Hylleberg 1996.



Genus *Fragum* Röding, 1798

896. *Fragum unedo* (Linnaeus, 1758)

Distribution: Shallow water. Tropical Indo-West Pacific.

Reported from Pakistan by Dance, 1992.



Genus *Lyrocardium* Meek, 1876

897. *Lyrocardium lyratum* (Sowerby, 1840)

Distribution: Offshore. Tropical Indo-West Pacific.

Reported from Pakistan by Dance, 1992.

Genus *Acanthocardia* Gray, 1851

898. *Acanthocardia aculeata* (Linnaeus, 1758)

Distribution: Rocky. Africa, Europe

Reported from Pakistan by PARC (unpublished report, 1986).

Genus *Ciliatocardium* Kafanov, 1974

899. *Ciliatocardium ciliatum* (Fabricius, 1780)

Distribution: Intertidal. Indo-West Pacific

Reported from Pakistan by PARC (unpublished report, 1986) as *Clinocardium ciliatum* Fabricius, 1780.

Genus *Corculum* Röding, 1798

900. *Corculum cardissa* (Linnaeus, 1758)

Distribution: Shallow water, sand. Tropical Indo-West Pacific, Australia, Philippines

Reported from Pakistan by Dance, 1992.



Genus *Tridacna* Bruguiere, 1797

901. *Tridacna maxima* (Röding, 1798)

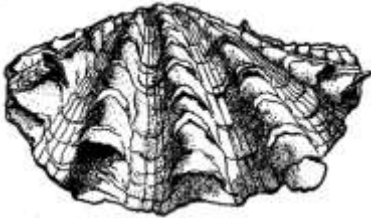
Distribution: Attached to rocks. Indo-West Pacific.

Reported from Pakistan by Shah et al., 2003 as *Tridacna maxima*, OBIS, 2006.

902. *Tridacna crocea* Lamarck, 1819

Distribution: Boring, infaunal. Indo-West Pacific, Red Sea, Great Barrier Reef

Reported from Pakistan by PSF (unpublished report, 1977)



(From Tirmizi and Zehra, 1982)

903. *Tridacna squamosa* Lamarck, 1819

Distribution: Corals. Indo-Pacific.

Reported from Pakistan by Dance, 1992.

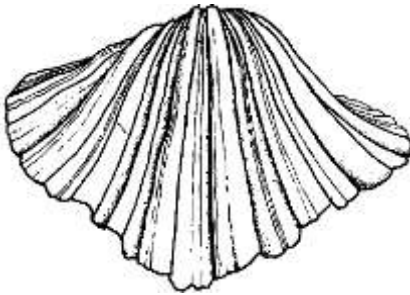


Genus *Hippopus* Lamarck, 1799

904. *Hippopus hippopus* (Linnaeus, 1758)

Distribution: Attached on hard substrate and corals. Indo-West Pacific.

Reported from Pakistan by PSF (unpublished report, 1977).



(From Tirmizi and Zehra, 1982)

Superfamily Mactroidea Lamarck, 1809

Family Mactridae Lamarck, 1809

Genus *Mactra* Linnaeus, 1767

905. *Mactra chinensis* Philippi, 1846

Distribution: Intertidal sand and mud. East China Sea, Japan, Korea, Yellow Sea

Reported from Pakistan by PARC (unpublished report, 1985).

906. *Mactra aequisulcata* Sowerby III, 1894

Distribution: Intertidal sand and mud

Reported from Pakistan by Moazzam, present study



907. *Macra glabrata* Linnaeus, 1767

Distribution: Intertidal sand. Indo-West Pacific.

Reported from Pakistan by Melvill, et al, 1906 as *Macra glabrata*? Non Linn., Lamy(1920) doubted and assigned probably to *M. lilacea*.

908. *Macra luzonica* Reeve, 1854 (Luzon troughshell)

Distribution: Rocky shores. Persian Gulf, tropical Indo-West Pacific, Australia.

Reported from Pakistan by Melvill and Standen, 1844 as *Macra (Trigonella) Luzonica*, OBIS, 2006.



(Source FAO)

909. *Macra lilacea* Lamarck, 1818

Distribution: Intertidal, subtidal sand. Indo-West Pacific, Red Sea, Malaysia.

Reported from Pakistan by Melvill et al., 1906 as *Macra fauroti*, OBIS, 2006.



910. *Mactra violacea* Gmelin, 1791

Distribution: Sub littoral sand and mud. Indonesia.
Reported from Pakistan by PARC (unpublished report, 1986) as *Mactra violacea* Gmelin, OBIS, 2006.

911. *Mactra antiquata* Spengler, 1802 150mm.

Distribution: in fine sand and mud, subtidal. Indo-West Pacific
Reported from Pakistan by Reeve, 1854 as *Mactra cornea* Reeve, 1854



(From ShareAlike 3.0 Unported (CC BY-SA 3.0))

Genus *Mactromeris* Conrad, 1868

912. *Mactromeris polynyma* (Stimpson, 1860)

Distribution: Rocky shores. Indo-West Pacific, Hong Kong, Sri Lanka, Japan, Malaysia.
Reported from Pakistan by Ahmed and Hameed, 1999 as *Mactra mera* Reeve.

Genus *Mactrotoma* Dall, 1894

913. *Mactrotoma angulifera* (Reeve, 1854)

Distribution: Sand and mud, subtidal. Indo-West Pacific.

Reported from Pakistan by PARC (unpublished report, 1986) as *Mactra angulifera*, OBIS, 2006.

Genus *Mactrinula* Gray, 1853

914. *Mactrinula dolabrata* (Reeve, 1854)

Distribution: Sub littoral sand and mud. Indo-West Pacific, China, Australia.

Reported from Pakistan by PARC (unpublished report, 1986) as *Mactra dolabrata*, OBIS, 2006.

Genus *Standella* Gray, 1853

915. *Standella pellucida* (Gmelin, 1791)

Distribution: Intertidal sand, at 10 fathoms, on rocks. Indo-West Pacific, Australia, Malaysia, Philippines, Sri Lanka.

Reported from Pakistan by Melvill, et al, 1906, as *Standella (Merope) capillacea* Deshayes, OBIS, 2006.

Genus *Meropesta* Iredale, 1929

916. *Meropesta nicobarica* (Gmelin, 1791) (Radiately-ridged trough shell)

Distribution: Intertidal mud and sand. Indo-West Pacific, Australia, Japan

Reported from Pakistan by Melvill et al, 1906 as *Standella (Merope) aegyptica*, OBIS, 2006.

Order Adapedonta Cossmann and Peyrot, 1909

Superfamily Solenoidea Lamarck, 1809(Razor shells)

Family Solenidae Lamarck, 1809

Genus *Solen* Linnaeus, 1758

917. *Solen guinensis* Hanley, 1842 35-120mm. Reddish brown bands

Distribution: Muddy and sandy bottom, burrowing. Indian Ocean, Arabian Sea, Persian Gulf, Red Sea.

Reported from Pakistan by Melvill et al., 1906 as *Solen (Solen) ceylonensis* Leach, 1814, Ranjha, 1960; OBIS, 2006; Khan and Dastagir, 1972 as *Solen truncatus*



(From Khan and Dastagir, 1972)

918. *Solen corneus* Lamarck, 1818

Distribution: Intertidal Mud flats and sand. Indo-West Pacific, China, Red Sea, Yellow Sea
Reported from Pakistan by Melvill et al 1906, OBIS, 2006.

919. *Solen strictus* Gould, 1861

Distribution: Sandy littoral zone, prefers the depth about 20–50 cm. Indo-West Pacific, China, Japan.
Reported from Pakistan by Ahmed, 1994.

920. *Solen grandis* Dunker, 1862

Distribution: Shallow subtidal, intertidal sand. Indo-West Pacific, China, Korea, Japan
Reported from Pakistan by PARC (unpublished report, 1986).

921. *Solen cylindraceus* Hanley, 1843

Distribution: Infaunal, estuarine. West Indian Ocean
Reported from Pakistan by Moazzam, present study



922. *Solen dactylus* Cosel, 1989

Distribution: Infaunal, estuarine. West Indian Ocean, Persian Gulf

Reported from Pakistan by Cosel, 1989



Family Pharidae H. Adams and A. Adams, 1856

Genus *Siliqua* Megerle von Muhlfield, 1811

923. *Siliqua radiata* (Linnaeus, 1758) 10-20mm. Marked by broad wedge shaped bands of mauve

Distribution: Sand and mud in shallow water. Indo-West Pacific, South China Sea, Hainan.

Reported from Pakistan by Melvill *et al.*, 1906 as *Machaer polita* and *M. radiata*, Khan and Dastagir, 1972.



(From Gravely, 1941)

Genus *Sinonovacula* Prashad, 1924

924. *Sinonovacula constricta* (Lamarck, 1818)

Distribution: Intertidal, mud and sand. South and East China Seas.

Reported from Pakistan by PARC (unpublished report, 1986)

Genus *Enciculus* H. Adams, 1861

925. *Enciculus cultellus* (Linnaeus, 1758)

Distribution: Mangroves. Madagascar, Tanzania

Reported from Pakistan by Moazzam and Ahmed, 1994 as
Cultellus cultellus



Superfamily Tellinoidea Blainville, 1814

Family Solecurtidae d'Orbigny, 1846

Genus *Solecurtus* Blainville, 1824

926. *Solecurtus australis* (Dunker, 1862)

Distribution: Australia. In sandy or shelly gravel, from the lower shore into the shallow sublittoral

Contributed from Pakistan by Moazzam, present study



Family Tellinidae Blainville, 1814

Genus *Austromacoma* Olsson, 1961

927. *Austromacoma constricta* (Bruguère, 1792)

Distribution: Rocky shores. America

Reported from Pakistan by PARC (unpublished report, 1986) as *Macoma constricta* Bruguère, 1792.

Genus *Macoma* Leach, 1819

928. *Macoma calcarea* (Gmelin, 1791)

Distribution: Offshore. Japan

Reported from Pakistan by PSF (unpublished report, 1977).

929. *Macoma blainvillei* Melvill and Standen, 1907 nomen nudum

Distribution: Muddy sand near rocks. Northern Arabian Sea.

Reported from Pakistan by Melvill et al., 1906.

Genus *Rexithaerus* Tryon, 1869

930. *Rexithaerus secta* (Conrad, 1837)

Distribution: Mudflats. Indo-West Pacific

Reported from Pakistan by PARC (unpublished report, 1986) as *Macoma (Rexithaerus) secta*

Genus *Psammotreta* Dall, 1900

931. *Psammotreta angulata* (Linnaeus, 1767) nomen dubium 30-35mm. White colour

Distribution: At 0-tide level in sandy cum muddy .Indo-Pacific

Reported from Pakistan by Khan and Dastagir, 1972 as *Tellina angulata* (Linnaeus, 1767)



Genus *Pseudotellidora* Huber, Langleit and Kreipl, 2015

932. *Pseudotellidora pellyana* (H. Adams, 1873)

Distribution: Subtidal on muddy bottom. Arabian Sea, Persian Gulf.

Reported from Pakistan by Melvill et al., 1907 as *Tellidora pellyana* Adams, 1873.

Genus *Gastrana* Schumacher, 1817

933. *Gastrana multangula* (Gmelin, 1791) 10-70mm.

Brownish grey

Distribution: In sandy-cum muddy areas. Indo-Pacific

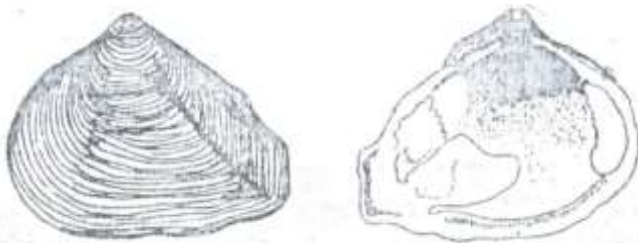
Reported from Pakistan by Khan and Dastagir, 1972



934. *Gastrana matadoa* (Gmelin, 1791) 35-45mm.

Distribution: In soft sediments in shallow seas. South Africa, Senegal

Reported from Pakistan by Melvill and Standen, 1906 as *Gastrana abildgaardiana* (Spengler) and *Gastrana guineaica*; Khan and Dastagir, 1972 as *Macoma polygona* Hanley



(From Khan and Dastagir, 1972)

Genus *Apolymetis* Salisbury, 1929

935 *Apolymetis plicata* (Saint -Vincent, 1827)

Distribution: Intertidal sand. Indo-West Pacific.

Reported from Pakistan by PARC (unpublished report, 1986) as *A. (Hemimirtus) plicatus*.

Genus *Tellinella* Mörch, 1853

936. *Tellinella philippi* (Anton, 1844)

Distribution: Intertidal sand. Indo-West Pacific, Red Sea, Africa, Great Barrier Reef

Reported from Pakistan by PARC (unpublished report, 1986) as *Tellina philippi* Anton, OBIS, 2006.

937. *Tellinella virgata* (Linnaeus, 1758)

Distribution: Shallow water sand. Tropical Indo-West Pacific, Red Sea, Philippines

Reported from Pakistan by PARC (unpublished report, 1986) as *Tellina varigata*, OBIS, 2006.



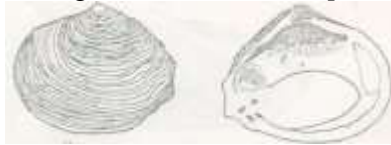
Genus *Serratina* Pallary, 1920

938. *Serratina capsoides* (Lamarck, 1818) 18-45mm.

Colour white

Distribution: Intertidal sandy mud at low tide mark. Indo-West Pacific, Red Sea, China, Africa.

Reported from Pakistan by Melvill, 1896 as *Tellina emarginata* and *Tellina thymares* Melvill, 1896; Khan and Dastagir, 1972 as *Tellina pristis*, OBIS, 2006.



(From Khan and Dastagir, 1972)

939. *Serratina perplexa* (Hanley, 1844)

Distribution: Intertidal mud flats. Northern Arabian Sea, China Sea, Japan

Reported from Pakistan by Melvill et al., 1906 as *Tellina (Arcopagia) perplexa*.

Genus *Quidnipagus* Iredale, 1929

940. *Quidnipagus palatam* Iredale, 1929.

Distribution: Intertidal Sand. Tropical Indo-West Pacific, Queensland, Red Sea, Great Barrier Reef

Reported from Pakistan by Melvill et al., 1906 as *Tellina* (*Tellinella*) *rugosa*, OBIS, 2006.



Genus *Cadella* Dall, Bartsch and Rehder, 1938

941. *Cadella obtusalis* (Deshayes, 1855)

Distribution: Intertidal sand. Northern Arabian Sea, Australia, Queensland, Great Barrier Reef

Reported from Pakistan by Melvill et al., 1906 as *Tellina* (*Moera*) *obtusalis*, OBIS, 2006.

942. *Cadella semen* (Hanley, 1845)

Distribution: Intertidal, shallow subtidal sand. South African coast, Mozambique, Seychelles, Persian Gulf, Malaysia, Australia, Philippines, Fiji.

Reported from Pakistan by Melvill et al., 1906 as *Tellina* (*Moera*) *semen*, OBIS, 2006.



(Photo Source Poppe and Poppe)

943. *Cadella lechriogramma* (Melvill, 1892)

Distribution: Intertidal. Arabian Sea.

Reported from Pakistan by Melvill et al., 1906 as *Tellina lechriogramma* Melvill, 1893.

Genus *Scutarcopagia* Pilsbry, 1918

944. *Scutarcopagia scobinata* (Linnaeus, 1758)

Distribution: Intertidal, shallow subtidal. Tropical Indo-West Pacific.

Reported from Pakistan by Melvill et al., 1906 as *Tellina (Arcopagia) scobinata*, OBIS, 2006



(Photo contributed by Moazzam)

945. *Scutarcopagia linguafelis* (Linnaeus, 1758) (Cat's Tongue)

Distribution: Shallow water sand. Tropical Indo-Pacific.

Reported from Pakistan by Melvill et al, 1906;Dance, 1992 as *Tellina linguafelis* Linnaeus, 1758.

Genus *Iridona* Huber, Langleit and Kreipl, 2015

946. *Iridona methoria* (Melvill, 1897)

Distribution: Muddy sand near rocks .Western Indian Ocean

Reported from Pakistan by Melvill, 1897 as *Tellina methoria* Melvill, 1897

947. *Iridona iridescens* (Benson, 1842)

Distribution: Muddy sand near rocks. Arabian Sea.

Reported from Pakistan by Melvill et al., 1906 as *Tellina* (*Angulus*) *iridescens*

Genus *Nitidotellina* Scarlato, 1965

948. *Nitidotellina unifasciata* (G. B. Sowerby II, 1867)

6.9-8mm.

Distribution: Muddy sand in offshore. Tropical Indo-West Pacific

Reported from Pakistan by Oliver, 1992 as *Tellina nitens* Deshayes, 1855.



Genus *Clathrotellina* Thiele, 1934

949. *Clathrotellina habrotima* (Melvill, 1898)

Distribution: Fine sand bottom, intertidal?

Reported from Pakistan by Melvill et al, 1906 as *Tellina habrotima*

Genus *Eurytellina* Fischer, 1887

950. *Eurytellina alternata* (Say, 1822)

Distribution: Mangroves. Arabian Sea, Western Atlantic, North America.

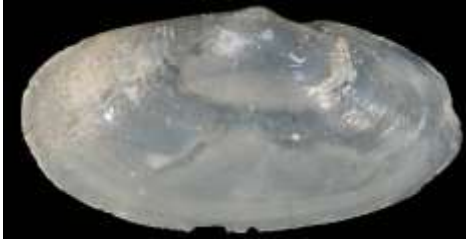
Reported from Pakistan by Tirmizi and Barkati, 1985 as *Tellina alternata* Say, 1822

Genus *Hanleyanus* Huber, Langleit and Kreipl, 2015

951. *Hanleyanus vestalis* (Hanley, 1844)

Distribution: Coral sands clay mixed with sand .India, Philippines, Mauritius.

Reported from Pakistan by Melvill, 1906 as *Tellina vestalis*
Hanley, 1844



Genus *Indentina* Huber, Langleit and Kreipl, 2015

952. *Indentina scalpellum* (Hanley, 1844)

Distribution: Subtidal mudflats. Indian Ocean.

Reported from Pakistan by Melvill et al., 1906 as *Tellina*
(*Angulus*) *rubella*.

Genus *Pinguitellina* Iredale, 1927

953. *Pinguitellina pinguis* (Hanley, 1844)

Distribution: Sandy bottom toll depth at 1-3 fathoms below
surface, India, Singapore

Reported from Pakistan by Melvill and Standen, 1898 as
Tellina savignyi H. Adams, 1871



954. *Pinguitellina nux* (Hanley, 1844)

Distribution: Shallow subtidal, intertidal mud, sand. Indo-
West Pacific, Red Sea.

Reported from Pakistan by Melvill et al., 1906 as *Tellina* (*Arcopagia*) *nux*

Genus *Tellinides* Lamarck, 1818

955. *Tellinides sinuatus* (Spengler, 1798)

Distribution: Soft bottom. India; Malagasy; Sri Lanka; Indonesia; Philippines.

Reported from Pakistan by Melvill and Standen, 1906

956. *Tellinides striatus* (Gmelin, 1791) 32-34mm

Distribution: Subtidal muddy sand. East Africa, Arabian Sea, Red Sea, Persian Gulf, Gulf of Oman, Australia

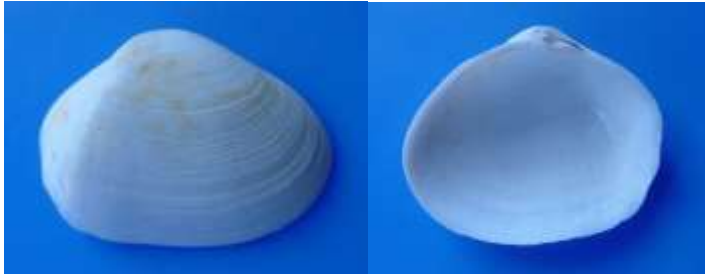
Reported from Pakistan by Melvill et al., 1907 as *Tellina* (*Tellinides*) *ovalis*.

Genus *Leporimetis* Iredale, 1930

957. *Leporimetis papyracea* (Gmelin, 1791)

Distribution: Mud flats at low tide. Indian Ocean, Red Sea, Gulf of Aden.

Reported from Pakistan by Melvill et al., 1906 as *Tellina* (*Metis*) *lacunosa* Chemn, OBIS, 2006.



(Photo contributed by Moazzam)

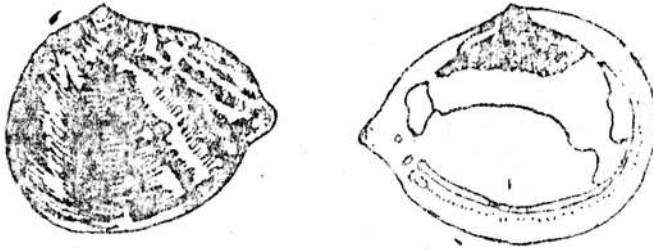
958. *Leporimetis obesa* (Deshayes, 1855)

Distribution: Mud flats. Arabian Sea

Reported from Pakistan by Melvill et al., 1906 as *Tellina* *turgida* Deshayes, 1855

Genus *Alaona* Huber, Langleit and Kreipl, 2015

959. *Alaona ala* (Hanley, 1845) 20-30mm. Colour white
Distribution: Creeks in sand, mangroves. Indian Ocean.
India; Sri Lanka; Myanmar; Philippines; Japan.
Reported from Pakistan by Dey, 1844 as *Macoma ala*;
Khan and Dastagir, 1972 as *Tellina ala*, OBIS, 2006.



(From Khan and Dastagir, 1972)

Genus *Ardeamya* Olsson, 1961

960. *Ardeamya tokunagai* (Ikebe, 1936)

Distribution: Sandy shores. Indo-West Pacific.
Reported from Pakistan by PARC (unpublished report,
1986) as *Arcopagia (Merisea) tokunagai*.

Genus *Laciolina* Iredale 1937

961. *Laciolina chloroleuca* (Lamarck, 1818)

Distribution: Intertidal, Shallow subtidal mud and sand.
Indo-West Pacific, China, Australia.
Reported from Pakistan by PARC unpublished report.

Genus *Psammacoma* Dall, 1900

962. *Psammacoma gubernaculum* (Hanley, 1844)

Distribution: Offshore. Mediterranean
Reported from Pakistan by Day, 1981 as *Macoma*
(*Psammacoma*) *truncata* (Jonas)

Genus *Pseudopsammobia* M. Huber, Langleit and Kreipl, 2015

963. *Pseudopsammobia simplex* (G. B. Sowerby III, 1894)

Distribution: Sandy mud. Indo-China.

Reported from Pakistan by Melvill et al., 1906 as *Gari simplex*, OBIS, 2006

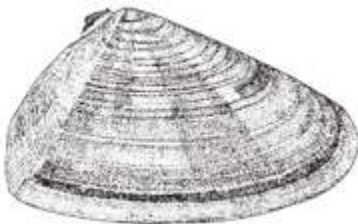
Family Donacidae Fleming, 1828

Genus *Donax* Linnaeus, 1758 (Bean clams)

964. *Donax cuneatus* Linnaeus, 1758 (Cuneate Wedge Shell) 17-46 mm x 11-31 mm. x 7-14 mm

Distribution: Exposed intertidal sandy beaches .Indo-Pacific

Reported from Pakistan by Arshad et al, 2017



(Source FAO)

965. *Donax denticulatus* Linnaeus, 1758

Distribution: Exposed intertidal sandy beaches .Indo-Pacific

Reported from Pakistan by Arshad et al, 2017



966. *Donax scortum* (Linnaeus, 1758) 50-70mm. White

Distribution: Sandy beaches. Between tide marks Indo-West Pacific.

Reported from Pakistan by Khan and Dastagir, 1972



(From Tirmizi and Zehra,1982)

967. *Donax scalpellum* Gray, 1825

Distribution: Sandy beaches, lower littoral zone.UAE
Reported from Pakistan by Melvill and Standen,1906.



968. *Donax rugosus* Linnaeus, 1758

Distribution: Sandy beaches.Indo-West Pacific, West Africa.

Reported from Pakistan by PARC (PARC report, 1986).

969. *Donax aperittus* Melvill, 1897

Distribution: Sandy beaches.Eastren Indian Ocean, Arabian Sea, India; Iran

Reported from Pakistan by Melvill et al., 1906 as *Donax (Serrula) aperittus*, OBIS, 2006.

970. *Donax nitidus* Deshayes, 1855 3-10mm

Distribution: Sandy areas. Indo-West Pacific, Gulf of Aden, South China Sea, Thailand, Australia

Reported from Pakistan by Melvill et al., 1906 as *Donax (Serrula) nitidus*, OBIS, 2006.

971. *Donax townsendi* Sowerby, 1894 20-26mm.

Distribution: Buried in sand. Indo-West Pacific

Reported from Pakistan by Melvill et al., 1906 as *D. (Serrula) townsendi*



(Photo contributed by Moazzam)

972. *Donax clathratus* Reeve, 1855 12mm.

Distribution: in the sand on exposed beaches. Oman

Contributed from Pakistan by Moazzam, present study



Genus *Iphigenia* Schumacher, 1817

973. *Iphigenia brasiliensis* (Lamarck, 1818)

Distribution: Muddy sand. Indo-West Pacific.

Reported from Pakistan by PARC (unpublished report, 1986).

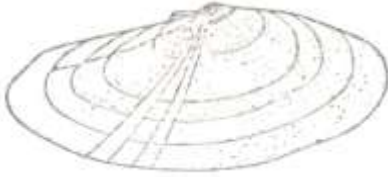
Family Psammobiidae Fleming, 1828 (Sunset clams)

Genus *Hiatula* Modeer, 1793

974. *Hiatula diphos* (Linnaeus, 1771)

Distribution: Intertidal muddy sand. Indo-West Pacific.

Reported from Pakistan by Reeve, 1857 as *Soletellina acuminata*; Khan and Dastagir, 1972; Tirmizi and Barkati, 1985 as *Soletellina diphos* Linnaeus, 1771.



(From Gravely, 1941)

975. *Hiatula ambigua* (Reeve, 1857)

Distribution: Inhabits tranquil waters in lagoons and estuaries. Philippines, Singapore

Reported from Pakistan by Barash and Danin, 1986 as *Soletellina subradiata* (Reeve, 1857)



(Source WMSDB)

976. *Hiatula rosea* (Gmelin, 1791)

Distribution: In tranquil waters in lagoons and estuaries. Mediterranean, Red Sea.

Contributed from Pakistan by Moazzam, present study as *Hiatula ruppelliana* (Reeve, 1857).



977. *Hiatula atrata* (Reeve, 1857) 16.17 mm.

Distribution: Intertidal sand. China, Philippine.

Reported from Pakistan by PSF (unpublished report, 1977)
as *Soletellina atrata*



Genus *Gari* Schumacher, 1817

978. *Gari insignis* (Deshayes, 1855)

Distribution: Mud and coral. Indo-West Pacific, Gulf of Oman, Red Sea.

Reported from Pakistan by Melvill et al., 1906 as *Gari elegans*, OBIS, 2006.



979. *Gari pallida* (Deshayes, 1855)

Distribution: coarse sand; sand-shell-seagrass; mud flats.
Depth range of 10 to 150 subtidal. Indo-West Pacific,
Persian Gulf, Gulf of Oman, Red Sea,

Reported from Pakistan by Melvill et al., 1906, OBIS,
2006.

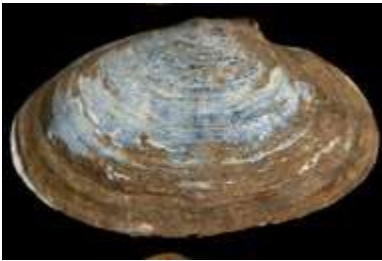


(Photo Source World wide seashell collection, 2018)

980. *Gari elongata* (Lamarck, 1818)

Distribution: lives in sand and sandy gravel deposits in a shallow burrow Eastern Indian Ocean.

Reported from Pakistan by Melvill et al., 1906 as *Psammotaea violacea* Lamarck, 1818



981. *Gari amethystus* (Wood, 1815)

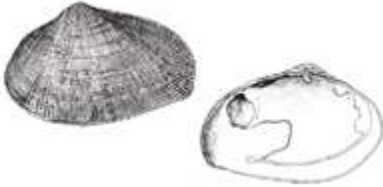
Distribution: lives in sand and sandy gravel deposits in a shallow burrow Philippines, Thailand, Japan, Australia, Indonesia, New Zealand, Oman, Sri Lanka, Red Sea

Reported from Pakistan by Kazmi and Khan, 2014



Genus *Asaphis* Modeer, 1793

982. *Asaphis deflorata* (Linnaeus, 1758) 47 mm 60 mm
Distribution: Subtidal shallow sandy and muddy bottom.
Persian Gulf, Madagascar, Tanzania.
Reported from Pakistan by Melvill et al., 1906



(Photo Source FAO)

983. *Asaphis violascens* (Forsskål in Niebuhr, 1775) 30-38mm. Dull white
Distribution: Subtidal shallow sandy and muddy bottom.
Reported from Pakistan by Khan and Dastagir, 1972 as
Asaphis dichotoma Anton, 1838



Family Semelidae Stoliezka, 1876
Genus *Semele* Schumacher, 1817

984. *Semele striata* (Reeve, 1853)
Distribution: Inter tidal sand. Indian Ocean
Reported from Pakistan by PARC (unpublished report, 1986).

985. *Semele cordiformis* (Holten, 1802)
Distribution: On mud flats at low tide. Indian Ocean, Red Sea.

Reported from Pakistan by Melvill et al, 1906.



986. *Semele crenulata* (Reeve, 1853)

Distribution: Intertidal sand. Arabian Sea.

Reported from Pakistan by Melvill et al., 1906.



(www.nmr-pics.nl/Semelidae/album/index.htm)

Genus *Abra* Lamarck, 1818

987. *Abra prismatica* (Montagu, 1808)

Distribution: Burrows in sand or muddy Sand. Mediterranean Sea, Arabian Sea.

Reported from Pakistan by PARC (unpublished report, 1986).

Order Venerida Gray, 1854

Suerfamily Veneroidea Rafinesque, 1815

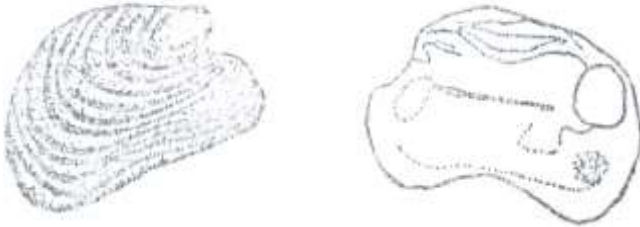
Family Trapezidae Lamy, 1920 (1895)

Genus *Neotrapezium* Habe, 1951

988. *Neotrapezium sublaevigatum* (Lamarck, 1819)

Distribution: Rocky shores, attached, usually to the undersides of rocks and boulders sheltered from strong wave action, and nestling in crevices and amongst clumps of oysters as well as occasionally in burrows of boring bivalves in coral rocks in sheltered areas. Arabian Sea.

Reported from Pakistan by Melvill et al., 1906 in Cyprinidae as *Trapezium vellicatum* Reeve; Khan and Dastagir, 1972 as *Libitina vellicata*



(From Khan and Dastagir, 1972)

Genus *Ruditapes* Chiamenti, 1900

989. *Ruditapes decussatus* (Linnaeus, 1758) 39mm.

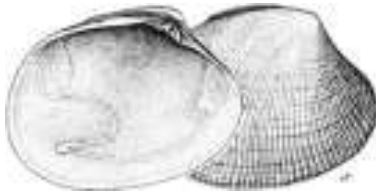
Distribution: Infaunal in mud or sand. Arabian Sea.

Reported from Pakistan by Melvill, 1906 as *Cryptodon decussatus* Ad. PSF (unpublished report, 1977) as *Venerupis decussata* Linnaeus, 1758.

990. *Ruditapes philippinarum* (Adams and Reeve, 1850) (Japanese carpet shell) Extremely variable in colour and pattern, white, yellow or light brown, sometimes with rays, steaks, blotches or zig-zags of a darker brown, slightly polished; inside of shell polished white with an orange tint.

Distribution: Mud flats at low tide. Arabian Sea.

Reported from Pakistan by Melvill et al, 1906 as *Tapes (Amygdala) indica*, Ranjha, 1960.



Family Veneridae Rafinesque, 1815

Genus *Placamen* Iredale, 1925

991. *Placamen lamellatum* (Röding, 1798) (Turban venus)
8-12mm. Rust indistinctly marked with rust-brown or
falsvous white, shining, rayed with purple

Distribution: In crevices in rock or among oyster. Tropical
Indo-W. Pacific Australia

Reported from Pakistan by Khan and Dastagir, 1972 as
Chione calophylla (Philippi, 1836) and *Chione tiara*.



(From Gravely, 1941)

992. *Placamen foliaceum* (Philippi, 1846)

Distribution: Sub littoral. Tropical Indo-West Pacific.

Reported from Pakistan by Melvill et al, 1906 as *Anaitis
foliacea*, OBIS, 2006

Genus *Lioconcha* Mörch, 1853

993. *Lioconcha picta* (Lamarck, 1818)

Distribution: Intertidal sand. Indo-West Pacific.

Reported from Pakistan by PARC (unpublished report,
1986).

994. *Lioconcha fastigiata* (Sowerby, 1851)

Distribution: Subtidal and intertidal sand. Tropical Indo-
West Pacific, Philippines, Australia

Reported from Pakistan by PARC (unpublished Report,
1986) as *L. fastigala*, OBIS, 2006

995. *Lioconcha castrensis* (Linnaeus, 1758)

50mm. Shining white, ash or saffron tinged with suffuse chestnut or black zigzag markings

Distribution: Intertidal sand. Tropical Indo-West Pacific, Red Sea, Gulf of Aqaba, West Africa, Australia.

Reported from Pakistan by Khan and Dastagir, 1972 as *Circe castrensis*, OBIS, 2006.



(From Khan and Dastagir, 1972)

996. *Lioconcha ornata* (Dillwyn, 1817) 45mm.

Distribution: 1- 10 fathoms, sand and mud, gravel. Andamans, Sri Lanka, Persian Gulf, Laccadive and Maldives Archip., Red Sea, Aden, Mauritius, Rodriguez, Durban, Philippines, China, Japan, Samoa Isles., Loyalty Isles.

Reported from Pakistan by Melvill and Standen, 1907 as *Lioconcha picta* (Lamarck, 1818)



Genus *Tivela* Link, 1807

997. *Tivela stefaninii* (Nardini, 1933)

Distribution: Loose sand, below surface at low tide. Arabian Sea, Red Sea, East Africa.

Reported from Pakistan by Melvill et al., 1906 as *Tivela ponderosa* Koch, OBIS, 2006



(Photo contributed by Moazzam)

998. *Tivela trigonella* (Lamarck, 1818)

Distribution: Muddy sand. Indo-West Pacific

Reported from Pakistan by Melvill et al., 1901



999. *Tivela* cf. *mulawana* Biggs, 1969

Distribution: Muddy sand

Contributed from Pakistan by Moazzam, present study

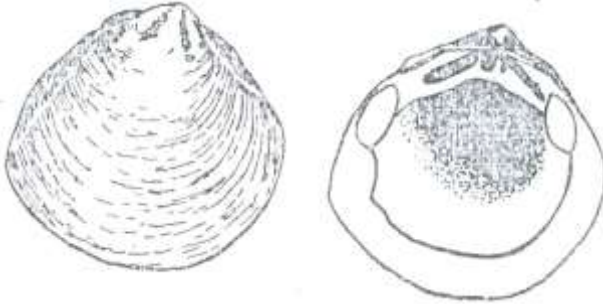


Genus *Meretrix* Lamarck, 1799

1000. *Meretrix meretrix* (Linnaeus, 1758) 25-60mm.

Distribution: Intertidal, subtidal sand and mud. Tropical Indo-West Pacific.

Reported from Pakistan by Melvill and Standen, 1901 and as *M. impudica*, Melvill et al, 1906 as *M. zonaria*, var. of *M. impudica*

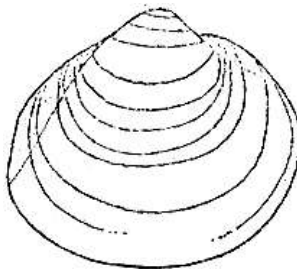


(From Khan and Dastagir, 1972)

1001. *Meretrix casta* (Gmelin, 1791) 30-70mm.

Distribution: At low tide areas in muddy-cum-sandy substratum

Reported from Pakistan by Moazzam and Ahmed, 1994



(From Gavely, 1921)

Genus *Antigona* Schumacher, 1817

1002. *Antigona lamellaris* Schumacher, 1817 10-15mm,
creamy white

Distribution: At low tide mark, in sand

Reported from Pakistan by Khan and Dastagir, 1972 as
Venus lamellaris Schumacher



(From Khan and Dastagir, 1972)

Genus *Periglypta* Jukes -Browne, 1914

1003. *Periglypta reticulata* (Linnaeus, 1758)

Distribution: Intertidal, boring in soft rocks and rocky crevices. Indo-West Pacific, Red Sea, Japan, China, Hong Kong, Australia.

Reported from Pakistan by Khan and Dastagir, 1972 as
Venus reticulata



Genus *Irus* Schmidt, 1818

1004. *Irus irus* (Linnaeus, 1758) (Macrophyll rock Venus)
20-25 mm.

Distribution: Intertidal, boring in soft rocks and rocky crevices. Indo-West Pacific, Red Sea, Japan, China, Hong Kong, Australia.

Reported from Pakistan by Melvill and Standen, 1906 as *Irus macrophylla*; Khan and Dastagir, 1972 as *Venerupis macrophylla* Deshayes, 1853, OBIS, 2006)

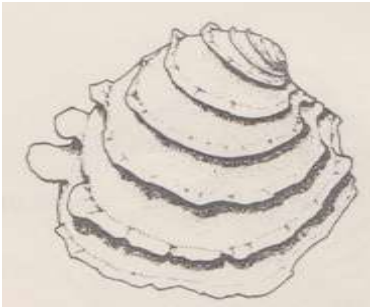


(From Gravely, 1941)

1005. *Irus* sp

Distribution: Intertidal, boring in soft rocks and rocky crevices.

Reported from Pakistan by Tirmizi and Zehra, 1982



(From Tirmizi and Zehra, 1982)

1006. *Irus vertumnalium* (Melvill, 1918) 40mm.

Distribution: Tropical Indo-West Pacific

Reported from Pakistan by Melvill, 1918 *Cypricardia vertumnalium* Melvill, 1918.

1007. *Irus cumingii* (Deshayes, 1854)

Distribution: Tropical Indo-West Pacific

Reported from Pakistan by Melvill, 1906 as *Venerupis obesa* Deshayes, 1854

Genus *Venerupis* Lamarck, 1818

1008. *Venerupis rugosa* (G. B. Sowerby II, 1854)

Distribution: Infaunal in mud or sand. Aden, Bahrain, S. Africa, Mozambique.

Reported from Pakistan by Fischer Piette and Barnard, 1971 as *Irus rugosa*.

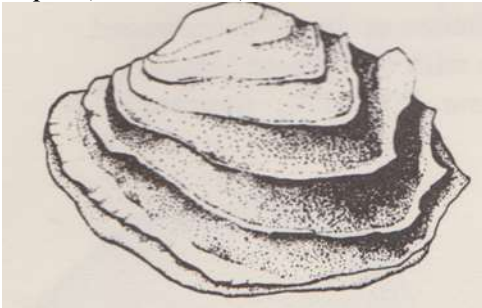


(Photo contributed by Moazzam)

1009. *Venerupis corrugata* (Gmelin, 1791)

Distribution: Mud flats at low tide. Arabian Sea.

Reported from Pakistan by Melvill et al, 1906 as *Tapes (Parembola) corrugata* Deshay; Melvill, et. al, 1906 as *Tapes (Parembola) obsoleta* .



1010. *Venerupis aspera* (Quoy and Gaimard, 1835) (Variegated carpet shell) 4.5-6 cm., Outside variable, cream to fawn, brown or grey, uniform or variegated with various patterns of lighter or darker colours. Umbones frequently hued in pink, yellow, orange, or deep purplish blue. Interior often brightly tinged in yellow, pink, orange, purple, or light bluish grey, paler towards the margins and with deep purple blotches on hinge area.

Distribution: In sandy bottoms, often with pebble. Intertidal and sublittoral to a depth of about 20 m. Japan, Australia
Reported from Pakistan by Carpenter and Neim, 1998 as *Ruditapes variegatus* (Sowerby, 1852)



(Photo Source Femorale)

Genus *Paratapes* Stoliczka, 1870

1011. *Paratapes undulatus* (Born, 1778)

Distribution: Inter to sub tidal mudflats. Tropical Indo-West Pacific, widely distributed.

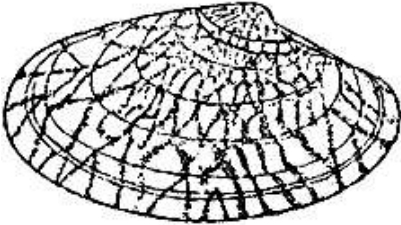
Reported from Pakistan by Melvill et al., 1906 as *Tapes (Textrix) textrix*, OBIS, 2006.



1012. *Paratapes textilis* (Gmelin, 1791)

Distribution: Sandy and muddy shores. Mangroves. Indo-West Pacific, Red Sea, South China Sea.

Reported from Pakistan by Khan and Dastagir, 1972 as *Paphia textile* (Gmelin, 1791).



Genus *Paphia* Röding, 1798

1013. *Paphia euglypta* (Philippi, 1847)

Distribution: Intertidal mud and sand. Indo-West Pacific, South and East China Sea, Japan

Reported from Pakistan by Mirza, 1981, unpublished thesis

1014. *Paphia sulcosa* (Philippi, 1847)

Distribution: Mud flats at low tide. Indian Ocean

Reported from Pakistan by Melvill et al., 1906 as *Tapes (Textrix) sulcosa*.

Genus *Protapes* Dall, 1902

1015. *Protapes monstrosus* (Römer, 1870)

Distribution: Mud flats at low tide. Tropical Indo-West Pacific.

Reported from Pakistan by Melvill et al., 1906 as *Paphia (Protapes) gallus bombayana* Oliver and Glover, 1996

1016. *Protapes gallus* (Gmelin, 1791)

Distribution: Mud flats at low tide..

Reported from Pakistan by Melvill, 1906 as *Tapes (Textrix) malabarica*



(Natural History Museum Rotterdam)

1017. *Protapes cor* (G. B. Sowerby II, 1853) 30-71mm.

Distribution: Muddy-cum-sandy flats. Arabian Sea, Persian Gulf, Bay of Bengal

Reported from Pakistan by Sowerby, 1853; Melvill and Abercrombei, 1893 as *Venus cor*; Melvill et al., 1906 as *Tapes (Hemitapes) cor* Sowerby

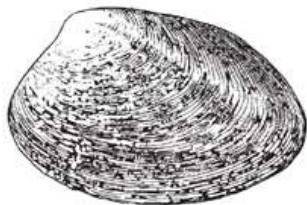


Genus *Tapes* Muhlfeldt, 1811

1018. *Tapes literatus* (Linnaeus, 1758) (Lettered venus)

Distribution: Mud flats at low tide. Benthic; depth range 0 - 20 m. Indo-Pacific

Reported from Pakistan by Rehman and Barkati, 2012



(Photo Source FAO)

Genus *Polititapes* Chiamenti, 1900

1019. *Polititapes aureus* (Gmelin, 1791)(Golden carpet shell)

Distribution: Offshore on sand. Arabian Sea

Reported from Pakistan by Melvill et al, 1906 as *Tapes* (*Amygdala*) *florida*



Genus *Mercenaria* Schumacher, 1817

1020. *Mercenaria stimpsoni* (Gould, 1861)

Distribution: Subtidal mud. Arabian Sea, North Pacific.

Reported from Pakistan by PARC (unpublished report, 1985).

1021. *Mercenaria mercenaria* (Linnaeus, 1758)

Distribution: Intertidal. Indo-West Pacific, Atlantic Ocean.

Reported from Pakistan by PARC (unpublished report, 1986) .

Genus *Dosinia* Scopoli, 1777

1022. *Dosinia prostrata* (Linnaeus, 1758)

Distribution: Sandy beaches. Arabian Sea.

Reported from Pakistan by Ahmed and Hameed, 1999.



1023. *Dosinia alta* (Dunker, 1849) 5.6-9.8mm.

Distribution: Mud flats, lower intertidal and subtidal. Indo-West Pacific, Red Sea, Persian Gulf.

Reported from Pakistan by Melvill et al., 1906.



1024. *Dosinia angulosa* (Philippi, 1847)

Distribution: Mud flats. Indo-West Pacific

Reported from Pakistan by Melvill et al., 1906.



1025. *Dosinia amphidesmoides* (Reeve, 1850)

Distribution: Clean and coarse shell sand. Red Sea; Suez Canal, Mediterranean

Reported from Pakistan by OBIS, 2006.



(From Poppe, 2015)

1026. *Dosinia levissima* Fischer-Piette and Delmas, 1967

Distribution: Offshores mud and sand. Indo-West Pacific, Australia.

Reported from Pakistan by Melvill et al., 1906 as *Dosinia exasperata*

1027. *Dosinia histrio* (Gmelin, 1791)

Distribution: Off shores mud and sand. Indo-West Pacific, Persian Gulf, Gulf of Oman.

Reported from Pakistan by Melvill et al., 1906.

1028. *Dosinia subrosea* (Gray, 1835)

Distribution: Off shores mud and sand. Indo-West Pacific, New Zealand.

Reported from Pakistan by Melvill et al., 1906.



1029. *Dosinia biscocta* (Reeve, 1850)

Distribution: Sand shores. Indo-West Pacific

Reported from Pakistan by PSF (Report, 1977) as *D. (Phacosoma) biscocta*.

1030. *Dosinia penicillata* (Reeve, 1850)

Distribution: Off shores mud and sand. Indo-West Pacific.

Reported from Pakistan by Tirmizi and Barkati, 1985 as *D. (Dosinella) penicellata*

1031. *Dosinia kaspiewi* Fischer-Piette and Delmas, 1967

9-25mm. Shell with alternate concentric shades of brownish red

Distribution: Off shores mud and sand. Indo-West Pacific.

Reported from Pakistan by Khan and Dastagir, 1972 as *Dosinia cretacea* (Reeve, 1850)



(From Khan and Dastagir, 1972)

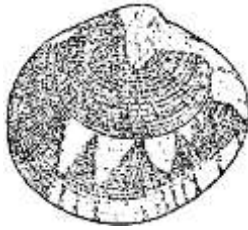
1032. *Dosinia puella* Römer, 1863 taxon inquirendum. 16-30mm. dull white or pale
Distribution: Off shores mud and sand. Indo-West Pacific.
Reported from Pakistan by Khan and Dastagir, 1972



(From Khan and Dastagir, 1972)

Genus *Gafrarium* Röding, 1798

1033. *Gafrarium divericatum* (Gmelin, 1791)
33 mm. Reddish-brown zigzag markings on outer surface
Distribution: Intertidal sand and gravel. Indo-West Pacific, Thailand, Australia
Reported from Pakistan by Melvill and Abercrombie, 1892 as *Circe divaricata*, OBIS, 2006.



(From Gravely, 1941)

Genus *Circenita* Jousseaume, 1888

1034. *Circenita callipyga* (Born, 1778) 36-68mm .

Distribution: Muddy cum sandy shores below 0-tide. Indo-West Pacific, Red Sea, East Africa, Gulf of Aqaba Gulfs of Suez , Arabian Sea

Reported from Pakistan by Melvill and Standen, 1906 as *Gafrarium calipygum* (Von Born, 1778)



Genus *Saxidomus* Conrad, 1837

1035. *Saxidomus purpurata* (Sowerby II, 1852) (Purple butter clam)

Distribution: Intertidal to 40 m., sandy mud and gravel. Japan Sea; Korea, Yellow Sea, coastal China, Indian Ocean.

Reported from Pakistan by Sowerby II, 1852 as *Tapes purpurata*

Genus *Clementia* Gray, 1842

1036. *Clementia asiatica* (Melvill, 1899)

Distribution: 27 -50 m on muddy, sandy muddy substrata.

No Georeferenced data available

Reported from Pakistan by Melvill, 1899 as *Oedalina asiatica*



Genus *Mysia* Lamarck, 1818

1037. *Mysia undata* (Pennant, 1777)

Up to 38 mm.

White or light yellow, periostracum indistinct. Inner surfaces glossy white.

Distribution: Burrowing in muddy, coarse bottoms. Offshore, but probably extending little deeper than 50 m. Distributed from Norway to the Mediterranean and the Canary Isles.

Reported from Pakistan by Oliver, 1996 as *Venus sinuosa* Pennant, 1777



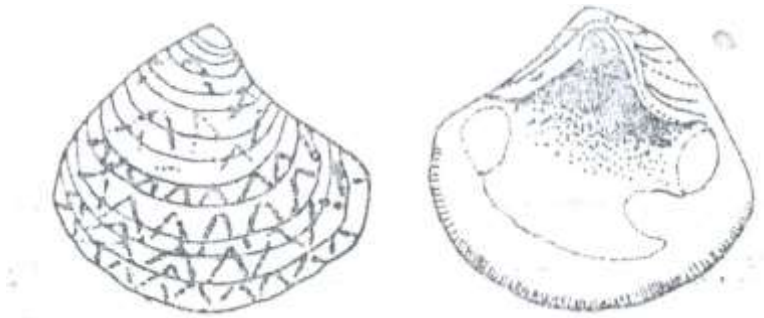
Superfamily Cyrenoidea Gray, 1840

Family Glauconomidae Gray, 1853

Genus *Glauconome* Gray, 1828

1038. *Glaucanome cerea* Reeve, 1844 Whitish, 47 mm
Distribution: Mangroves. India, Australia, Queensland
Reported from Pakistan by Melvill, 1928 as *Tapes oncodes*
Genus *Sunetta* Link, 1807

1039. *Sunetta scripta* (Linnaeus, 1758) (Script tapestry shell) 15-50mm. Brown chevron shaped colour pattern
Distribution: Infaunal, sandy beaches. Indian Ocean.
Reported from Pakistan by Khan and Dastagir, 1972



(From Khan and Dastagir, 1972)

1040. *Sunetta donacina* (Gmelin, 1791) 5cm.
Distribution: Infaunal, sandy beaches. Indian Ocean.
Reported from Pakistan by Sowerby, 1895 as *Sunetta kurachensis* Sowerby, OBIS, 2006.



(From Khan and Dastagir, 1982)

1041. *Sunetta solanderii* (Gray, 1825)
Distribution: Sand. Indo-Arabia.

Reported from Pakistan by Melvill *et al.*, 1906.



(From Femorale, 2011)

Genus *Circe* Schumacher, 1817

1042. *Circe scripta* (Linnaeus, 1758) (Script venus clam)
20-45mm.

Distribution: Infaunal, in sand. Indo-West Pacific Widely distributed

Reported from Pakistan by Khan and Dastagir, 1972;
OBIS, 2006.



1043. *Circe rugifera* (Lamarck, 1818)

Distribution: Infaunal, in sand .Mediterranean

Contributed from Pakistan by Moazzam, present study



Genus *Pitar* Romer, 1857

1044. *Pitar striatum* Gray, 1838

Distribution: Muddy cum sandy shores. Indo-West Pacific
Reported from Pakistan by PARC (unpublished report, 1986) as *Pitar (Pitarina) striatum*.

1045. *Pitar lineolatum* Sowerby, 1854

Distribution: Sandy bottom. Indo-West Pacific.
Reported from Pakistan by PARC (unpublished report, 1986) as *Pitar (Pitarina) lineolatum*.

Genus *Callista* Poli, 1791

1046. *Callista umbonella* (Lamarck, 1818)

Distribution: intertidal zone of creek. Persian Gulf
Contributed from Pakistan by Moazzam, present study



1047. *Callista erycina* (Linnaeus, 1758) 16-33mm. Light brown

Distribution: Sand or mud at low tide. Indo-West Pacific, Red Sea, China, Japan.

Reported from Pakistan by Khan and Dastagir, 1972 as *Pitar erycina*, OBIS, 2006.



(From Khan and Dastagir, 1972)

1048. *Callista festiva* (G.B. Sowerby II, 1851)

Distribution: Mud creeks. Arabian Sea, Gulf of Oman.
Reported from Pakistan by Melvill et al., 1906.

1049. *Callista florida* (Lamarck, 1818) 59mm.

Distribution: Intertidal muddy sand, saline lakes. Indo-West Pacific, Red Sea, Egypt, Persian Gulf.
Reported from Pakistan by Melvill et al., 1906 *a*, OBIS, 2006.

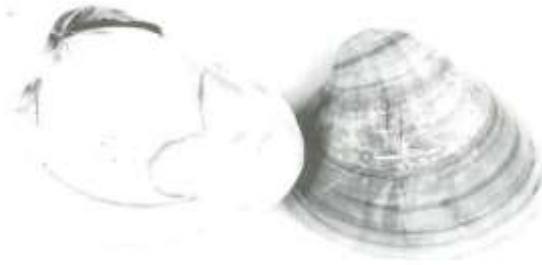


(From WMSDB)

1050. *Callista phasianella* (Deshayes, 1854)

Distribution: Hard muddy sand. Indo-West Pacific, Persian Gulf.
Reported from Pakistan by Melvill et al., 1906.

1051. *Callista umbonella* (Lamarck, 1818) 33-73mm.
Distribution: Sandy-cum-muddy and muddy at low tide
Reported from Pakistan by Jahangir et al, 2012 as *Amiantis umbonella*



Genus *Ezocallista* Kira, 1959

1052. *Ezocallista brevisiphonata* (Carpenter, 1864)
Distribution: Sandy bottom. Indo-West Pacific, Japan, Siberia.
Reported from Pakistan by PARC (unpublished report, 1986) as *Callista brevisiphonata* Carpenter, 1865.

Genus *Katelysia* Römer, 1857

1053. *Katelysia japonica* (Gmelin, 1791)
Distribution: Intertidal sandy bottom. Indo-West Pacific.
Reported from Pakistan by PARC (unpublished report, 1986) as *K. (Hemitepeus) japonica*

Genus *Marcia* Adams and Adams, 1857

1054. *Marcia hiantina* (Lamarck, 1818)
Distribution: Subtidal, intertidal sand, gravel, mud flats mangroves. Indo-West Pacific, Australia.
Reported from Pakistan by Melvill et al., 1906 as *Tapes (Hemitapes) hiantinus*; PARC (unpublished report, 1986) as *Katelysia. (Hemitepeus) hiantina*, OBIS, 2006.



1055. *Marcia recens* (Holten, 1802) 35-73mm.

Distribution: Sandy-cum-muddy at low tide. Arabian Sea
India; SriLanka; Seychelles; Myanmar; Indonesia; Java;
Australia; Singapore, Malaysia,

Reported from Pakistan by Melvill et al, 1906 as *T.*
(*Hemitapes*) *orientalis* Reeve, Ray, 1948 as *Katelysia*
marmorata; Jahangir et al, 2012 as *Marcia marmorata*

1056. *Marcia opima* (Gmelin, 1791) 39-70mm.

Distribution: In sandy-cum-muddy bottoms at 0-m tide
India, Djibouti, Arabian Sea

Reported from Pakistan by Melvill, et al, 1906 as *Tapes*
(*Hemitapes*) *pinguis*; Ranjha, 1960; Jahangir et al, 2012



Genus *Timoclea* Brown, 1827

1057. *Timoclea arakana* (Nevill and Nevill, 1871)

Distribution: Sand and muddy sand. Indo-West Pacific,
Red Sea, Persian Gulf, Singapore, Africa.

Reported from Pakistan by Melvill and Standen, 1906



1058. *Timoclea imbricata* (Sowerby, 1853) 2.5mm-12mm.

Distribution: Subtidal sand and muddy sand. Eastern Indian Ocean.

Reported from Pakistan by Melvill et al., 1906 as *Venus imbricata*, OBIS, 2006.



1059. *Timoclea layardi* (Reeve, 1864)

Distribution: Subtidal sand and muddy sand .Persian Gulf.

Reported from Pakistan by Reeve, 1864 as *Chione layardi*

Genus *Petricolaria* Stoliczka, 1870

1060. *Petricolaria gracilis* (Deshayes, 1853)

Distribution: Subtidal mud. Arabian Sea, Gulf of Aden.

Reported from Pakistan by Melvill et al, 1906 as *Petricola gracilis* Deshayes, 1853. OBIS, 2006.

1061. *Petricolaria pholadiformis* (Lamarck, 1818)
(American paddock)

Distribution: Chalky mud, hard clay at infralittoral. Cosmopolitan.

Reported from Pakistan by Melvill et al, 1906.



1062. *Petricolaria serrata* (Deshayes, 1853) (False angel wing)

Distribution: Drills itself into wood and blocks of peat. Arabian Sea

Reported from Pakistan by Melvill et al, 1906 as *Petricola serrata* Deshayes

Genus *Petricola* Lamarck, 1801

1063. *Petricola fabagella* Lamarck, 1818

Distribution: Infaunal, boring in limestone. Arabian Sea, Red Sea, Gulf of Aden, Mediterranean

Reported from Pakistan by Melvill et al, 1906 as *Petricola hemprichi*, OBIS, 2006.



Superfamily Glossoidea J.E. Gray, 1847 (1840)

Family Vesicomidae Dall and Simpson, 1901

Genus *Calyptogena* Dall, 1891

1064. *Calyptogena makranensis* Krylova and Sahling, 2006. 52-82 mm.

Distribution: Gas hydrants. Not outside type locality

Reported from Pakistan by Krylova and Sahling, 2006.

Order Myida Stoliczka, 1870
Superfamily Myoidea Lamarck, 1809
Family Corbulidae Lamarck, 1818
Genus *Corbula* Bruguière, 1797

1065. *Corbula rugifera* Adams in Smith, 1903 White,
Distribution: Mud and sand. Indo-West Pacific, Northern Arabian Sea, East Africa, Mauritius, Natal, Japan and Singapore-Thailand
Reported from Pakistan by Melvill et al., 1906 in Myidae.

1066. *Corbula erythraeensis* Adams, 1871 6-9mm
Distribution: Offshore mud, dredged at 120m. Persian Gulf
Reported from Pakistan by Melvill et al., 1906 in Myidae



(Photo contributed by Moazzam)

1067. *Corbula taitensis* Lamarck, 1818
Distribution: Sub littoral mud and sand. Indo-West Pacific, Malaysia, China.
Reported from Pakistan by Melvill et al., 1906 as *Corbula modesta* in Myidae, OBIS, 2006.





Family Myidae Lamarck, 1809
Genus *Mya* Linnaeus, 1758

1068. *Mya arenaria* Linnaeus, 1758

Distribution: Intertidal mud and sand found living approximately 7.6–20.3 cm under the surface of the mud. Yellow Sea, Korea, Japan, Arctic.

Reported from Pakistan by PSF (unpublished report, 1977).



1069. *Mya truncata* Linnaeus, 1758 (Soft shell clam)

Distribution: Intertidal mud and sand. Cosmopolitan.

Reported from Pakistan by PSF (unpublished report, 1977)



Superfamily Pholadoidea Lamarck, 1809

Family Pholadidae Lamarck, 1809

Genus *Pholas* Linnaeus, 1758

1070. *Pholas dactylus* Linnaeus, 1758.

Distribution: Subtidal soft rocks, wood and sand. Cosmopolitan.

Reported from Pakistan by Melvill e. al. 1906 as *Pholas (Dactylina) dactylus*.

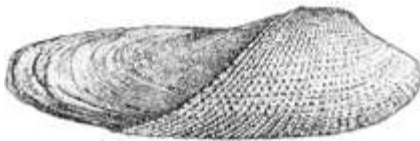


1071. *Pholas orientalis* Gmelin, 1791(Oriental angel wing)

70-75 mm.Snowy white

Distribution: Intertidal infauna, burrows in fine sediments, creeks clay rocks and mud.Indo-West Pacific, Australia.

Reported from Pakistan by Melvill et al. 1906, as *P. (Dactylina) orientalis*, Khan and Dastagir, 1972, OBIS, 2006.

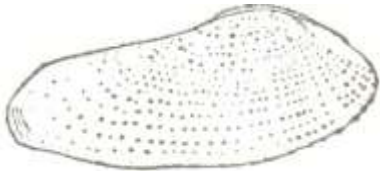


Genus *Barnea* Risso, 1826

1072. *Barnea birmanica* (Philippi, 1849)

Distribution: Mangroves. Arabian Sea

Reported from Pakistan by Woodward, 1854 as *Pholas bakeri*



Genus *Jouannetia* Desmoulins, 1828

1073. *Jouannetia cumingii* (Sowerby, 1850) 20-38mm.

Distribution: Boring in muddy rocks. Infaunal. Cosmopolitan in tropical waters.

Reported from Pakistan by Khan and Dastagir, 1972, OBIS, 2006



1074. *Jouannetia globulosa* (Quoy and Gaimard, 1835)

Distribution: Boring in muddy rocks and corals. Indo-West Pacific.

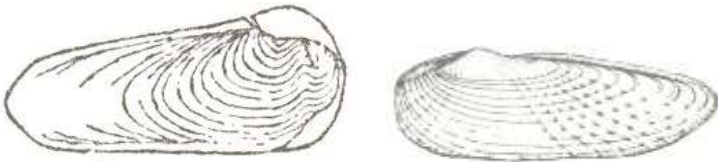
Reported from Pakistan by Khan and Dastagir, 1972 in Jouannetidae.

Genus *Penitella* Valenciennes, 1846

1075. *Penitella gabpii* (Tyron, 1863)

Distribution: Intertidal limestone. Indo-West Pacific, Japan.

Reported from Pakistan by PARC (Report, 1986) as *Pholadidea (Penitella) kamakurensis*.

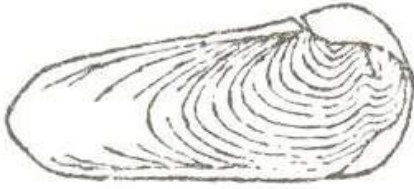


Genus *Martesia* Sowerby, 1824

1076. *Martesia striata* (Linnaeus, 1758) 10-20 mm.

Distribution: Shallow waters, borer in submerged or floating wood. Cosmopolitan.

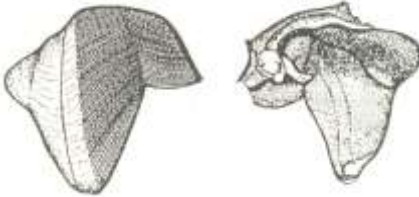
Reported from Pakistan by Khan and Dastagir, 1972.



Family Teredinidae Rafinesque, 1815 (Shipworms)
Genus *Bankia* Gray, 1842

1077. *Bankia rochi* Möll, 1931 24.5 mm.

Distribution: Shallow water woods. Indo-West Pacific
Reported from Pakistan by Barkati and Tirmizi, 1991.



(From Tirmizi, 1985 unpublished)

1078. *Bankia campanellata* Moll and Roch, 1931

Distribution: Shallow water wood. Worldwide, tropical.
Reported from Pakistan by Niazi, 1973, Khan, *et al.* 1973,
Tirmizi and Barkati, 1991 as *B. (Bankia) bengalensis* Nair,
OBIS, 2006.



Cones and pallets (From Turner, 1966)

1079. *Bankia bipalmulata* (Lamarck, 1801)

Distribution: Shallow water wood. Indo-West Pacific.
Reported from Pakistan by Niazi, 1973, OBIS, 2006.



Calcareous plate/pallet (From Sowerby, 1859)

Genus *Nausitora* Wright, 1864

1080. *Nausitora dunlopei* Wright, 1864

Distribution: Woods, backwater. Indo-West Pacific.
Reported from Pakistan by Niazi, 1973 as *Bankia*
(*Nausitora*) *lanceolata* Rajgopal, 1961.

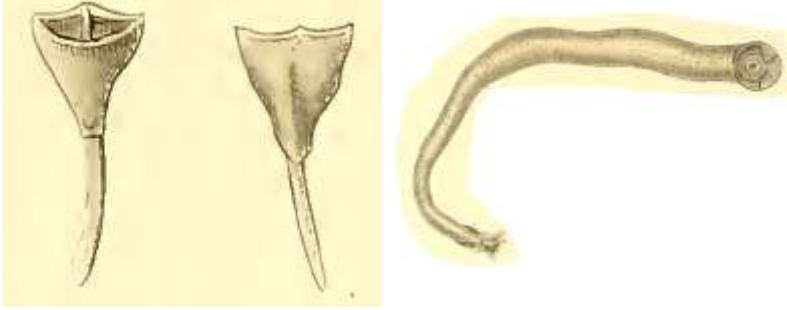


Pallet (From Turner, 1966)

Genus *Dicyathifer* Iredale, 1932

1081. *Dicyathifer manni* (Wright, 1866) 30 mm .

Distribution: Shallow brackish water, mangrove woods.
Indo-West Pacific, Tropical and subtropical
Reported from Pakistan by Niazi, 1971 as *Teredo* (*Kuphus*)
mannii, OBIS, 2006

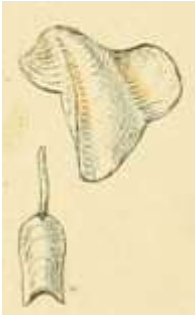


Genus *Teredo* Linnaeus, 1758

1082. *Teredo nautilus* Linnaeus, 1758 (The naval shipworm)

Distribution: Mangrove wood. Cosmopolitan

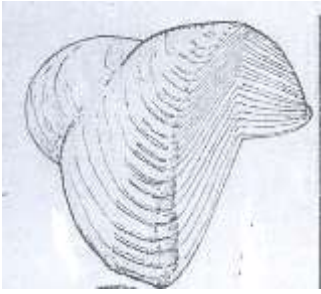
Reported from Pakistan by Niazi, 1973 as *Teredo (Teredo) nautilus*.



1083. *Teredo furcifera* von Martens, 1894

Distribution: Wood. Indo-West Pacific, Red Sea, China.

Reported from Pakistan by Khan, *et al.* 1973 as *Teredo*, (*Teredo*) *parksi*, Niazi, 1973 as *T. (Teredo) furcillatus*, OBIS, 2006)



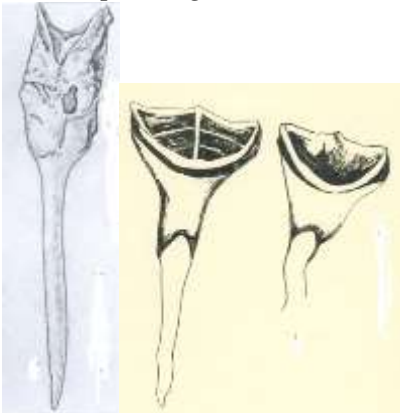
Pallet (From Turner, 1966)

Genus *Lyrodus* Gould, 1870

1084. *Lyrodus pedicellatus* (Quatrefages, 1849)

Distribution: Woods. Cosmopolitan

Reported from Pakistan by Niazi, 1973 as *Teredo* (*Teredo*) *indica*, *Teredo* (*Teredops*) *samoensis* and *Teredo* (*Teredops*) *diegensis*.



(From Niazi, 1973)

Superfamily Pandoroidea Rafinesque, 1815

Family Pandoridae Rafinesque, 1815

Genus *Pandora* Bruguiere, 1797

1085. *Pandora flexuosa* Sowerby, 1822. 5.7mm-11mm
Creeks, muddy sand and gravel in offshore area, dredged
at 10-20m.

Distribution: Red Sea, Persian Gulf, Gulf of Aden.

Reported from Pakistan by Melvill et al. 1906, Ahmed,
1994, OBIS, 2006.



Superfamily Thracioidea Stoliczka, 1870 (1839)

Family Thraciidae Stoliczka, 1870

Genus *Thracia* Blainville, 1824

1086. *Thracia kakumana* (Yokoyama, 1927)

Distribution: Rocks in offshore waters Lives on sand-silt
deposits at depths ranging from 8-10 to 20-25 m. Indo-
West Pacific.

Reported from Pakistan by PARC (unpublished report,
1986)

Family Laternulidae Hedley, 1918

Genus *Laternula* Roding, 1798

1087. *Laternula anatina* (Linnaeus, 1758) 35-70
mm. Silvery white

Distribution: Offshore on gravely mud flats. Indian Ocean,
Red Sea.

Reported from Pakistan by Khan and Dastagir, 1972 as
Anatina subrostrata



(From Khan and Dastagir, 1972)

Class Cephalopoda Cuvier, 1795

Subclass Coleoidea Bather, 1888

Order Spirulida Stolley, 1919

Family Spirulidae Owen, 1836

Genus *Spirula* Lamarck, 1799

1088. *Spirula spirula* (Linnaeus, 1758) (Ram's horn squid)

Dark reddish brown. Luminescent. 35-45mm.

Distribution: Mesopelagic, from 600 to 700 m during the day and found in depths less than 300 m at night. Tropical and subtropical oceanic waters worldwide

Reported from Pakistan by Reid, 2005



Order Sepiida Zittel, 1895

Family Sepiidae Keferstein, 1866

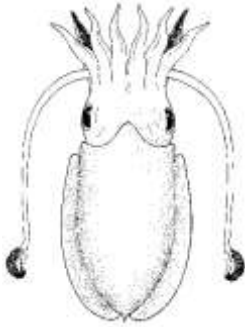
Genus *Sepia* Linnaeus, 1758

1089. *Sepia kabiensis* Hoyle, 1885 (Kobi cuttlefish)

Reddish brown. Head with V-shape reddish stripe on dorsal margins of eye orbits and with orange stripes extending from posterior end of head to basal portions of arms.

Distribution: Depth range subtidal to 200 m. Bangladesh, Brunei Darussalam; Cambodia, China , India, Indonesia, Iraq, Japan, Korea, Kuwait, Malaysia , Maldives, Myanmar, Oman, Philippines, Saudi Arabia, Singapore, Sri Lanka, Taiwan, Thailand, United Arab Emirates, Viet Nam

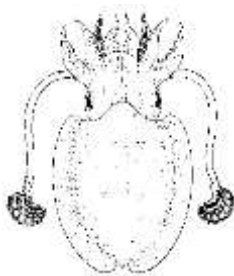
Reported from Pakistan by Fanning et al, 2011



1090. *Sepia latimanus* Quoy and Gaimard, 1832

Distribution: Shallow - water species, 30m depth. Indo - Pacific from Southern Mozambique, Coral Sea, Melanesia Islands, East and South China Sea, Philippine Sea to Southern Japan.

Reported from Pakistan by Roper *et al*, 1984.



1091. *Sepia pharaonis* Ehrenberg, 1831 (Pharaoh cuttlefish) Pale brownish or reddish purple; head and arms with transverse zebra stripes

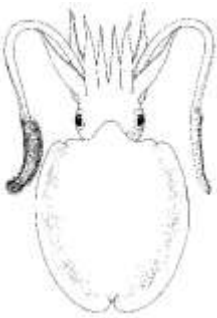
Distribution: Usual capture depth 0-120m. Indo - Pacific from Red Sea through Arabian Sea to Thailand, South China Sea and north western Australia.

Reported from Pakistan by Ashraf, 1969; Psomadakis *et al.*, 2015 as *Sepia ramani* Neethiselvan.



1092. *Sepia aculeata*, Van Hasselt, 1835 [in Férussac and d'Orbigny, 1835

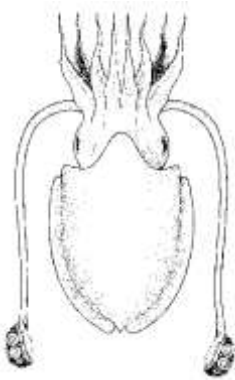
Distribution: Usual capture depth 60 m. Indo-west Pacific. Reported from Pakistan by Ashraf, 1969, Voss *et al.*, 1998.



1093. *Sepia prashadi* Winckworth, 1936 (Hooded cuttlefish) Dorsal mantle with transverse zebra stripes

Distribution: Usual capture depth about 50-200m. Western Indian Ocean from South Mozambique to Gulf of Aden, Red Sea, Gulf of Oman, both coasts of India, Madagascar, Mauritius and Thailand.

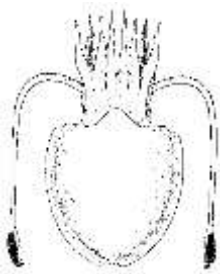
Reported from Pakistan by Roper *et al*, 1984.



1094. *Sepia savignyi* Blainville, 1827

Distribution: 25 to 70m depth. Western Indian Ocean, Red Sea, Persian/Arabian Gulf and Gulf of Oman.

Reported from Pakistan by Voss *et al*, 1998.

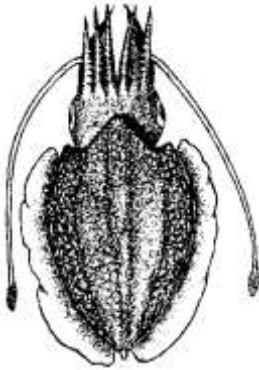


1095. *Sepia stellifera* Homenko and Khromov, 1984
(Starry cuttlefish) Dorsal mantle with many small, bright,

brown-pink spots, encircled with green-blue rings, the whole pattern resembling a starry sky

Distribution: Usual capture depth 50-100m. Arabian Sea, Bay of Bengal, Andaman Sea, Gulf of Thailand.

Reported from Pakistan by Sweeney and Roper, 1998.



1096. *Sepia omani* Adam and Rees, 1966 Light brown; dorsal mantle with dark brown transverse stripes

Distribution: Neretic, 20-201m depth. Indian Ocean; western Gulf of Oman.

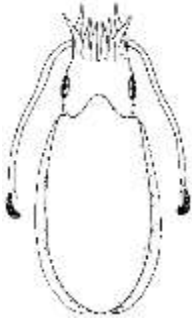
Reported from Pakistan by Roper *et al*, 1984.



1097. *Sepia arabica* Massy, 1916 (Arabian cuttlefish) Reddish purple; head with chromatophores concentrated over eye orbits. Dorsal mantle chromatophores are

irregularly distributed in patches; base of fins on posterior half with 10 to 12 patches of concentrated reddish purple
Distribution: 99-272 m. Red Sea, Thailand, Northwestern and Southwest Indian Ocean.

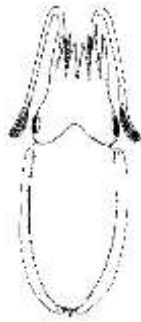
Reported from Pakistan by Roper *et al*, 1984.



1098. *Sepia murrayi* Adam and Rees, 1966 106m.

Distribution: Indian Ocean; Gulf of Aden and western Gulf of Oman.

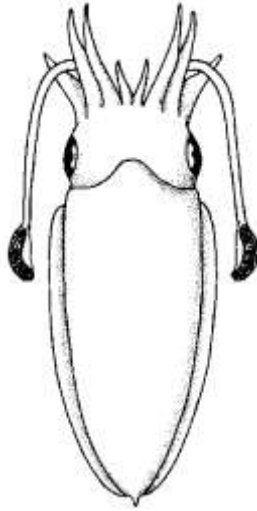
Reported from Pakistan by Roper *et al*, 1984.



1099. *Sepia trygonina* (Rochebrune, 1884) (Trident cuttlefish) Purplish brown; base of fins in males with a dark purple band

Distribution: Usual capture depth 20-200m. Indian Ocean from Saya-de-Malha Bank and Zanzibar to Southern India, Red Sea, possibly Persian Gulf.

Reported from Pakistan by Khromov *et al*, 1998.

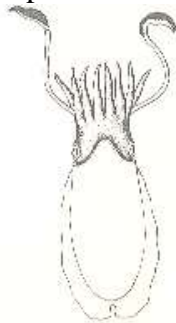


Genus *Sepiella* Gray, 1849

1100. *Sepiella inermis* (Van Hasselt[inFérussac and d'Orbigny] 1835 Greyish brown; dorsal mantle with more than 7 reddish patches adjacent to base of fins.

Distribution: At about 20-40 m. depth. From Persian Gulf and southern Red Sea to eastern Indonesia, Thailand.

Reported from Pakistan by Ashraf, 1969; Voss *et al*, 1998.



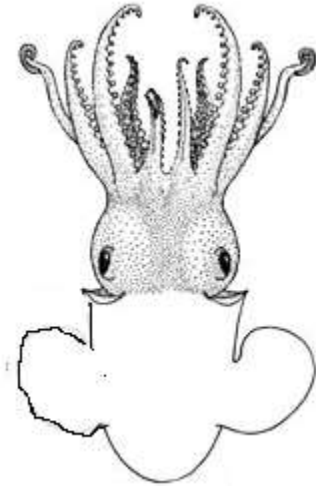
Family Sepiolidae Leach, 1817

Genus *Euprymna* Steenstrup, 1887

1101. *Euprymna stenodactyla* (Grant, 1833)

Distribution: Benthic. Indian Ocean. Pacific Ocean

Reported from Pakistan by Moazzam and Ahmed, 1994



Order Teuthidea Naef, 1916 nomen dubium

Suborder Myopsida Orbigny, 1841

Family Loliginidae Lesueur, 1821

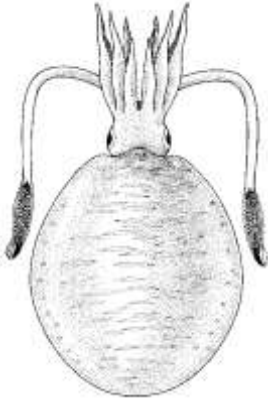
Genus *Sepioteuthis* Blainville, 1824 (Reef squids)

1102. *Sepioteuthis lessoniana* Orbigny, 1826 Brown on

the back, with white spots and stripes, variously

Distribution: 100m depth. Indo-Pacific: Red Sea, Arabian Sea, north Australian and north to central Japan, eastward to the Hawaiian Islands.

Reported from Pakistan by Roper *et al*, 1984.

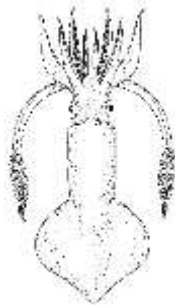


Genus *Uroteuthis* Rehder, 1945
Sub genus *Photololigo* Natsukari, 1984

1103. *Uroteuthis (Photololigo) duvaucelii* (Orbigny, 1835). (Indian squid) 320 mm

Distribution: 30 to 70m depth. Indo-Pacific: Indian Ocean, Red Sea, Arabian Sea, Mozambique to the south China Sea and the Philippines Sea, northward to Taiwan.

Reported from Pakistan by Ashraf, 1969, Khan *et al*, 1973 as *Loligo duvauceli*



1104. *Uroteuthis (Photololigo) vossi* (Nesis, 1982) (Voss's Miter Squid) . 140 mm

Distribution: Inshore. Philippine Islands, Sri Lanka to the Arabian Sea

Reported from Pakistan by Jereb and Roper, 2010

1105. *Uroteuthis (Photololigo) singhalensis* (Ortmann, 1891) (Long barrel squid) 500mm.

Distribution: extends to bottom depths of 220 m. Indo-Pacific

Reported from Pakistan by Jereb and Roper, 2010

1106. *Uroteuthis (Photololigo) edulis* (Hoyle, 1885) (Sword tip squid). 502 mm. for males, 410 mm for females

Distribution: inhabits continental shelf waters and winters inshore in shallow water. Indo-Pacific

Reported from Pakistan by Jereb and Roper, 2010

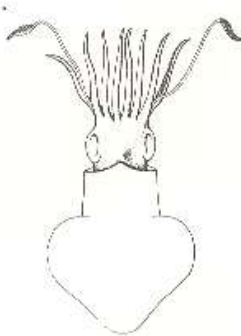
Genus *Loliolus* Steenstrup, 1856

Subgenus (*Loliolus*) Steenstrup, 1856

1107. *Loliolus (Loliolus) hardwickei* (Gray, 1849) (Little Indian squid). 88 mm .

Distribution: Littoral. Indian Ocean

Reported from Pakistan by Ashraf, 1969, Khan *et al*, 1973 as *Loliolus inverstigatoris* Goodrich, 1896



(From Tirmizi and Zehra,1982)

Order Oegopsida Orbigny, 1845

Family Pyroteuthidae Pfeffer, 1912

Genus *Pyroteuthis* Hoyle, 1904

1108. *Pyroteuthis margaritifera* (Rüppel, 1844)

Distribution: In upper mesopelagic zone in the daytime then undergo diel vertical migration into epipelagic waters at night

Reported from Pakistan by FAO



Genus *Pterygioteuthis* Fischer, 1896

1109. *Pterygioteuthis giardi* Fischer, 1896

Distribution: Mesopelagic to the epipelagic zone predominantly oceanic just below the surface to about 500 m

Reported from Pakistan by FAO



(From Chun, 1910)

Family *Thysanoteuthidae* Keferstein, 1866

Genus *Thysanoteuthis* Troschel, 1857

1110. *Thysanoteuthis rhombus* Troschel, 1857 (Diamond

back squid) 2.3 m mantle intense brown

Distribution: At 2.3 m. semi-cosmopolitan

Reported from Pakistan by Moazzam and Ahmed, 1994; Chesalin and Zuyev, 2002 as *Taningia danae* Joubin, 1931



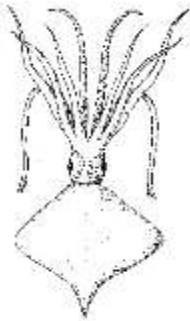
Family Ancistrocheiridae Pfeffer, 1912

Genus *Ancistrocheirus* Gray, 1849

1111. *Ancistrocheirus lesueurii* (Orbigny, 1842)

Distribution: Epipelagic, mesopelagic, and bathypelagic. Worldwide in tropical, subtropical and temperate open ocean waters (about 40°N to 30°S); includes the entire Mediterranean Sea.

Reported from Pakistan by Chesalin and Zuyev, 2002.



Family Brachioteuthidae Pfeffer, 1908

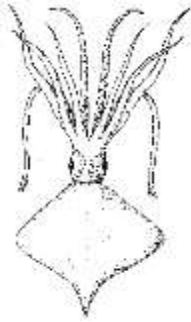
Genus *Brachioteuthis* Verrill, 1881

1112. *Brachioteuthis picta* Chun, 1910 (Ornate Arm squid). Up to 90 mm. Light purple-brown or chocolate hue.

Distribution: Paralarvae are epipelagic and mesopelagic; adults are lower epipelagic, mesopelagic and bathypelagic

.Circumglobal, oceanic from about 30°N to at least 40°S to 45°S

Reported from Pakistan by Roper and Jereb , 1984



Family Cycloteuthidae Naef, 1923

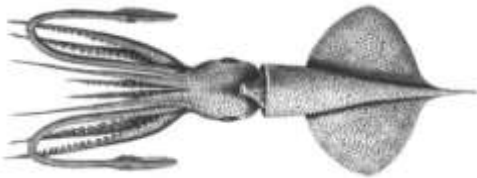
Genus *Cycloteuthis* Joubin, 1919

1113. *Cycloteuthis sirventi* Joubin, 1919 (Sirvent's disc-fin squid). 500 mm.

Distribution: Tropical, subtropical,temperate waters of the Atlantic, Mediterranean,

Indo-West Pacific. Lower epipelagic, mesopelagic, rarely bathybenthic

Reported from Pakistan by Roper and Jereb, 2010



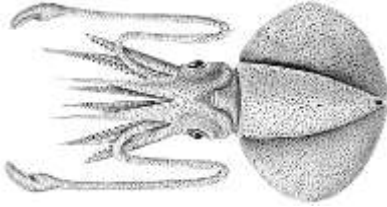
(From Young and Roper 1969)

Genus *Discoteuthis* Young and Roper, 1969

1114. *Discoteuthis discus* Young and Roper, 1969

(Rounded disc-fin squid).90 mm.

Distribution: Tropical and subtropical Atlantic, Pacific and Indian Oceans. Lower epipelagic to mesopelagic
Reported from Pakistan by Roper and Jereb, 2010



(From Young and Roper, 1969)

Family Cranchiidae Prosch, 1847

Genus *Cranchia* Leach, 1817

1115. *Cranchia scabra* Leach, 1817 (Rough cranch squid).150 mm

Distribution: Paralarvae and juveniles epipelagic to upper mesopelagic, adults mesopelagic and bathypelagic. circumglobal, oceanic waters in tropical and subtropical open oceanic waters

Reported from Pakistan by Roper and Jereb, 1984



Genus *Liocranchia* Pfeffer, 1884

1116. *Liocranchia reinhardti* (Steenstrup, 1856)
(Reinhardt's cranch squid) 250 mm

Distribution: Mesopelagic and bathypelagic depths; surface to 1 200 m circumglobally in tropical and subtropical waters

Reported from Pakistan by Jereb, 1984.

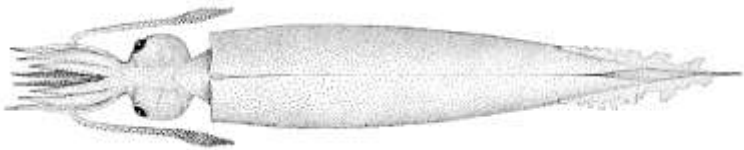


Genus *Egea* Joubin, 1933

1117. *Egea inermis* Joubin, 1933 (Unarmed cranch squid).
420 mm.

Distribution: Circumglobal in equatorial, tropical to subtropical waters

Reported from Pakistan by Roper and Jereb, 2010



(From Young and Mangold 2016)

Genus *Sandalops* Chun, 1906

1118. *Sandalops melancholicus* Chun, 1906 (Melancholy cranch squid) 110 mm

Distribution: epipelagic, mesopelagic and bathypelagic zones, cosmopolitan in tropical and subtropical waters

Reported from Pakistan by Roper and Jereb, 2010



Family Chiroteuthidae Gray, 1849
Genus *Chiroteuthis* d'Orbigny, 1841

1119. *Chiroteuthis veranyi* (Ferussac, 1834) (Verany's long-armed squid) .100 to 200 mm

Distribution: Mesopelagic to bathypelagic species as adults
Tropical, subtropical to Sub-Antarctic; circumglobal; 55°N to 23°S in Atlantic

Reported from Pakistan by Roper and Jereb, 2010

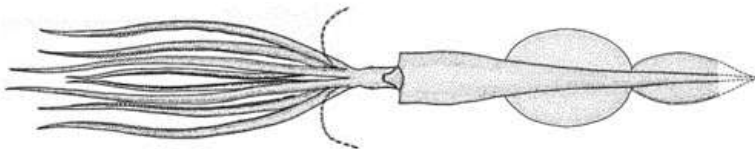


Genus *Asperoteuthis* Nesis, 1980

1120. *Asperoteuthis acanthoderma*(Lu, 1977) (Thorny chiroteuthid squid) .Up to 800 mm.

Distribution: Mesopelagic to bathypelagic. Indo-West Pacific; Celebes Sea, Ryuku Islands, Molucca Sea, New Guinea, southern Africa; eastern Gulf of Mexico, Gulf Stream, Florida, South Atlantic Ocean

Reported from Pakistan by Jereb et al, 2016



Genus *Grimalditeuthis* Joubin, 1899

1121. *Grimalditeuthis bonplandi* (Verany, 1839)

(Noodle-Armed Deep-sea Squid) Up to 250 mm

Distribution: Mesopelagic to bathypelagic .Circumglobal in tropical, subtropical, temperate waters

Reported from Pakistan by Jereb et al, 2016

Family Enoploteuthidae Pfeffer, 1900

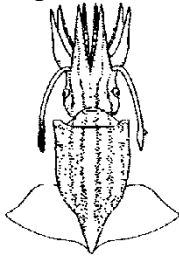
Genus *Abralia* Gray, 1849

Subgenus (*Enigmoteuthis*) Adam, 1973

1122. *Abralia marisarabica* Okutani, 1983

Distribution: Epipelagic to mesopelagic. Endemic to Arabian Sea.

Reported from Pakistan by Okutani, 1983



(From Zuyev, 2002)

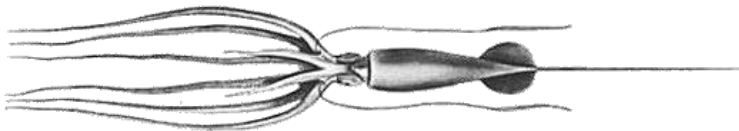
Family Joubiniteuthidae Naef, 1922

Genus *Joubiniteuthis* Berry, 1920

1123. *Joubiniteuthis portieri* (Joubin, 1916) (Joubin's squid).105 mm; tail length an additional 155 mm.

Distribution: Cosmopolitan in tropical and subtropical, even temperate waters

Reported from Pakistan by Roper and Jereb, 1984

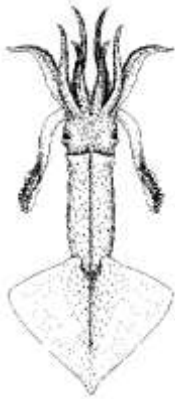


Family Onychoteuthidae Gray, 1847
Genus *Onychoteuthis* Lichtenstein, 1818

1124. *Onychoteuthis banksi* (Leach, 1817) (Clubhook squid)

Distribution: 150m depth, Epipelagic, mesopelagic, bathypelagic, worldwide, the warm and temperate oceanic waters, semi cosmopolitan

Reported from Pakistan by Roper *et al*, 1984.



Family Ommastrephidae Steenstrup, 1857
Genus *Ornithoteuthis* Okada, 1927

1125. *Ornithoteuthis volatalis* (Sasaki, 1915) (Shiny bird squid).

Distribution: in midwater over the slope and seamounts and near the bottom, in upper 300m. Tropical to subtropical Indo-Pacific waters and tropical waters off West Africa.

Reported from Pakistan by Dunning, 1998.



Genus *Sthenoteuthis* Verrill, 1880

1126. *Sthenoteuthis ulaniensis* (Lesson, 1830)
(Purpleback flying squid).

Distribution: Epipelagic to mesopelagic and upper bathypelagic oceanic in open waters over great depths of more than 200 to 400 m. Indian and Pacific oceans and the Red Sea, to subtropical zones near Japan, the eastern Australian coast and South Africa

Reported from Pakistan by Fishery Agency of Japan, 1975; Yamanaka *et al.*, 1976 as *Symplectoteuthis oulaniensis*



(Photo contributed by Moazzam)

Family Octopoteuthidae Berry, 1912

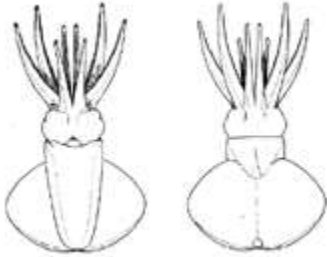
Genus *Octopoteuthis* Rüppell, 1844

1127. *Octopoteuthis sicula* Rüppell, 1844

Distribution: Mesopelagic to bathypelagic (to 2 000 m) during daytime with nocturnal ascent into epipelagic zone .

Circumglobal, from tropical to temperate waters.

Reported from Pakistan by Roper and Jereb, 2010



(From FAO)

Genus *Taningia* Joubin, 1931

1128. *Taningia danae* Joubin, 1931

Distribution: Deep sea. Semi-cosmopolitan

Reported from Pakistan by Moazzam and Ahmed, 1994



Super order Decapodiformes [unassigned]

Order Decapodiformes

Superfamily Bathyteuthoidea Vecchione, Young & Sweeney, 2004

Family Bathyteuthidae Pfeffer, 1900

Genus *Bathyteuthis* Hoyle, 1885

1129. *Bathyteuthis abyssicola* Hoyle, 1885 (Bathyal Deep-sea squid). Maximum length 75 mm. deep maroon-coloured

Distribution: between 700 and 2 500 m. Worldwide.
Reported from Pakistan Roper and Jereb, 2010

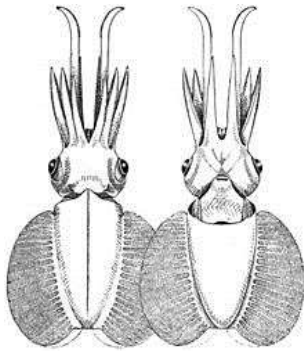


Family Ctenopterygidae Grimpe, 1922
Genus *Ctenopteryx* Appellöf, 1890

1130. *Ctenopteryx sicula* (Verany, 1851) (Sicilian comb-finned squid). Up to 100 mm.

Distribution: Cosmopolitan (circumglobal) in tropical and subtropical waters. Paralarvae epipelagic; adults descend to mesopelagic and bathypelagic depths

Reported from Pakistan by Jereb et al, 2016



(From Young, and Michael Vecchione, 2016)

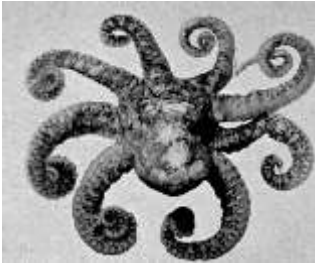
Order Octopoda Leach, 1818
Superfamily Octopodoidea d'Orbigny, 1840
Family Octopodidae Orbigny, 1840

Genus *Abdopus* Norman and Finn, 2001

1131. *Abdopus horridus* (d'Orbigny, 1826)

Distribution: Reefs. Red Sea, Indo-Pacific.

Reported from Pakistan by Ashraf, 1969 as *Octopus horridus* Orbigny



(From Wikimedia)

Genus *Callistoctopus* Taki, 1964

1132. *Callistoctopus ornatus* (Gould, 1852) (White-striped octopus.)1.2m

Distribution: Depths range from 0 to ~10 m. Widely distributed in tropical waters of the Indian and western and central Pacific Oceans,

Reported from Pakistan by Jereb et al, 2016



1133. *Callistoctopus macropus* (Risso, 1826) (Atlantic white-spotted octopus) 20cm. Red, with white blotches on body and paired white spots on arms.

Distribution: lives near the shore at depths down to about 17 m ., in sand, rubble or sea-grass meadows, or buries itself under the sand. The Mediterranean Sea, the temperate and tropical Atlantic Ocean and the Caribbean Sea ,in the Pacific and Indian Oceans.

Reported from Pakistan by Bianchi,1984;Moazzam and Ahmed, 1994 as *Octopus macropus*; frequently incorrectly identified



(Developmental stages)

Genus *Amphioctopus* P. Fischer, 1882

1134. *Amphioctopus varunae* (Oommen, 1971) 125-135m.

Distribution: Endemic to Arabian Sea.

Reported from Pakistan by Voight, 1998 as *Octopus varunae* Oommen, 1971.



1135. *Amphioctopus marginatus* (Taki, 1964) (Veined octopus). 300mm. Pattern of orange-brown to purple with dark reticulations defining distinct patches in irregular longitudinal rows; suckers white to pink contrasting against dark brown to black along leading edge of arms I to III; white triangle below each eye

Distribution: Depths range from shallow subtidal to at least 190 m. Known from coastal muddy waters on mud and sand substrates. Found in tropical continental waters of the Indian Ocean, from Durban, South Africa, to Red Sea, India, south-east Asia, Taiwan, Philippines and Japan, as well as east to north-eastern Australia.

Reported from Pakistan by Roper et al, 1984 as *Octopus aegina* Gray, 1849, needs to be confirmed fide Pomadakis et al, 2015

1136. *Amphioctopus neglectus* (Natewathana and Norman, 1999) (Neglected ocellate octopus)

Distribution: Depth range unknown. Andaman Sea, Gulf of Thailand, Cambodia, Vietnam, and Taiwan Province of China, west to Kerala, India .

Reported from Pakistan by Moazzam and Ahmed, 1994 as *Octopus membranaceus* (Quoy and Gaimard))



Genus *Octopus* Cuvier, 1797

1137. *Octopus vulgaris* Cuvier, 1797 Grey, yellow, brown

Distribution: Benthic, neritic, 0-200m. Worldwide.

Reported from Pakistan by Ashraf, 1969; Roper *et al*, 1984; Pomadakis *et al*, 2015 as *Octopus cf.vulgaris*



1138. *Octopus cyaneus* Gray, 1849) (Big Blue Octopus)

Distribution: In a rock crevice, a hidden place under an overhang, a hiding place among coral heads, or a hole excavated in rubble or sand. Pacific and Indian Oceans
Reported from Pakistan by Roper *et al*, 1984

Genus *Macrotritopus* Grimpe, 1922

1139. *Macrotritopus defilippi* (Vérany, 1851) (Lilliput longarm octopus) yellowish-brown

Distribution: Shallow sandy area Atlantic Ocean, the Mediterranean Sea and the Indian Ocean .

Reported from Pakistan by 77978.0 collect. Steiner, 1973; Roper *et al.*, 1984 as *Octopus defilippi*



Genus *Cistopus* Gray, 1849

1140. *Cistopus indicus* (Rapp in Orbigny, 1835)

Distribution: Benthic, 0-50m on muddy bottom. Indo-Pacific, Indo-Malayan.

Reported from Pakistan by Ashraf, 1969. An unresolved *Cistopus* species misidentified as *C. indicus* fide Roper et al, 2014



Genus *Teretoctopus* Robson, 1929

1141. *Teretoctopus indicus* Robson, 1929

Distribution: Depth range to 1 000 m, known only from Pakistan

Reported from Pakistan by Robson, 1929

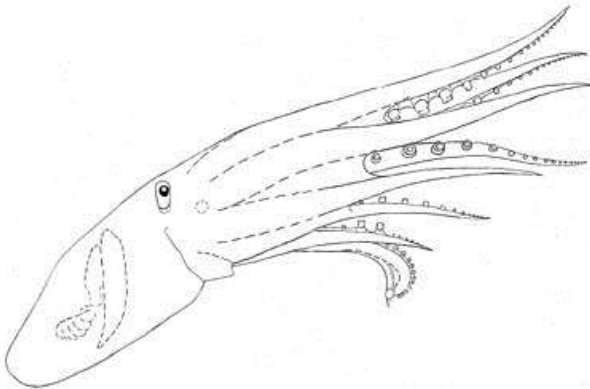
Family Amphitretidae Hoyle, 1886

Genus *Vitreledonella* Joubin, 1918

1142. *Vitreledonella richardi* Joubin, 1918 (Glass octopod) 450 mm

Distribution: Depth range from near the surface to at least 1 000 m.

Reported from Pakistan by Jereb and Roper, 2014

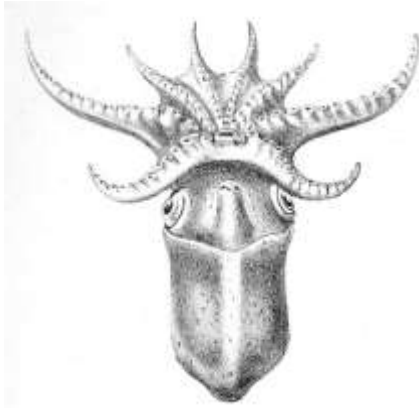


Genus *Bolitaena* Steenstrup, 1859

1143. *Bolitaena pygmaea* (Verrill, 1884) (Pygmy pelagic octopod)

Distribution: Abyssopelagic. Depth range from 100 to 1 400 m. Tropical and temperate waters worldwide

Reported from Pakistan by IUCN, 2015



Genus *Japetella* Hoyle, 1885

1144. *Japetella diaphana* Hoyle, 1885 160 mm.

Distribution: from 200 to 1 000 m. throughout tropical and subtropical waters worldwide

Reported from Pakistan by Silas, 1968



Genus *Amphitretus* Hoyle, 1885

1145. *Amphitretus pelagicus* Hoyle, 1885 (Telescope octopus) transparent, almost colourless

Distribution: Depth range from 100 to 2 000 m. Tropical and subtropical waters of Indo-Pacific region

Reported from Pakistan by Jereb et al, 2016



Superfamily Argonautoidea Cantraine, 1841

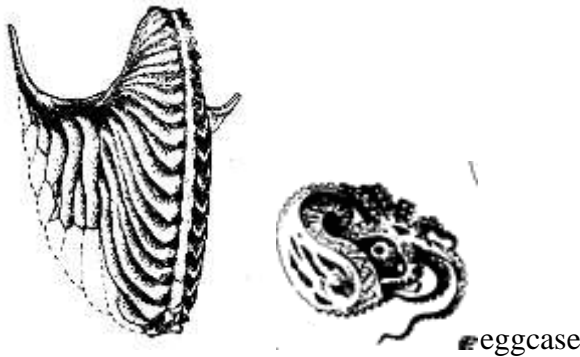
Family Argonautidae Cantraine, 1841

Genus *Argonauta* Linnaeus, 1758

1146. *Argonauta argo* Linnaeus, 1758 (White Sea-horse's Nest, Greater Argonaut) Female 300 mm. Male length to 15 mm. Body of females purple-blue to wine-red from above, light from below; extended 1st arm flap purple-red; shell, porcelain-white

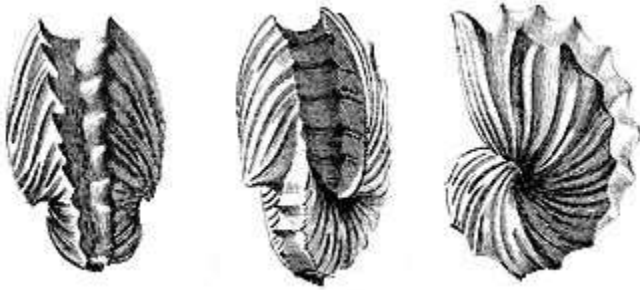
Distribution: Widespread tropical-subtropical cosmopolitan species.

Reported from Pakistan by Moazzam and Ahmed, 1994



1147. *Argonauta hians* Lightfoot, 1786 (Lesser Argonaut).Female 118mm, Male 40mm. Variable from deep maroon to silver; dorsal mantle adorned with large chromatophores, smaller chromatophores present on ventral mantle, shell off white to brown

Distribution: Epipelagic, oceanic. All warm seas.
Reported from Pakistan by Ashraf, 1969

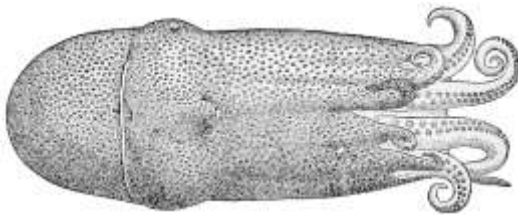


Family Alloposidae Verrill, 1881
Genus *Haliphron* Steenstrup, 1859

1148. *Haliphron atlanticus* Steenstrup, 1861 (Gelatinous giant octopod). Total length of females up to 4 m; Males up to 210 mm

Distribution: Pelagic. Circumglobal in the Atlantic, Indian, and Pacific oceans

Reported from Pakistan by Roper et al, 1984

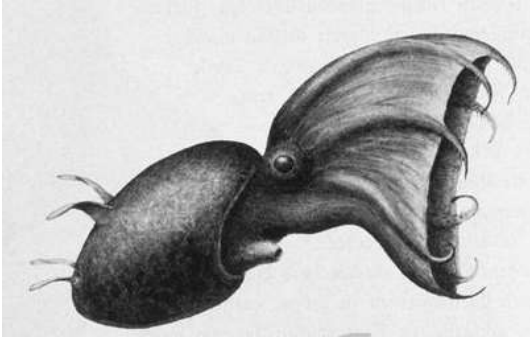


(Source Verill, 1881)

Order Vampyromorpha Robson, 1929
Family Vampyroteuthidae Thiele, in Chun, 1915
Genus *Vampyroteuthis* Chun, 1903

1149. *Vampyroteuthis infernalis* Chun, 1903 (Vampire squid). Up to ~300 mm.

Distribution: Depths range from 600 to 1 200 m. Tropical and temperate waters, worldwide
Reported from Pakistan by Johnson, 2000



Conclusion: By collecting historical records, it showed that the number of species has replaced old species over time and possibly habitat degradation and predation by exotic species or indiscriminate exploitation has caused the local extinction of many native species as they do not figure in recent samples. New research in the world suggests that it might not be easy for scientists to tell and the most threatened species are the ones least likely to be preserved for future generations. In the last 500 years, the oceans have suffered far fewer extinctions than on land at least that the research knows of. The researchers, however, warn that the number of marine extinctions could rise rapidly as the oceans are industrialized.

LITERATURE CITED.

Abbott, R. T., 1960. Thecosomata. In: American Seashells, Van Nostrand & Co Inc., New York: 274-310.

Abbott, R. T., 1968. Seashells of North America: A Guide to Field Identification

Adam, W. and W.J. Rees, 1966. A review of the Cephalopod Family Sepiidae. Scientific reports of the John Murray Expedition 1933-34. 11(1); 1-165

Adams, A. 1855. Monographs of Actaeon and Solidula, two genera of gasteropodous Mollusca with descriptions of several new species from the Cumingian collection. Proc. Zool. Soc. London 22: 58-62.

Afsar, N., G. Siddiqui, and Z. Ayub, 2012. Update of Records of Selected Prosobranch Gastropod Species Found Along the Coasts of Sindh and Balochistan, Pakistan. Pakistan J. Zool. 44: 267-275

Ahmed, M., 1971. Oyster species of West Pakistan. *Pak. J. Zool* 3 (2) : 229-236.

Ahmed, M. and S. Hameed, 1999. Animal communities of the exposed Sandy beaches at Clifton in Karachi (Pakistan). Pakistan J. Zool., 31 (3): 211-217.

Ahmed, M., S.H.N. Rizvi and M. Moazzam, 1982. The distribution and abundance of intertidal organisms on some beaches of Mekran coast in Pakistan (Northern Arabian Sea). Pakistan J. Zool., 14 (2): 175-184.

Aijazuddin, A and S. Barkati 2013. INTERTIDAL FAUNAL ASSEMBLAGES AT LIGHT HOUSE-KEAMARI SEAWALL: MANORA CHANNEL LAGOON (KARACHI, PAKISTAN) *INT. J. BIOL. BIOTECH.*, 10 (2): 289-298,

Ali, Y., 2006. Report of the survey conducted by KSDC in year 2005-2006. Pp 6.

Angas, G.F. ,1877. Descriptions of a new genus of gasteropodous Mollusca from Japan, and of a new species of Bullia from Kurachi. Proc. Zool. Soc.London, : 529–530,

Anonymous, 1976.Report on cruise of R/V Shoyo Marui in the North Arabian Sea survey in cooperation with IOP, FAO to assess the pelagic fish stocks.Oct 2-Jan 14, 1976.pp110

Aravindakshan,P.N. ,1977.Pterotracheidae (Heteropoda, Mollusca) of the Indian Ocean from the International Indian Ocean Expedition. Proceedings of the Symposium on Warm Water Zooplankton. NIO, India: 137-145

Arshad,N., S. Farooq and A. A. Muhammad,2017.Diversity and Abundance of Donax Species at two Sandy Beaches of Karachi Coast.Sindh Univ. Res. Jour. (Sci. Ser.) Vol. 49 (2) 409-414

Ashraf, S. A., 1969. On cephalopods of Pakistan. Rec. Zoo. Surv. Pakistan 1(2):1-15

Asif, M., 1979.Hermaphroditism and sex reversal in the four common oviparous species of oysters from the coast of Karachi. Hydrobiologia 66(1):49-55

Avon, C.2016 .GASTROPODA PACIFICA Auto-compiled MAHN 84-06 FRANCE From : WAS-archives.org

Ayub, Z.,G.Siddiqui and S. Hameed,2006.Molluscan biodiversity in Pakistan. World aquaculture: 1-6

Baba, K., 1949. Opisthobranchia of Sagami Bay. Iwanami Shoten, Tokyo.

Baig, H.S., 2014.THE MOBILE AND SESSILE FAUNA ASSOCIATED WITH CAULERPA TAXIFOLIA WITH

SOME ECOLOGICAL REMARKS. Pakistan Jour. Oceanography 7(1):31-40

Baig, H. S. and Zehra, I. 2006. Seasonal variation in sessile & mobile epifaunal associated with brown seaweed (*Sargassum* spp.) from two rocky shores of Pakistan”: Pakistan Jour. Oceanography, 2(1):1-8.

Bano, A., M. Moazzam, Z. Ayub and G. Siddiqui, 2011. First Report of Siphonaria (Mollusca: Gastropoda) Species from the Rocky Coasts off Karachi, Pakistan (Northern Arabian Sea). Pakistan Jour. of Zoology v. 43(3) 602-604

Bano, N., 1981. Cypraeids of the Karachi coast. (M.Sc Project, unpublished)

Barash Al., and Z. Danin, 1986. Further additions to the knowledge of Indo-Pacific Mollusca In the Mediterranean Sea (Lessepsian migrants) .Spixiana: 117-141

Barkati, S. and M. Ahmed, 1983 STUDIES ON THE REPRODUCTIVE-BIOLOGY OF SOME PROSOBRANCHS FROM THE COAST OF PAKISTAN BORDERING THE NORTHERN ARABIAN SEA .2. EGG CAPSULES AND LARVAE OF 4 SPECIES OF THAIS. The veliger. 26: 30--36

Barkati, S. and M. Ahmed, 1984a. Egg masses and larvae of two species of *Nodilittorina* from the Arabian Sea (Mollusca: Gastropoda). Kar. Univ. J. Sc. 12(1):91-95

Barkati, S. and M. Ahmed, 1984b. Egg masses and larvae of three species of *Cerithium* from the Arabian Sea. The Veliger, 26: 316- 319.

Barkati, S. and Ahmed, M. 1984c. Egg masses and larvae of two species of *Cypraea* (Mollusca: Gastropoda) from the coast of Karachi bordering the northern Arabian Sea. Pakistan Jour. Sc. Indus. Res. 27(4):229-232, figs. 1-2.

Barkati, S. and Ahmed, M. 1985. Egg capsules and larvae of two species of *Conus* from the coast of Pakistan bordering the Northern Arabian Sea. Pakistan Jour. Zool. 17(4):387-392

- Barkati, S. and I. Hussain, 2011.** Bio-Ecology of Molluscan Wood-Borers of Karachi Mangroves. LAP LAMBERT Academic Publishing 88 pp
- Barkati, S. and Rahman, S. 2005.** Species composition and faunal diversity at three sites of Sindh Mangroves. Pakistan Jour. Zoo., **37**: 17-31
- Barkati, S. and Tirmizi, N.M., 1987.** Population structure and some aspects of the breeding behavior of three gastropod species from Karachi mangroves. Pakistan. J. Sci. Ind. Res. Vol. 30: 539-544.
- Barkati, S. and N. M. Tirmizi, 1988.** Studies on Wood borers from the mangroves of Karachi. Marine bio-deterioration Ad. Tech. App. Ind. Ocean. (M. F. Thompson, A. Sarojini, R. Nagabhushanam Eds.:203-213.
- Barkati, S., N.M.Tirmizi, I.Hussain and I. Zehra, 1990.** Some aspects of population structure and breeding in pulmonate gastropod, *Onchidella* sp., Kar. Univ. J. Sc. 18(1and2):119-124
- Barnard, H. 1958.** CONTRIBUTIONS TO THE KNOWLEDGE OF SOUTH AFRICAN MARINE MOLLUSCA Part i. Gastropoda: Prosobranchiata :*Toxoglossa* .Annals of the South African Museum. 4:73—163
- Barnard K. H. 1963.** Deep sea Mollusca from west of Cape Point, South Africa. Ann. South African Mus. 46 (17): 407-452.
- Begum, F., 1998.** Study of invertebrate macrofauna of Layari River in Karachi with special reference to molluscan fauna. PhD thesis, University of Karachi, Karachi.
- Begum, F, Nazneen S. 1992.** Systematic study of molluscan fauna of Layari river. Part-I. Archaeogastropoda (*Aspidobranchia*: *Prosobranchia*) from the estuarine region. Pakistan Jour. of Scientific and Industrial Research 35, 401-401.

- Bieler ,R., 1993.** Architectonicidae of the Indo-Pacific (Mollusca, Gastropoda). Abhandl Naturwis. Vereins in Hamburg (NF) 30: 1-376.
- Biggs, H. E. J., 1973 .**The marine mollusca of the Trucial coast, Persian Gulf .Bulletin of the British Museum (natural history) Zoology. 24, 8 London: 341-421
- Bosh, D.T., Dance, S.P., Moolenbeek, R.G. and Oliver, P.G., 1995.** Sea Shells of Eastern Arabain Sea. Emirates Printing Press, Dubai, UAE: 1-296.
- Bouchet, P.,Gofas S. and Rosenberg G., 2013.** WoRMS Mollusca: World Marine Mollusca database (version Feb 2013)
- Burch, J.Q. and Burch, R.L., 1960.** Catalogue of Recent and fossil olives. Min. Conch. Club. ~. Cal. 196: 1-46
- Carpenter, K. E.and V. H. Niem, 1998.**FAO Species Identification Guide for Fishery Purposes.The Living Marine Resources of the Western Central Pacific Volume 1: Seaweeds, corals, bivalves and gastropods
Seller Image
- Cernohorsky, W. O., 1967.**Marine Shells of the Pacific
Published by Pacific Publication 248 pages.
- Cernohorsky, W.O., 1972.** Indo-Pacific Nassariidae (Mollusca: Gastropoda), Records of the Auckland Institute and Museum, 9
- Cernohorsky W.O. ,1976.** The taxonomy of some Indo-Pacific Mollusca. The taxonomy of some Indo-Pacific Mollusca. Part 4.
- Cernohorsky,W. O.,1984.** Systematics of the Family Nassariidae (Mollusca: Gastropoda). Bull. Auckland Inst. and Mus. 14: 1-356
- Chesalin, M.V and G.V. Zuyev, 2002.** Pelagic cephalopods of the Arabian Sea with an emphasis on *Sthenoteuthis oualaniensis*. Bull. Mar. Sci. 71 (1): 209-221.
- Cooke, C.W., 1919.** Contributions to the geology and palaeontology of the West Indies IV. Tertiary mollusks

from the Leeward Islands of Cuba. Carnegie Institute of Washington Publications, 291, 103–156

Coonans, H.E. and R.G. Moolenbeek, 1990. Notes on some Conidae from Oman, with description of *Conus stocki* n. sp. (Mollusca; Gastropoda) *Bijdragen tot de Dierkunde*, 60 (3/4) 257-26.

von Cosel, R., 1989. Three new species of *Solen* (Bivalvia: Solenidae) from the Indian Ocean, with remarks of the Solenidae of Madagascar. *Journ. Conch.* **33**: 189-208; pls 1-25, text figs 1-34

Dance, S.P. 1977. The Encyclopedia of Shells. Blandford Press Limited, Poole, Dorset, UK

Dance, S.P. 1992. The eyewitness handbook of shells. Dorling Kindersley, Inc. New York. 256 Pp.

Deshayes, G.P., 1853. Catalogue of the Conchifera or Bivalves Shells in the collection of the British Museum. 1. Veneridae, Cyprinidae and Glauconomidae. British Museum, London. 292 pp.

Deshayes, G. P., 1859. A general review of the genus *Terebra*, and a description of new species. *Proceedings of the Zoological Society of London* 27: 270-321

Dey, 1844. Studies on Indian Teilinnids, Ph.D. thesis, Ranchi University

Dunning, M.C., 1998. A Review of the Systematics, Distribution and Biology of the Arrow Squid Genera *Ommastrephes* Orbigny, 1835, *Sthenoteuthis* Verrill, 1880, and *Ornithoteuthis* Okada, 1927 (Cephalopoda: Ommastrephidae). Systematics and Biogeography of Cephalopods. Vol. 2 (eds: N.A. Voss, M. Vecchione, R.B. Toll and M.J. Sweeney) Smith. Cont. Zool. (586): 425-433.

Eales, N.B. 1944. Aplysiids from the Indian Ocean, with a review of the family Aplysiidae. *Proc. Malacol. Soc. London* 26(1):1-22; figs. 1-15

Eales, N.B. 1957. Revision of the world species of *Aplysia* (Gastropoda, Opisthobranchia). *Bull. BM* 5(10):267-404

Edgar A Smith,1903. A LIST OF SPECIES OF MOLLUSCA FROM SOUTH AFRICA, FORMING AN APPENDIX TO G. B. SOWERBY'S "MARINE SHELLS OF SOUTH AFRICA." Proceedings of the Malacological Society of London.5:354—402

Eliot, C.N.E. 1905. Nudibranchs from the Indopacific: 1. Notes on a collection dredged near Karachi and Maskot. *J. Conch. Paris*, **11**: 237-256

Emerson, W. K. and D'Attilio, A. 1962. Remarks on Triton ranzanii Bianconi (Mollusca, Gastropoda). American Museum Novitates 2108: 1-8.

Emily, A. Glover and J. D. Taylor,2001. Systematic Revision of Australian and Indo-Pacific Lucinidae (Mollusca: Bivalvia): Pillucina, Wallucina and Descriptions of Two New Genera and Four New Species. Records of the Australian Museum (2001) Vol. 53: 263–292

Fanning P., L. ,M. W.Khan,S. Kidwai and G. J. Macauley ,2011. Surveys of the offshore fisheries resources of Pakistan – FAO Fisheries and Aquaculture Circular No. 1065 RAP/C1065 (En)87pp

Fatemi,Y. and G. Attaran-Fariman,2015. Checklist of the opisthobranchs (Heterobranchia: Gastropoda) along the Iranian coasts of the Gulf of Oman. *J. Bio. & Env. Sci.* 6, 3, .: 1-7

Fatima, A., 1972. Taxonomical study of some of the molluscan shells of Manora Island.(unpublished MSc.project)

Fatima, M. 1988. Pteropods, species composition and abundance in northern Arabian Sea. *Pakistan Jour. Sci.. Indust. Res.* 31 (9): 634-636.

Fatima, M. and S. Barkati., 1999. Biodiversity studies on natural mussel bed of Karachi: Paradise Point. *Pak. J. Mar. Biol.* 5 (1):

Fischer, P.1887. Manual of the Mollusca, ed. ii. p. 73.

Fischer Piette ,E. and M.Barnard ,1971. Revision des Tapetinae (Mollusques bivalves). (French) pp. 106 con 2

fig Tapetinae (Mollusques bivalves). (French) pp. 106 con 2 fig.

FISHERY AGENCY OF JAPAN, 1976. Report on cruise of the R. V.SHOYO MARU in the North Arabian Sea Survey, in cooperation with the IOP, FAO, to assess the pelagic fish stocks, 2 October 1975—14 January 1976. *Res. Dev. Div., Fish. Agen.Japan*, 110 pp

Frontier, S. 1963. Zooplankton Recolte en mer D'arbie, Golfe Persque et Golfe d' Aden (3 campagneOceanographic du "Commandant Robert Giraud") 1. Donnes Generales- Repartition quantitative.Cahiers ORSTOM Oceanogr. No. 3: 17-30

Frontier, S. 1966. Zooplankton de la region de Nosy-Be. I. Programme des recoltes et techniques d'etudes. II. Plancton de surface aux stations 5 et 10. Cahiers ORSTOM Oceanogr,4(3) 3-36

Frontier, S.1968.Document no. 417-S.R., ORSTOM, 11 pp

Ghani A., and Afsar N. 2017. New record of two flag pen shells (Mollusca: Bivalvia) from Bandri beach, Jiwani coast, Pakistan.*Int J Biol Biotech.*, **14**: 75-78

Ghani,A. , N. Afsar and S. Rahman ,2017.Quantitative Analysis of Macrobenthic Molluscan Populations Inhabiting Bandri Area of Jiwani, South West Pakistan Coast. *JJBS* 10, 4: 281 - 287

Ghani,A.,N. Afsar and S. Qadir, 2018.New report of Tutufa bardeyi (Jousseaume, 1881) (Mollusca: Gastropoda) from Jiwani coast, Pakistan. *Int J Biol Biotech.* 15(1):163-166

Glover,G.A. and J.D.Taylor, 2001. Published in: Glover, E.A.; Taylor, J.D. (2001). Systematic revision of Australian and Indo-Pacific Lucinidae (Mollusca: Bivalvia): Pillucina, Wallucina and descriptions of two new genera and four new species. *Rec. Australian Mus.* 53: 263-292.

Gmelin, J. F., 1791. Caroli a Linné, systema naturae. Tom. I. Pars VI. - pp. 3021-3910. Lipsiae. (Beer).

- Gondal M. A., Noor Us Saher and N. A. Qureshi, 2012.** Diversity and biomass distribution of intertidal fauna in Sonmiani bay (Miani Hor), Balochistan (Pakistan) Egypt. Acad. J. Biolog. Sci., 4(1): 219-234
- Gravelly, F.H. 1941.** Shells and other animal remains found on the Madras beach. 1-Froups other than snails, etc. (Mollusca Gastropoda) : 1-
- Habe, T. 1964.** Shells of the western Pacific in color, 2. Hoikusha, 233 pp
- Habe, T., 1973.** Introduction of "Habe, T. and Sato, J: A classification of the family Buccinidae from the North Pacific. Proceed. Japan Soc. Syst. Zoo., 8, pp. 18, pls. 12 ". Venus 32: 98. (in Japanese)
- Hasan, S.A, 1960.** Oyster fishing resources of Pakistan. Proc. 4th Pan. Indian Ocean Cong. Sec. B : 167-171
- Herbert, D. G., 1996.** Observations on *Clanculus tonnerrei* (G. & H. Nevill 1874) (Mollusca Gastropoda Trochidae). Tropical Zoology 9: 31-45
- Herbert, D. G., 2012.** A Revision of the Chilodontidae (Gastropoda: Vetigastropoda: Seguenzioidea) of Southern Africa and the South-Western Indian Ocean. African Invertebrates 53(2):381-502.
- Horst R. and Schepman M. M. 1908.** *Catalogue systématique des mollusques (gastropodes prosobranches et polyplacophores)*. Tome XIII. E.J. Brill, Leiden. pp 572
- Hornell, J. 1910.** The present depletion of the *Oyster-bed of Sind*; its Causes and the Remedies. Vol. ii. Bulletin No. 5. 1 vol. Gov. Madras
- Hornell, J. 1951.** Indian Molluscs. Bombay Nat. His. Soc.: 1-94
- Houart, R., 1999.** Review of the Indo-Pacific species of *Haustellum* Schumacher, 1817 and comments on *Vokesimurex* Petuch, 1994 (Gastropoda: Muricidae) with the description of *H. bondarevi* n.sp. *Apex*, 14(3-4):81-107.

Houbrick, R.S., 1980. Review of the deep-sea genus *Argyropeza* (Gastropoda, Prosobranchia, Cerithiidae). *Smithsonian Contr. Zoo.* no. 321

Houbrick, R.S.1992, Monograph of the Genus *Cerithium* Bruguiere in the Indo-Pacific (Cerithiidae: Prosobranchia). *Smithsonian Contr. Zoo.* 51 0:1-2010

Huang,Chih-Wei , Yen-Chen Lee,2016.Checklist of the family Epitoniidae (Mollusca: Gastropoda) in Taiwan with description of a new species and some new records. *Biodiversity Data Jour.* 4: e5653

Hubendick, B. ,1946. Systematic monograph of the Patelliformia. *Kunglige Svenska Ventenskapsakademiens Handlingar*, ser. 3, 23 (5) : 1-93, 20 figs, 6 pls

Hylleberg,J.1996.LEXICAL APPROACH TO CARDIACEA (Mollusca: Bivalvia). RECORDS OF TAXA. Parts1- 3:

Iffat. F. 2005. Marine Gastropods of Karachi in the Collection of Zoological Survey Department. *Rec. Zoo. Sur. Pakistan XVI:* 86-99.

Jahangir, S., Siddiqui G., Moazzam M., and Ayub Z. 2012. Clams of the Families Tellinidae and Veneridae and Blood Cockle of Family Arcidae From Phitti Creek and Sonmiani Along the Coast of Pakistan (Northern Arabian Sea)..*Pakistan Jour. Zool.* 44(1), 259-266.

Jereb, P. and Roper, C.F.E. (eds), 2005.Cephalopods of the world. An annotated and illustrated catalogue of cephalopod species known to date. Volume 1.Chambered nautilus and sepioids (Nautilidae, Sepiidae, Sepiolidae, Sepiadariidae, Idiosepiidae and Spirulidae).FAO Species Catalogue for Fishery Purposes. 4, 1. Rome, 262pp.

Jereb, P. and Roper, C.F.E. (eds),2010.Cephalopods of the world-an annotated and illustrated catalogue of cephalopod species known to date Volume 2 Myopsid and Oegopsid Squids.FAO Species Catalogue for Fishery Purposes. 4, 2. Rome, 60

- Jereb,P.,C, F. E. Roper,M. D. Norman and J, K. Finn,(eds),2016.**Cephalopods of the world an annotated and illustrated catalogue of cephalopod species known to date.Octopods and Vampire SquidsFAO Species Catalogue for Fishery Purposes 4, . 3,pp370
- Jonklaas, R.S.L. and Nicolay, K. 1977.** *Cypraea lentiginosa* Gray, 1825 (considerations on its range and variability). *La Conchiglia* (95-96):16.
- Johnson, B. 2000.** "*Vampyroteuthis infernalis*" (On-line), Animal Diversity Web.
- Kaas,P.,1954.**Report on a collection of loricata from Manora Island, Karachi, with descriptions of three new species and a new variety.Zoologische Mededelingen dee l xxxiii , no. 1- 19
- Kaiser, K. L.1997.**Systematic revision of the Recent species of *Peasiella* Nevill, 1885 (Gastropoda: Littorinidae), with notes on the fossil species. *The Nautilus* 103 (2): 43-69
- Kazmi, M.A.S., 1953.** Preliminary investigation on oyster beds in the Korangi creek.Agri.Pakistan 4:143-150
- Kazmi, Q. B., 1992.** A fascinating sea slug. MRC Newsletter 3(1): 1
- Kazmi, Q. B., 1993.** New additions of Marine Organism in MRC. *Lima* sp. MRC Newsletter 2(4): 1
- Kazmi, Q. B., 1995.** A note on *Lamellaria perspicua* (Mesogastropoda, Gastropoda) collected from Karachi coast. *Pak. J. Mar. Sci.* 4(2):155-157
- Kazmi, Q. B., 2016.**A compendium of Partnerships and associations in Crustaceans of Pakistan (with an appendix of HIOE samples), VDM Verlag,200 pages
- Kazmi, Q. B. and M.Khan, 2014.**SOME NEW RECORDS OF MARINE MOLLUSCANS FROM THE PAKISTAN COAST. *Int. J. Biol. Res.*, 2(2): 79-84.
- Kazmi, Q. B. and R. Naushaba, 2000.** First record of a spindle cowry *Crenovolva* sp. (Ovulidae, Gastropoda) from Buleji, Karachi, Pakistan, on the *Gorgonial* coral *Muricella*

sp. and with a note on their association. Pak. J. Mar. Sci. 9(1and2): 107-111

Kazmi, Q. B. and R. Naushaba, 2003. Marine Fauna of Pakistan. Series No. II: Cephalopods. Marine Reference Collection and Resource Centre, University of Karachi. Pp. 22.

Kazmi, Q. B. and Tirmizi, N. M., 1997. On two species of *Armina*: *A. babai* (Tchang-Si, 1934) and *A. punctilopsis* Lin, 1992 (Gastropoda, Opisthobranchia) from Pakistani coasts of the Indian Ocean with a note on egg ribbons of *A. babai*. Vita Marina 44(3-4):51-59

Kazmi, Q.B., N.M. Tirmizi and I. Zehra, 1996. A checklist of opisthobranch snails of the Karachi coast. Pakistan Journ. Mar. Sc. 5(1): 69-104.

Kenoyer, J. M. 1995. SHELL TRADE AND SHELL WORKING DURING THE NEOLITHIC AND EARLY CHALCOLITHIC AT MEHRGARH, PAKISTAN .The Department of Culture and Tourism, Government of Sindh, Pakistan, in Collaboration with the French Ministry of Foreign Affairs. MEHRGARH FIELD REPORTS 1974-1985 FROM NEOLITHIC TIMES TO THE INDUS CIVILIZATION THE REPORTS OF ELEVEN SEASONS OF EXCAVATIONS IN KACHI DISTRICT, BALOCHISTAN BY THE FRENCH ARCHAEOLOGICAL MISSION TO PAKISTAN.

Khan, I. 1962 .Oyster fisheries of West Pakistan. Agri.Pakistan. 13:371-375

Khan, M.D. and S.G.Dastagir, 1970. On the Mollusca: Gastropod-fauna of Pakistan. Rec. Zoo. Surv. Pakistan. II(1) :17-129.

Khan , M. D. and S. G. Dastagir,1972 .On the Mollusca: Pelecypod Fauna of Pakistan .The Agri. Res. Counc., Pakistan, 2/375:1-40

Khan, M.D., S.G. Dastagir and S.A. Ashraf, 1973. Pelagic and Demersal fauna of Pakistan. Rec. Zoo. Surv. Pakistan. IV(1a)

Khanum,S.and Q.B.Kazmi,2016.New record of *Dendrodoris krusensternii* (Gray, 1850) (Nudibranchia, Dendrodorididae) from the Karachi coast, Pakistan (Northern Arabian Sea).IJFBS 4(4):76-77

Khromov,D.N.,C.C.Lu ,A.Guerra,Zh.Dong and S.V.Boletzky,1999.A synopsis of Sepiidae outside Australian waters(Cephalopoda:Sepiodea)In:Systematics and Biogeography of Cephalopods(eds:Voss,A.N.,M.Vechione,R.B.Toll and M.J.Sweeney).Smithsonian Contribution to Zoologyno586:77-139.

Kiener L.C. (1834-1841). Spécies général et iconographie des coquilles. Vol. 3. Famille des Columellaires. Genres *Mitre (Mitra)*, Lamarck, pp. 1-120, pl. 1-34 [pp. 1-48 (1838); 39-120 (1839); pl. 1-31 (1838); 32-34 (1839)]; *Volute (Voluta)*, Linné, pp. 1-70, pl. 1-51 [pp. 1-70 (1839); pl. 1-8, 10-19, 33, 35, 38-39, 45-48, 50 (1838); 9, 20-32, 34, 36-37, 40-44, 49, 51-52 (1839)]; *Marginelle (Marginella)*, Lamarck, pp. 1-44, pl. 1-13 [pp. 1-30 (1834); 31-44 (1841); pl. 1-9 (1834); 10-13 (1841)]. *Paris*

Kilburn, R.N. ,1980. A new *Ancilla* from the Arabian Sea, and a discussion of two homonyms in the Ancillinae (Mollusca: Gastropoda: Olividae). Durban Museum Novitates. 12(14): 167-170

Kilburn, R.N. ,1981. Revision of the genus *Ancilla* Lamarck, 1799 (Mollusca : Olividae : Ancillinae), Series: Ann. Natal Mus.. 24, 2, .

Kilburn, R. N., 1985.The family Epitoniidae (Mollusca: Gastropoda) in southern Africa and Mozambique. Ann. Natal Mus. Vol. 27(1): 239-33

Kilburn, R. N., 1992.Turridae (Mollusca: Gastropoda) of southern Africa and Mozambique. Part 6. Subfamily Mangeliinae, section 1. Ann. Natal Mus. Vol. 33(2) Pages 461-575

Kilburn, R. N. , A. E. Fedosov and B. M. Olivera,2012.

Revision of the genus *Turris* Batsch, 1789 (Gastropoda: Conoidea: Turridae) with the description of six new Zootaxa. 3244(1): 1–58.

Kira, T., 1962, Shells of the western Pacific in color. [vii]+ 224 pp., 72 pis.; Hoikusha, Osaka

Kool, H.H. and Dekker, H., 2006. Review of the *Nassarius pauper* (Gould, 1850) complex (Gastropoda: Nassariidae). Part 1, with the description of four new species from the Indo-west Pacific. *Visaya*, 1(6): 54–75

Krylova, E. M. and H. Sahling, 2006. Recent bivalve molluscs of the genus *Calyptogena* (Vesicomysidae). *Jour. Moll. Stud.* 72(4): 359–395; doi:10.1093/mollus/eyl022

Lamarck, J.-B. M. de., 1822. Histoire naturelle des animaux sans vertèbres. Tome sixième, 2me partie. Paris: published by the Author, 232 pp.

Lamy, E., 1920. Révision des Cypricardiacea et des Isocardiacea vivants du Muséum d'Histoire naturelle de Paris. *Jour. de Conchyliologie*, 64: 259–307.

Leyen, A. and S. Spoel, 1982. A new taxonomic and zoogeographic interpretation of the *Diacria quadridetata* group (Mollusca, Pteropods) *Bull. Zoo. Mus. Univ. Amsterdam* 8(13): 101–114

Lorenz, F. and A. Hubert, 2000. A guide to worldwide cowries. *Conch Books*: 494–496.

Ludbrook, N.H. 1954. Scaphopoda. The John Murray Expedition 1933–34, *Scientific Reports*. 10: 91–120

Malaquias M.A. and Reid D.G., 2008. Systematic revision of the living species of Bullidae (Mollusca: Gastropoda: Cephalaspidea), with a molecular phylogenetic analysis. *Zool. Jour. Linn. Soc.* 153: 453–543.

Marcus, E. DU B–R. 1971. On some euthyneuran gastropods from the Indian and Pacific oceans. *Proc. Malac. Soc. London*. 39: 355–368

Martin, C. A new *Meretrix* species from Arabian Sea species from Arabian Sea (Muséum National d'Histoire Naturelle, Paris) and Akihiko Matsukuma (Kyushu Univ.)

- McGowan, J.A., 1968.** Thecosomata and Gymnosomata. The Veliger, California Malacozoological Society In. 3: supplement: 103-135.
- Melissa, F. 2012.** Taxonomy, phylogenetics and biogeography of *Nerita* (Gastropoda: Neritidae) Project
- Melville J.C., 1892.** Descriptions of twenty-five new species of marine shells from Bombay collected by Alexander Abercrombie, Esq. *Mem. Pro. Manchester Literary and Philosophical Society* 7: 52-67, 1 pl.
- Melville, J. C., 1896.** Descriptions of new species of minute marine shells from Bombay: *Proceed. Malacol. Soc. London.* 2: 108-116, pl. 8
- Melville, J.C., 1897.** Description of *Plecotrema sykesii* n.sp. from Karachi. *Proceed. Malacol. Soc. London.* 2: 292
- Melville, J.C., 1903.** A revision of the Columbelloidea of the Persian Gulf and North Arabian Sea, with description of *C. calliope*, n. sp. *J. Malac. Soc.* 10(2): 27-31.
- Melville, J. C., 1901.** A few further remarks upon the Erythraean molluscan fauna, with descriptions of seven new species from Aden, in the collection of commander E.R. Shopland, R.I.M. *Ann. Mag. Nat. Hist.* 7(7): 550-556
- Melville, J.C., 1904a.** Descriptions of twenty eight species Gastropoda from the Persian Gulf and Gulf of Oman and Arabian Sea, dredged by F.W. Townsend 1900-1904.—*Proc. Malac. Soc. London:* 158-169, pls.
- Melville, J.C., 1904b.** Descriptions of twelve new species and one variety of marine Gastropoda from the Persian Gulf and Gulf of Oman and Arabian Sea, dredged by F.W. Townsend 1902-1904. *Jour., Malac. Soc. London:* 79-85, pls.
- Melville, J.C., 1904c.** Descriptions of twenty-three species of gastropoda from the Persian Gulf, Gulf of Oman, and Arabian Sea, dredged by Mr. F.W. Townsend of the Indo-European Telegraph Service 1903. *Proceed. Malacological Soc. London* 6:51-60, pl. 5.

Melville, J.C., 1906a. Descriptions of thirty one of Gastropoda and one scaphopod from the Persian Gulf and Gulf of Oman dredged by F.W. Townsend 1902-1904. *Proc. Malac. Soc. London* 7: 69-80, pls. 7-8.

Melville, J.C., 1906b. A revision of the species of Cyclostrematidae and Liotiidae occurring in the Persian Gulf and North Arabian Sea. *Proc. Malac. Soc. London*. 7: 20-30.

Melville, J. C., 1910. A revision of the species of the family Pyramidellidae occurring in the Persian Gulf, Gulf of Oman and North Arabian Sea, as exemplified mostly in the collections made by Mr. F.W. Townsend (1893-1900), with descriptions of new species. *Proc. Malacol. Soc. London*. 9: 171-207, pls 4

Melville, J.C., 1912. Description of thirty-three new species of Gastropoda from the Persian Gulf, Gulf of Oman and Arabian Sea. *Proc. Malac. Soc. London* 10: 240-254, pls 11-12.

Melville, J. C., 1916. A revision of the Turridae (Pleurotomidae) occurring in the Persian Gulf, Gulf of Oman and north Arabian sea, as evidenced mostly through the results of dredgings carried out by Mr. F. W. Townsend, 1893-1914. *Proc. Malaco. Soc. London*. Pages 140-201

Melville, J. C., 1917. Description of a new species of *Terebra* from the Mekran coast, Arabian. *J. Conch. Lond* 15:188-189

Melville, J. C., 1918. Description of thirty-four species of marine mollusca from the Persian Gulf, Gulf of Oman and Arabian Sea, collected by Mr. F.W. Townsend. *Ann. Mag. nat. Hist. (Series 9)*, 1 :137-158, Pls 4-5.

Melville, J. C. and Abercrombie, A. 1893. The marine Mollusca of Bombay. *Mem. and Proc. the Manchester Literary and Philosophical Society*. 4, 7. :17-51

Melville, J. C. and R. Standen, 1896. NOTES on a collection of shells from Lifu and Uvea, Loyalty islands, formed by

the Rev. James and Mrs. Hadfield, with list of species: Part II. *Journal of Conchology*. 8: 273-315 pls 9-11

Melville, J. C. and R. Standen, 1898. Description of a new *Strombus* from Mekran Coast of Baluchistan, *Mem. Proc. Manchr. Lit phil. Soc.*(No. 4):37-38

Melville, J.C. and R. Standen, 1901. The Mollusca of the Persian Gulf, Gulf of Oman and Arabian Sea, as evidenced mainly through the collection of Mr F.W. Townsend 1893-1900, with descriptions of new species. Part 1. Cephalopoda, Gastropoda, Scaphopoda. *Proc. Zool. Soc. London* 1901: 327-460, pls. 21-24.

Melville, J.C. and R. Standen, 1903a. The Mollusca of the Persian Gulf, Gulf of Oman and Arabian Sea, as evidenced mainly through the collections of F.W. Townsend, 1893-1906; with descriptions of new species. Part II - Pelecypoda. *Proc. Zool. Soc. London* 1906: 783-848.

Melville, J.C. and R. Standen, 1903b. Descriptions of sixty eight new Gastropoda from the Persian Gulf, Gulf of Oman and Arabian Sea, dredged by F.W. Townsend, 1901-1903. *Ann. Nat. Hist.*(7):289-324

Melville, J.C. and R. Standen, 1903c. The genus *Scala* (Klein) Humphrey as represented in the Persian Gulf, Gulf of Oman and Arabian Sea, with description of (18) new species. *Jour. Conch.*x:340-351

Melville, J.C. and R. Standen, 1903d. The Cypræidae of the Persian Gulf, Gulf of Oman and Arabian Sea, as exhibited in Mr. F.W. Townsends collections, 1893-1904. *Jour. Conch.*xi:161-163 pl

Melville, J.C. and Standen, R., 1907.- The Mollusca of the Persian Gulf, Gulf of Oman, Arabian Sea, as evidenced mainly through the Collections of Mr. F.W. Townsend, 1893-1906; with descriptions of new species. Part II. Pelecypoda. *Proceed. Zool. Soc. London*: 783-855

Melville, J. C. and R. le Brockton Tomlin in The Melville-Tomlin Collection from 1865-1914

- Mienis, H.K., 2001.** A blister pearl formation in *Paphia cor* (Sowerby, 1853) from the Arabian Sea off Pakistan. *De Kreukel*, 37 (6): 108
- Mirza, N. 1981.** Some burrowing and boring bivalves of Karachi shore. (M.Sc Project unpublished).
- Moazzam, M. and J. Ahmed, 1994.** Prospects of development of Molluscan Fisheries in Pakistan. Proc. National Seminar on Fisheries Policy and Planning (Eds: Majid, Khan, Moazzam and Ahmed). UNDP/FAO: 41-76.
- Moazzam, M., Moazzam, N. and Osmany, H. B. 2016.** First Record Of Occurrence Of The Opisthobranch *Kalinga Ornata* Alder And Hancock, 1864 From The Coast Of Pakistan. *Int. J. Biol. Biotech.*, 13 (4): 613-615.
- Moazzam, N. and M. Moazzam, 2007.** Some observations on the micromollusc community of Ras Zarrin, Pasni, Balochistan. *Int. J. Biol. Biotech.* 4 (Special issue): 89-96
- Mookherjee, H.P., 1985.** Contribution to the molluscan fauna of India. Part III, Marine molluscs of the Coromandel coast, Palk Bay and Gulf of Mannar - Gastropoda-Mesogastropoda (Part 2). *Rec. zool. Surv. India, Occ. Pap.* 75: 93, 15 plates
- Moolenbeek, R.G. and H.E. Coomans, 1986.** On the identity of *Conus milesi*, & *C. elegans*. *Studies on Conidae (Mollusca, Gastropoda)*, 7. *Conchiglia*, 18 (210-211): 18-19
- Monsecour, 1 and F. Koehler, 2006.** Annotated list of columbellid types held in the Malacological Collection of the Museum für Naturkunde, Berlin (Mollusca, Caenogastropoda, Columbellidae) *Kevin Mitt. Mus. Nat.kd. Berl., Zool. Reihe* 82, 2, 282-306
- Murray, J. and J. Hjort, 1912.** *The Depths of the Ocean.* Macmillan, London, p. 821
- Nasreen, H., Ahmed, M. and Hameed, S, 2000.** Seasonal variation in biomass of marine macro-invertebrates occurring on the exposed rocky ledge of Manora Island, Karachi, Pakistan. *Pakistan Jour. Zool.* 32 (4) : 343-350

Naushaba R. and Q. B. Kazmi. 2004. Rediscovery of *Chiton peregrinus* Thiele, 1910 (Mollusca, Polyplacophora) from Pakistan coast. Pak. J. Mar. Sci. 13(1and2): 75-77

Nayeem, I., and I. Zehra, 1995. Ecology of pteropods of the northern Arabian Sea, Pakistan coast. In: M.-F. Thompson and N.M. Tirmizi (eds). The Arabian Sea. Living marine resources and the environment. New Delhi/Bombay/Calcutta, Oxford and IBH Publ. Co. PVT. Ltd.: 55-61.

Nazneen, S. and F. Begum 1994. Distribution of molluscs in Layari River (Sindh), Pakistan Hydyobiologia 273: 95-100

Newton, R. B. 1905. An account of some marine fossils contained in limestone nodules found on the Mekran Beach, off Ormara Headland, Baluchistan. *Geological Magazine* 2:293-305

Niazi, R.M. 2001. A trawl study of benthic marine macro-organisms found in the near shore waters of Karachi, Pakistan. *Pakistan J. Fish.* 2(1and2): 13-23.

Niazi S,M..1973, Marine fauna supplement,(Marine wood borer) Rec.Zoo.Surv.Pakistan 1v(1&2)

OBIS Indo-Pacific Molluscan Database Data as of: 2003-07-03,2006Taxa reported from regions in Pakistan

Ode, H., 1998 .Indo-Pacific taxa of turbonilids, excluding those along the Americas . *Texas Conchologist*, 34(2):33-103.

Okutani, T., 1983. *Abralia marisarabica*, a new Enoploteuthid squid from the Arabian Sea (Cephalopoda: Oegopsida). Bull. Nat. Sc. Mus.Tokyo, Ser. A (Zoology), 9: 161-168.

Oliver,P.G.,1985.A comparative study of two species of Striarcinae from Hong Kong with comments on specific and generic systematics. In: Morton, B,Dudgeon,D., eds. *Proceedings of the Second International Workshop on the Malacofauna of Hong Kong and Southern China.*Hong KongHong Kong University Press :283–310

- Oliver P.G. ,1992.** *Bivalved seashells of the Red Sea.* Wiesbaden: Christa Hemmen. 330 pp
- Oliver A P H , and J. Nicholls,2004.** Guide to seashells of the world. Firefly Books, NY. 320 p.
- Oliver,G.and E.Glover,1996.**Paphia (Protapes) (Bivalvia: Veneroidea) in the Arabian Sea, with the description of a new species. *Jour. of Conchology* 35: 389-405.
- Olivier, P. G. and L. Levin, 2006.** A new species of family Thyasiridae (Mollusca: Bivalvia) from the oxygen minimum zone of Pakistani margin. *Jour. Mar. biol. Ass. UK.* 86:411-416
- Oliver, A. P. H., 2004.** Philip's Guide to seashells of the world.pp 320
- Parveen, T. 1975.** Taxonomy of cephalopods of Pakistan coast.(M.Sc Thesis, unpublished)
- PARC PROJECT Final Report, 1985.** Mangrove fauna (Invertebrate) of Karachi (Sindh Coast). Pakistan Agricultural Research Council.
- PARC PROJECT Final Report, 1986.** Survey of fish and shellfish of Baluchistan coast. Pakistan Agricultural Research Council.
- Peile, A. J., 1929.** PUPOIDES KARACHIENSIS, SP.NOV. *Jour. of Molluscan Studies* (Oxford University Press) 18 (4): 139-140.
- Piatkowski, U.,and W. Welsch, 1991.** On the distribution of pelagic cephalopods in the Arabian Sea. *Bull. Mar. Sc.* 49: 186-198.
- Pilsbry, H. A.,and W.H.Dall, 1895.** Catalogue of the marine mollusks of Japan, with descriptions of new species and notes on others collected by Frederick Stearns (1895) *Science*, 2, 51: 855-856.
- Pilsbry, H.. A and Johnson, C. W., 1903.** The Nautilus 7
- Pola, M., W.B. Rudman and T.M. Gosliner, 2009.** Systematics and preliminary phylogeny of Bornellidae (Mollusca: Nudibranchia:Dendronotina) based on

morphological characters with description of four new species. *Zootaxa* 1975: 1-57.

Ponder, W.F. and E.H. Vokes, 1988. A Revision of the Indo-West Pacific Fossil and Recent Species of *Murex* s.s. and *Haustellum* (Mollusca: Gastropoda: Muricidae) Records of the Australian Museum (1988) Supplement 8:1-160

Powell, A. W. B., 1964. THE FAMILY TURRIDAE IN THE INDO-PACIFIC. Part 1. The subfamily Turrinae . INDO-PACIFIC MOLLUSCA, vol. 1, no. 5

PSF Final Technical Report, 1977. Marine Molluscs of Pakistan Pakistan Science Foundation Project SU- Bio (52). Nasima M. Tirmizi, Principal Investigator

Ramirez-llodra, and E. C. Olabarria, 2005. Aspects of the distribution, population structure and reproduction of the gastropod *Tibia delicatula* (Nevill, 1881) inhabiting the oxygen minimum zone of the Oman and Pakistan continental margins. *Jour. Sea Res.* 54:299-306.

Rahman, S. and S. Barakati, 2004. Development of Abundance- Biomass Curves indicating pollution and disturbance in Molluscan communities on four beaches near Karachi, Pakistan. *Pakistan J. Zool.*, 36 (2) :111-123.

Rahman, S. and S. Barkati, 2011. Species Composition and Abundance of Molluscs along Karachi Shores. 152 pages VDM Verlag Dr. Müller

Rahman, S. and S. Barkati, 2012. Spatial and temporal variations in the species composition and abundance of benthic molluscs along 4 rocky shores of Karachi. *Turk J Zool.* ; 36(3): 291-306

Rai, H. S. 1932. The shell-fisheries of the Bombay Presidency. *J. Bombay nat. Hist. Soc.*, 35: 826-847

Rajagopal, A.S. and H.P., Mookherjee, 1978. Contribution to the molluscan fauna of India Part I. Marine molluscs of the Coromandel Coast, Palk Bay and Gulf of Mannar- Gastropoda: Archeogastropoda. *Rec. Zool. Surv. India Misc. Pub. Occas. pap.* 12:1-48

- Rajagopal, A.S and H.P., Mookherjee, 1982.** Contribution to the molluscan fauna of India Part 11. Marine mollusk of the Coromandel coast, Palk Bay and Gulf of Mannar-Gastropoda: Mesogastropoda (partim) Record of the Zoological Survey of India Misc. Pub. Occas. pap. 28: 1-53
- Ranjha, A. R., 1960.** Edible molluscs of Pakistan, Proc. 4th Pan Indian Ocean Cong. Sector B.: 167-171
- Rao, N.V. and Dey A., 1991.** Composition and distribution of marine molluscs of Andaman and Nicobar Islands. Jour. Andaman Sc. Assoc. 4,: 61-66.
- Rao, K.V.S. and Subba Rao, N.V., 1991.** Fauna of Lakshadweep, Mollusca: State Fauna ser., 2: 273-362
- Rao, N.V.S. and Rao, K.V.S., 1993.** Contributions to the knowledge of Indian Marine Molluscs 3. Family: Muricidae. Rec. Zool. Surv. India, Occasional Paper, no. 15(14): 1-233
- Ray, H.C., 1948,** on a collection of Mollusca from the Coromandel coast of India, Records of the Indian Museum 46: 87-122.
- Ray, H.C. 1951.** On some deep-sea molluscs from the Indian Ocean, with descriptions of three new species. Rec. the Indian Mus. 49: 37-43.
- Ray, H. C., 1968.** Small marine shells obtained off Puri, India. Indian Mus. Bull. 3 (1 and 2) : 14-32
- Ray, H. C. 1977.** Contribution to the knowledge of molluscan fauna of Maungmagan, Lower Burma. Indian Museum Publication, Burma, 150 pp.
- Reeve, L. A., 1849.** *Monograph of the genus Conus. Conchologia Iconica, I: figures and descriptions of the shell of molluscs; with remarks on their affinities, synonymy, and geographical distribution, 1. Conus.* Suppl.
- Reeve, L.A. 1850.** Monograph of the genus *Oliva*. pp. pls 1-30 in Reeve, L.A. *Conchologia Iconica*. London: L. Reeve and Co. Vol. 6

- van Regteren, Altena. C.O. and Gittenberger E. 1981.**The genus *Babylonia* (Prosobranchia: Buccinidae). Zool. Verhan. 188: 1-57
- Reid, D.G., 1986.** The Littorinid Molluscs of Mangrove Forests in the Indo-Pacific Region: the genus *Littoraria* (Mollusca: Gastropoda: Littorinidae) . British Museum (Natural History), London. xv 1-250
- Reid, D. G., 1989,** Systematic Revision of the Recent Species of *Peasiella* Nevill, 1885 (Gastropoda: Littorinidae), with Notes on the Fossil Species. THE NAUTILUS 103 (2):43-69
- Reid, D.G. ,2007.** The genus *Echinolittorina* Habe, 1956 (Gastropoda: Littorinidae) in the Indo-West Pacific Ocean. *Zootaxa* 1420: 1-161
- Robson, G.C., 1929.** LXXIII. Notes on the Cephalopoda. VIII. The genera and subgenera of Octopodinae and Bathypolypodinae, *Annals and Magazine of Natural History*. (Series 10) 3(18): 607-608.
- Roper, C. F. E. and P. Jereb. 2010.** P. 148-178. In: **Jereb. P; Roper, C.F.E** (eds). Cephalopoda of the world. An annotated and illustrated catalogue of cephalopod species known to date. Vol. 2. Myopsid and Oegopsid Squids. FAO Species Catalogue for Fishery Purposes. No. 4, Vol.2. Rome, FAO
- Roper, C.F.E., M.J. Sweeney and C. E. Nauen, 1984.** FAO Species Catalogue Vol.3. Cephalopods of the world. An annotated illustrated catalogue of species of interest to fisheries. FAO Fish. Syn. No.125. 277 pp.
- Rosenberg, G., 2014.** A new critical estimate of named species-level diversity of the recent Mollusca Amer. Malac. Bull. 32(2): 308–322
- Rosewater, J.1973.** THE FAMILY LITTORINIDAE IN THE INDO-PACIFIC .Part I. The Subfamily Littorininae
- Saba, A. and Moazzam, M., 2012.** Systematic position of *Conradia eutornisca* (Mollusca: Gastropoda) a rare species described from Karachi, Pakistan. 32nd Pakistan Congress

of Zoology (International Congress), FEWFM-22: 253 (Abstract).

Sakthivel, M. 1972. Studies on Euthecosomata of the Indian Ocean, Ph.D. Thesis, Cochin University, India, 1972.

Samaie, A .,1997 Thesis. A-L, 1-221. Iran. [in Arabic].

Scarabino V. 2008. New species and new records of scaphopods from New Caledonia, in HÉROS V., COWIE R. H. & BOUCHET P. (eds), Tropical Deep-Sea Benthos 25. Mémoires du Muséum national d'Histoire naturelle 196: 215-268

SEADEC Newsletter2000, 23(4)

Shah, B., M.A.Karim and R.Meerani, 2003. Commercially important Sea Shells of Pakistan. Specially found at Sindh Coast. Directorate of Fisheries) Research and Development) Government of Sindh. Pp 10

Siddiqui, G. and M. Ahmed. 2002. Oyster species of the sub-tropical coast of Pakistan (northern Arabian Sea). Indian J. Mar. Sci., 31(2): 108-118.

Siddiqui,G. and S. Aslam,2017.A first record of mussel, *Septifer excises* (Wiegmann, 1837) (*Bivalvia: Mytilidae*) from Pakistan, Northern Arabian Sea. International Jour. of Advanced Scientific and Technical Research . 7 volume

Sowerby, G. B., 1895a. New species of shells from Kurachi and Mekran Coast collected by Mr. F. W. Townsend. Proc. Mal. Soc. London 1:278-280, pl 18.

Sowerby, G. B., III. ,1895b. *Descriptions of nine new species of shells.* Proc. Malacological Soc. London 1(5):214-217, pl. 13.

Sowerby, G.B.(3rd), 1914. Descriptions of new mollusca from New Caledonia, Japan, Philippines, China and West Africa.. *Ann. Mag. Nat. Hist.*8, 14:475-480

Spoel, Vander S., J. Bleeker and H. Kobayasi, 1993. From *Cavolinia longirostris* to twenty four *Diacavolinia* taxa, with a phylogenetic discussion (Mollusca, Gastropoda). *Bijd. Dierk.* 62(3):127-166

Steiner G. and Kabat A. R. 2004. Catalog of species group names of Recent and Fossil Scaphopoda (Mollusca). *Zoosystema* 26(4):549-726

Stubbings, H. G., 1938. Pteropoda. The John Murray Exped. 1933-34. Sc. Rep. V. Zoo. : 15-33

Sultana, R. and K. Jamil, 2013. New record of *Pinna fragilis* from Pakistan coast. *Marine Biodiversity Records*, 6, E48.

Sweeney, M.J., and C.F.E. Roper, 1998. Classification, Type localities, and Type Repositories of Recent Cephalopoda. Systematics and Biogeography of Cephalopods. Vol. 2 (Eds: N.A. Voss, M. Vecchione, R.B. Toll and M.J. Sweeney). *Smith. Cont. Zool.* (586): 561-595.

Swennen R.G. Moolenbeek N. Ruttanadukul H. Hobbelink H. Dekker S. Hajisamae, 2001. The Molluscs of the southern Gulf of Thailand; Number ... Publisher: Bangkok, Thailand: Biodiversity Research and Training Program ... 947 7360 61 6; Serie: Thai Studies in Biodiversity; Volume | Edition (Serie): 4 .

Tchang S. ,1934. Contribution a l'etude des opisthobranches de la cote de Tsingtao. *Contrib Inst Zool Natl Acad Peiping* 2(2):1-148

Tirmizi, N.M. 1985. Report on project Molluscan fauna of Mangroves of Karachi coast. Pakistan Agriculture Research Council, Islamabad. unpublished

Tirmizi, N.M. and S. Barkati. 1985. Molluscan fauna of Mangroves of Karachi coast. Mangroves of Pakistan, Proc. National Workshop on Mangroves, Karachi, Pakistan Agriculture Research Council, Islamabad: 40-44.

Tirmizi, N.M and Q. B. Kazmi. 1994. Association. MRC Newsletter 3(1):3.

Tirmizi, N.M and Q. B. Kazmi. 1995. *Sinum haliotodeum* (Linnaeus, 1758), a gastropod mollusc new to the marine

waters of Pakistan (northern Arabian Sea). Pak. J. Mar. Sci. 4(1):67-69

Tirmizi, N. M. and I. Zehra, 1982. Illustrated key to families of Pakistani marine molluscs. Pakisran Science Foundation, Islamabad pp 46

Tirmizi, N. M. and I. Zehra, 1983. Study of the eggs of six common prosobranchs of the Pakistani coast. Pakistan jour. Zool. 15: 39-43

Tirmizi, N. M. and I. Zehra, 1984. Marine Fauna of Pakistan: 2 Mollusca: Gastropoda. University Grant Commission, Islamabad. Pp. 105.

Tirmizi, N. M. and I. Zehra, 1988. Reproductive biology and larval development of *Dendrodoris rubra* Reproductive biology and larval development of *Dendrodoris rubra* (Kelaart) var. *nigromaculata* (Eliot) (Mollusca: Opisthobranchia) from the northern Arabian Sea, Pakistan

Trew, A., 1987. The Melville-Tomlin Collection. Parts.50, 51,52,53,54. Buccinacea (Pyrenidae, Buccinidae, Galeodidae, Nassariidae and Fasciolaridae). National Museum of Wales

Turner, R.1986. The biology of molluscan hard-substrate borers. International Conference on Marine Sciences of the Arabian Sea. March 28 - April 2, 1986, Karachi, Pakistan, Abstracts p. 3

Tryon, G. W. 1884. Conidae and Pleurotomidae. Man. Conch. Philadelphia: Tryon. 6: 151-413

Tryon, G. W. 1909–1910. Volume 20. *Caecilioides*, *Clessula* and Partulidae. Index to vols. XVI. – XX. Continued by H. A. Pilsbry.

Ullah, Z., Zehra, I., and Gondal, M. A.,2015. Species Diversity, Distribution and Seasonal Abundance in Mangrove Associated Molluscs along the Karachi Coast, Pakistan, *Journal of Bioresource Management*, 2(3): 9-22

Vidal J. 1999. Taxonomic review of the elongated cockles: genera *Trachycardium*, *Vasticardium*

and *Acrosterigma*(Mollusca, Cardiidae). *Zoosystema* 21 (2) : 259-335

Voskuil, R.P.A.,and W.J.H. Onverwagt, 1991, 1991 .Studies on Cardiidae. 3. The recent species of *Maoricardium* Marwick, 1944 (Mollusca, Bivalvia), with description of a new species BASTERIA, 55: 25-33.

Voss, N. A.; Sweeney, M. J.1998. Systematics and Biogeography of Cephalopods. Volume I. Smithsonian Contributions to Zoology, 586:1-276

Vredenburg,E. ,1925.Description of Mollusca from the Post-Eocene Tertiary Formation of North-Western India: Cephalopoda, Opisthobranchiata, Siphonostomata. Mem. Geol. Surv. India, L, (1).

White, K. M., 1946. On three new species of Pleurobranchidae from Karachi. Proc. Mal. Soc. London 27: 52-56

Winckworth, R. 1930a. Description of a new chiton from Karachi. Proc. Mal. Soc. London XIX: 80.

Winckworth, R. 1930b .A LARGE *PECTEN* FROM KARACHI, 1948.Jour. *Mollus. St.*, 27, 5: 185

Yamanaka, H. 1976. Summary Report on cruise of R. V. *SOHYO MARU* in the Northern Arabian Sea, Oct. 1975-Feb. 1976. Par Seas Fisheries Research Laboratory, Japan Fisheries Agency pp. 1-9 with 30 figs. 7 tables, 6 plates and 2 appendice

Zafar, F. H. S., Z. Ayub, S. Begum, G. Siddiqui and D. Roberts, 2015.Limpets of the genus *Cellana* (Patellogastropoda) from Pakistan, North Arabian Sea: species identification based on DNasequencing, Mitochondrial DNA: The Jour. of DNA Mapping, Sequencing, and Analysis

Zehra, I. 1976. Species of genus *Dentalium* (Scaphopoda; Molluscs) from Pakistan coast (Northern Arabian Sea).Proc. Pakistan Acad. Sci., 13(1):35-47

Zehra, I., 1981.Systematic study of some marine molluscs of NorthernArabian Sea (Pkistan coast) unpublished thesis

Zehra, I. 1995. Mating Behavior, Spawning, Morphology of the Egg Ribbon, and Development of *Dendrodoris rubra* (Kelaart). in: M.-F. Thompson & N.M. Tirmizi (Eds.). The Arabian Sea: Living Marine Resources and the Environment. Pakistan-United States Conference, Karachi, Pakistan, June 1993, xv+732p. Brookfield, VT, ISBN 90-5410-256-X. [p. 167-175

Zehra, I., 2001. Some Pinnids (Mollusca: Bivalvia) of Pakistan (Karachi Coast). Pak. Jour. Mar. Sci. 10 (1):65-71

Zehra, I. and R. Perveen. 1991a. Studies on the breeding season, egg capsule and early larval development of *Theliostyla albicilla* (Linne, 1758) from Karachi coast. *Pakistan Jour. Zoo.* 23:35-38.

Zehra, I and R. Perveen. 1991b. Egg capsule structure and larval development of *Conus biliosus* (Roding, 1798) and *C. coronatus* Gmelin, 1791, from Pakistan. *Jour. Moll. Stud.* , 57, 239-248

Zehra, I. and R. Perveen. 1992. Observations on the mating behavior, spawn mass and larval development of *Hydatina physis* Linné, 1758 (Cephalaspidea: Hydatinidae) from Karachi. *Pakistan J Mar Sci* 1(2): 127-33

Zehra, I and S. Shamim, 2004. Distribution patterns of the inter-tidal Pulmonate *Onchidium verruculatum* (Cuvier, 1830) on a rocky shore of Karachi, Pakistan. *Pakistan Jour. Ma.Sc.* 13(1-2): 63-73

Zehra, I., Shaukat, S.S. and Saeed, H., 1995. Diversity of algal associated communities from the northern Arabian Sea. In: The Arabian Sea. Living marine resources and the environment (eds. M.F. Thompson and N.M. Tirmizi), pp. 87-98. Vanguard Books (Pvt) Ltd.

Addendum

Nerita dombeyi **Récluz, 1841** 12mm.

Distribution: In intertidal zone, Indonesia

Reported from Pakistan by Aijazuddin and Barkati, 2013

ABOUT THE COMPILER AND CONTRIBUTORS



Prof. Dr. Quddusi B. Kazmi began her career as Research Assistant at the Zoology Department, University of Karachi. After working for 41 years, she retired from the same institution as the Director, Marine Reference Collection and Resource Centre and Professor of Zoology. After her retirement she was selected as Eminent Educationist and research scholar, Higher Education Commission of Pakistan (HEC). Her areas of concentration are marine faunal diversity, its conservation. Her new intrests are anthropogenic changes of macro-benthic ecology in coastal waters, and invasive species. Her main interests are marine, terrestrial and freshwater crustaceans, molluscs, echinoderms, nemerteans, flat worms, tunicates, echuirids are also included in her studies. Dr. Kazmi has received 2 gold medals and Life Time Achievement Award from scientific organizations, a Best Paper Award, a Star Woman of the Year Award, two travel grant awards to work at the British Museum and two consecutive Productivity Awards of Ministry of Science and Technology, Pakistan. Dr. Kazmi has written 12 books, 4 monographs including one published by the HEC and more than 165 research papers published in local and international journals; co-edited 3 proceedings of conferences Urdu and English NEWSLETTER and edited a biannual Journal " The Pakistan Journal of Marine Sciences" of the Centre and written around 70 popular articles.



Mohammad Moazzam Khan is one of the leading fisheries scientists of the country. Mr. Moazzam has been associated with fisheries research and administration since 1973. Since 1998 till his retirement in 2011 he worked as Director General, Marine Fisheries Department. During his tenure, as Director General, Marine Fisheries Department acclaimed national and international recognition. The Department enabled to achieve status of a harmonized country by European Commission as well as by US Department of State for complying TED regulations during his tenure. He also served as Chief Executive Officer of Fisheries Development Board in 2009-2010 and also served as Director, Animal Quarantine Department during 2009. Mr. Moazzam Khan has published more than 170 scientific papers in national and international journals. Presently he is working as Technical Advisor (Marine Fisheries) in WWF-Pakistan. He is leading a team of scientists and fisheries managers working on bycatch of commercial fishing operations especially sharks, rays and cetaceans.



Dr. Razia Sultana, had worked as Chief Scientific Officer and Head of the Food and Marin Resources Section (FMRRRC) at PCSIR Laboratories Complex, Karachi. She has a research experienc of almost 32 years in the field of Fisheries and Aquaculture.

She has 46 research publications to her credit in national and international journals of repute, one book and one book chapter published by Springer.