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FOREWORD

As is well-known the Zoological Survey Department started from scratch in 1948, and was directed to perform its responsibilities in compiling the information of the zoogeography of Pakistan and its territorial waters. The activities were mostly confined to the collection of the marine fauna with its data from typical localities in East and West Pakistan and the off-shore collections of the Arabian Sea and the Bay of Bengal. These collections could not be identified due to the scarcity of research officers and staff. Keeping this difficulty in view the Zoological Survey Department in 1955 started a project namely, the Marine Biological Research Laboratory which was completed in 1960 for the research on the Bio-ecology of the marine fauna from the Arabian Sea and the Bay of Bengal. The officers and staff were recruited to do research work on the marine fauna of East and West Pakistan.

It was, therefore, considered necessary to record the fauna collected from the shores of the Arabian Sea and the Bay of Bengal during various faunistic survey tours. The officers and staff of Zoological Survey Department and its Marine Biological Research Laboratory were therefore encouraged to prepare the Check List of the Fauna inhabiting different zones of the shores of the two Wings of Pakistan.

Most of the work on the Pelecypods and Gastropods was conducted separately under the Agricultural Research Council project and published in the "Records of Zoological Survey of Pakistan" as well as in the "Agriculture Pakistan". Rest of the collections of the Marine fauna have been worked out by the various officers and research staff of the Marine Biological Research Laboratory and the Department. The results of the above research work were compiled by the Marine Zoologist (Mr. S. M. Sayed) for publication in this Volume.

M. S. U. SIDDIQI,
Director.

INTRODUCTION

The Director desired that "Check List of Marine Fauna of Pakistan" may be prepared and the undersigned took over this onerous responsibility firstly in guiding the workers wherever needed in the identification of specimens and secondly in the compilation of this Check List. It is to be noted that the Marine animals included in this list are specifically identified, serialised, properly catalogued and are placed in the research collection Museum of the Marine Biological Research Laboratory of Zoological Survey Department, Korangi Creek, Karachi, for ready reference and comparison. Further the species are listed under different heads of their habitats. This has been done keeping in view the current international taxonomic trend which does not approve mere listing the species without any ecological data. For the first time in Pakistan attempt has been made by the research workers of Marine Biological Research Laboratory Section and the Zoological Survey Section of the Zoological Survey Department to bring home the information about the Marine fauna of the country to Zoologists of Pakistan in particular and of foreign countries in general.

At present 332 species of different Marine Phylla are included in this list. The research workers are busy getting up to date information on other Marine Forms along with their other assignments of Biological, Bio-ecological, Behavioral and Biochemical experiments. It is intended to publish such lists one after another with all the species placed in the Research Reserve Collection Museum of Zoological Survey Department. In this way very soon the Department will be able to let the Marine Biologist know the number of various species of different marine groups present in our sea waters which is, of course, the fundamental need for all research workers.

The task ahead, no doubt, involves great dedication and further efforts will be made for extensive surveys of our coast to add to the knowledge of the Fauna.

COAST LINE OF WEST PAKISTAN

There is a coastal line of about 550 miles in West Pakistan. It is divided into two regions. First starting from the Iranian border to near Karachi. It has large bays with two back waters, Kalmat Khor, near Pasni and Sonmiani Hor, 55 miles West of Karachi. The continental shelf is narrow, about 25 miles off the coast, after which there is steep decline. The sea bed is mostly silted with patches of sand here and there. It is rocky at many places, specially near Pasni and Churna Island with corals near Jivani and Gawadur.

Second the South East Coast starting from Karachi Harbour to the border of India. It is formed of a net work of creeks and delta of the Indus river. The continental shelf is quite broad sloping gradually to about 60 miles off the coast, with a "Swatch of no ground" opposite the mouth of River Indus. The sea bed is mostly silted with patches of sand.

COAST LINE OF EAST PAKISTAN

The coast line of East Pakistan is about 200 miles long. The slope is very gradual. Forty miles south of the mouth of Pussur river there is a "Swatch of no ground". Ganges, Brahmaputra deltaic region is very wide. Fourteen miles off Chittagong river Karnafulli falls into the sea.

The coast line extending from Chittagong to Cox's Bazar is full of extensive creeks.

Surveys of East Coast carried out not so frequently due to lack of facilities in that region. The points from where the Marine fauna and data collected are Cox's Bazar, Sandwip (Island off Cox's Bazar) Maiskhal (Island off Cox's Bazar), Kutubdia and Taknaf (South to Cox's Bazar).

The foregoing description gives an overall picture of our coast line. All along the coast line different types of shores have been spotted out. Universally the shores are categorised into three major forms, namely Muddy; Sandy and Rocky shores. This categorisation is based upon their different Ecological and Topographical conditions and as the species of the present list are placed under the heads of different shores it becomes essential to give brief ecological and topographical accounts of our different types of main shores from where the specimens are collected.

Salient Features of Muddy Shore

The fragments of soft rocks divide into more finer particles to form muddy shore. It is very difficult for organism to move on such shores because of their meshy nature. The greatest limiting factor, the low O_2 content, exists on the shore. This is caused by accumulation of organic matter and its decomposition. Only highly specialized forms of life can exist in such conditions. A layer of H_2S is found just below the surface in result of the chemical action of Bacteria, ultimately, stopping the O_2 supply of the underlying animals. Due to the absence of stones and rocks there are no attached forms, only burrowing animals are found. The fauna is specially adapted to low O_2 concentration and high concentration of H_2S e.g. Baba and Bhit Islands of West Pakistan and Cox's Bazar, Sandwip and Maiskhal of East Pakistan.

Topography of Baba Island

It is a small island at a distance of two or three miles away from Keamari. This beach is muddy and some where it is covered with mangrooves which is the characteristic feature of muddy shore. The shore is smooth and protected from all sides, for which there is no strong wave action. The slope is gradual towards the sea side and on the high tidal level the shore is flat and gradual. The animals are found embedded partially in the mud within the burrows which they form themselves. Among the Coelentrates, Sea anemones are abundant and are found partially embedded in the burrows. When they are disturbed they withdraw themselves in the burrows. Lingula is the characteristic of muddy shore. Neries and tube worms are also found abundantly in the mud. Chaetopterus does also occur on this type of shore in the self-formed tubes, but it has not yet been recorded from our shores. Uca is abundantly found on this shore.

Salient Features of Sandy Shore

They are composed of fine fragments of hard rocks. If fragments are soft they further divide into more finer particles to form muddy shore. The water is retained within the sand grains by way of capillary actions and fauna in the grain particles is called "Interstitial Fauna".

In sandy beach the animals live under the surface at certain depth where the conditions of temperature and salinity are more or less constant. The principal types of sandy shores, are :—

1. Exposed open beach.
2. Protected lagoon or beach.
3. Eelgrass communities.

The sandy substratum is chiefly home of burrowing forms. Among these are sand crabs, amphipods, isopods and many micro-organisms. The fauna is obtained by digging and sieve tube methods where the tide is low. The sandy shore is not a stable medium so fauna is more restricted on rocky shore, e.g., Gaddani, Sonmiani and Makran Coast, Baluchistan.

Topography of Gaddani Beach

It is located at about 35 miles west of Karachi. The beach is sandy but on the left side we find big boulders of sandy origin and of hard granite. The shore is in the form of a long stretch and it is not so steep. Almost at the point by spring tide, it is followed by a second line which is due to usual high tide. Along the drift line are lying empty shells bivalves and broken pieces of crabs. The fauna of this shore is very poor due to unfavourable conditions.

Salient Features of Rocky Shore

Rocky shores disclose a variety of marine life, because of excellent foot hold, they provide for attachment and greater degree of protection afforded by their inhabitants. The rock may be hard or soft, sedimentary or igneous and compact or loose. Such shores are commonly subjected to strong wave action, radiation, dessication, temperature and salinity fluctuations. The upper part of the beach is covered during high tide and it becomes fully covered during spring tide. The rocky pools provide a home for a variety of attached plants and animals and many free living animals. The micro-organisms are easily collected when weeds are removed. When the boulders are turned, a large number of varieties can be observed such as sponges, annelids, crabs, echinoderms and attached molluscs. Some crustaceous like Pholas have specially adopted for boring in the rocks. The examples of rocky shores are Manora Island, Paradise Point, Cape Monze and Bhulleji.

At Taknaf two types of shores exhibited, i.e., Rocky and Rocky-cum-Sandy and seemed to be the home of Coelentrates Corals.

Topography of Manora Island

Manora is a small island, 1-1/2 miles away from Keamari. The beach is sandy cum-rocky. The rocky portion of the beach has rich fauna and flora. The splash zone is sandy which steeply down into the rocky portion of the shore. The rocks are turnable and provide shelter for different kinds of animals. The animals are modified due to the strong wave action e.g. which cling to the rock have flattened bodies. These rocks are brownish and thickly populated with brown and green algae. The most commonly occurring specimens are sponges, sertularia, sea anemone, Eurythoe, tube worms, xanthids, portunids, spider crabs, Anomuran, Chiton, Cellana, Conus, Onchidium, Mytilus, Brittle Star, Starfish, Sea Urchin, Sea Cucumber and small fishes. Physalia are Pelagic forms but due to wave action they are thrown on the shore. The shore is very rich as far as the animal population is concerned, representatives of more or less all the Phyla are in abundance. Crustaceans are the dominating while annelids come second.

The abundant animal population is the result of high oxygen O_2 contents and rich supply of nutrients. This shows how efficient is the food chain in an ecosystem of the shore.

ACKNOWLEDGEMENT

My thanks are mainly due to Mr. M. S. U. Siddiqi, Director, Zoological Survey Department, and Marine Biological Research Laboratory who emphasised the need of preparing and compiling the Checklist of Marine fauna and gave all kinds of assistance and encouragements in its preparation. The zeal and keen interest of research and other technical staff of Marine Biological Research Laboratory and Zoological Survey Department are commendable whose contributions are embodied in the present Check List.

S. M. SAYED,
Marine Zoologist.

MARINE FAUNA OF SANDY SHORE OF PAKISTAN

S. No.	Catalogue No.	Name	Locality	Remarks
I. COELENTERATA				
ACTINOZOA				
Aleyeniidae				
1.	CO—4	<i>Cavernularia obesa</i> (Dead Man's finger)	Salt Factory Area, Korangi Creek, Karachi.	
Renillidae				
2.	CO—5	<i>Renilla reniformis</i> (Pallas)	Cox's Bazar Coast, East Pakistan. Korangi Creek, Karachi.	
Virgularidae				
3.	CO—6	<i>Scytalium tentaculatum</i> (Koll) (Sea-pen)	Keamari Coast, Karachi.	
Sagartidae				
4.	CO—8	<i>Sagartia modesta</i> Verrill (Sea-anemone)	Baba Island, Karachi.	
II. ANNELIDA				
POLYCHAETA				
Amphinomidae				
5.	AN—1	<i>Eurythoe matthaii</i> Bindra	Native Jetty, Karachi.	
6.	AN—2	<i>Eurythoe karachiensis</i>	Manora, Karachi.	
7.	AN—3	<i>Eurythoe complanata</i> (Pallas)	Manora, Karachi.	
8.	AN—4	<i>Eurythoe indica</i>	Manora, Karachi.	
Hesionidae				
9.	AN—10	<i>Hesione pantherina</i> Risso	Bulegi Coast, Karachi.	

MARINE FAUNA OF SANDY SHORE OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
III. ARTHROPODA CRUSTACEA				
DECAPODA				
BRACHYURA				
Calappidae (Sand Crabs)				
10.	AR—18	<i>Calappa lophos</i> (Herbst) (Box crab, Shame-face Crab)	Gaddani.	
11.	AR—19	<i>Matuta lunaris</i> (Forsk.) (Sand crab)	Gaddani.	
12.	AR—20	<i>Matuta planipes</i> Fabricius (Sand crab)	Gaddani.	
Ocypodidae (Sand crabs, running crabs)				
13.	AR—49	<i>Ocypoda ceratophthalma</i> (Pallas) (Ghost crab)	Cape Monze, Light House, Karachi.	
14.	AR—50	<i>Ocypoda rotundata</i> Miers (Ghost crab)	Cape Monze, Light House, Karachi.	
STOMATOPODA (Mantis shrimps)				
Lysiosquillidae				
15.	AR—57	<i>Lysiosquilla tredecimdentata</i> (Holthuis) 1941	Agpata, near Bulegi, Karachi (Dredged out).	
16.	AR—58	<i>Acanthosquilla acanthocarpus</i> (Claus, 1781)	Off Korangi Creek, Karachi (Dredged out).	
Gonodactylidae				
17.	AR—59	<i>Gonodactylus chiragra</i> (Fabricius) 1781	Ormara, Mekran Coast (Dredged out).	
Squillidae				
18.	AR—60	<i>Harpisquilla raphidea</i> (Fabricius) 1798	Off Korangi Creek, Karachi (Dredged out).	
19.	AR—61	<i>Cloridopsis scorpio</i> (Latreille, 1825)	Karachi Coast. (Brought from fish harbour).	

MARINE FAUNA OF SANDY SHORE OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
20.	AR—62	<i>Oratosquilla nepa</i> (Latreille, 1825)	Off Korangi Creek, Karachi. (Dredged out).	
21.	AR—63	<i>Oratosquilla interrupta</i> (Kemp, 1914)	Off Korangi Creek, Karachi (Dredged out).	
22.	AR—64	<i>Oratosquilla h sp ria</i> (Mannings, 1968)	Off Korangi Creek, Karachi. (Dredged out).	
IV. MOLLUSCA				
Gastropoda				
PROSOBRANCHIA				
ARCHAEOGASTROPODA				
ZEUGOBRANCHIA				
Fissurellidae (Pitted key-hole limpets)				
23.	MS—4	<i>Diodora funiculata</i> (Reeve)	Akab Korangi Creek, Karachi.	
24.	MS—5	<i>Diodora ticaonica</i> (Reeve)	Akab Korangi Creek, Karachi.	
TROCHACEA				
Trochidae (Top-shells)				
25.	MS—7	<i>Euchellus asper</i> (Gmelin)	Bulegi Coast, Karachi.	
26.	MS—8	<i>Trochus stellatus</i> (Gmelin)	Native Jetty, Karachi.	
27.	MS—9	<i>Trochus niloticus</i> (Lamarck)	Manora Coast, Karachi.	
28.	MS—10	<i>Stomatella sulcifera</i> (Lamarck)	Manora Coast, Karachi.	
Turbinidae (Turbine Shells)				
29.	MS—11	<i>Turbo intercostalis</i> (Menke)	Astola Island (Arabian Sea).	
NERITACEA				
Neritidae (Neritis)				
30.	MS—13	<i>Nerita albicila</i> (Linne)	Light House, Karachi.	
31.	MS—14	<i>Nerita lineata</i>	Light House, Karachi.	
32.	MS—15	<i>Nerita plexa</i> (Lamarck)	Manora Island, Karachi.	

MARINE FAUNA OF SANDY SHORE OF PAKISTAN—contd.

S. No.	Catalogue No.	Name	Locality	Remarks
CERITHIACEA				
Turritellidae				
33.	MS—16	<i>Turritella duplicata</i> (Linne)	Badar Mokam (East Pakistan).	
34.	MS—17	<i>Turritella trisulcata</i>	Bulegi Coast, Karachi.	
35.	MS—18	<i>Turritella terebra</i>	Sonadia Island, East Pakistan.	
PTENOGLOSSA				
Janthinidae				
36.	MS—23	<i>Janthina janthina</i>	Pittiani Creek, Karachi.	
37.	MS—24	<i>Janthina globosa</i> (Swainson)	Pittiani Creek, Karachi.	
NATICACEA				
Naticidae				
38.	MS—27	<i>Natica tigrina</i> (Roding)	Keamari Coast, Karachi.	
39.	MS—28	<i>Natica lineata</i> (Roding)	Light House, Karachi.	
40.	MS—29	<i>Natica didyma</i> (Roding)	Baba Island, Karachi.	
41.	MS—30	<i>Polynices mamilla</i> (Linne) (Bull's Eyes)	Korangi Creek, Karachi.	
CYPRAEACEA				
Cypraeidae (Cowry Shells)				
42.	MS—35	<i>Cypraea caputserpentis</i> (Linne)	Purchased from Clifton, Karachi.	
43.	MS—36	<i>Cypraea moneta</i> (Linne)	Purchased from Clifton, Karachi.	
44.	MS—37	<i>Erronea listeri</i> (Gray)	Astola Island (Arabian Sea).	
45.	MS—38	<i>Callytocypraea aurantiana</i>	Astola Island (Arabian Sea).	
46.	MS—39	<i>Zonaria (Zonaria) zonaria</i> (Gmelin)	Manora Island, Karachi.	
Tonnidae (Tun shells)				
47.	MS—43	<i>Tonna dolium</i> (Linne).	Korangi Creek, Karachi.	
Ficus (Fig shells)				
48.	MS—44	<i>Ficus ficus</i>	Pasni, West Pakistan.	

MARINE FAUNA OF SANDY SHORE OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
MURICACEA				
Buccinidae				
49.	MS—55	<i>Babylonia spirata</i> (Linne)	Gwader, West Pakistan.	
50.	MS—56	<i>Hemifusus pugilinus</i> (Born)	Korangi Creek, Karachi.	
Nassidae				
51.	MS—57	<i>Nassa thesites</i> (Bruguiere)	Ormara Coast (Arabian Sea).	
52.	MS—58	<i>Bullia (Pseudostrombus) strenaria</i> (Melville)	Ormara Coast (Arabian Sea).	
53.	MS—59	<i>Bullia karachiensis</i>	Pasni, West Pakistan.	
Fasciariidae				
54.	MS—60	<i>Fasciolaria filamentosa</i> (Lamark)	St. Martins Island, East Pakistan.	
VOLUTACEA				
Olividae (Olive Shells)				
55.	MS—61	<i>Oliva oliva</i> (Linne)	Manora Island, Karachi.	
56.	MS—62	<i>Oliva gibbosa</i> (Born)	Manora Island, Karachi.	
57.	MS—63	<i>Oliva nebulosa</i> (Lamark)	Native Jetty, Karachi.	
Harpidae (Harp Shells)				
58.	MS—64	<i>Harpa conoidalia</i> (Lamark)	St. Martin's Island, East Pakistan.	
PLEUROCOCCLA BULLOMORPHA				
Hydatinidae (Bubble Shells)				
59.	MS—70	<i>Hydatina velum</i> (Gmelin)	Manjia Island, Karachi.	
60.	MS—71	<i>Hydatina physis</i>	Manjia Island, Karachi.	

MARINE FAUNA OF SANDY SHORE OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
PELECYPODA				
TAXODONTA				
ARCACEA				
Arcidae (Ark Shells)				
61.	MS—74	<i>Arca rhomboidalis</i> (Chem).	Korangi Creek, Karachi.	
62.	MS—75	<i>Arca indica</i> (Gmelin)	Manora Island, Karachi.	
63.	MS—79	<i>Arca granosa</i> (Lamark)	St. Martins' Island, East Pakistan.	
ANISOMYARIA				
ANOMIACEA				
Anomiidae (Window-glass Shells)				
64.	MS—82	<i>Placenta placenta</i> (Linne)	Korangi Creek, Karachi.	
CHAMACEA				
Chamidae				
65.	MS—83	<i>Pseudochama cristella</i> (Lamark)	Astola Island, Arabian Sea, W. Pakistan.	
CARDIACEA				
Cardiidae (Cockle Shells)				
66.	MS—85	<i>Cardium assimile</i> (Reeve)	Manora Island, Karachi.	
67.	MS—86	<i>Cardium asiaticum</i> (Brugiere)	Korangi Creek, Karachi.	
VENERACEA				
Veneridae (Clams)				
68.	MS—90	<i>Paphia textile</i> Gmelin	Astola Island, Arabian Sea, Pakistan.	
PECTINACEA				
Pectinidae (Scallops)				
69.	MS—96	<i>Pecten townsendi</i>	China Creek, Karachi.	
Spondylidae (Spiny Oysters)				
70.	MS—97	<i>Spondylus layardi</i> (Reeve)	Bhit Island, Karachi.	

MARINE FAUNA OF SANDY SHORE OF PAKISTAN—concl'd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
EULAMELLIBRANCHIATA				
HETERODONTA				
LUCINACEA				
Lucinidae				
71.	MS—98	<i>Codakia divergene</i> (Phillippi)	Astola Island, Arabian Sea, W. Pakistan.	
Tellinidae				
72.	MS—99	<i>Tellina ala</i> (Hanley)	Korangi Creek, Karachi.	
V. ECHINODERMATA				
ASTEROIDEA				
Astropectinidae				
73.	EC—1	<i>Astropecten indicus</i> Dod (Sandy starfish)	Keamari Coast, Karachi.	
74.	EC—2	<i>Astropoecten euryacanthus</i> (Ltk.) (Sandy Starfish)	Cox's Bazar, East Pakistan.	
OPHIUROIDEA				
Amphiuridae				
75.	EC—10	<i>Amphiura tenuis</i> H. L. Clark (Brittle star)	Baba Island, Karachi.	
MARINE FAUNA OF ROCKY SHORE OF PAKISTAN				
I. ANNELIDA				
POLYCHAETA				
Sabellidae				
76.	AN—5	<i>Dasychone cingulata</i> Grube	Bhit Island, Karachi.	
77.	AN—6	<i>Dasychone serratibranchis</i> Grube	Bhit Island, Karachi.	
78.	AN—7	<i>Sabellastarte indica</i> Savigny	Bhit Island, Karachi.	
Chloraemidae				
79.	AN—8	<i>Stylarioides parvatus</i> Grube	Manora, Karachi.	
Sabellariidae				
80.	AN—14	<i>Pallasia (Pallasia) pennata</i> Peters	Manora Island, Karachi.	

MARINE FAUNA OF ROCKY SHORE OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
II. ARTHROPODA CRUSTACEA				
DECAPODA				
BRACHYURA				
Leucosidae				
81.	AR—21	<i>Leucosia longifrons dahan</i>	Ormara Bay.	
82.	AR—22	<i>Philyra globosa</i> (Fabricius) 1798	Ormara Bay.	
83.	AR—23	<i>Philogra globulosa</i> (Milne Edwards) 1836	Ormara Bay.	
Portunidae (Swimming crabs)				
84.	AR—37	<i>Charybdis (Goniosoma) annulata</i> (Faba)	Cape Monze (Light House), Karachi.	
85.	AR—38	<i>Charybdis (Goniosoma) Callianasa</i> (Herbst)	Monora Island, Karachi.	
Xanthidae (Rock Crabs)				
86.	AR—41	<i>Atergatis integrimus</i> (Lamarck)	Manora (Light House), Karachi.	
87.	AR—42	<i>Atergatis floridus</i> (Rumph)	Manora Island, Karachi.	
88.	AR—43	<i>Atergatis roseus</i> (Rupp).	Akab Korangi Creek, Karachi.	
89.	AR—44	<i>Atergatis dilatatus</i> De Htaan	Manora Island, Karachi.	
90.	AR—45	<i>Leptodius exaratus</i> (Milne Edward)	Pachha.	
91.	AR—46	<i>Ozius rugulosus</i> . Stimpson	Manora Island, Karachi.	
92.	AR—47	<i>Pilumnus longicornis</i> . Helgendorf	Cape Monze (Light House), Karachi.	
93.	AR—48	<i>Eriphia laevimana smithii</i> Macklary	Manora Island, Karachi.	
94.	AR—54	<i>Grapsus strigosus</i> (Herbst)	Manora, Karachi.	
95.	AR—56	<i>Plagusia depressa tuberculata</i> (Lamarck)	Cape Monze (Light House), Karachi.	
III. MOLLUSCA				
AMPHINEURA				
POLYPLACOPHORA				
Chitonidae (Coat of Mail Shells)				
96.	MS—1	<i>Acanthopleura haddoni</i> (Winckworth)	Astola Island (Arabian Sea), W. Pakistan.	
97.	MS—2	<i>Chiton waller</i> winckworth)	Manora, Karachi.	

MARINE FAUNA OF ROCKY SHORE OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
III. MOLLUSCA—contd.				
SCAPHOPODA				
Dentalidae (Tooth Shells)				
98.	MS—3	<i>Dentalium eburneum</i> (Sowerby)	Astola Island (Arabian Sea), W. Pakistan.	
GASTROPODA				
PROSOBRANCHIA				
ARCHAEOGASTROPODA				
PATELLACEA				
Patellidae				
99.	MS—6	<i>Cellana radiata</i> (Born)	Astola Island, Arabian Sea.	
Turbinidae				
100.	MS—12	<i>Astraea semicostata</i> (Kiener) (Star Shell)	Manora Island, Karachi.	
Potamididae				
101.	MS—19	<i>Cerithidea fluviatilis</i> (Potiez and Michand)	Astola Island, Arabian Sea.	
102.	MS—20	<i>Terebralia palustris</i> (Linne)	Patiani Creek, Sind Coast.	
Cypraeidae (Cowry Shells)				
103.	MS—31	<i>Cypraea arabica</i> (Linne)	Manora Island, Karachi.	
104.	MS—32	<i>Cypraea turdus</i>	Bullegi Coast, Karachi.	
105.	MS—33	<i>Cypraea ocellata</i> (Linne)	Bullegi Coast, Karachi.	
106.	MS—34	<i>Cypraea pallida</i> (Gray)	Bullegi Coast, Karachi.	
MURICACEA				
Muricidae (Cock Shells)				
107.	MS—49	<i>Drupa margaritcola</i> (Broderip)	Akab, Korangi Creek, Karachi.	
108.	MS—50	<i>Thais rudolphi</i> (Lamark)	Miani Beach, West Pakistan.	
109.	MS—51	<i>Thais bufo</i> (Lamark)	Miani Beach, West Pakistan.	

MARINE FAUNA OF ROCKY SHORE OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
III. MOLLUSCA—contd.				
110.	MS—52	<i>Thais tissoti</i> (Petit)	Astola Island (Arabian Sea).	
111.	MS—53	<i>Thais carinifera</i>	Native Jetty, Karachi.	
112.	MS—54	<i>Thais rugosa</i> (Born)	Native Jetty, Karachi.	
VOLUTACEA				
Conidae (Cone Shells)				
113.	MS—67	<i>Conus acuminatus</i> (Bruguiere)	Manora Island, Karachi.	
114.	MS—68	<i>Darioconus textile</i>	Manora Island, Karachi.	
Terchridae				
115.	MS—69	<i>Duplicaria duplicata</i> (Linne)	Astola Island (Arabian Sea).	
PELECYPOD				
TAXODONTA				
ARCACEA				
Arcidae (Ark Shells)				
116.	MS—76	<i>Arca complanata</i> (Reeve)	Akab, Korangi Creek, Karachi.	
117.	MS—77	<i>Arca gubernaculum</i> (Reeve)	Akab, Korangi Creek, Karachi.	
118.	MS—78	<i>Arca symmetrica</i> (Reeve)	Astola Island, Arabian Sea, West Pakistan.	
119.	MS—80	<i>Barbatia obliquata</i>	Akab, Korangi Creek, Karachi.	
ANISOMIACEA				
ANOMIACEA				
Anomiidae				
120.	MS—81	<i>Anomia sol</i> (Reeve) (Jingle Shell)	Akab, Korangi Creek, Karachi.	
Libitiniidae				
121.	MS—84	<i>Libitina vellicata</i> (P. & S.)	Manora Island, Karachi.	

MARINE FAUNA OF ROCKY SHORE OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
III. MOLLUSCA—concl'd.				
VENERACEA				
Veneridae (Clams)				
122.	MS—89	<i>Veneruphis macroplylla</i> (Deshayes)	Bullegi Coast, Karachi.	
MYTILACEA				
Mytilidae				
123.	MS—91	<i>Mytilus viridis</i> (Linn) (Mussels)	Akab, Korangi Creek, Karachi	
124.	MS—92	<i>Lithophaga nigra</i> (d'orbigny) (Date Shell)	Manora Island, Karachi.	
125.	MS—93	<i>Lithophaga cinnmomea</i> (Lamark) (Date Shell).	Manora Island, Karachi.	
IV. ECHINODERMATA				
ASTEROIDEA				
Anthewidae				
126.	EC—3	<i>Anthenea rudis</i> . Kochler (Massine Starfish)	Oyster Island, Karachi.	
Asterinidae				
127.	EC—4	<i>Asterina lorioli</i> Kochler (Common rocky starfish)	Native Jetty, Karachi.	
128.	EC—5	<i>Asterina burtoni</i> Gray (Rocky starfish)	Ormara, Mekran Coast, West Pakistan.	
OPHIUROIDEA				
Ophiopodidae				
129.	EC—6	<i>Ophioplocus imbricatus</i> . M. & Tr.	Manora Island, Karachi.	
130.	EC—7	<i>Ophiopeza fallax</i> Peters (Brittle Star)	Bulegee Village Coast, Karachi.	

MARINE FAUNA OF ROCKY SHORE OF PAKISTAN—concl'd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
IV. ECHINODERMATA—cont'd.				
Ophiurichidae				
131.	EC—8	<i>Macrophiothrix aspidota</i> M. & Tr. (Burly Brittle star)	Manora Island, Karachi.	
Ampuridae				
132.	EC—9	<i>Ophioneis Dubia</i> M. & Tr. (Brittle star)	Bulegee Village Coast, Karachi.	
ECHINOIDEA				
Echinometridae				
133.	EC—11	<i>Echinometra mathaci</i> (de Bl.) (Sea-urchin)	Astola Island, Mekran Coast, West Pakistan.	
134.	EC—12	<i>Echinostrephus molaris</i> de. Bl. (Sea-urchin)	Astola Island, Mekran Coast, West Pakistan.	
135.	EC—13	<i>Stomopneustes variolaris</i> Lmk. (Sea-urchin)	Bulegee Village Coast, Karachi.	
HOLOTHURIOIDEA				
Cucumaridae				
136.	EC—17	<i>Stereoderma torbesi</i> (Bell) (Rocky Sea-cucumber)	Cape Monze, Karachi.	
Thyonidae				
137.	EC—18	<i>Staurothyone rosacea</i> Semper (Sea-cucumber)	Bulejee Village Coast, Karachi.	
Psolidae				
138.	EC—19	<i>Stolus buccalis</i> Stimpson (Sea-cucumber)	Bulejee Village Coast, Karachi.	
Holothuriidae				
139.	EC—20	<i>Actinopyga mauritiana</i> (Gaimond) (Sea-cucumber)	Cape Monze, Karachi.	

MARINE FAUNA OF MUDDY SHORE OF PAKISTAN.

Sl. No.	Catalogue No.	Name	Locality	Remarks
I. ANNELIDA				
POLYCHAETA				
Chloraemidae				
140.	AN—9	<i>Stylariodes hamocarens</i> Monro	Baba Island.	
II. ARTHROPODA				
CRUSTACEA				
DECAPODA				
BRACHYURA				
Dromiidae (Sponge Crabs)				
141.	AR—15	<i>Dromia dromia</i> (Linn.) (Sleepy Sponge-Crab)	Off Korangi Creek, Karachi.	
142.	AR—16	<i>Pseudodromia integrifrons</i> Henderson—Sponge Crab	Ormara, Mekran Coast.	
143.	AR—17	<i>Conchoectes artificiosus</i> (Fab. Stimp) (1858 Shell Caring Crab)	Ormara, Mekran Coast.	
Portunidae (Swimming Crabs)				
144.	AR—34	<i>Scylla serrata</i> (Forsk.)	Korangi Creek, Karachi.	
145.	AR—39	<i>Charybdis (Goniopellinus) hoplites</i> (Wood-Mason)	Korangi Creek, Karachi.	
146.	AR—40	<i>Thalamita crenata</i> Milne-Edwards	Off Korangi Creek, Karachi.	
Ocypodidae				
(Sand Crabs, Running Crabs)				
147.	AR—51	<i>Uca annulipes</i> Latreille (Flider Crab)	Korangi Creek, Karachi.	
148.	AR—52	<i>Macrophthalmus pectinipes</i> Guerin	Korangi Creek, Karachi.	
149.	AR—53	<i>Macrophthalmus sulcatus</i> Milne-Edwards	Korangi Creek, Karachi.	
Grapsidae				
(Running Crab)				
150.	AR—55	<i>Metopograpsus messor</i> (Forsk.)	Korangi Creek, Karachi.	

MARINE FAUNA OF MUDDY SHORE OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
III. MOLLUSCA				
GASTROPODA				
PROSOBRANCHIA				
ARCHAEOGASTROPODA				
CYPRAEACEA				
Cymatiidae				
(Triton Shells)				
151.	MS—40	<i>Gyrineum natator</i> (Roding)	Korangi Creek, Karachi.	
152.	MS—41	<i>Cymatium pileare</i> (Linne)	Bhit Island, Karachi.	
Bursidae				
(Frog Shells)				
153.	MS—42	<i>Bursa echinata</i>	Keamari Coast, Karachi.	
VOLUTACEA				
Conidae				
(Cone Shells)				
154.	MS—65	<i>Conus piperatus</i> . (Dilwyn)	Native Jetty, Karachi.	
155.	MS—66	<i>Conus coronatus</i> . (Dilwyn)	Native Jetty, Karachi.	
ZENGOBRANCHIA				
Cerithiidae				
156.	MS—22	<i>Cerithium morus</i> (Lamarck)	Native Jetty, Karachi.	
PELECYPODA				
TAXODONTA				
PTERIAE				
Pinnidae				
(Feather Shells)				
157.	MS—94	<i>Pinna bicolor</i> (Gmelin)	Korangi Creek, Karachi.	
158.	MS—95	<i>Pinna atropurpurea</i> (Sow)	Native Jetty, Karachi.	
EULAMELLIBRANCHIATA				
ADAPEDONTA				
SOLENAE				
Solenidae (Razor Shells)				
159.	MS—100	<i>Solen truncatus</i> (Wood)	Korangi Creek, Karachi.	

MARINE FAUNA OF MUDDY SHORE OF PAKISTAN—concl.

Sl. No.	Catalogue No.	Name	Locality	Remarks
ADESMACEA				
III. MOLLUSCA—contd.				
Pholadidae				
(Piddocks)				
160.	MS—101	<i>Pholas orientalis</i> (Gmelin)	Korangi Creek, Karachi.	
Jouannetidae				
161.	MS—102	<i>Jouannetia globulosa</i> (Quoy and Gaimard).	G. M. Hut, Karachi.	
IV. COELENTERATA				
Plumulariidae				
162.	CO—1	<i>Plumularia flabellum</i> (Allman)	Keamari Coast, Karachi.	
(Sea feather)				
Campanulariidae				
163.	CO—2	<i>Campanularia juncea</i> (Allman)	Bhit Island.	
INSHORE AND OFFSHORE FAUNA OF PAKISTAN				
I. ARTHROPODA				
DECAPODA				
BRACHYURA				
Leucosidae				
164.	AR—24	<i>Arcania septemspinosa</i> (Fabr)	Off Korangi Creek, Karachi.	
165.	AR—25	<i>Arcania undecemspinosa</i> (De Haan) 1885	Manora, dredged.	
166.	AR—26	<i>Myra fugax</i> (Fabricius)	Off Korangi Creek, Karachi.	
167.	AR—27	<i>Dorippe astuta</i> Fabricius	Off Korangi Creek, Karachi.	
Maididae				
168.	AR—28	<i>Schizophrys aspera</i> (Milne Edwards)	Off Korangi Creek, Karachi.	
169.	AR—29	<i>Doclea gracilipes</i> Stimpson	Off Korangi Creek, Karachi.	
Parthenopidae				
170.	AR—30	<i>Lambrus</i> (Platylambrus) <i>prensor</i> Herbst.	Off Korangi Creek, Karachi.	
171.	AR—31	<i>Cryptopodia angulata</i> Milne-Edwards and Lucas	Off Korangi Creek, Karachi.	

INSHORE AND OFFSHORE FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
II. ECHINODERMATA				
ECHINOIDEA				
Temnopleuridae				
172.	EC—14	<i>Temnopleurus toreumaticus</i> Leske	Dredged out from Karachi Coastal Waters.	
Clypeasteridae				
173.	EC—15	<i>Clypeaster rarispinus</i> (de Meijere) (Sand-Dollar)	Dredged out from Karachi Waters.	
Arachnoididae				
174.	EC—16	<i>Arachnoides placenta</i> Linne. (Sand-Dollar)	Sonadia Island, East Pakistan.	
MUDDY-CUM-SANDY FAUNA OF PAKISTAN				
I. COELENTERATES				
HYDROZOA				
Cerianthiidae				
175.	CO—7	<i>Cerianthus membranaceus</i> (Mud-Sea-anemone)	Baba Island, Karachi.	
II. ANNELIDA				
POLYCHAETA				
Maldanidae				
176.	AN—11	<i>Axiiothella obockensis</i> (Gravier)	Native Jetty, Karachi.	
Chaetopteridae				
177.	AN—12	<i>Phyllochaetopterus elioti</i> (Crossland)	Native Jetty, Karachi.	
Cirratulidae				
178.	AN—13	<i>Audouinia anchylochaeta</i> (Schmarda)	Native Jetty, Karachi.	
Arenicolidae				
179.	AN—15	<i>Arenicola brasiliensis</i> Nonato	Bulleji Coast, Karachi.	

MUDDY-CUM-SANDY FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
III. MOLLUSCA				
GASTROPODA				
PROSOBRANCHIA				
ARCHAEOGASTROPODA				
MURICACEA				
Muricidae (Rock Shells)				
180.	MS—45	<i>Murex tenuispina</i> (Lamark)	Pasni, West Pakistan.	
181.	MS—46	<i>Murex adustus</i> (Lamark)	Keamari Coast, Karachi.	
182.	MS—47	<i>Murex virginicus</i>	Keamari Coast, Karachi.	
183.	MS—48	<i>Drupa tuberculata</i> (Blainville)	Akab, Korangi Creek, Karachi.	
PLEUROCOCLA				
BULLOMORPHA				
Artyidae				
184.	MS—72	<i>Haminea tenera</i> (Adams)	Dhongri Island, Korangi Island, Karachi.	
Bullidae (Bubble-Shells)				
185.	MS—73	<i>Bulla ampulla</i> (Linne)	Manora Island, Karachi.	
186.	MS—21	<i>Telescopium telescopium</i>	Native Jetty, Karachi.	
STROMBACEA				
Xenophoridae				
187.	MS—25	<i>Xenophora solaris</i>	Auction Hall, Fish Harbour.	
Strombidae				
188.	MS—26	<i>Tibia insolaechorab</i> (Roding)	Bhit Island, Karachi.	
PELECYPODA				
ANISONYARIA				
VENERACEA				
Veneridae (Clams)				
189.	MS—87	<i>Gafrarium divaricata</i>	Keamari Coast, Karachi.	
190.	MS—88	<i>Pitar nobilis</i> (Reeve)	Korangi Creek, Karachi.	

MUDDY-CUM SANDY FAUNA OF PAKISTAN—concl'd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
IV. ECHINODERMATA				
HOLOTHURIOIDEA				
Synaptidae				
191.	EC—21	<i>Synapta inhaerens</i> Mull	Buleji Village Coast, Karachi.	
CRINOIDEA				
Comasteridae				
192.	EC—22	<i>Comanthus samoanus</i> (A.H.C.) (Feather star)	Jewani, Mekran Coast, West Pakistan.	
V. BRYOZOA				
ECTOPROCTA				
CHIELOSTOMATA				
Bugulidae				
193.	BR—1	<i>Bugula neritina</i> Linne	Keamari, Bhit and Manora East, Karachi. (Attached to the rocks and sea-weeds).	
194.	BR—2	<i>Bugula neritina</i> , Var. <i>minima</i> waters	Bhit, Native Jetty, Karachi. (Attached to the rocks and sea-weeds).	
195.	BR—3	<i>Bugula turbinata</i> (Alder)	Fish Harbour, Karachi. Attached to the Ascidians).	
196.	BR—4	<i>Bugula avicularia</i> Linne	Fish Harbour, Native Jetty, Karachi. (Attached to the Ascidians).	
197.	BR—5	<i>Bugula stolonifera</i> J. S. Ryland	Bhit, Karachi. (Attached to the rocks).	
MARINE WOOD BORES OF PAKISTAN				
I. MOLLUSCA				
PELECYPODA				
TELEODESMACEA				
Teredenidae (Ship-Worms)				
198.	MB—1	<i>Teredo (Teredo) indica</i> Nair 1955	Native Jetty, Karachi.	
199.	MB—2	<i>Teredo (Teredo) nana</i> Linne 1767	Native Jetty, Karachi.	

MARINE WOOD BORER OF PAKISTAN—contd.

S. No.	Catalogue No.	Name	Locality	Remark
MOLLUSCA—contd.				
200.	MB—3	<i>Teredo (Teredo) furcillatus</i> Miller 1924	West Wharf, Karachi.	
201.	MB—4	<i>Teredo (Teredo) parksi</i> Bartsch 1921	West Wharf, Karachi.	
202.	MB—5	<i>Teredo (kuphus) mannii</i> Wright 1865	Phitti, Korangi Creek, Karachi.	
203.	MB—6	<i>Teredo (Teredops) samoensis</i> Miller 1924	Native Jetty, Karachi.	
204.	MB—7	<i>Teredo (Teredops) diegensis</i> Bartsch 1916	Patt, Korangi Creek, Karachi.	
205.	MB—8	<i>Bankia (Bankia) bengalensis</i> Nair 1954	Native Jetty, Karachi.	
206.	MB—9	<i>Bankia (Bankia) bipalmulata</i> (Lamark) 1835	Native Jetty, Karachi.	
207.	MB—10	<i>Bankia (Nausitora) lanceolata</i> Raj-gopal 1961	Kalamula, East Pakistan.	
Pholadidae (piddocks)				
208.	MB—11	<i>Martesia (Martesia) striata</i> (Linne) 1758	Phitti, Korangi Creek, Karachi.	
PELAGIC AND DEMERSAL FAUNA OF PAKISTAN				
I. COELENTERATA				
HYDROZOA				
Rhizophysaliidae				
209.	CO—3	<i>Physalia utriculus</i> Le. (Portuguese Man of War)	Martiniere Korangi Creek, Karachi.	
II. ARTHROPODA CRUSTACEA				
COPEPODA				
Centropagidae				
210.	AR—1	<i>Isias tropica</i> Sewell	Korangi Creek, Karachi.	
211.	AR—2	<i>Centropages dorsispinatus</i> Thompson and Scott	Korangi Creek, Karachi.	
212.	AR—3	<i>Centropages tenuiremis</i> Thompson	Korangi Creek, Karachi. and Scott	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

S. Catalogue No.	Name	Locality	Remarks
II. ARTHROPODA, CRUSTACEA—contd.			
Temoridae			
213. AR—4	<i>Temora turbinata</i> (Dana)	Korangi Creek, Karachi.	
214. AR—5	<i>Temora dubia</i> (Lubbock)	Korangi Creek, Karachi.	
DECAPODA MACRURA			
Penaeidae (Shrimps)			
215. AR—6	<i>Penaeus japonicus</i> Bate	Korangi Creek, Karachi.	
216. AR—7	<i>Penaeus indicus</i> Milne-Edwards	Ormara, Estuaries of Chittagong and Khulna District.	
217. AR—8	<i>Penaeus merguensis</i> (de Man)	Fish Harbour, Karachi.	
218. AR—9	<i>Metapenaeus stebbingi</i> (Nobili)	Korangi Creek, Karachi.	
219. AR—10	<i>Metapenaeus monoceros</i> (Fabricius)	Korangi Creek, Karachi.	
220. AR—11	<i>Parapenaeopsis stylifera</i> Milne-Edward)	Korangi Creek, Karachi, Estuaries of Pusur River of Khulna.	
221. AR—12	<i>Parapenaeopsis sculptilis</i> (Heller)	Fish Harbour, Karachi, Estuaries of Khulna and Chittagong.	
222. AR—13	<i>Penaeus semisulcatus</i> de Haan	Off Korangi Creek, Karachi.	
223. AR—14	<i>Metapenaeus affinis</i> (Milne-Edwards)	Off Korangi Creek, Karachi.	
BRACHYURA			
Portunidae			
224. AR—32	<i>Neptunus</i> (<i>Neptunus</i>) <i>pelagicus</i> (Linne) (Blue swimming crab)	Korangi Creek, Karachi.	
225. AR—33	<i>Neptunus</i> (<i>Neptunus</i>) <i>sanguinolentus</i> (Herbst). (Blood-spot spiny swimming crab)	Korangi Creek, Karachi.	
226. AR—35	<i>Charybdis</i> (<i>Goniosoma</i>) <i>cruciata</i> (Herbst)	Korangi Creek, Karachi.	
227. AR—36	<i>Charybdis</i> (<i>Goniosoma</i>) <i>lucifera</i> (Fabr.)	Korangi Creek, Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

S. Catalogue No.	Name	Locality	Remarks
II. ARTHROPODA CRUSTACEA—contd.			
Panuliridae (Lobsters)			
228. AR—65	<i>Panulirus polyphagus</i> (Herbst) 1796 (spiny Lobster)	Pasni, Coast.	
229. AR—66	<i>Panulirus homarus</i> (Herbst) 1796	Mekran Coast.	
Scyllaridae			
230. AR—67	<i>Thenus orientalis</i> (Lund) 1793 (Lobster)	Off Korangi Creek, Karachi.	
III. MOLLUSCA			
CEPHALOPODA DIBRANCHIATA DECAPODA SEPIACEA MYOPSIDA			
Sepiidae (Cuttle-fishes)			
231. MS—103	<i>Sepia aculeata</i> (Orbigny)	Dredged off Patiani Creek (Arabian Sea), W. Pakistan.	
232. MS—104	<i>Sepia pharaonis</i> (Ehrenberg)	Collected from Fish Harbour, Karachi.	
233. MS—105	<i>Sepiella inermis</i> (d'Orbigny)	Dredged, Korangi Creek, Karachi.	
LOLICINACEA			
Loliginidae			
234. MS—106	<i>Loligo duvaucelli</i> (d'Orbigny)	Dredged, off West Manora, Karachi.	
235. MS—107	<i>Loliolus investigatoris</i> (Goodrich)	Dredged, off Patiani Creek (Arabian Sea), W. Pakistan.	
OCTOPODA INCIRRATA OCTOPODACEA			
Octopodidae (Devil Fishes)			
236. MS—108	<i>Octopus vulgaris</i> (Lamarck)	Manora Island, Karachi.	
237. MS—109	<i>Octopus horridus</i> (d'Orbigny)	Manora Island, Karachi.	
238. MS—110	<i>Cistopus indicus</i> (Orbigny)	Dredged off west of Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

S. Catalogue No. No.	Name	Locality	Remarks
MOLLUSCA—contd.			
TETRABRANCHIA NAUTILAIDEA			
Nautilidae			
239. MS—111	<i>Nautilus pompilius</i> (Linne)	St. Martin's Island (Bay of Bengal), East Pakistan.	
IV. CHORDATA VERTEBRATA PISCES			
ELASMOBRANCHII SELACHII LAMNIFORMES			
Orectolebidae			
240. CD—1	<i>Chiloscyllium indicum</i> (Gmelin) Ridge-Back Catshark. Kulra-Mangra (Sindhi, Baloochi and Kutchi). Syn : <i>Squalus indicus</i> (Gmelin) 1789 <i>Hemiscyllium indicum</i> (Day) 1875 <i>Scyllium ornatum</i> , (Gray) 1878.	Coastal Waters of Karachi, Mekran and Sind.	
241. CD—2	<i>Stegostoma fasciatum</i> (Hermann) Zebra shark Syn : <i>Squalus fasciatus</i> Hermann 1783 <i>Squalus tigrinus</i> Gmel. and Linn. <i>Squalus longicaudus</i> (Gmel. and Linn.) <i>Squalus fasciatus</i> Bloch. <i>Stegostoma fasciatum</i> (Mull).	Coastal Waters of Karachi, Sind and Mekran. Shore dweller.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

S. Catalogue No. No.	Name	Locality	Remarks
IV. CHORDATA—contd.			
Carcharinidae			
242. CD—3	<i>Scoliodon sorrakowah</i> (Cuvier) Yellow dog-fish Mangra (Sindhi & Baluchi) Syn : <i>Carcharias sorrakowah</i> Cuvier 1829 <i>Scoliodon laticaudus</i> Day <i>Carcharias laticaudus</i> Day	Sind, Karachi, Mekran Coast. Open Sea dweller.	
243. CD—4	<i>Scoliodon walbeehmi</i> (Bleeker) Walbeehm's sharp-nosed shark. Mangra (Sindhi, Kutchi and Baluchi) Syn : <i>Carcharias walbeehmi</i> Bleeker 1856.	Coastal Waters of Sind, Karachi and Mekran. Pelagic.	
Sphyrnidae			
244. CD—5	<i>Sphyrna tudes</i> (Valenciennes) Squat Headed or Hammer head shark Kanar Mangra, Julia Manger, Doka (Sindhi, Baloochi & Kutchi). Syn : <i>Zygaena tudes</i> Val 1822. <i>Squalus pantouffier</i> Lacep. <i>Squalus zygaena</i> Russell. <i>Zygaena tudes</i> Cuvier <i>Sphyrna tudes</i> Mull. & Henle.	Off Sind, Karachi and Mekran Coast. Pelagic.	
245. CD—6	<i>Sphyrna blochii</i> (Cuv.) Arrow headed Hammer Head Shark. Kanar Mangra, Julia Mangra, Doka (Sindhi and Baluchi). Syn : <i>Zygaena blochii</i> Cuv. 1817.	Off Sind, Mekran and Karachi Coast. Pelagic.	
RAJIFORMES			

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

S. No.	Catalogue No.	Name	Locality	Remarks
VI. CHORDATA—contd.				
Rhinobatidae				
246.	CD—7	<i>Rhinobatus granulatus</i> Cuveier Granulated Shoal-nose Ray Patramangra, Kair, Siree Cun-da-ree (Sindhi, Baluchi and Kutchi). Syn. : <i>Rhinobatus granulatus</i> Cuv. 1829 <i>Rhinobatus rhinobatus</i> Bl. & Schn <i>Rhinobatus armatus</i> Gray and Hardiv <i>Rhinoatus tuberculatus</i> Cuv. <i>Rhinobatus typus</i> Bennett <i>Rhinobatus halavi</i> Day.	Sind, Mekran and Karachi Coast (Bottom dweller).	
Trygonidae				
247.	CD—8	<i>Gymnura micrura</i> (Bl. & Schn.) Pittan, Thata, Kutla (Sindhi, Kutchi & Baluchi). Syn. : <i>Raja micrura</i> Bl. & Schn 1801. <i>Pteroplatea micrura</i> Mull. & Henl. <i>Dasyatis micrura</i> Blyth.	Coastal Waters of Sind, Karachi and Mekran. (Bottom dweller).	
248.	CD-9	<i>Himantura uarnak</i> (Forsk.) Bended Whiptail Sting-ray. Gadum (Sindhi & Mekrani). Syn. : <i>Raja uarnak</i> Forskal 1775 <i>Trygon uarnak</i> Day.	Coast of Sind, Karachi and Mekran. (Bottom dweller).	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
249.	CD-10	<i>Hymantura bleekeri</i> (Blyth) Whiptail Sting ray Syn. : <i>Trygon bleekeri</i> Blyth 1860 <i>Dasyatis bleekeri</i> Day	Coastal Waters of Karachi, Sind and Mekran Coast. (Bottom dweller).	
250.	CD-11	<i>Amphotistius imbricatus</i> (Bl. & Schn.) Scaly Sting-ray. Cadum (Sindhi, Baluchi & Cutchi). Syn. : <i>Raja imbricata</i> Bl. & Schn. 1801 <i>Trygon imbricata</i> Day	Coastal Waters of Karachi, Sind and Mekran. (Bottom dweller).	
Myliobatidae				
251.	CD-12	<i>Aetobatus narinari</i> (Euphrasen) Spotted Eagle Ray Kodokuto (Sindhi). Syn. : <i>Raja narinari</i> Euphrasen 1790 <i>Aetobatus narinari</i> Jordan & Everman <i>Trygon walga</i> Day.	Coastal Waters and Estuaries of Sind, Mekran and Karachi. (Bottom dweller).	
TORPEDINIFORMES				
Torpedinidae				
252.	CD-13	<i>Narke dipterygia</i> (Bl. & Schn.) Numbfish. Tankurya, Nithan (Sindhi, Baluchi and Kutchi). Syn. : <i>Rhinobatus dipterygia</i> Bl. & Schan 1801 <i>Torpedo dipterygia</i> Clfers. <i>Narcine dipterygia</i> Henle <i>Astrap dipterygia</i> Mull. & Henle	Coast of Sind, Mekran and Karachi. (Bottom dweller).	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Names	Locality	Remarks
253.	CD-14	<i>Narcine brunnea</i> Annandale Brown Electric Ray. Chido, Tankurya (Sindhi, Baluchi and Kutchi). Syn. : <i>Narcine brunnea</i> Annandale 1909 <i>Narcine firma</i> Day. 1875—78	Coastal Waters of Sind, Mekran and Karachi. (Bottom dweller).	
254.	CD-15	<i>Narcine timlei</i> (Bl. & Schn). Spotted Electric Ray. Tankurya (Sindhi, Baluchi and Kutchi). Syn. : <i>Raja timelei</i> Bl. & Schn. 1801 <i>Narcine timeli</i> Jordan & Seale	Coastal Waters of Sind, Mekran and Karachi. (Bottom dweller).	
TELEOSTOMI ACTINOPTERYGII CLUPEIFORMES				
Albulidae				
255.	CD-16	<i>Albula vulpes</i> (Linn). Lady Fish, Seerrnh (Sindhi) Syn. : <i>Esox vulpes</i> Linn. 1758 <i>Albula conorhynchus</i> Bl. & Schn. <i>Conorhynchus glossodon</i> Bleeker 1872	Coastal Waters and Estuaries of Sind, Mekran and Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
Dorosomidae				
256.	CD-17	<i>Nematalosa nasus</i> (Bloch) Long Bay Boney Bream Barang, Dhadhipali, Pabra (Sindhi, Kutchi & Baluchi). Syn. : <i>Clupea nasus</i> Bloch 1795 <i>Clupea thrissa</i> Russell <i>Clupanodon nasica</i> Laceped <i>Dorosoma nasus</i> Bleeker. 1872	Coastal Waters and Bays of Sind, Mekran and Karachi.	
257.	CD-18	<i>Anodontostoma chacunda</i> (Hamilton- Buchanan) Short-nose gizzard shad. Syn. : <i>Clupanodon chacunda</i> Hamilton—Buchanan 1822 <i>Dorosoma chacunda</i> Bleeker 1872 <i>Chatoessus chacunda</i> Day 1875—78	Coastal Waters and Creeks of Sind, Karachi and Mekran.	
SCOPELIFORMES				
Scopelidae				
258.	CD-19	<i>Harpodon nehereus</i> (Hamilton— Buchanan) Deep sea lizard fish Bombil Lotia, Bombella, (Sindhi, Kutchi and Baluchi) Syn. : <i>Osmerus nehereus</i> Hamilton & Buchana 1822 <i>Laurida microps</i> Swainson <i>Harpodon nehereus</i> Day 1875—78	Off Sind, Mekran and Karachi Coast. Demersal.	
CYPRINIFORMES				
Plotosidae				
259.	CD-20	<i>Plotosus anguillaris</i> (Bloch) Striped Catfish Eel Cong Magur, Loroan (Sindhi, Baluchi)	Sind, Mekran and Karachi Coasts.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
		Syn. : <i>Platystacus anguillaris</i> Bloch 1794 <i>Plotosus arab</i> Bleeker 1862 <i>Plotosus vittatus</i> Swainson		
260.	CD-21	<i>Plotosus canius</i> Ham. Buch. Canin Cat Fish Eel Syn. : <i>Plotosus canius</i> Ham. Buch 1822 <i>Plotosus horridus</i> Bleeker <i>Plotosus viviparus</i> Bleeker <i>Plotosus unicolor</i> Kulil & Han.	Rivers, Estuaries and Coastal Areas of Sind, Mekran and Karachi.	
ANGUILLIFORMES				
Muraenesocidae				
261.	CD-22	<i>Muraenesox cinereus</i> (Forsk.) Silver Conger Eel. Sankh (Sindhi) Syn. : <i>Muraena cinerea</i> Forskal 1775 <i>Muraena arabica</i> . (Bl. & Schn) <i>Muraena hagio</i> Ham. & Buch.	Coastal Waters of Sind, Mekran and Karachi.	
BELONIFORMES				
Belonidae				
262.	CD-23	<i>Tylosurus crocodilus</i> (Le. Sueur) Fork Tail Alligator Gar. Syn. : <i>Belona crocodilia</i> Le Sueur 1821 <i>Belona chorum</i> Rupp.	Found in Creeks and Coastal Areas of Sind, Mekran and Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISWAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
		<i>Belona crocodilus</i> (Cuv.) <i>Tylosurus crocodilus</i> Fowler. 1904		
263.	CD-24	<i>Tylosurus strongylurus</i> (Van Hasselt) Round Tail Alligator Gar. Congur (Sindhi) Syn. : <i>Belona strongylurus</i> Van Hasselt 1823 <i>Belona caudimaculata</i> Cuv. <i>Belona strongylurus</i> Day. 1875—78	Seas, Estuaries and Tidal Rivers of Sind, Mekran and Karachi Coast.	
Exocoetidae				
264.	CD-25	<i>Cypselurus comatus</i> (Mitchill) Fourwinged flying fish Jiri (Sindhi). Syn. : <i>Exocoetus comatus</i> Mitchill 1815 <i>Exocoetus bahiensis</i> Day 1875—78 <i>Exocoetus silonoplesus</i> Blk.	Open Seas of West Pakistan.	
SYNGNATHIFORMES				
Fistularidae				
265.	CD-26	<i>Fistularia villosa</i> Klanzinger Rough Flute Mouth Kanghi (Sindhi) Sari Kangha (Kutchi) Syn. : <i>Fistularia serrata</i> Cuv. <i>Fistularia commersonii</i> Rupp. <i>Cannorhynchus immaculatus</i> Cantor <i>Cannorhynchus serratus</i> Blecker.	Shallow Coastal Areas of Sind and Mekran Coast.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
POLYNEMIFORMES				
Polynemidae				
266.	CD—27	<i>Polydactylus plebeius</i> (Broussonet) Common Thread Fish Seeri (Sindhi). Syn. : <i>Polynemus plebeius</i> Broussonet 1782 <i>Trichidion plebejus</i> Gunther 1875 <i>Polydactylus plebejus</i> Gunther 1875 <i>Polynemus plebeius</i> Gunther 1875	Estuaries and Coastal Water of Sind, Karachi and Mekran.	
PERCIFORMES				
Serranidae				
267.	CD—28	<i>Epinephelus stoliczkae</i> (Day) Sea Perch Gissar, Toont (Sindhi and Baluchi) Syn. : <i>Serranus stoliczkae</i> Day 1878	Coastal Waters and Estuaries of Sind, Karachi and Mekran.	
268.	CD—29	<i>Epinephelus diacanthus</i> (Valenciennes) Six barbed Reef Cod Dhambo, Damba (Sindhi and Mekrani), Sailin (Kutchi). Syn. : <i>Serranus diacanthus</i> Cuv. & Val. 1828	Coastal Waters and Estuaries of Sind, Mekran and Karachi.	
269.	CD—30	<i>Epinephelus merra</i> (Bloch) Wire Netting Reef Cod Gisar. (Sindhi), Bulish (Kutchi) Syn. : <i>Epinephelus merra</i> Bloch 1793 <i>Serranus merra</i> Cuv. & Val 1828	Coastal Waters of Sind, Mekran and Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
Serranus foveatus Cuv. & Val. Epinephelus hexagonatus Bleeker Serranus hexagonatus Day				
Theraponidae				
270.	CD—31	<i>Therapon jarbua</i> (Forsk.) Ginyano, Bargvni (Sindhi and Mekrani) Syn. : <i>Sciaena jarbua</i> Forskal 1775 <i>Tharapon servus</i> Cuv. & Val.	Coastal Waters and Estuaries of Sind, Mekran and Karachi.	
Sillaginidae				
271.	CD—32	<i>Sillago sihama</i> (Forsk.) Silver Whiting Bhambbor and Sunda (Sindhi and Baluchi) Syn. : <i>Atherina sihama</i> Forskal 1775 <i>Sillago acuta</i> Bleeker 1877	Coastal Waters and Estuaries of Sind, Karachi and Mekran.	
Lactariidae				
72.	CD—33	<i>Lactarius lactarius</i> (Bloch & Schn) White Fish Bukku (Sindhi) Syn. : <i>Scomber lactarius</i> Bl. & Schn. 1801 <i>Lactarius delicatulus</i> Cuv. and Val.	Coastal Waters and Estuaries of Sind, Karachi and Mekran.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
Carangidae				
273.	CD—34	<i>Alectis indica</i> (Ruppell) Indian Thread finned Travelly Seem Phohia (Sindhi and Kutchi) Syn.: <i>Scyris indica</i> Ruppell 1828 <i>Xeus gallus</i> Bloch <i>Caranx gallus</i> Gunther	Coastal Waters of Sind, Mekran and Karachi.	
274.	CD—35	<i>Gnathodon speciosus</i> (Forsk.) Golden Toothless Travelly. Syn.: <i>Scomber speciosus</i> Forskal 1775 <i>Garax speciosus</i> Lacepede <i>Gnathodon speciosus</i> Bleeker	Coastal Waters of West Pakistan.	
275.	CD—36	<i>Selar kalla</i> (Cuvier & Val.) Golden Scad Bangda, Seem (Sindhi Kutchi) Syn.: <i>Caranx kalla</i> Cuv. & Val. 1833 <i>Selar kalla</i> Ogibly 1915	Coastal Waters of Sind, Mekran and Karachi.	
276.	CD—37	<i>Selar malam</i> Bleeker Banded Scad Bangla and Seem, (Sindhi and Baluchi) Syn.: <i>Selar malam</i> Bleeker 1851 <i>Caranx malam</i> McCullo	Coastal Waters of Sind, Mekran and Karachi.	
277.	CD—38	<i>Carangoides malabaricus</i> (Bloch & Schn) Malabar Travelly Bangda (Sindhi) Syn.: <i>Scomber malaboricus</i> Bl. & Schn. 1801 <i>Carangoides malabaricus</i> Bleeker <i>Caranx malabaricus</i> Day 1875—78	Coastal Waters of Sind, Mekran and Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
278.	CD—39	<i>Trachinotus blochi</i> (Lacepede) Bloch's Dart Naila (Kutchi) Kakanter (Sindhi) Syn.: <i>Caesiomorus blochii</i> Lacep. 1802 <i>Trachinotus ovatus</i> Gunther <i>Trachnotus ovatus</i> Ogibly 1916.	Coastal Waters of Sind, Karachi and Mekran.	
279.	CD—40	<i>Chorinemus tala</i> Cuvier Deep Queenfish Aal (Sindhi) Aladisarum (Mekrani) Syn.: <i>Scomber toloo</i> Russel <i>Chorinemus tala</i> Cuv. 1851 <i>Chorinemus toloo</i> Weber and De Beaufort <i>Chorinemus toloo</i> Day 1875—78	Coastal Waters of Sind, Mekran and Karachi.	
Rachycentridae				
280.	CD—41	<i>Rachycentron canadus</i> (Linn.) Black King Fish Saiakhla (Sindhi) Syn.: <i>Gasterosteus canadus</i> Linn. 1766 <i>Scomber niger</i> Bloch <i>Elecate nigra</i> Day 1875—78 <i>Rachycentron pondicerianus</i> Jordan and Seale	Coastal Waters of Karachi, Sind and Mekran.	
Lutianidae				
281.	CD—42	<i>Lutianus johni</i> (Bloch) Moses perch Syn.: <i>Anthias johnii</i> Bloch 1792 <i>Lutjanus johnii</i> Lacep. <i>Mesoprion johnii</i> Bleeker 1876—78	Coastal Waters of Sind, Karachi and Mekran.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
Nemipteridae				
282.	CD—43	<i>Nemipterus japonicus</i> (Bloch) Japanese Thread fin Bream Syn.: <i>Sparus japonicus</i> Bloch 1791 <i>Synagris japonicus</i> Gunther <i>Synagris filamentosus</i> Gunther	Trawling ground along the West of Sind, Karachi and Mekran.	
Gerridae				
283.	CD—44	<i>Pertica filamentosa</i> (Cuv.) Long-Rayed Silver-Biddy Jarkali, Jarki (Sindhi & Baluchi) Syn.: <i>Gerres filamentosa</i> Cuv. 1829 <i>Gerres punctatus</i> Day 1875—78	Coastal Waters of Sind, Karachi and Mekran.	
Leiognathidae				
284.	CD—45	<i>Secutor ruconius</i> (Hamilton & Buch) Kanderi, Tikla (Sindhi, Baluchi) Syn.: <i>Chanda ruconius</i> Ham. & Buch 1822 <i>Equula interrupta</i> Cuv. & Val. <i>Equula ruconius</i> Day 1875—78	Coastal Waters of Sind, Mekran and Karachi.	
285.	CD—46	<i>Secutor insidiator</i> (Bloch) Syn.: <i>Zeus insidiator</i> Bloch 1787 <i>Equula insidiatrix</i> (Cuv. and Val.) <i>Equula insidiatrix</i> Day 1875—78	Coastal Waters and occasionally recorded from tidal rivers of Sind, Mekran and Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
286.	CD—47	<i>Leiognathus equulus</i> (Forsk.) Greater Pony Fish. Kanderi, Tikla (Sindhi) Syn.: <i>Scomber equula</i> Forskal 1775 <i>Leiognathus edentula</i> Day 1875—78 <i>Equula edentula</i> Day 1875—78	Coastal waters sometimes ascending rivers of Sind, Mekran and Karachi.	
Pomadasyidae				
287.	CD—48	<i>Pomadasys operculare</i> (Playfair) Pomadesid Grunt Kogla, Mullan, Dhoter. Syn.: <i>Pristipoma operculare</i> Playfair 1866	Common Sind, Mekran and Karachi Coast.	
288.	CD—49	<i>Pomadasys maculatus</i> (Bloch) Spotted Grunter Syn.: <i>Anthias maculatus</i> Bloch 1797 <i>Lutianus maculatus</i> Lacep. <i>Pristipoma maculatus</i> Bleeker <i>Pomadasys maculatus</i> Fowler <i>Pristipoma maculatum</i> Day 1875—78	Common Sind, Mekran and Karachi Coast.	
Plectorhynchidae				
289.	CD—50	<i>Gaterin cinctus</i> (Schlegel) Three-Banded Sweet Lip Syn.: <i>Diagramma cinctus</i> Schlegel 1843 <i>Diagramma cinctus</i> Day 1875—78	Coastal Waters of Sind, Karachi and Mekran.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
Sciaenidae				
290.	CD—51	<i>Sciaena dussumieri</i> (Val. & Cuv.) Dussunier's Jew Fish Syn.: <i>Umbrina dussumieri</i> Cuv. and Val. 1833 <i>Sciaena dussumieri</i> Bleeker 1877	Coastal Waters of Sind, Mekran and Karachi.	
291.	CD—52	<i>Johnius maculatus</i> (Bloch & Schneider) Black-Banded Jewfish Bokdi (Sindhi and Mekran) Mushka (Sindi) Syn.: <i>Johnius maculatus</i> Bloch & Schneider 1801 <i>Sciaena maculata</i> Gunther	Coastal Waters of Sind, Mekran and Karachi.	
Sparidae				
292.	CD—53	<i>Sparus bifasciatus</i> (Forsk.) Syn.: <i>Chaetodon bifasciatus</i> Forskal 1775 <i>Holocentrus rabaji</i> Lacépède <i>Chryaophrys bifasciata</i> Cuv. & Val.	Estuaries and Coastal Waters of Sind, Karachi and Mekran.	
293.	CD—54	<i>Argyrops spinifer</i> (Forsk.) Long spined Red Bream Sohru (Baluchi) Syn.: <i>Spanus spinifer</i> (Forsk.) 1775 <i>Pagrus spinifer</i> Cuv. & Val. <i>Pagrus longifilis</i> Bleaker	Coastal Waters of Sind, Karachi and Mekran.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
Mulidae				
294.	CD—55	<i>Upeneus vittatus</i> (Forsk.) Yellow-striped goat fish. Moorori (Sindhi) Syn.: <i>Mullus vittatus</i> , 1775 <i>Upeneus sulphureus</i> Cuv. <i>Upenoides bivittatus</i> Bleeker <i>Upenoides vittatus</i> Day 1875—78	Coastal Waters of Sind, Mekran and Karachi.	
Drepanidae				
295.	CD—56	<i>Drepane punctata</i> (Linn.) Spotted Bat Fish Chanda, Punnur (Sindhi) Shuk (Baluchi) Syn.: <i>Chaetodon punctatus</i> Linn. 1758 <i>Chaetodon longimanus</i> Bl. & Schn. <i>Chaetodon falcatus</i> Lacep. <i>Harpochirus punctatus</i> Bleeker 1877	Coastal Waters of Sind, Mekran and Karachi.	
Scatophagidae				
296.	CD—57	<i>Scatophagus argus</i> (Linn.) Spotted Butter Fish Quce (Sindhi) Syn.: <i>Chaetodon argus</i> Linn. 1776 <i>Chaetodon arromaculatus</i> Bennet.	Creeks, Brack-waters and Coastal Waters of Sind, Mekran and Karachi.	
Parapercidae				
297.	CD—58	<i>Parapercis punctata</i> (Cuv. & Val.) Spotted Grubfish Banoor (Sindhi)	Coastal Waters of Sind, Mekran and Karachi. (Bottom dwellers, living amongst weeds).	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
		Syn. : <i>Percis punctata</i> Cuv. & Val. 1829 <i>Percis millepunctata</i> Day 1875—78 <i>Percis punctata</i> Day 1875—78		
		Trichiuridae		
298.	CD—59	<i>Trichiurus savala</i> (Cuv.) Ribbon Fish Talvar (Sindhi) Syn. : <i>Trichiurus savala</i> , Cuv. 1829 <i>Trichiurus armatus</i> Grey <i>Enhelyopus savala</i> Bleeker	Coastal Waters of Sind, Karachi and Mekran.	
		Scomberomoridae		
299.	CD—60	<i>Indocybium guttatum</i> (Bloch and Schneider) Spotted spanish Mackerel Surmoi (Sindi) Syn. : <i>Scomber guttatus</i> Bl. & Schn. 1801 <i>Cybuim guttatum</i> Cuv. & Val <i>Cybuim guttatum</i> Day 1875—78	Coastal Waters of Sind, Mekran and Karachi.	
		Stromateidae		
300.	CD—61	<i>Pampus argenteus</i> (Euphrasen) Silver pumpret Pithe (Sindhi) Syn. : <i>Stromateus argenteus</i> Euph. 1788 <i>Stromateus cinereus</i> Day 1875—78	Coastal Waters of Sind, Mekran and Karachi.	
		GOBIOIDEI		
		Trypauchenidae		
301.	CD—62	<i>Trypauchen vagina</i> (Bl. & Schn.) Burrowing goby Baleer (Sindhi) Syn. : <i>Gobius vagina</i> Bl. & Schn. 1801 <i>Trypauchen vagina</i> Cuv.	Lives under surface of mud in Coastal Waters of Sind, Mekran and Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN

Sl. No.	Catalogue No.	Name	Locality	Remarks
		COTTOIDEI		
		Scorpaenidae		
302.	CD—63	<i>Pterois russelli</i> Bennett Russell's Fire Fish Popat (Sindhi) Syn. : <i>Pterois russelli</i> Bennett 1831 <i>Pterois miles</i> Canter <i>Pterois kodipungi</i> Russell	Coastal Waters of Sind, Mekran and Karachi.	
		Synanceidae		
303.	CD—64	<i>Minous monodactylus</i> (Bl. & Schn.) Grey Goblin Fish Sarih (Sindhi) Syn. : <i>Scorpaena monodactylus</i> Bl. and Schn. 1801 <i>Minous Wooru</i> Cuv. <i>Minous monodactylus</i> Cuv. <i>Minous monodactylus</i> Day 1875—78	Coastal Waters of Sind, Mekran and Karachi.	
		DACTYLOPTERIFORMES		
		Dactylopteridae		
304.	CD—65	<i>Dactylopterus orientalis</i> (Cuv. & Val.) Flying Gurnard Shashan (Sindhi) Syn. : <i>Dactylopterus orientalis</i> Cuv. & Val. 1829. <i>Dactylopterus japonicus</i> Bleeker	Trawling grounds and Coastal Waters of Sind, Mekran and Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
PLEURONECTIFORMES				
Bothidae				
305.	CD—66	<i>Pseudorhombus javanicus</i> (Bleeker) Javanese Flounder Phani, Kukurjib (Sindhi) Syn.: <i>Rhombus javanicus</i> Bleeker 1853 <i>Pseudorhombus javanicus</i> Gunther	Coastal Waters of Sind, Mekran and Karachi.	
306.	CD—67	<i>Pseudorhombus arsius</i> (Ham. & Buch.) Phani, Kukurjib (Sindhi) Syn.: <i>Pleuronectis arsius</i> Ham. & Buch. 1822 <i>Rhombus arsius</i> Bleeker <i>Pseudorhombus russelli</i> Gunther <i>Pseudorhombus arsius</i> Day 1875—78	Seas and Estuaries of Sind, Mekran and Karachi.	
Soleidae				
307.	CD—68	<i>Zebrias quagga</i> Kaup Zebra sole Phani, Kukurjib (Sindhi) Syn.: <i>Aesopia quagga</i> Kaup 1858. <i>Synaptura jarreus</i> Bleeker <i>Synaptura zebra</i> Day 1875—78	Coastal Waters of Sind, Mekran and Karachi.	
ECHENEIFORMES				
Echeneidae				
308.	CD—69	<i>Echeneis naucrates</i> Linn. Slender Sucker Fish Syn.: <i>Echeneis naucrates</i> Linn. 1758	Coastal Waters of West Pakistan.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
Leptecheneis naucrates Smith Echeneis naucrates Smith 1949				
TETRADONTIFORMES BALISTOIDEI				
Balistidae				
309.	CD—70	<i>Sufflamen capistratus</i> (Shaw) Masked File Fish Syn.: <i>Balistes capistratus</i> Shaw 1804. <i>Balistes mitis</i> Bennett <i>Balistis frenatus</i> Bleeker 1865	Coastal reefs of Mekran, Sind and Karachi.	
Triacanthidae				
310.	CD—71	<i>Pseudotriacanthus strigilifer</i> (Cantor) Long spined Tripod Fish Tidda, Khokh (Sindhi and Baluchi) Syn.: <i>Triacanthus strigilifer</i> Cantor 1849 <i>Triacanthus longirostris</i> Hellard	Coastal Waters of Sind, Mekran and Karachi.	
311.	CD—72	<i>Triacanthus indicus</i> (Regan) Short-nosed Tripod Fish Sukura, Tidda and Khokh (Sindhi and Baluchi) Syn.: <i>Triacanthus indica</i> Regan 1903. <i>Balistes biaculeatus</i> Bennett <i>Triacanthus bennetti</i> Bleeker <i>Triacanthus brevirostris</i> Temm. & Schleg <i>Triacanthus brevirostris</i> Day 1875—78	Coastal Waters of Sind, Mekran and Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
OSTRACIOIDEI				
Ostraciontidae				
312.	CD—73	<i>Tetrosomus gibbosus</i> (Linn.) Thorn-backed Boxfish Tidda (Sindhi) Syn.: <i>Ostracion gibbosus</i> Linn. 1758 <i>Ostracion turitus</i> Forskal. <i>Ostracion turitus</i> Day. 1875—78	Coastal Waters of Sind, Mekran and Karachi.	
TETRADONTOIDEI				
Diodontidae				
313.	CD—74	<i>Diodon hystrix</i> Linn. Spotted Percupine Fish Muller (Sindhi) Syn.: <i>Diodon hystrix</i> Linn. 1758 <i>Paradiodon hystrix</i> Bleeker <i>Diodon brachistus</i> Bl. & Schn. <i>Diodon punctatus</i> Cuv.	Coastal Waters of Sind, Mekran and Karachi.	
314.	CD—75	<i>Diodon maculifer</i> Kaup Bloched Porcupine Fish Muller (Sindhi) Syn.: <i>Diodon maculifer</i> Kaup 1855 <i>Diodon maculifer</i> Smith 1949 <i>Tetrodon maculatus</i> Smith 1949	Coastal Waters of Sind, Mekran and Karachi.	
Lagocephalidae				
315.	CD—76	<i>Torquigener oblongus</i> (Bloch) Oblong Blowfish Tooro (Sindhi) Syn.: <i>Tetrodon oblongus</i> Bloch 1786 <i>Tetrodon patioca</i> Bleeker <i>Gastrophysus microphthalmus</i> Blyth.	Coastal Waters of Sind, Mekran and Karachi.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
316.	CD—77	<i>Gastrophysus lunaris</i> (Bloch & Schn.) Green Rough Backed Blowfish Toro (Sindhi) Syn.: <i>Tetrodon lunaris</i> Bl. & Schn. 1801 <i>Tetrodon tepa</i> Ham. & Schm	Coastal reefs and trawling grounds along the Coast of Sind, Mekran and Karachi.	
Tetraodontidae				
317.	CD—78	<i>Monotretus cutcutia</i> Ham. & Buch. Ocelated Blow Fish Tooro, Kakoo (Sindhi) Syn.: <i>Tetrodon cutcutia</i> Ham. & Buch 1822 <i>Tetrodon caria</i> Ham. & Buch. <i>Tetrodon guleris</i> Ham. & Buch.	Fresh Waters of East Pakistan.	
318.	CD—79	<i>Arothron immaculatus</i> (Bloch & Schn.) Immaculate Blowfish Tooro, Kakoo (Sindhi) Syn.: <i>Tetrodon immaculatus</i> Bl. & Schn. 1801 <i>Arothron scaber</i> Bleeker	Coastal Waters of Sind, Mekran and Karachi.	
319.	CD—80	<i>Arothron hispidus</i> (Lacep.) White-spotted Blow Fish Tooro, Kakoo (Sindhi) Syn.: <i>Tetrodon hispidus</i> Lacep. 1802 <i>Tetrodon parspicularis</i> Rup- pell <i>Grayracion impluvius</i> Bleeker	Coastal reef and trawling ground along Mekran, Karachi and Sind Coast.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—contd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
320.	CD—81	<i>Arothron reticularis</i> (Bloch & Schn.) Reticulated Blow Fish Tooro, Kakoo (Sindhi) Syn. : <i>Tetrodon reticularis</i> Bl. & Schn. 1801 <i>Tetrodon testudineus</i> Blk. 1801	Coastal Waters of Sind, Mekran and Karachi.	
LOPHIIFORMES				
Antennariidae				
321.	CD—82	<i>Antennarius hispidus</i> (Bloch & Schn.) Staggy Fishing frogs. Serin (Sindhi). Syn. : <i>Lophius hispidus</i> Bl. & Schn. 1801 <i>Lophius liestic</i> Russell <i>Chironectes hispidus</i> Cur. & Val. <i>Antennarius hispidus</i> Day 1875—78	Coastal Waters of Sind, Karachi and Mekran.	
322.	CD—83	<i>Antennarius numifer</i> (Cuv.) Ocellated Fringed Fishing Frog Serin (Sindhi). Syn. : <i>Chironectes numifer</i> Cuv. 1817 <i>Chironectes Chlorostigma</i> Cuv. & Val.	Coastal Waters of Sind, Mekran and Karachi.	
REPTILIA				
Hydrophiidae				
323.	RP—1	<i>Hydrophis cyano cinatus</i> (Daudin)	Karachi and Mekran Coast.	
324.	RP—2	<i>Hydrophis spiralis</i> (Shaw)	Karachi Coast.	
325.	RP—3	<i>Hydrophis lapemoides</i> (Grey)	Mekran Coast.	

PELAGIC AND DEMERSAL FAUNA OF PAKISTAN—concl'd.

Sl. No.	Catalogue No.	Name	Locality	Remarks
326.	RP—4	<i>Hydrophis mamillaris</i> (Daudin)	Karachi Coast.	
327.	RP—5	<i>Enhydrina schistosa</i> (Daudin) (Broken-sea Snake)	Karachi and Mekran Coast.	
328.	RP—6	<i>Lapemis curtus</i> (Shaw)	Mekran Coast.	
329.	RP—7	<i>Prascutata viperine</i> (Schmidt)	Karachi and Mekran Coast.	
330.	RP—8	<i>Microcephalophis cantoris</i> (Gunther)	Karachi Coast.	
331.	RP—9	<i>Pelamis platurus</i> (Linn.) (Pelagic sea-snake).	Karachi and Mekran Coast.	

REFERENCES

GENERAL

- | | | | | | |
|---------------------------------------|----|----|----|------|--|
| Alcock, A. | .. | .. | .. | 1902 | "A Naturalist in Indian Seas" John Murray
Albemarle Street, London. |
| Arnold, A. F. | .. | .. | .. | 1901 | The sea-at ebb-tide, New York. |
| Bruce, J. R. | .. | .. | .. | 1928 | Physical factors on the Sandy beach. Part I
tidal climatic and Edaphic. J. mar. biol. Assoc.
United Kingdom, Vol. 15 No. 2 PP. 522—535. |
| Caldwell, J. M. | .. | .. | .. | 1949 | Beach rosion Sci. Monthly, Vol. 69 No. 4. |
| Colman, J. | .. | .. | .. | 1933 | The nature of the intertidal Zonation of Plants
and Animals. J. mar. biol. Assoc. United
Kingdom, Vol. 18 No. 2 PP. 435—476. |
| Dakin, W. J., Bennett, I and Pope, E. | | | | 1948 | A study of certain aspects of the Ecology of the
Intertidal Zone of the New South Wales Coast.
Aust. J. Sci. Research Vol. (B) No. 2 PP.
176—230. |
| Dellow, V. | .. | .. | .. | 1950 | Intertidal Ecology at Narrow Neck Reef,
Newzealand. Pacific Sci. Vol. 4 No. 4 PP.
355—374. |
| Doe, L. A. E. | .. | .. | .. | 1964 | Physical condition of the shelf near Karachi
during post and monsoon calm. Contribution
No. 33. Bedford, Institute of Oceanography,
Dartmouth, N. S. Canada. |
| Eales, N. B. | .. | .. | .. | 1950 | "The Littoral fauna of Great Britian"
Cambridge at the University Press. |
| Elmhirst, R. | .. | .. | .. | 1931 | Studies in the Scottish marine fauna. —The
Crustacea of the Sandy and Muddy areas of the
tidal zone. Proc. Roy. Soc. Edinburgh.
Vol. 51, Part 2, No. 21, PP. 169—175. |
| Evans, R. G. | .. | .. | .. | 1947 | The Interdidal Ecology of selected localities
in the Plymouth neighbour hood. J. mar. biol.
Assoc. United Kingdom Vol. 27 No. 1 PP.
173—218. |
| Flattely, F. W. and walton, C. L. | | | | 1922 | The Biology of the Sea-shore PP. 1—336
Sidgwick and Jackson, London. |
| Furieux | .. | .. | .. | 1903 | "The sea-shore". Longmans, Green & Co.,
London. |
| Johonson, D. W. | .. | .. | .. | 1919 | Shore Processes and shore line Development,
PP. 1—584. Chapman and Hall, London, |

- Miner, R. W. 1950 "Field Book of Sea-shore life" G. P. Putnam's sons, New York.
- Newbigin, M. 1913 "Life by the Sea-shore" George Allen & Unwin Ltd., Museum Street, London.
- Qureshi, M. R. 1960 Fishes of commercial importance belonging to the order Perciformes. Proc. 4, Pan. Ind. Oc. Sci. Conf. Karachi.
- Russel, F. S. and Young .. 1928 "The seas" Frederick Warne & Co. Ltd., London.
- Sewell, R. B. S. 1925-32 Geographic and Oceanographic Research in Indian Waters. Mem. Asiat. Soc. Bengal PP. 1-67.
- Wilson, D. P. 1951 Life of the shore and shallow sea, 2nd ed. PP. 1-213. Nicholson & Watson and London.
- Young, C. M. 1949 The sea-shore PP. 1-311, Collin, London.

COELENTRATA

- Allman, Prof. G. J. 1883 "Report on the Hydroida by H. M.S. Challenger during the year 1873-76" Vol. 7 No. 3, PP. 19, Pl. 1, fig. 1-4.
- 1886 "Description of Australian Cape and other Hydroida, mostly new from the collection of Miss H. Gatty". J. Linn. Soc. London (Zool.) Vol. 19, PP. 132-160.
- 1904 "Diagnosis of new genera and species of Hydroida". Ceylon Pearl Oyster Fisheries Part II. Report No. 8, PP. 107-126.
- Annandale, N. 1915 "Fauna of Chilka Lake" Mem. Ind. Mus. Vol. 5 (1-6), PP. 68-96.
- Armstrong, J. 1879 "A description of some new species of Hydroida Zoophytes from the Indian Coasts and Seas".
- Billard, A. 1913 "Hydroides, 1, Plumularidae." Siboga-Expedite, Mon. 7a : PP. 1-114.
- 1925 "Hydroides II, Synthecidae et Sertularidae". Siboga-Expedite, Mon. 7b : PP. 115-232.
- Gravely, F. G. 1927 "The littoral Fauna of Krusadai Island in the Gulf of Mannar (Hydrozoa)." Bull. Mad. Govt. Mus. (N. S., N. H. Sect.) Vol. 1, PP. 7-20.

- Kolliker, Prof. A. V. 1879 "Report on the Pennatulida dredged by H.M.S. Challenger during the year 1873-76". Vol. 1, No. 2. PP. 10.
- Miner, R. W. 1950 "Field Book of Seashore Life".
- Parulekar, A. 1968 "Two new species of Sea-Anemones (Actimaria) from Maharashtra." J. Bomb. Nat. Hist. Soc. Vol. 64, No. 3, PP. 524-529.
- 1968 "Sea-Anemones (Actimaria) of Bombay". J. Bomb. Nat. Hist. Soc. Vol. 65, No. 1, PP. 138-147.
- 1968 "On a new species of Sea-Anemone from Maharashtra". J. Bomb. Nat. Hist. Soc. Vol. 65, No. 3. PP. 590-595.
- Raj, B. S. 1927 "The littoral Fauna of Krusadai Island in the Gulf of Mannar (Siphonophora)". Bull. Madr. Govt. Mus. (N.S., N.H. Sec.) Vol. 1. No. 1, PP. 21.

ANNELIDA

- Aziz, N. D. 1938 "Polychaetes of Karachi". Mem. Deptt. Zoology, Punjab University.
- Bindra, S. S. 1927 "Fauna of Karachi". Genus Eurythoe. Mem. Deptt. Zoology, Punjab University.
- Fauvel, P. 1953 "The fauna of India, "Annelida Polychaeta".

BRYOZOA

- Annandaie, N. 1916 Zoological results of a tour in the forest. Polyzoa Entoprocta and Cheilostomata, Calcutta, Mem. Asiatic. Soc. Bengal, Vol. 6, PP. 13-37, Pls. I & II.
- 1919 Sponges, Hydrozoa and Polyzoa of Sustan. Calcutta. Rec. Ind. Mus. Vol. 18, PP. 83-97, Pl. xii.
- Ferdinand, C. & Bassler, R. S. .. 1929 Contribution to the Biology of the Phillippine Archipelago and Adjacent Region. The Bryzoa of the Phillippine Region. Bull. U.S. Nat. Mus. Bur. 100, Vol. 9, XI+685 figs. 224, Pl. 94.

- Harmer, S. F. 1896 Polyzoa. Cambridge Nat. Hist. Vol. II (Worms Rotifers and Polyzoa) pp. 463—533 text figs. 232—357.
- 1926 The Polyzoa of the Siboga Expeditions, II. Cheilostomata, Anasca. Rept. Siboga Expedition 28d XV + 641—1147.
- 1957 The Polyzoa of the Siboga Expedition Part IV, Cheilostomata Aschophora II. Siboga Exped., 28d 64—1147.
- Hincks, T. 1880 A History of the British Museum. Polyzoa Vol. 1, C. XI + 601 pp. Vol. 2, 83 pl. London John. Van. Voorst.
- 1884 "Contribution towards a general History of Marine Polyzoa XII. Polyzoa from India." Ann. Mag. Nat. Hist., Vol. 5, XIII, pp. 356—362. pl. XIII.
- 1877 On British Polyzoa Part II, Classification, Ann. Mag. Nat. Hist. Vol. 4, No. 20. pp. 526—32.
- Karim, S. I. 1971 Bryozoa of the genus Bugula of Karachi Coast. Rec. Zool. Sur. Pakistan Vol. II, No. 2.
- Robertson, A. 1921 Report on collection of Bryozoa from the Bay of Bengal and the Eastern Seas. Rec. Indian Mus. Calcutta Vol. XXII, pp. 33—6511.
- Ryland, J. S. 1960 The British species of Bugula (Polyzoa). Proc. Zool. Soc. London. Vol. 134, PP. 65—105, 3 pl. 15 text figs.
- Thornely, L. R. 1907 Report on the Marine Polyzoa in the collection of the Indian Museum. Rec. Ind. Mus. Vol. 1, pp. 178—196, 8 text figs.
- 1912 The Marine Polyzoa of the Indian Ocean from H. M. S. "Sealark" Rep. Pursey Saladin. Trust Exp. to Indian Ocean under J. Stanely Gardiner IV. Trans. Linn. Soc. London Zool. Vol. XV, pp. 137—157, pl. viii.
- 1916 Report on the Polyzoa collected by Mr. James Hornel at Okhamandal in Kathiawar in 1905-6 in report of the Government of Baroda on the Marine Zoology of the Okhamandal in Kathiawar, Part II London William and Norgate, pp. 157—165.

- Thurston, E. 1895 "Rameswarm Island and fauna of Gulf of Mannar" Bull. Madras. Govt. Mus., 1 pp. 79—138, 2 maps 4 view.
- Waters, Arther, W. M. 1909 Reports on the Marine Biology of the Sudanese Red Sea, from collection made by Gyril Crossland, N. A. B.Sc., F. A. S., together with collection made in the Red Sea by Dr. Hurtemyer xii. The Bryozoa. J. Linn Soc. Zool. London. Vol. 87 pp. 123—181 pls. x-xviii.

CRUSTACEA

- Ahmad, M.F. 1966 Some Rostral abnormalities in the genus *Pendaeus* Agri. Pak., Vol. XVII, No. 4, pp 435—440.
- Ahmed, N. 1957 Prawn and Prawn Fishes of East Pakistan. (Directorate of Fisheries, East Pakistan, Govt. Press, Dacca.)
- Alcock, A. 1894 Natural History notes from H. M. Indian Marine Survey Steamer "Investigator", Commander C. F. Oldham, R. N. Commanding series II No. 14. An Account of recent collection of deep sea Crustacea from the Bay of Bengal and Laccadive Sea. Journal Asiat. Soc. Bengal. Vol. LXIII, pt. II No. III, pp. 175—185.
- 1894 a Natural History notes from H. M. Indian Marine Survey Steamer "Investigator", Commander C. F. Oldham, R. N. Commanding. series II No. 17, List of the Shore and Shallow—Water Brachyura collected during the season 1893-1894. Journal. Asiat. Soc. Bengal, Vol. LXIII, pt. II, No. IV, PP. 197—209.
- 1895 Materials for a carcinological fauna of India No. 1. The Brachyura, Oxyrhyncha. Journal Asiat. Soc. Bengal, Vol. LXIV, pt. II, No. II, pp. 157—289.
- 1895 a Description of a new species of Oxyrhyncha Crab of the genus Parthenopa, Journal Asiat. Soc. Bengal Vol. LXIV, pt. II, No. II, pp. 296—298.
- 1896 Materials for a Carcinological fauna of India No. 2. The Brachyura, Oxystoma. Journal Asiat. Soc. Bengal Vol. LXV, pt. II, No. II, pp. 134—296.

- Alcock, A. 1898 Materials for a Carcinological fauna of India No. 3. The Brachyura, Cyclometopa. Pt. I. The family Xanthidae. Journal Asiat. Soc. Bengal Vol. LXVII, pt. II, No. I, pp. 67—233.
- 1899 Materials for a Carcinological fauna of India No. 4. The Brachyura Cyclometopa. Journal Asiat. Soc. Bengal Vol. LXVIII, pt. II, No. 1, pp. 1—104.
- 1899 a Natural History notes from the Royal Indian Marine Survey Ship "investigator", Commander T. H. Henning, R. N. Commanding. series III No. 3 on some notable new and rare species of Crustacea. Journal Asiat. Soc. Bengal Vol. LXVIII, pt. II, No. III, pp. 111—119.
- 1899 b Materials for a Carcinological fauna of India No. 5. The Brachyura, Primigenia, or Dromiacea Journal Asiat. Soc. Bengal Vol. LXVIII, pt. II, No. III, pp. 123—169.
- 1900 Materials for a Carcinological fauna of India No. 6. The Brachyura, Catometopa, or grapsoida. Journal Asiat. Soc. Bengal, Vol. LXIX, pt. II, No. III, pp. 229—456.
- Anderson, A. R. 1894 Natural History Ntes from the Royal Indian Marine Survey Steamer "Investigator", Commander C. F. Oldham, R. N. Commanding—series II, No. 12. Journal Asiat. Soc. Bengal Vol. LXIII, pt. II, No. II, pp. 138—139.
- 1896 Natural History notes from the R. I. M. Survey Steamer "Investigator", Commander C. F. Oldham, R. N. Commanding, series II, No. 21, An account of the Deep Sea Crustacea collected during the season 1894-95,—By A. R. S. Anderson, B. A., Journal Asiat. Soc. Bengal Vol. LXV, pt. II, No. II, pp. 103-106.
- Barnard, K. H. 1946 Description of new species of South African Decapod Crustacea, with notes on synonymy and new records. Ann. Mag. Nat. Hist. Vol. II No. XIII, pp. 361—391.

- 1950 Descriptive Catalogue of South African Decapod Crustacea (Crabs and Shrimps), and Descriptive list of South African Stomatopod Crustacea (Mantis Shrimps). Ann. S. Afr. Mus. Vol. XXXVIII, pp. 1—1864.
- Boone, L. 1930 Scientific results of the cruises of the Yachts "Eagle" and "Ara", 1921—1928, William K. Vanderbilt commanding, Crustacea Stomatopoda and Brachyura. Bull. Vanderbilt Mar. Mus. Vol. II, pp. 21—42.
- 1938 Scientific results of the world cruises of the Yachts "Ara" 1928-1929 and "Alva" 1931-1932. "Alva" Mediterranean cruise 1933, and "Alva" South American Cruise 1935 William, K. Vanderbilt commanding. Crustacea, stomatopoda Bull. Vanderbilt Mar. Mus. Vol. VII, pp. 203—208.
- Borradaile, L. A. 1898 On some crustaceans from South Pacific Part I, Stomatopoda. Proc. Zool. Soc. Lond. pp. 32—38.
- 1900 On some Crustaceans from the South Pacific Part IV. The Crabs. By L. A. Borradaile, M. A., F. Z. S., Lecturer in Natural Sciences of of Selwyn College, Cambridge. Proc. Zool. Soc. Lond. pp. 568—596.
- Brady, G. S. 1883 Report on Copepoda on the Scientific result on the Voyage, H. M. S. Challenger, Zoology Vol. III Part 23. London.
- Buitendijk, A. M. 1950 On a small collection of Decapoda Brachyura, Chiefly Dromiidae and Oxyrhyncha, from the neighbourhood of Singapore. Bull. of the Raffl. Mus. Singapore No. 21, pp. 59—82.
- Calman, W. T. 1920 A new Crab of the genus Sesarma from Basra. Ann. Mag. Nat. Hist. Vol. V No. 9, pp. 62—64.
- 1925 A new crab of the genus Sesarma from New Guinea. Ann. Mag. Nat. Hist. Vol. XV No. 9 pp. 454—456.
- 1939 Crustacea, Caridea. John Murry. Exped. Vol. VI, pp. 183—224.

- Chhapgar, B. F. 1956-57a On the Marine Crabs (Decapoda : Brachyura) of Bombay State Part I. J. Bombay Nat. Hist. Soc. Vol. 54, No. 2 pp. 399—439.
- 1956-57b On the Marine Crabs (Decapoda : Brachyura) of Bombay State Part II. J. Bombay Nat. Hist. Soc. Vol. 54 No. 3, pp. 503—549.
- Chopra, B. 1933 Further notes on Crustacea Decapoda in the Indian Museum III.—on the Decapod Crustacea collected by the Bengal Pilot Service off the mouths of the River Hughli. Dromiacea and Oxystomata. Rec. Ind. Mus. Vol. XXXV, pp. 25—52.
- 1933 a Further notes on Crustacea Decapoda in the Indian Museum IV—on two new Species Oxystomous Crab from the Bay of Bengal Rec. Ind. Mus. Vol. XXXV, pp. 77—86.
- 1934 On the stomatopods, crustacea collected by the Bengal Pilot Service of the mouth of River Hugly together with notes on some other forms. Rec. Ind. Mus. Vol. XXXVI, pp. 17—44.
- 1934a Further notes on Crustacea Decapoda in the Indian Museum, VI. on a new Dromiid and a rare Oxystomous crab from the sand heads, of the mouth of the Hugly River, Rec. Ind. Mus. Vol. XXXVI, pp. 477—482.
- 1935 Further notes on Crustacea Decapoda in the Indian Museum. VIII on the Decapod Crustacea collected by the Bengal Pilot Service off the mouth of the River Hooghly. Brachygnatha (Oxyrhyncha and Brachyrhyncha) on three South Indian Crabs (Decapoda Brachyura) of the Madras Museum, Rec. Ind. Mus. Vol. XXXVII, pp. 463—514.
- 1939 Stomatopoda, John Murray Exped. Sci. Reps. Vol. VI pp. 137—181.
- 1940 Some food, prawns, crabs of India and their fisheries. J. Bombay Nat. Hist. Soc. Vol. 41 No. 2 pp. 221—234.

- Chopra, B. and Dass, K. N. 1930 Further notes on Crustacea Decapoda in the Indian Museum I. on two new species of Hymenomatid Crab, with notes on some other species. Rec. Ind. Mus. Vol. XXXIX, pp. 413—429.
- Dass, K. N. 1930 Further notes on Crustacea Decapoda in the Indian Museum, I. Rec. Ind. Mus. Vol. XXXII, pp. 413—430.
- 1937 Further notes on Crustacea Decapoda in the Indian Museum. Rec. Ind. Mus. Vol. XXXIX, pp. 377—434.
- de-Maan, J. G. 1888 Report on the Podophthalmous Crustacea of the Mergui Archipelago, Collected for the Trustees of Indian Museum, Calcutta, by Dr. John Anderson, F.R.S. Superintendent of the Museum Part I. J. Linn. Soc. Lond. (Zool) Vol. XXII, pp. 1—212.
- 1908-1909 Description of the new species of the genus Sesahma Say from Anderson Islands Rec. Ind. Mus. Vol. II, pp. 181—185.
- 1908-1909a The fauna of Brackish Ponds at Port Canning, Lower Bengal. Rec. Ind. Mus. Vol. II, pp. 211—231.
- Finnegan, S. 1930-1932 Report on the Brachyura collected in Central America the Gorgoan and Galapagos Islands by Dr. Cross Land on the St. George Expedition to the Pacific, 1924-25, J. Linn. Soc. Lond. (Zool.) Vol. XXXVII, pp. 607—673.
- Flipse, H. J. 1930 Decapoda, Brachyura Der Siboga Expedition. Oxyrhyncha-Parthenopidae. Siboga exped. Rep. Vol. XXXIX C2, pt. VI, pp. 1—96.
- Gordon, I. 1932 Brachyura from the Coast of China, J. Linn. Soc. Lond. (Zool) Vol. XXXVII, pp. 525—558.
- 1936 On a few Indopacific species of Pinnotheres, with special reference to asymmetry of the walking legs. J. Linn. Soc. Lond. (Zool) Vol. XI, pp. 163—180.

- 1950 Crustacea Dromiacea (i) Systematic account of the Dromiacea collected by John Murry expedition. (ii) Morphology of the spermethica in certain Dromiacea. John Murray exped. 1933-34, Vol. IX(3), pp. 201—230 and 231—253.
- Gravely, F. H. 1927 The littoral Fauna of Krusadai in the Gulf of Manaar. Bull. Madras. Govt. Mus. (n.s.). Vol. 1, No. 1, pp. 135—155.
- Hansen, H. J. 1926 Stomatopoda of the Siboga Expeditions. Siboga Exped. Rep. Vol. XXXV, pp. 1—48.
- Hendersen, J. R. — — 1893 A contribution to Indian Carcinology. Trans. Linn. Soc. Lond. (Zool) (2) V. pp. 325—458.
- Hokhuis, L. B. 1964 Preliminary notes on two new genera of stomatopoda, Crustaceana, Vol. 7, No. 2, pp. 140—141.
- Hora, S. L. 1933 A note on the Bionomics of Two estuarine crabs. Proc. Zool. Soc. Lond. pt. II, 881—884.
- Ihle, J. E. W. 1913 Die Decapoda Brachyura der Siboga-Expedition I. Dromiacea. (W, 96, S, 38 Figs., 4 Taf.) Gld. 8. 35.
- 1916 Die Decapoda Brachyura der Siboga Expedition II. Oxystomata, Dorippidae (IV S, S. 97—158, Fig. 39—77).
- 1918 The Decapoda Brachyura of the Siboga Expedition, IV, (Erroneously numbered 1). T. J. TESCH. Hymenosomidae, Retroplumidae, Ocypodidae, Grapsidae and Gecarcinidae. Febr. (IV. 148 P., 6 pl., + 1).
- Jones, S. and Sujansingani, K. H. 1952 Notes on the Crab Fishery of the Chilka Lake. J. Bombay Nat. Hist. Soc. Vol. 51 No. 1, pp. 123—134.
- Kemp, S. 1911 Preliminary description of new species and varieties of Crustacea Stomatopoda in the Indian Museum. Rec. Ind. Mus. Vol. VI, pp. 93—100.
- 1913 An account of the Crustacea Stomatopoda of the Indopacific region. Mem. Ind. Mus. Vol. IV, pp. 1—217.

- 1915 Fauna of the Chilka Lake Crustacea Decapoda. Mem. Ind. Mus. Vol. V., pp. 199—325.
- 1917 Notes on the Fauna of the Mathah River in the Gangetic Delta. Rec. Ind. Mus. Vol. XIII, pp. 243—279.
- 1918 Crustacea Decapoda of the Inle Lake Basin. Rec. Ind. Mus. Vol. XIV, pp. 81—102.
- 1919 Notes on Crustacea Decapoda in the Indian Museum XII Scopemerinae. Rec. Ind. Mus. Vol. XVI, pp. 305—348.
- 1920 Notes on Crustacea Decapoda in the Indian Museum, XIII, The Indian species of Macrophthalmus. Rec. Ind. Mus. Vol. XVI, pp. 383—391.
- Kemp, S. and Sewell, R. B. S. .. 1912 Notes on Decapoda in the Indian Museum III. The species obtained by R. I. M. S. S. 'Investigator'. During the survey season 1910-1911. Rec. Ind. Mus. Vol. VII, pp. 15—32.
- Lanchaster, W. F. 1900 On a collection of crustaceans made at Singapore and Malacca—Part I. Crustacea Brachyura. Proc. Zool. Soc. Lond. pp. 719-770.
- Laurie, R. D. 1907-1915 Reports on the Marine Biology of the Sudanese Red-Sea—XXI on the Brachyura. J. Linn. Soc. Lond. (Zool.) XXXI, pp. 407—425.
- Leene, J. E. 1938 The Decapoda Brachyura of the Siboga Exped. VII. Brachygnatha. Portunidae. Siboga Exped. Rep. Vol. XXXIX C⁸, pp. 1—153.
- Lloyd, R. E. 1907 Crustacea, Squilla investigatoris, sp. nov. Rec. Ind. Mus. vol. I, pp. 10—12.
- 1908 Remarkable cases of variation I, Squilla investigatoris. Rec. Ind. Mus. Vol. II, pp. 29—35.
- 1878 On Acteomorphe erosa, a new genus and species of Crustacea. J. Linn. Soc. Lond. Zool. Vol. XIII, p. 183—185.
- 1882 On some Crustaceans from Mauritius. Proc. Zool. Soc. Lond. pp. 339—342.

- Montgomery, S. K. 1931 Report on the Crustacea Brachyura of the Percy Sladen Trust expedition to the Abrolhos Islands under the leadership of the Prof. W. J. Dakin, D. Sc., F. L. S., in 1913, alongwith other crabs from Western Australia (Plates 24—30, and I text figure) J. Linn. Soc. Lond. (Zool.) Vol. XXXVII, pp. 405—465.
- Patil, A. K. 1951 Study of the Marine fauna of the Karwar Coast and neighbouring Islands J. Bombay Nat. Hist. Soc. vol. 50 No. 1. pp. 128—139.
- Pocock, R. I. 1893 Reports upon the Stomatopod Crustacea obtained by P. W. Basset-Smith, Esqr., Surgeon, R. N. during the cruise in the Australian and China Seas, of H. M. S. Penguin. Commander W. U. Moore. Ann. Mag. Nat. Hist. Ser. 6, Vol. XI, pp. 473—479.
- Rathbun, M. J. 1911 Marine Brachyura, Plates 15—20 and Text figure. Trans. Linn. Soc. Lond. (2) Zool. Vol. XIV, pp. 191—261.
- 1914 Stalked Eyed Crustaceans collected at the Monte Bullo Islands. Proc. Zool. Soc. Lond. pp. 657—664.
- 1930 The Cancroid crabs of America of the families Euryalidae, Portunidae Atelecyclidae, Cancoridae, and Xanthidae, U. S. Nat. Mus. Bull. 97, pp. 23—26.
- Sars, G. O. 1903 An Account of Crustacea of Norway Vol. IV, Copepoda Calanoidea.
- Scot, A. 1909 The Copepoda of Siboga Expedition, Monograph XXIX A, pp. 1—323, pt. 1-164.
- Sewel, R. B. S. 1929 The Copepoda of Indian Seas calanoidae. Mem. Ind. Mus. No. 10. pp. 30—71.
- Sence, B. 1888 Report on Crustacea Macrura. Voyage of H. M. S. Challenger Vol. XXIV. London.
- Stebbing, T. R. R. 1900 On some Crustacean from the Falkland Islands. Proc. Zool. Soc. Lond. pp. 517—529.

- Tattersall, W. M. 1921 Report on the Stomatopoda and Macrurous Decapoda collected by Mr. Cyril Crossland in the Sudanese Red Sea. J. Linn. Soc. Lond. (Zool.) XXXIV, pp. 345—398.
- Tesch, J. J. 1918 The Decapoda Brachyura of the Siboga Expedition IV (erroneously numbered I). Hymenosomidae Retroplumidae, Ocypodidae, Grapsidae and Gecarcinidae. Siboga Exped. Rep. Vol. XXXIXC pt. I, pp. 1—148.
- 1918 The Decapoda Brachyura of the Siboga Expedition V. (erroneously numbered II) Goneplacidae and Pinnotheridae.
- Tirmizi, N. M. 1962 A new record of *Metapenaeus Stibbingi* from Pakistan. Crustaceana Vol. 4, No. 2, pp. 103—106.
- 1967 "Commercial Prawns of West Pakistan." Food and Agriculture Organization of the United Nations Mexico, 12.
- Tirmizi N. M., and Quddusi, B. ... 1973 Shore and Offshore Penaeid Prawns of Northern Arabian Sea. Department of Publications University of Karachi, Pakistan pp. 68, Fig. 1—46.
- Tweedie, M. W. F. 1940 New and interesting Malaysian species of *Sesarma* and *Utica*. Bull. Raffles Mus. Singapore Vol. 16, pp. 88—113.
- 1947 On the Brachyura of Christmas Island Bull. Raffles Mus. Singapore Vol. 18, pp. 27—42.
- 1949 Additions to the collection of Stomatopoda in the Raffles Museum. Bull. Raffles Mus. Singapore, Vol. 19, pp. 39—41.
- 1950 A collection of crabs from Aor Island, South China Sea. Bull. Raffles Mus. Singapore Vol. 21, pp. 83—96.
- 1950 The fauna of the Cocos—Keeling Islands, Brachyura and Stomatopoda. Bull. Raffles Mus. Singapore Vol. 22, pp. 105—139.
- 1954 Notes on Grapsoid Crabs from the Raffles Museum, Nos. 3, 4 and 5. Bull. Raffles Mus. Singapore Vol. 25, pp. 118—128.

- Walker, A. O. 1887 Notes on a collection of Crustacea from Singapore. J. Linn. Soc. Lond. (Zool) Vol. XX, pp. 107—117.
- Ward, M. 1934 & 1935 Notes on a collection of Crabs from Christmas Island Indian Ocean. Bull. Raffles Mus. Singapore, Vol. 9, pp. 5—28.
- Wilson, C.B. 1932 The Copepoda of the Woods—Hole Region Massachusetts. U.S. National Mus. Bull 1958.

MOLLUSCA

- Bartsch, P. 1921 A new classification of the shipworms and description of some new wood boring mollusks. Proc. Biol. Soc. Washington, Vol. 34, pp. 25—32.
- 1923 Addition to our knowledge of shipworms Proc. Biol. Soc. Washington, Vol. 36, pp. 95—102.
- 1927 The shipworms of the Philippine Island ; contribution to the biology of the Philippine Archipelago and adjacent regions. Bull. U.S. Nat. Mus. Bull No. 100 Vol. 2, No. 5, pp. 533-554.
- Boissevain, M.M. 1903 Siboga Expedition, Scaphopoda No. LIV.
- Calman, W.T. 1920 Notes on Marine wood boring animals I, the shipworms (Teredinidae). Proc. Zool. Soc. Lond. pp. 391—403.
- 1926 The shipworm. Nature (London), 117 (2953), pp. 795—797.
- Crichton, M.D. 1942 Marine shells of Madras. J. Bombay Nat. Hist. Soc. Vol. XLII, No. 2, pp. 323—341.
- Cybes 1903 Amphineura in the Hardman's Report of Ceylon Pearl Oyster Fisheries in the Gulf of Manaar, I.
- Erlanson, E.W. 1936 A preliminary survey of marine boring organisms in Cochin Harbour, Curr. Sc. Vol. 4, pp. 726—732.
- Ganapati, P.N. and Nagabhushanam, R. 1953 Sex changes in wood boring bi-valve mollusc, *Martesia striata* (Linn.) Curr. Sc. Vol. 22, pp. 345-346.
- Ganapati, P.N. and Lakshaman Rao, V.V. 1961 The marine wood borer, *Xylophaga* from Bay of Bengal. Curr. Sc. Vol. 30, pp. 464-465.

- Grave, B.H. 1928 Natural History of Shipworms, *Teredo navalis* at Woods Hole, Massach, Biol. Bull. Woods Hole, Vol. LV, No. 4, pp. 260—282.
- Gravelly, F.M. 1941 Littoral fauna of Krusadi Island—Groups other than snails etc. (Mollusca) Bull. Madras Govt. Mus. (Nat. Hist.) Vol. V, No. 1, pp. 1—112.
- Hasan, S.A. 1960 Oyster Fishing resources of Pakistan Proc. 4th Congr., PIOSA, Karachi, Sec. B, pp. 271—282.
- Hill, C.E. and Kofoed, C.A. 1927 Marine borers and their relation to the Marine Contructions on the Pacific Coast. Final Report on San Francisco Bay Marine Piling Committee, pp. 269—284.
- Hornell, J. 1916 Indian varieties and races of *Turbinella*. Mem. Ind. Mus. Vol. VI, pp. 109—122.
- 1917 A revision of the Indian species of *Meretrix*. Rec. Ind. Mus. Vol. XIII, pp. 153—173.
- Jameson, L.H. 1901 On the identity and distribution of the Mother of Pearl Oysters, with a revision of the subgenus *Maragartefera*. Proc. Zool. Lond. Vol., pp. 372—394.
- Khan, M.D. and Dastagir, S.G. 1970 On the Mollusca, Gastropod Fauna of Pakistan, Rec. Zool. Surv. Pak. Vol. 2, No. 1, pp. 17—25.
- 1971 On the Mollusca, Pelecypod Fauna of Pakistan. Agri. Res. Counc, Pakistan, 2/375, pp. 1—40.
- Melvill, C.J. 1909 Report on the Marine Mollusca obtained by Mr. Stanley Gardiner among with Islands of Indian Ocean in 1905. Tran. Linn. Soc. Lond. XIII, pp. 65—138.
- Moll, F. and Roch, F. 1931 The Teredinidae of British Museum, The Natural History Museum of Glasgow and Manchester, and the Jeffereys collection. Proc. Malac. Soc. Lond. Vol. XIX, 1930-31, pp. 201—218.
- Nagabhushanam, R. 1955 A systematic account of the moluscan wood borers of Visakhapatnam Harbour. Rec. Ind. Mus. Vol. 53, pt. 1 and 2, pp. 1—13.

- Nair, N.B. 1955 Shipworms from India I. Report on ten species of shipworms from Madras Coast. Rec. Ind. Mus. Vol. 52, Nos. 3 & 4, pp. 387—414.
- 1956 Shipworms of India II. Seven more shipworms from South India, Rec. Ind. Mus. Vol. 53, Nos. 1 & 2, pp. 261—278.
- 1956 The shipworms of South India, with a note on the breeding season of *Bankia indica* J. Bombay Nat. Hist. Soc. Vol. 54, pp. 344—357.
- 1964 Marine Timber Boring organism of the Indian Coast J. Bombay Nat. Hist. Soc. Vol. 62, No. 1, pp. 120—131.
- Navill, H. and Meesrs, G. 1869 Description of Marine Gastropods from Ceylon. Journal Asiat. Soc. Bengal., Vol. XXXVIII, pp. 157—209.
- Niazi, M.S. 1971 Variation in the pallets of *Teredo* (*Kuphus*) *mannii* Wright, collected from Karachi Coast. Rec. Zool. Surv. Pak. Vol. 2, No. 2, pp. 55—59.
- Nooruddin 1960 A short note on the gut-contents of edible oyster of Karachi Coast. Proc. 4th Congr. PIOSA, Karachi, Sec. B, pp. 134—161.
- Palekar, V.C. and Bal, D.V. 1955 Marine organisms injurious to sub-merged timber in the Bombay Harbour J. Bombay Nat. Hist. Soc. Vol. 53, No. 2, pp. 201—204.
- Rajgopal, A.S. 1964 Two new species of Marine Borers of the genus *Nausitora* (Mollusca : Teredinidae) of West Bengal, India. J. Bombay Nat. Hist. Soc. Vol. 61, No. 1, pp. 108—118.
- Ranjha, A.R. 1960 Edible Mollusca of Pakistan. Proc. 4th Congr. PIOSA, Karachi, Sec. B., pp. 168—171.
- Robson, G.C. 1927 Report on the Mollusca (Cephalopoda) Trans. Linn. Soc. Lond., Vol. XXII, part 3, pp. 321—330.
- Roonwall, M.L. 1954 The Marine borer *Bactronophorous thoracite* (Gould) as a pest of living trees in the mangroone forest of the Sunderbans, Bengal. Proc. Zool. Soc. (Bengal), Vol. 7, No. 2, pp. 91—105.

- Santhakumaran 1965 Further record of marine wood borers (Teredinidae : Mollusca) from Bombay Waters. J. Bombay Nat. Hist. Soc. Vol. 62, No. 3, pp. 580.
- Schilder, F.A. and Schilder, M. 1939 Prodrome of a Monograph on living Cypraeidae. Proc. Malac. Soc. Lond., Vol. XXIII, part iii, pp. 119—231.
- Shopland, E.R. 1902 List of marine shells collected in the neighbourhood of Aden between 1892—1901. Proc. Malac. Soc. Lond. Vol. V, pp. 171—184.
- Smith 1906 In Gardiner Fauna & Geography of the Maldives and Archipelagoes. Marine Mollusca II.
- Tomlin, J.R. Le.B. 1927 Zoological results of Cambridge Expedition to the Suez Canal in 1924. Report on the Mollusca : Amphineura, Gastropoda, Scaphopoda, and Cephalopod. Proc. Zool. Soc. Lond. (Zoology), Vol. XXII, part 3, pp. 291—320.
- Vredenburg, E.W. 1919 Observation on the shells of the family Doliidae. Mem. Ind. Mus. Vol. VII, pp. 145—190.
- Winck-worth, R. 1927 New species of Chiton from Aden and Southern India Proc. Malac. Soc. Lond. Vol. XVII, pp. 206—207.
- 1929 Marine Mollusca from South India and Ceylon—Pinna. Proc. Malac. Soc. Lond., Vol. XVIII, Part VI, pp. 276—291.
- 1939 On the species of *Xancus* or *Turbinella*. Proc. Malac. Soc. London., Vol. XXIII, Part VI, pp. 345—347.
- Winckworth, R. and Tomlin, J.R. LeB. 1933 Recent species of the genus *Tonna* (Dolium). Proc. Malac. Soc. Lond., Vol. XX, pt. IV, pp. 206—213.
- Wright, E.P. 1865 Contribution to a natural history of the Teredinidae. Trans. Linn. Soc. Lond. Vol. 25, pp. 561—568.
- Younge, C.M. 1951 Marine Wood boring organisms. Research, Vol. 4, No. 4.

ECHINODERMS

- Anderson, A.R.S. 1894 Natural History Notes from H.M. Indian Marine Steamer, Investigator : Ser. ii, No. 16, on the Echinoidea collected during the season 1893-94. Journal Asiat. Soc. Bengal Vol. 63, No. 2, pp. 188—195.
- Bell, F.J. 1888b Report on the collection of Echinoderms made at Tuticorin, Madras by Mr. Edgar Thurston, C.M.Z.S. Superintendent, Government Central Museum, Madras.
- Bell, F.G. 1892 Catalogue of the British Echinoderms in the British Museum (N.H.) Trustees of British Museum London, Proc. Zool. Soc. London, pp. 383—389.
- Boone, L. 1933 Bulletin of the Vanderbilt Marine Museum, Vol. IV, pp. 68—164.
- Boone, L. 1938 Bulletin of the Vanderbilt Marine Museum, Vol. VII, pp. 115—193.
- Clark, A.H. 1912a The Crinoids of the Indian Ocean. Echinoderms of the Indian Mus. Part VII, pp. 95—99.
- Clark, A.H. 1912b On small collection of recent crinoids from Indian Ocean. Rec. Ind. Mus., Vol. 7, pp. 267—271.
- _____ 1931 A monograph of the Existing Crinoids. U.S. National Museum Bull., 82, Vol. 1, Part 3, pp. 1—816.
- _____ 1932 On collection of Crinoids from the Indian Ocean and Bay of Bengal. Rec. Ind. Mus., Vol. 34, No. 5, pp. 551—567.
- _____ 1949 Echinoderms of Tarut Bay and Vicinity, Saudi Arabia, American Museum. Novitates., No. 1390, pp. 1—20, 2 figs.
- _____ 1966 Notes on the ophiotrichidea (ophiuroidea) Ann. Mag. Nat. Hist. Vol. 1, Ser. 13, Nos. 106, 107 & 108, pp. 637—655.
- Clark, A.H. and Davices 1966 Echinoderms of the Maldiv Islands, Ann. Mag. Nat. Hist. Vol. 13, No. 8, pp. 597—612.

- Clark, H.L. 1939 Ophiuroidea. Sci. Rep. John Murray Exped., Vol. 6, pp. 29—136.
- Döderlein, L. Die unterfamilie Oreasterinae (Siboga Expedite) Mons. XLVI a, XLVI ; XLVI 3 and XLVI c.
- Fisher, W.K. 1919 Starfishes of the Phillippine Sens and adjacent water. Bull. U.S. Nat. Mus. No. 100, Vol. 3, pp. 1—546.
- Haque, M.M. 1969 Echinoderms of Pakistan coasts. Rec. Zool. Sur. Pakistan, Vol. 1 and 2.
- James, D.B. 1966 Studies on Indian Echinoderms—The Holothurian *Stolus buccalis* (Stimpson) with notes on its Systematic Position. J. Mar. Biol. Ass. Indian, Vol. 8, No. 2, pp. 285—289.
- Kochler, A. 1900 Illustrations of the shallow water ophiuroidea collected by the R.I.M.S.S. "Investigator". Echinoderms of the Indian Museum, Part II, pp. 1—4.
- _____ 1910 Asteries de Museea Calcutta. II, Les. asteries littorales, Echinoderms of the Indian Museum, Part VI, pp. 191.
- _____ 1914 Echinides de musee a Calcutta L, Spatangides. Echinoderms of the Indian Museum, Part VIII, pp. 1—528.
- _____ 1922 Echinides de musee a Calcutta 1. Clypeastrides at Cassidulides, Echinoderms of the Indian Museum, Part IX, pp. 1—161.
- _____ 1927 Echinides de musee a Calcutta 1. Echinides reguliers, Echinodorms of the Indian Museum, Part X, pp. 1—158.
- Kurian, C.V. 1953 A preliminary survey of the bottom fauna and bottom deposits of the Travancore coast within the 15 fathom Line. Proc. Nat. Inst. Sci. India, Vol. 19, No. 6, pp. 747—775.
- Patil, A.M. 1953 Study of the marine fauna of the Karwar coast and the neighbouring islands (Part IV, Echinodermata and other groups). J. Bombay Nat. Hist. Vol. 5, No. 1 & 2, pp. 42—434.

- Sam, S.R. and Chhapgar 1962 Intertidal Echinodermata of Bombay. J. Bombay Nat. Hist. Soc. Vol. 59, No. 2, pp. 672—676.
- Wood—Mason, J. and Alcock. 1891 Natural History notes from H.M. Indian Marine Survey Steamer, Investigator : Ann. Mag. Nat. Hist. , Vol. 7, Ser. 6 Pt. 19, pp. 186—202, 258—272.

FISHES

- Ahmad, M.F. 1965 Record of *Rhinoptera sewelli* from Karachi Coast. Abst. Sc. Confr. 1965.
- Ahmad, M.F. 1970 Redescription of *Abudefduf luridus*. Senckenbergiana biologie, Vol. 51, No. 5/6.
- Ahmad, M.F. 1970 Morphology of Air—bladder of Sciaenoid Fishes and its significance in the classification. Rec. Zool. Sur. Pak., Vol. II, No. 1, 1970.
- Day, F. 1878-1888 The fishes of India : a natural history of the fishes of India, Burma, and Ceylon—(William Dawson and Sons Ltd., London 1958).
- Day, F. 1889 The Fauna of British India, including Ceylon and Burma, Fishes—London, Part 1 & 2.
- Misra, K.S. 1949 A check list of the fishes of Indian, Burma and Ceylon. I. Elasmobranchii and Holocephali. Rec. Ind. Mus. Delhi, Vol. 45, (1947), pp. 1-46.
- 1949 A check list of the fishes of India, Burma and Ceylon. II. Clupeiformes, Bathyclupeiformes, Galaxiiformes, Scopeliformes, and Ateleopiformes—Rec. Ind. Mus., Vol. 45 (1947), pp. 377—431.
- 1952 An Aid to the identification of the Fishes of India, Burma and Ceylon I. Elasmobranchii, and Holocephali.—Rec. Ind. Mus. Delhi, Vol. 49 (1951), pp. 89—137, 25 text figures.
- 1953 An Aid to the identification of the Fishes of India, Burma, and Ceylon, II. Clupeiformes, Bathyclupeiformes Scopeliformes, and Ateleopiformes—Rec. Ind. Mus. Delhi, Vol. 50 (1952), pp. 367—422, 30 text figures.

- 1959 An Aid to the identification of the common commercial fishes of India and Pakistan. Rec. Ind. Mus., Vol. 57, pp. 1—320, 198 text figures.
- 1955 The Marine and Freshwater Fishes of Ceylon. Department of External Affairs, Canberra, with 19 figures in the text and 56 plates.
- 1967 The fishes of New Guinea. Department of Agriculture Stock and Fisheries, Port Moresby, New Guinea, with 84 plates, 23 text figures.
- 1927 The flat fishes (Heterostomata) of India, with a list of specimens in the Indian Museum Part I, Rec. Ind. Mus. (Calcutta), Vol. 29, pp. 7—47, 7 pls. 30 text figures.
- 1928 The flat fishes (Heterostomata) of India, with a list of specimens in the Indian Museum, Part II, Rec. Ind. Mus. (Calcutta), Vol. 30, pp. 173—215, 4 pls. 30 text figures.
- 1955 Marine Fishes of Karachi and the Coasts of Sind and Makran. Central Fisheries Deptt., Ministry of Food & Agriculture, Govt. of Pakistan with 113 text figures.
- 1950 The Sea Fishes of South Africa, Central News Agency, Ltd. South Africa, pp. 1—550, pls. 103.
- 1913-1940 The Fishes of the Indo Australian Archipelago, Leiden, Vol. 2, No. 8.
- 1951 The Fishes of the Indo Australian Archipelago, Leiden, Vol. 9.
- 1953 The Fishes of the Indo-Australian Archipelago, Leiden, Vol. 10.
- 1962 The Fishes of the Indo-Australian Archipelago, Leiden, Vol. 11.
- SEA SNAKE
- 1965 The snakes of the Arabian Peninsula & Socotra. J. Bombay, Nat. Hist. Soc., Vol. 62, No. 3, pp. 475—506.
- 1968 On a collection of snakes in the Zoological Survey of Pakistan, Agriculture, Pakistan, Vol. 19, No. pp. 201—212.

- Minton, Sherman A. 1962 An Annotated key to the Amphibians and reptiles of Sind and Lasbela, West Pakistan, American Mus. Natural History, New York, Novitates No. 2081.
- 1966 A Contributin to the Herpetology of West Pakistan, Bull. American Mus. Nat. Hist., New York, Vol. 134, Article 2.
- Murray, Hames A. 1884a The Vertibrate Zoology of Sind, Bombay.
- 1887 Description of three new species of *Hydrophis* from the Bombay Harbour and the Mekran Coast. J. Bombay, Nat. Hist. Soc., Vol. 2, pp. 32—35, 1 pt.
- Smith, M. 1926 Monograph of the sea snakes London, British Mus.
- Smith, Malcolm A. 1943 The fauna of British India Ceylon, and Burma, Reptilia and Amphibia 3, Serpentes, London Taylor & Francis.
- Wall, Frank 1909 A monograph of the Sea Snakes Memoirs of Asiatic Society of Bengal, Vol. 11, No. 3, pp. 169—251, Calcutta.
- 1918 Notes on a collection of sea snakes from Madras J. Bomb. Nat. Hist. Soc. , Vol. 25, pp. 599—600.
- 1921 Ophidia Toprobanica or the snakes of Ceylon, Colombo, H.R. Cottle, Government Printer, Ceylon.

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