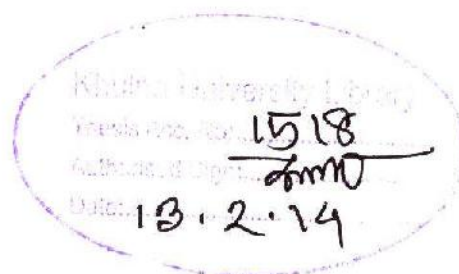


Collection and Identification of Fish and Crustacean Species Available in the Southwest Region of Bangladesh



A Project Thesis

By

SK. Hemayet Hosain

Examination Roll No: MS-030607

Session: 2002-2003

0075 21067
(1)

**The Project Thesis submitted to the Fisheries and Marine Resource Technology
Discipline in partial fulfillment of the requirements for the Degree of**

Master of Science (M.S.)

In

Fisheries and Marine Resource Technology



July, 2006

Collection and Identification of Fish and Crustacean Species Available in the Southwest Region of Bangladesh

Approved as to style and content by



Professor Dipak Kamal

Head

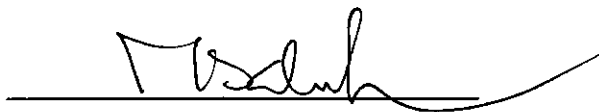
**Fisheries and Marine Resource Technology Discipline
Khulna University, Khulna
Bangladesh**



DECLARATION

The results submitted in this project thesis are entirely of the candidate's own investigation and no part of the results has been accepted for any degree, nor it is being concurrently submitted for any degree.

Supervisor



Dr. Md. Saifuddin Shah
Professor
Fisheries and Marine Resource Technology Discipline
Khulna University, Khulna
Bangladesh

Candidate



Sk. Hemayet Hosain

This project-thesis is dedicated to

My beloved

PARENTS



CONTENTS

	TITLE	PAGE
	ACKNOWLEDGEMENT	I
	ABSTRACT	II
	LIST OF TABLES	III
	LIST OF FIGURES	III
Chapter-1:	INTRODUCTION	1-7
	1.1 Fish available in Bangladesh	1
	1.2 Coastal region of Bangladesh and biodiversity status	2
	1.3 Inland fisheries	4
	1.4 Justification of the study	5
	1.5 Objectives of the present study	6
	1.6 Limitations of the study	6
Chapter-2:	MATERIALS AND METHODOLOGY	8-9
	2.1 Introduction	8
	2.2 Period of data collection	8
	2.3 Sample collection	8
	2.4 Cleaning of the specimens	8
	2.5 Identification	9
	2.6 Methods of preservation and labeling	9
Chapter-3:	RESULTS AND DISCUSSION	10-47
	3.1 Pleuronectiformes	12
	3.2 Symbranchiformes	12
	3.3 Anguiliformes	12
	3.4 Tetradontiformes	13
	3.5 Beloniformes	13
	3.6 Cyprinodontiformes	14
	3.7 Channiformes	14
	3.8 Scopeleiformes	16
	3.9 Mugiliformes	16
	3.10 Cypriniformes	17
	3.11 Clupiformes	28



3.12	Perciformes	29
3.13	Rajiformes	43
3.14	Lamniformes	43
3.15	Torpediniformes	44
3.16	Batrachoidiformes	44
3.17	Spiroidiformes	44
3.18	Decapoda	45
Chapter-4:	CONCLUSION	50
Chapter-5:	REFERENCES	51-52



ACKNOWLEDGEMENT

It is my gratification for being able to complete this thesis, so first of all, all my appreciation and indebtedness go for the creator of the universe, the omnipotent, omniscient, omnipresent Allah.

There are many people who helped me in various ways to complete this study successfully. I wish to express my thanks to all of them, specially:

I am pleased to express my deepest sense of gratitude, heartfelt indebtedness and profound respect to my honorable supervisor Dr. Md. Saifuddin Shah, Professor, Fisheries & Marine Resource Technology Discipline, Khulna University, Khulna for his scholastic guidance and continual effective help to execute this project thesis successfully.

Special thanks are extended to University Research Cell, Khulna University, providing funds to carry out this extensive research work.

I am also indebted to the fisherman, aratdar, retailer of study area for their sincere co-operation and all-round support during the observation period.

I acknowledge my eldest brother Md. Asaduzzaman to collect various pictures that were very essential in completion of my study.

I acknowledge Md. Bozlur Rahman, Project Extension officer, IFAD to collect digital pictures of fishes from fish markets.

I received helps from Ashraf Bhai, Lab assistant, Fisheries and Marine Resource Technology Discipline, Khulna University, Khulna.

Finally, I would like to convey special thanks to all my friends, well wishers and my wife Jafree for their kind co-operation, encouragement and inspiration to complete this project thesis.

July, 2006

Sk. Hemayet Hosain

ABSTRACT

A list of fish and crustacean species available in the southwest coastal areas of the country was prepared. The collection were made form all over the places of rural and urban markets of Khulna, Bagherhat and Satkhira, from fish landing ghats and from fishing boats from Mongla, Dakope, and Khulna 5 no Skid ghat. The study, though had some limitation in itself, has produced a list of 162 species of fish and shellfish belonging to 18 orders, 70 families. Among the different groups the order Perciformes was most prominent being represented with a total of 66 species being reported by the estuarine and marine dwellers. Next to this stood the order Cypriniformes with 44 species. It was seen that the order Decapoda was most prominent being represented with a total of 14 species. Many unconventional species could be obtained in the collection, for the fisherman catching fish in offshore water do not bring this in the market. The specimens were duly identified using standard identification keys, preserved in 10% formalin, labeled and shelved in the museum of Fisheries and Marine Resource Technology Discipline.

LIST OF TABLES

	Page no
Table 1: No of species found under different orders and families	10
Table 2: No of species found under different orders and families	44

LIST OF FIGURES

	Page no
Figure 1: Percentage of species under different major orders	48
Figure 2: Number of specie under Decapods	48

INTRODUCTION

Bangladesh is naturally enriched with fisheries resources. In this country, fisheries sector has an important and potential contribution in the agro-based economic development (5-6% in GDP), poverty alleviation, employment, supplying of animal protein (63%), and earning the foreign currency (Hye, 2003). On the basis of fish species number and abundance Bangladeshi fisheries resource is one of the largest and diversified in the world (Shah, 2003). There are 260 fresh water fish species (Rahman, 1989) and 475 marine water fish species (Hossain, 1979) are available in the waters area of Bangladesh.



1.1 Fish available in Bangladesh

Fish is the cold-blooded, limbless, completely aquatic vertebrates, having gills, commonly with fins, and typically elongated torpedo-shaped body, mostly covered with scales. Fish are usually grouped into four classes, three living (Agnatha, Chondrichthyes, and Osteichthyes) and one extinct (Placodermi): 1. Agnatha, the primitive jawless fishes, including the cyclostomes (lampreys and hagfishes) and extinct armoured fishes known as ostracoderms, none of which has gill arches (bony frames for the gills); 2. Placodermi, extinct armoured fishes with jaws; 3. Chondrichthyes, the cartilaginous fishes, including sharks, rays and their allies, all of which have a predominantly cartilaginous skeleton; and 4. Osteichthyes, the bony fishes, including the great majority of food and game fishes.

The bony fishes are divided into two groups: the fleshy-finned fishes (Crossopterygii) and the ray-finned fishes (Actinopterygii). The latter group includes over 95% of all living fish species. The ray-finned fishes evolved during a period of widespread drought and stagnation. The only surviving fleshy-finned fishes are the lungfishes and one species of Coelacanth. Ray-finned fishes are now the predominant in both fresh and marine waters.

There are about 22,000 species of fishes worldwide, in about 450 families, and almost 40% of the species live in fresh waters. A total of 490 species of fish of 133 families has been reported from the continental shelf of Bangladesh (Kader, 1995). A total of 150 species of fish has also been recorded from the waters in the Sundarbans reserved forest. Seventeen species from the continental shelf area and 3 from the Sundarbans waters have been reported (Kader, 1995; Chantarasri, 1994). Four rays and one skate have been reported from the Sundarbans waters (Chantarasri, 1994).

1.2 Coastal region of Bangladesh and biodiversity status

The central region of the coastline is situated between the eastern and western coastal areas. Most of the combined flow of the Ganga, Bramaputra, and Megna system is discharged through this low-lying area. The lower Meghna river is highly influenced by tidal interactions and consequential backwater effect. Heavy sediment inputs from the rivers result in a morphologically dynamic coastal zone. Cyclones and storm surges bring about the most catastrophic damages here.

The intricate canal system of tidal waterways in the estuaries of Bangladesh is rich in different aquatic species and the resource is exploited by small-scale or subsistence fishermen. The estuaries and the mangroves are the nursery grounds for the development of post-larvae of several marine shrimps where they feed and grow to juveniles before returning to deep waters of the sea for maturity and breeding. *Macrobrachium rosenbergii*, the freshwater giant prawn, spends life in freshwater but returns to the brackish-waters of the estuaries to hatch their eggs. So, favorable environmental conditions for brackish-water aquaculture, particularly for shrimps/prawns, are available in Bangladesh. Post-larvae of *P. monodon* and *M. rosenbergii*, locally known as Bagda and Galda respectively, are available almost round the year in the brackish-waters, providing work for thousands of larva collectors. The larvae and juveniles of finfishes are also available there. At present, some 120,000 ha are under prawn/shrimp farming in Bagerhat (29%), Satkhira (19%), Khulna (19%), . Usually, monoculture of *P. monodon* in high saline waters and culture of *M. rosenbergii* in less saline waters are practiced. Mixed culture of Bagda with mullets (*Mugil corsula* and *M. cascasi*) or other shrimps is also in vogue. Sometimes, predator fishes (*Lates calcarifer*, *Eleutheronema tetradactylus*) and crabs enter the ponds freely. Rotation of aquaculture (shrimp, fin-fish) with agriculture (paddy) is practiced in the polders in the brackish-water tidal area in Bagerhat, Khulna and Satkhira. During high salinity period, marine and brackish water shrimp and finfishes are cultured. During low salinity period, cultivation of 'aman' paddy is done. The practice is known as 'bheri/gher' culture. Some farmers even combine freshwater prawn (Golda) and other fishes (Tilapia, Carps). Shrimp culture and salt production in rotation are practised in Satkhira region.

Eleven species of crabs, belonging to the family Portunidae, Calapidae and Ocypodidae, are found in shallow coastal and brackish-waters. Of these, *Scylla serrata* is popular as human

food. Fishing crabs by baited hooks by fishermen on boats is a common sight in the Sundarbans.

Total number of molluscs species from the shelf area, and The Sundarbans are 350, and 26 respectively (Kader, 1995; Mollah, 1997; Jahan *et al.*, 1990).

Forty-four species of shrimps from the marine and 24 species from the Sundarbans have been recorded (Kader, 1995; Acharya and Kamal, 1994). A total of 16 species of marine crabs including 4 horseshoe crabs of 3 genera (*Tachypleus*, *Carcinoscorpius* and *Rotundicuda*) (Azam *et al.*, 1998; Chowdhury and Hafizuddin, 1980) and five species of lobsters has been recorded from Bangladesh coastal waters (Kader, 1995; Acharya and Kamal, 1994).

Hussain (1969) listed 475 species of fishes belonging to 133 families from the marine and estuarine waters of Bangladesh. Quddus and Shafi (1983) identified 169 species of fishes from marine and brackish-waters, of which, 148 species belonging to 59 families are bony fishes and 21 species belonging to 10 families are cartilaginous. Major fishes are sea perches (63 species under 30 families) followed by herrings and shads (21 species under 3 families), catfishes (19 species under 3 families), and flatfishes (16 species under 5 families). Hilsa alone makes up about 60% of the total catch from the sea. Sharks are represented by 10 species. Only about 65% of the marine fishes are of commercial importance.

Seidensticker and Hai (1978) reported that there are 200 species of fish in the sundarbans waters. IUCN (1994) produced a list of 177 finfish species and 24 shrimp species in the Sundarbans waters. Bernacsek (2000) put the list of finfish species at 196 and crustacean species at 38 in the sundarbans. The statistics on the fish catch, number of species caught and their taxonomic identity are often obtained from the records of the Forest Department but that is very much fragmentary having no strict authenticity. Bernacsek was a consultant under the Sundarbans Biodiversity Conservation project of the forest department while he produced his report on the list of species available in the sundarbans waters and it could not be known if he had the collections and a museum was established in the Forest Department . Biodiversity in the form of both species diversity and genetic diversity i the broad reflection of the geographical/ ecological diversity of an area. It is said that heterogeneity in the environment is reflected in the variable form of organisms. Thus the more heterogeneous the ecological conditions are , more variable the populations are. The fish and crustacean species available in the south –west coastal areas are diverse ones and this is clearly evident from the unique and heterogeneous ecological situations of the area as the whole and the mangrove

Sundarbans is definitely a prime determinant. Bangladesh is a land of waters. It abounds with a large variety of species. Rahman (1985) provided a list of 260 species of fish from Bangladesh waters. He included species available from entire Bangladesh; however, he did not include species from the estuarine, offshore and marine waters of the country excepting some saline water ones which are often available in the freshwater rivers. He also suggested the necessity for more careful collection and systematics on the species available in Bangladesh. As such the coastal and offshore waters of the Sundarbans need special attention for its fishery biodiversity. Shah (2003) stressed the necessity for carrying out research on the fishery resources identification of the Sundarbans.

In spite of huge exploitation and environmental degradation, the coastal zone of Bangladesh is still rich in diversity. Although there is no baseline survey on the diversity of living resources in the coastal zone or even in the country, some scattered information is available.

Khulna region is recognized as the fisheries zone of our country. It is close to the Bay of Bengal. Many varieties of fish species are available in the rivers of Khulna, Satkhira and Bagherhat region.

1.3 Inland fisheries:

Inland freshwaters are inhabited by over 266 species of finned fish. Shafi and Quddus (1982) recorded 148 species of fishes belonging to 36 families and 10 species of Palaemonid prawns from the freshwaters of Bangladesh, all of which are edible and popular as food. Prominent inland fish fauna include major carps (6 species including Rui, Catla and Mrigal) and minor carps and minnows (41 species including Punti, Chela, Mola and barbs), perches (31 species including Meni, Baila, Chew and Chanda), catfishes (29 species including Pangas, Boal, Magur, Shing, Air, Rita, Pabda and Bacha), shads (10 species including Hilsa representing 40 percent of the total inland catch, Chapila, Kachki and Phasya), snakeheads (5 species including Gazar, Taki and Shoal), loaches (7 species) and featherbacks (2 species including Chital). Rahman (1989) listed 260 species of freshwater fishes from Bangladesh. Bernascek *et al.* (1992) listed 137 species belonging to 31 families from the northeastern region of the country. Of the freshwater prawns, the genus *Macrobrachium* is represented by 9 species.

The rivers (Halda, Padma, Jamuna, Meghna and Brahmaputra) also support a major carp spawn fishery in which eggs, fry and fingerlings are collected to meet the demand for fish culture in ponds. Several exotic species of fin-fish, such as tilapia (2 species), Chinese silver

carp, grass carp, big-head carp, black carp, common carps (all 4 varieties), Thai punti, Thai pangas, and African magur have been introduced in Bangladesh for augmenting fish production through culture in ponds and lakes.

1.4 Justification of the study

Prior to 1960, many different indigenous fish species were abundant in the rivers, boro pits, roadside canals, streams, beels, jheels and ponds of Bangladesh. Since 1960, the biodiversity of indigenous fish species has been declining. As 80% of the Bangladeshi people depend on fish for their need of protein, the present research will directly benefit the people of Bangladesh who are related to fisheries activities. It is expected with the results of the survey, the country's policy makers and donors will have a clear idea about the present biodiversity status of coastal fishes and its' future trend. The final success will be the understanding for better-protection of biodiversity of the costal fishes and assurance of more sustained livelihood of the people who make their living on fish in coastal areas of the country in near future.

The project thesis is done on the project work on Collection and Identification of Fish and crustacean species Available in the Southwest Region of Bangladesh; the project was funded by Khulna University Research cell. Khulna University has been established in the southwest region of the country. This university has an automatic mandate to work on the aspects of better management and conservation of the resources of the region. With this aim in view, the Fisheries and Marine Resource Technology Discipline has been opened in this University. The Discipline offers education in the areas of fisheries biology, ecology, management, culture, extension and processing of fish. The Discipline does have direct contact with the out field activities that are targeted in management and conservation of the resources. It does not have an informative museum of specimens of fishes that are available in this region, whereas at the backdrop of the growing interest on the sustainable management and conservation of the resources, a knowledge on the diversity of the fish and crustaceans available in the water is utmost important.

In the present study the principal aim was to establish a museum of the specimens of fish and shellfish available in the region. Such a museum can help the students to gain important ideas about the species diversity and the taxonomic identity of the fish and shellfish in the coastal areas of this region. The mesuam can also serve as a resource base for information to the reserchers, academics and popular visitors in the academic Discipline. The specimens were

collected from all over the places of rural and urban markets of Khulna, Satkhira, and Bagherhat, from fish landing ghats and from fisherman boats from Mongla, Dacope and Khulna. The specimens were duly identified using standard identification keys, labeled, preserved in 10% formalin and shelved in the museum of the Fisheries and Marine Resources Technology Discipline. A total 162 species of fish and shellfish belonging to 18 orders, 70 families were identified from the collection of the study. Although comparatively a lesser number of species were obtained in the present study, it was satisfying to note here that a museum could be established in the FMRT Discipline that can serve the important purpose of education of fisheries students and researchers in the areas of fish biology and systematics.

1.5 Objectives of the present study

The study was based on the following objectives-

1. To collect the fish and crustacean species available in the southwest region of Bangladesh.
2. To identify their taxonomic characteristics.
3. To established a museum of specimens in the Fisheries and Marine Resource Technology Discipline of Khulna University.

1.6 Limitations of the study

In terms of time, money and personnel, almost all the research works have some limitations. So the study on collection and identification of fish and crustacean species available in the southwest region of Bangladesh had also some limitations, which are given below:

- i) To get appropriate result, it is necessary to collect data for a long period of time, because the availability of fish depends on the different season. But due to limitation of time it was not possible to collect data over a longer period of time.
- ii) The samples were first collected from study area, preserved in formalin and then brought in the Laboratory for final preservation and shelving. The photographs were taken later of the formalin preserved sample. By at time the animals had lost their original appearance and in many cases the original colors. It would have been better if photographs of fresh sample could be taken.

- iii) It was not possible to make collection from the offshore / marine waters of the region, thus many of the unconventional species from the offshore waters could not be included in the collection. The fishermen catching fish from the offshore waters do not bring the species in the inland market either; rather they discard them in the sea. Thus if the unconventional species could be obtained, the list could have been longer.

2. MATERIALS AND METHODS

2.1 Introduction

Methodology is the conceptual structure within which a study is conducted. It constitutes the blueprint for the collection, measurement and analysis of data. The prerequisite for the purpose will be to specify the data requirement and evaluate it in terms of time and resource constraints.

2.2 Period of data collection

The study was carried out over a period of six months from August 2002 to January 2003.

2.3 Sample collection

The collection areas were mainly the South -western coastal districts of Khulna, Satkhira and Bagherhat. Several visits were made to the fish markets and fish landing centers of Khulna, Satkhira, and Bagherhat for collection of specimens. The local fish centers viz., No 5 skid Ghat, New market, Rupsha wholesale market, Nutan bazar, Sandha market and Gollamary fish markets were specially visited for collection. The specimens were purchased and carefully packed in carrier box before being brought to the laboratory for identification and preservation.

2.4 Cleaning of the specimens

When considering the casting of a fresh fish specimen, the first step to take is to clean the entire surface of the fish. Most often there was a layer of slime, produced by the skin. Some fish, like carps, and eels needed to be soaked for a short period in formalin solution because of production of more slime. The mouth and gill chambers were thoroughly rinsed out, and incase if the mouth is required to be shown open, a plug of cottonwood was pushed into the gullet. Enough care was taken not to put any pressure in making space in the jar, so that the specimen gets de-shaped. Fishes which have large and swollen abdominal cavity was cut in to the abdomen with sharp blade and rinse into the tap water. Fishes that were too long to be stored in a straight position were not bent or coiled but were cut and then placed vertically into the glass jar.

2.5 Identification

The temporarily preserved fishes brought out and placed in a tray. The specimens were thoroughly rinsed with tap water and then it was identified. The identification was done with the help of keys as provided by Rahman (1989) and Munro (2000). For measuring the specimen's a normal centimeter scale, divider, forceps and Knife were used. Both meristic and morphometric characters were observed for identification.

2.6 Methods of Preservation and labeling

Preservation of fish was generally done in 10% formalin prepared by diluting one part of concentrated formalin with nine parts of distilled water. After identification of specimens they were kept in glass jars, with 10% formalin, properly labeled with number on and shelved in the FMRT Discipline museum. Distilled water used for preserving color in fishes. The biggest specimens, when kept in the jar, used to get bended, thus they were rested on a slip of glass and fixed with a nylon thread. The cover of the jars was added with grease for better preservation in the jar.

3. RESULT AND DISCUSSION

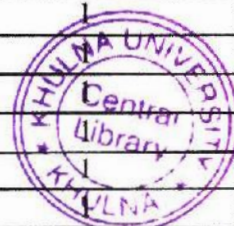
The arrangement of families and order is based primarily on Berg (1940) with modification based on more recent taxonomic accounts as far as were available from Rahman (1989). The most common local name was used in the list. Illustrations showing family, genus or species characters, whenever necessary are provided. The present study was conducted to observe the availability of fishes and crustacean species in southwest region of Bangladesh. The results of the present study are discussed as following briefly.

A total of 148 finfish species were found under 66 families and 17 orders. The table 1, shows the list of the order, families and the species obtained in this families.

Table 1: Number of species found under different orders and families.

	Name of the orders		Name of the families	Available species
1	Pleuronectiformes	F1	Cynoglossidae	1
2	Symbranchiformes	F2	Symbranchidae	1
3	Anguiliformes	F3	Moringuidae	1
		F4	Mouraenidae	1
4	Tetraodontiformes	F5	Legocephalidae	1
		F6	Tetraodontidae	1
5	Beloniformes	F7	Hemirhamphidae	2
		F8	Belonidae	2
6	Cyprinodontiformes	F9	Cyprinodontidae	1
7	Channiformes	F10	Channidae	5
8	Scopeliformes	F11	Harpodontidae	1
		F12	Engraulidae	1
9	Mugiliformes	F13	Mugilidae	3
10	Cypriniformes	F14	Cyprinidae	18
		F15	Cobotidae	4
		F16	Claridae	1
		F17	Siluridae	6
		F18	Heteropneustidae	1
		F19	Plotosidae	1
		F20	Schilbeidae	4
		F21	Bagridae	4
		F22	Sisoridae	1
		F23	Tachysuridae	4
11	Clupeiformes	F24	Notopteridae	2
		F25	Clupidae	3
		F26	Chirocentridae	1
		F27	Engraulidae	1

12	Perciformes	F28	Anabantidae	3
		F29	Mastacembelidae	4
		F30	Polynemidae	2
		F31	Serranidae	2
		F32	Taeniodidae	3
		F33	Gobiidae	6
		F34	Sillaginidae	1
		F35	Scatophagidae	1
		F36	Theraponidae	1
		F37	Nandidae	1
		F38	Centropomidae	4
		F39	Carangidae	6
		F40	Haemulidae	4
		F41	Lutjanidae	3
		F42	Gerridae	2
		F43	Mullidae	2
		F44	Sciaenidae	4
		F45	Leiognathidae	1
		F46	Chiclidae	1
		F47	Toxotidae	1
		F48	Monidae	1
		F49	Sparidae	1
		F50	Pentapodidae	1
		F51	Drepanidae	1
		F52	Plectoryhynchidae	1
		F53	Lobotidae	1
		F54	Scombridae	1
		F55	Thunnidae	1
		F56	Stromateidae	3
		F57	Trichuroidae	1
		F58	Diodontidae	1
		F59	Platycephalidae	1
13	Rajiformes	F60	Rhinobatidae	2
		F61	Trygonidae	1
		F62	Dasyatidae	1
14	Lamniformes	F63	Carcharhinidae	3
15	Torpediniformes	F64	Torpedinidae	1
16	Batrachoidiformes	F65	Batrachoididae	1
17	Spiroidiformes	F66	Sepiidae	1
			Total Species	148



3.1. Pleuronectiformes

The order was represented by a single family and single species.

Order – Pleuronectiformes

Family – Cynoglossidae

Genus- *Paraplagusia*

Species- *Paraplagusia bilineata* (Bloch)

Local name- Kukur jeeb

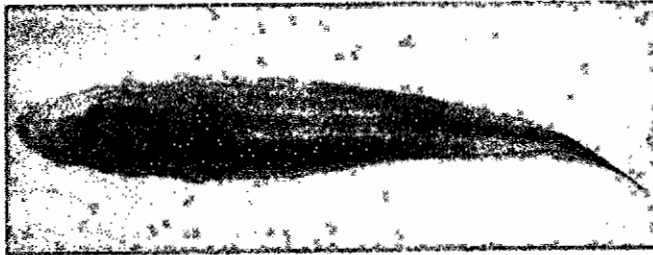


Fig: *Paraplagusia bilineata* (Bloch)

3.2. Order: Symbranchiformes

The order was represented by a single family and single species.

Order: Symbranchiformes

Family: Symbranchidae

Genus: *Monopterus*

Species: *Monopterusuchia* (Hamilton)

Local name: Kuchia



Fig: *Monopterusuchia* (Hamilton)

3.3. Order – Anguilliformes

The order was represented by two family and two species.

Order – Anguilliformes

Family – Moringuidae

Genus- *Moringua*

Species- *Moringua rataboura* (Hamilton)

Local name- Rata boura

Order: Anguilliformes
 Family: Muraenidae
 Genus: *Thyrsoidea*
 Species: *Thyrsoidea macrura* (Bleeker)
 Local name- Chuche

3.4. Order: Tetraodontiformes

The order was represented by two family and two species.

Order: Tetradontiformes
 Family: Legocephalidae
 Genus: *Gastrophysus*
 Species: *Gastrophysus lunaris* (Bloch)

Order – Tetraodontiformes
 Family – Tetraodontidae
 Genus- *Tetraodon*
 Species- *Tetraodon cutcutia* (Hamilton)
 Local name- Tapa

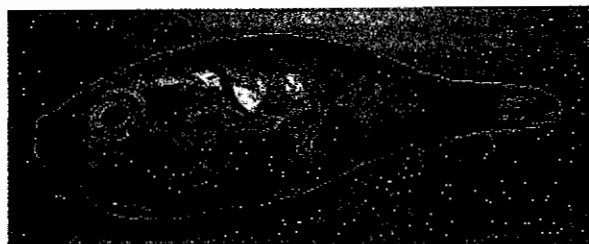


Fig: *Tetraodon cutcutia* (Hamilton)

3.5. Order: Beloniformes

The order was represented by two family and four species.

Order: Beloniformes
 Family: Hemirhamphidae
 Genus: *Hyporhamphus*
 Species: *Hyporhamphus xanthopterus* (Valenciennes)
 Local name: Ak thuta



Fig: *Hyporhamphus xanthopterus* (Valenciennes)

Order: Beloniformes
 Family: Belonidae
 Genus: *Strongylura*
 Species: *Strongylura Strongylura* (Van Hasselt)
 Local name: Fota leja Kakila

Order: Beloniformes
 Family: Belonidae
 Genus: *Tylosurus*
 Species: *Tylosurus leiurus* (Bleeker)
 Local name- Kakila

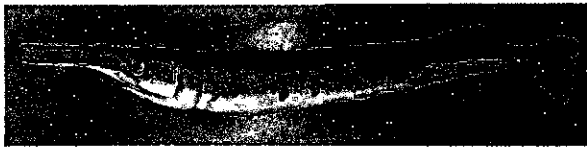


Fig: *Tylosurus leiurus* (Bleeker)

Order: Beloniformes
 Family: Hemirhamphidae
 Genus: *Hyporhamphus*
 Species: *Hyporhamphus gaimardi* (Valenciennes)
 Local name: Ak thuta

3.6. Order: Cyprinodontiformes

The order was represented by a single family and single species.

Order: Cyprinodontiformes
 Family: Cyprinodontidae
 Genus: *Aplocheilus*
 Species: *Aplocheilus panchax* (Hamilton)
 Local name: Kanpona, Tinchouka

3.7. Order – Channiformes

The order was represented by a single family and five species.

Order – Channiformes
 Family – Channidae
 Genus- *Channa*
 Species- *Channa punctatus* (Bloch)
 Local name- Taki



Fig: *Channa punctatus* (Bloch)

Order – Channiformes
Family – Channidae
Genus- *Channa*
Species- *Channa orientalis* (Schneider)
Local name- Cheng, Gachua

Order – Channiformes
Family – Channidae
Genus- *Channa*
Species- *Channa striatus* (Bloch)
Local name- Shol

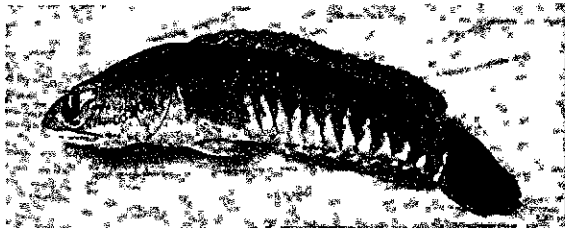


Fig: *Channa striatus* (Bloch)

Order: Channiformes
Family: Channidae
Genus: *Channa*
Species: *Channa barca* (Hamilton)
Local name: Tilashol, Pipla



Fig: *Channa barca* (Hamilton)

Order: Channiformes
Family: Channidae
Genus: *Channa*
Species: *Channa marulius* (Hamilton)
Local name: Gozar

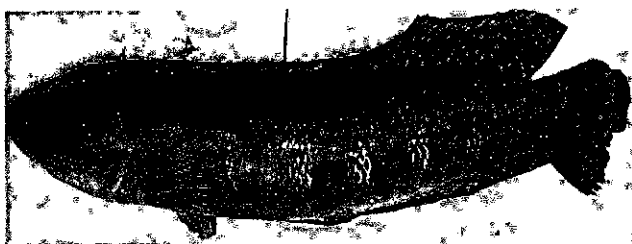


Fig: *Channa marulius* (Hamilton)

3.8. Order: Scopeleiformes

The order was represented by two family and two species.

Order: Scopeleiformes

Family: Harpodontidae

Genus: *Harpodon*

Species: *Harpodon nehereus* (Hamilton)

Local Name: Loitta



Fig: *Harpodon nehereus* (Hamilton)

Order: Scopeliformes

Family: Engraulidae

Genus: *Thryssa*

Species: *Thryssa hamiltoni* (Gray)

Local name- Phasa

3.9. Order: Mugiliformes

The order was represented by a single family and three species.

Order: Mugiliformes

Family: Mugilidae

Genus: *Liza*

Species: *Liza parsia* (Hamilton)

Local name : Parsa

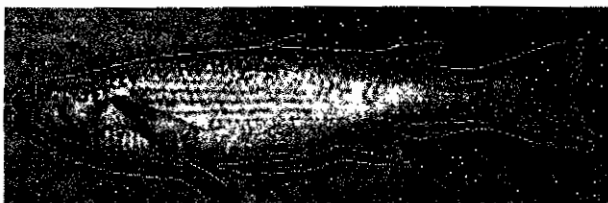


Fig: *Liza parsia* (Hamilton)

Order: Mugiliformes

Family: Mugilidae

Genus: *Mugil*

Species: *Mugil cephalus* (Linnaeus)

Local name: Bhargon

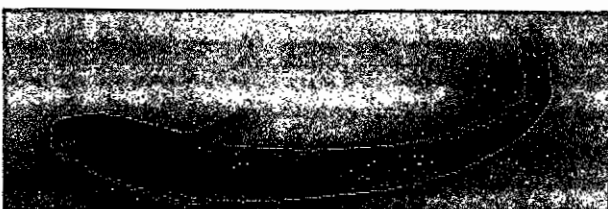


Fig: *Mugil cephalus* (Linnaeus)

Order: Mugiliformes
 Family: Mugilidae
 Genus: *Rhinomugil*
 Species: *Rhinomugil corsula* (Hamilton)
 Local name : Karsula

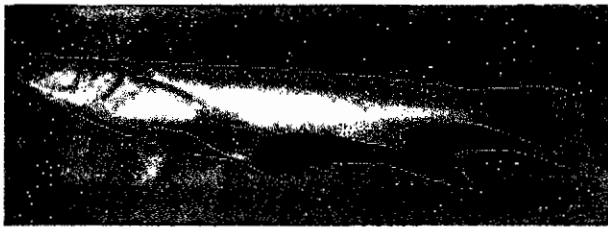


Fig: *Rhinomugil corsula* (Hamilton)

3.10. Order – Cypriniformes

The order was represented by ten family and forty one species.

Order – Cypriniformes
 Family – Cyprinidae
 Sub- family- Rasborinae
 Genus- *Esomus*
 Species- *Esomus danricus* (Hamilton)
 Local name: Darkina

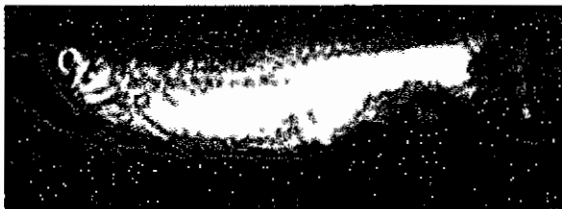


Fig: *Esomus danricus*(Hamilton)

Order: Cypriniformes
 Family: Cyprinidae
 Genus: *Amblypharyngodon*
 Species: *Amblypharyngodon mola* (Hamilton)
 Local name: Mola, Maya

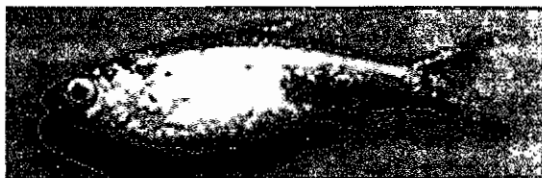


Fig: *Amblypharyngodon mola* (Hamilton)

Order: Cypriniformes
 Family: Cyprinidae
 Sub-family: Cyprininae
 Genus: *Puntius*
 Species: *Puntius sophore* (Hamilton)
 Local name: Puti, jatputi, vediputi



Fig: *Puntius sophore* (Hamilton)

Order: Cypriniformes

Family: Cyprinidae

Genus: *Puntius*

Species: *Puntius sarana* (Hamilton)

Local name: Sar puti

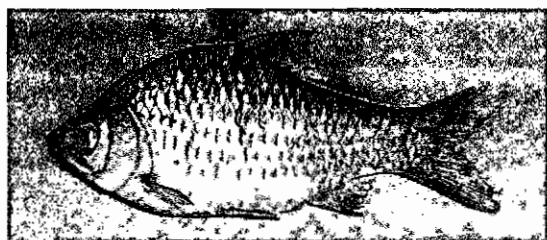


Fig: *Puntius sarana* (Hamilton)

Order: Cypriniformes

Family: Cyprinidae

Genus: *Puntius*

Species: *Puntius terio* (Hamilton)

Local name: Teri punti

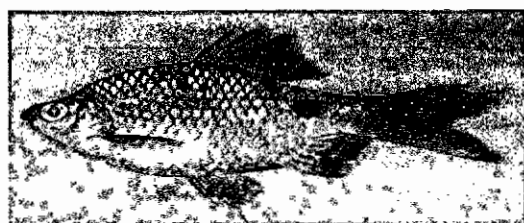


Fig: *Puntius terio* (Hamilton)

Order – Cypriniformes

Family- Cyprinidae

Genus- *Labeo*

Species- *Labeo rohita* (Hamilton)

Local name- Rohu

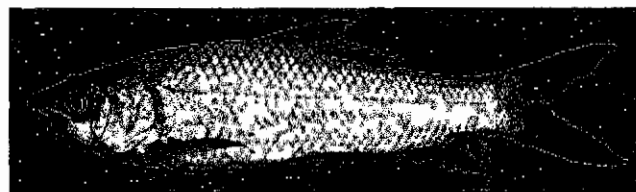


Fig: *Labeo rohita* (Hamilton)

Order – Cypriniformes
Family – Cyprinidae
Genus- *Labeo*
Species- *Labeo bata* (Hamilton)
Local name- Bata

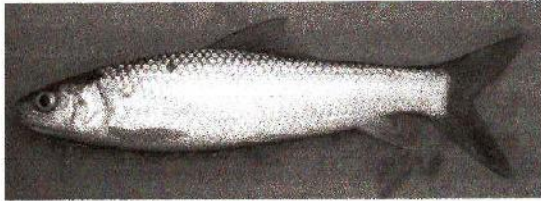


Fig: *Labeo bata*(Hamilton)

Order – Cypriniformes
Family – Cyprinidae
Genus- *Labeo*
Species- *Labeo dero* (Hamilton)
Local name- Bata

Order: Cypriniformes
Family: Cyprinidae
Genus: *Labeo*
Species: *Labeo calbasu* (Hamilton)
Local name: Kalibaus

Order: Cypriniformes
Family: Cyprinidae
Genus: *Labeo*
Species: *Labeo boga* (Hamilton)
Local name: Bhangan bata



Fig: *Labeo boga*(Hamilton)

Order: Cypriniformes
Family: Cyprinidae
Genus: *Labeo*
Species: *Labeo pungusia* (Hamilton)
Local name : Ghora mukhi

Order: Cypriniformes
Family: Cyprinidae
Genus: *Cirrhinus*
Species: *Cirrhinus mrigala* (Hamilton)
Local name: Mrigal



Fig: *Cirrhinus mrigala* (Hamilton)

Order – Cypriniformes

Family – Cyprinidae

Genus- *Cirrhinus*

Species- *Cirrhinus reba* (Hamilton)

Local name- Raik Bata, Bhargon bata

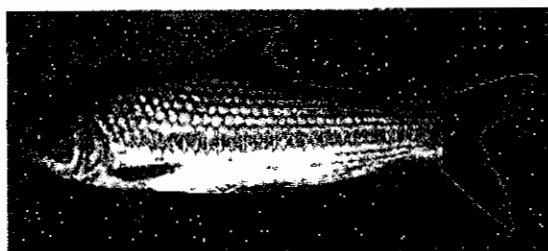


Fig: *Cirrhinus reba* (Hamilton)

Order: Cypriniformes

Family: Cyprinidae

Sub-family: Cyprininae

Genus: *Catla*

Species: *Catla catla* (Hamilton)

Local name: Catla

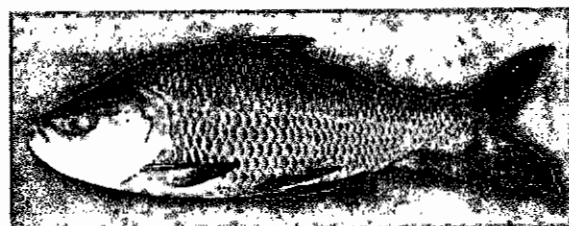


Fig: *Catla catla* (Hamilton)

Order: Cypriniformes

Sub-order: Cyprinoidei

Family: Cyprinidae

Genus: *Hypophthalmichthys*

Species: *Hypophthalmichthys molitrix*

Local name: Silver carp



Fig: *Hypophthalmichthys molitrix*

Order: Cypriniformes
 Sub-order: Cyprinoidei
 Family: Cyprinidae
 Genus: *Aristichthys*
 Species: *Aristichthys nobilis*
 Local name: Bighead carp

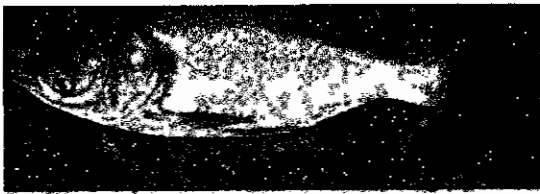


Fig: *Aristichthys nobilis*

Order: Cypriniformes
 Sub-order: Cyprinoidei
 Family: Cyprinidae
 Genus: *Cyprinus*
 Species: *Cyprinus carpio* var. *Specularis*
 Local name: Mirror carp



Fig: *Cyprinus carpio*

Order: Cypriniformes
 Sub-order: Cyprinoidei
 Family: Cyprinidae
 Genus: *Mylopharyngodon*
 Species: *Mylopharyngodon piceus*
 Local name: Black carp

Order: Cypriniformes
 Sub-order: Cyprinoidei
 Family: Cyprinidae
 Genus: *Ctenopharyngodon*
 Species: *Ctenopharyngodon idella*
 Local name: Grass carp

Order: Cypriniformes
Sub order: Siluroidei
Family: Schilbeidae
Genus: Pangasius
Species: *Pangasius hypothalamus*
Local name: Thai pangus



Fig: *Pangasius hypothalamus*

Order: Cypriniformes
Sub order: Siluroidei
Family: Clariidae
Genus: Clarius
Species: *Clarius gariepinus*
Local name: African magur

Order: Cypriniformes
Family: Cobotidae
Genus: Lepidocephalus
Species: *Lepidocephalus guntea* (Hamilton)
Local name: Gutum

Order: Cypriniformes
Family: Cobotidae
Genus: Lepidocephalus
Species: *Lepidocephalus berdmorei*
Local name: Puiya

Order: Cypriniformes
Family: Cobitidae
Genus: *Nemachilus*
Species: *Nemachilus zonalternans* (Blyth)
Local name: Balichata



Fig: *Nemachilus zonalternans* (Blyth)

Order: Cypriniformes
Family: Cobitidae
Genus: *Batia*
Species: *Batia dario* (Hamilton)
Local name: Rani

Order: Cypriniformes
Sub-Order: Siluroidei
Family: Clariidae
Genus: *Clarias*
Species: *Clarias batrachus* (Linnaeus)
Local name: Magur

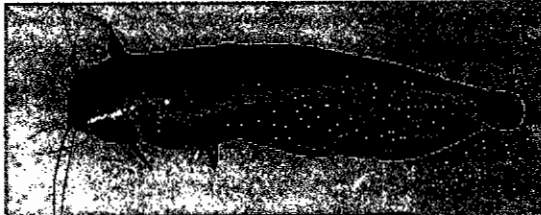


Fig: *Clarias batrachus* (Linnaeus)

Order: Cypriniformes
Family: Siluridae
Genus: *Wallago*
Species: *Wallago attu* (Bloch)
Local name: Boal

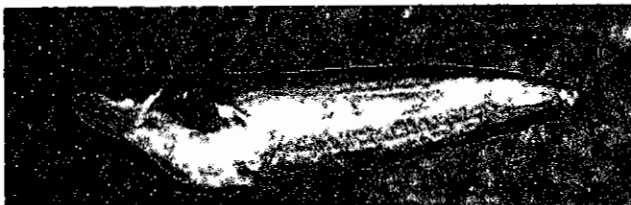


Fig: *Wallago attu* (Bloch)

Order: Cypriniformes
Family: Siluridae
Genus: *Ompok*
Species: *Ompok Pabda* (Bloch)
Local name: Pabda.



Fig: *Ompok Pabda* (Bloch)

Order: Cypriniformes
 Family: Siluridae
 Genus: *Ompok*
 Species: *Ompok bimaculatus* (Bloch)
 Local name: Kani pabda.

Order: Cypriniformes
 Sub-order: Siluroidei
 Family: Heteropneustidae
 Genus: *Heteropneustes*
 Species: *Heteropneustes fossilis* (Bloch)
 Local name: Shingi



Fig: *Heteropneustes fossilis* (Bloch)

Order: Cypriniformes
 Sub- family: Siluroidae
 Family: Plotosidae
 Genus: *Plotosus*
 Species: *Plotosus canius* (Hamilton)
 Local name: Gang magur



Fig: *Plotosus canius* (Hamilton)

Order: Cypriniformes
 Family: Plotosidae
 Genus: *Plotosus*
 Species: *Plotosus anguillaris* (Bloch)
 Local name: Magur

Order: Cypriniformes
 Family: Schilbeidae
 Genus: *Pseudeutropius*
 Species: *Pseudeutropius atherinoides* (Bloch)
 Local name: Batasi



Fig: *Pseudeutropius atherinoides* (Bloch)

Order: Cypriniformes

Family: Schilbeidae

Genus: *Ailia*

Species: *Ailia coila* (Hamilton)

Local name: Kajuli, Baspata

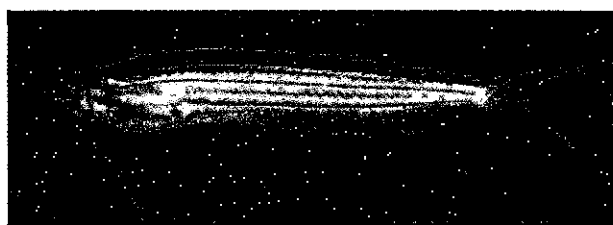


Fig: *Ailia coila* (Hamilton)

Order: Cypriniformes

Sub-order: Siluroidei

Family: Schilbeidae

Genus: *Silonia*

Species: *Silonia silondia* (Hamilton)

Local name: Cylinder, Shillong

Order: Cypriniformes

Sub-order: Siluroidei

Family: Schilbeidae

Genus: *Clupisoma*

Species: *Clupisma gaura* (Hamilton)

Local name: Ghaura

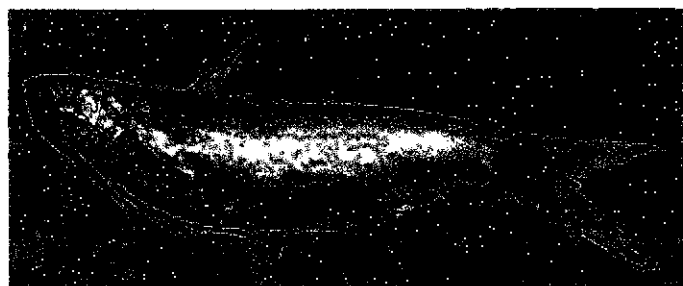


Fig: *Clupisma gaura* (Hamilton)

Order: Cypriniformes

Sub-order: Siluroidei

Family: Bagridae

Genus: *Mystus*

Species: *Mystus aor* (Hamilton)

Local name: Ayre



Fig: *Mystus aor* (Hamilton)

Order: Cypriniformes

Sub-order: Siluroidei

Family: Bagridae

Genus: *Mystus*

Species: *Mystus vittatus* (Bloch)

Local name: Tangra

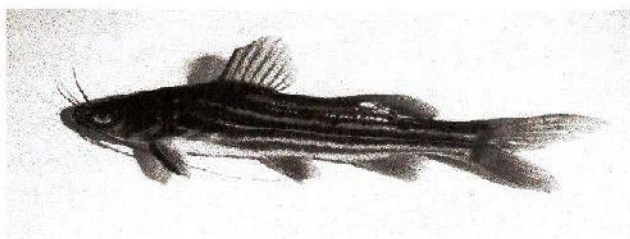


Fig: *Mystus vittatus* (Bloch)



Order: Cypriniformes

Sub-order: Siluroidei

Family: Bagridae

Genus: *Mystus*

Species: *Mystus cavasius* (Hamilton)

Local name: GhulsaTangra

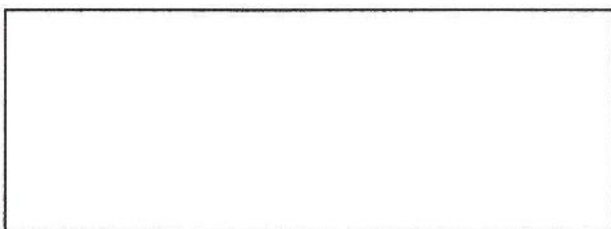


Fig: *Mystus cavasius* (Hamilton)

Order: Cypriniformes
 Sub-order: Siluroidei
 Family: Bagridae
 Genus: *Mystus*
 Species: *Mystus gulio* (Hamilton)
 Local name: Nuna tangra

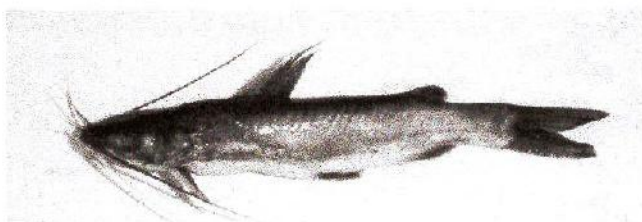


Fig: *Mystus gulio* (Hamilton)

Order: Cypriniformes
 Sub-order: Siluroidei
 Family: Sisoridae
 Genus: *Bagarius*
 Species: *Bagarius bagarius* (Hamilton)
 Local name: Baghair

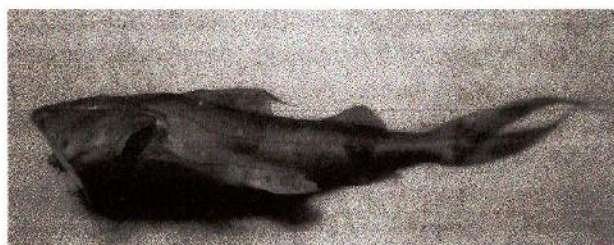


Fig: *Bagarius bagarius* (Hamilton)

Order: Cypriniformes
 Sub-order: Siluroidei
 Family: Tachysuridae
 Genus: *Batrachcephalus*
 Species: *Batrachcephalus mino* (Hamilton)
 Local name: Katabukha

Order: Cypriniformes
 Sub-order: Siluroidei
 Family: Tachysuridae
 Genus: *Pseudarius*
 Species: *Pseudarius platystomus* (Day)
 Local name: Med mach

Order: Cypriniformes
 Sub-order: Siluroidei
 Family: Tachysuridae
 Genus: *Pseudarius*
 Species: *Pseudarius jella* (Day)

Order: Cypriniformes
 Sub-order: Siluroidei
 Family: Tachysuridae
 Genus: *Osteogeniosus*
 Species: *Osteogeniosus militaris* (Hamilton)
 Local name: Apuia

3.11. Order: Clupiformes

The order was represented by four family and seven species.

Order: Clupiformes
 Family: Notopteridae
 Genus: *Notopterus*
 Species: *Notopterus chitala* (Hamilton)
 Local name: Chital

Order: Clupiformes
 Family: Notopteridae
 Genus: *Notopterus*
 Species: *Notopterus notopterus* (Pallas)
 Local name: Foli

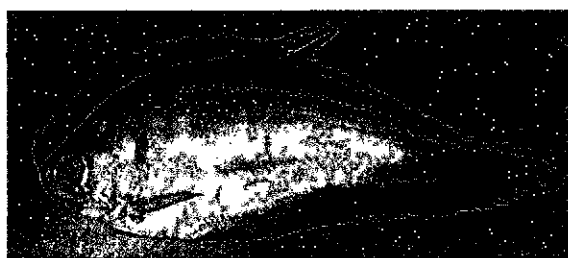


Fig: *Notopterus notopterus* (Pallas)

Order: Clupiformes
 Family: Clupidae
 Genus: *Gonialosa*
 Species: *Gonialosa manminna* (Hamilton)
 Local name: Goni chapila

Order: Clupiformes
 Family: Clupidae
 Genus: *Gudusia*
 Species: *Gudusia chapra* (Hamilton)
 Local name: Khaira; Chapila

Order: Clupiformes
 Family: Clupidae
 Genus: *Tenuulosa*
 Species: *Tenuulosa ilisha*
 Local name: Ilish



Fig: *Tenuulosa ilisha*

Order: Clupiformes

Family: Chirocentridae

Genus: *Chirocentrus*

Species: *Chirocentrus dorab* (Forsk.)

Local name: Karati chala

Order: Clupiformes

Family: Engraulidae

Genus: *Coilia*

Species: *Coilia ramcarati* (Hamilton)

Local name: Olua, Megha olua



Fig: *Coilia ramcarati* (Hamilton)

3.12. Order: Perciformes

The order was represented by thirty-two family and sixty-seven species.

Order: Perciformes

Sub-order: Anabontidei

Family: Anabantidae

Genus: *Colisa*

Species: *Colisa fasciatus* (Bloch)

Local name: Khalisha

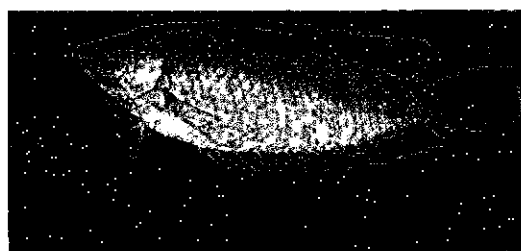


Fig: *Colisa fasciatus* (Bloch)

Order: Perciformes

Sub-order: Anabontidei

Family: Anabantidae

Genus: *Colisa*

Species: *Colisa lalius* (Hamilton)

Local name: Lal Khalisa

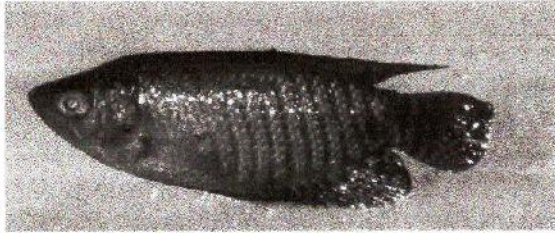


Fig: *Colisa lalius* (Hamilton)

Order: Perciformes

Sub-order: Anabontidei

Family: Anabantidae

Genus: *Anabus*

Species: *Anabus testudineus* (Bloch)

Local name: Koi

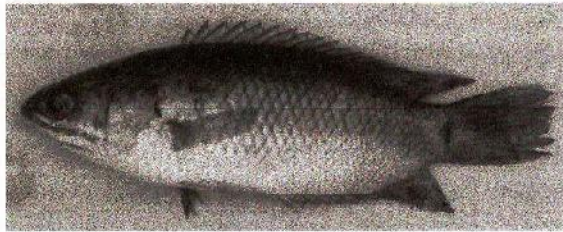


Fig: *Anabus testudineus* (Bloch)

Order: Perciformes

Sub-order: Mastacembeloidei

Family: Mastacembelidae

Genus: *Mastacembelus*

Species : *Mastacembelus armatus* (Lacepede)

Local name : Sal bain



Fig: *Mastacembelus armatus* (Lacepede)

Order: Perciformes

Sub-order: Mastacembeloidei

Family: Mastacembelidae

Genus: *Mastacembelus*

Species : *Mastacembelus pancalus* (Hamilton)

Local name : Guchi bain



Fig: *Mastacembelus pancalus* (Hamilton)

Order: Perciformes
 Sub-order: Mastacembeloidei
 Family: Mastacembelidae
 Genus: *Macrognathus*
 Species : *Macrognathus aculeatus* (Bloch)
 Local name : Tara bain

Order: Perciformes
 Order: Perciformes
 Sub-order: Polynemoidei
 Family: Polynemidac
 Genus: *Polynemus*
 Species : *Polynemus paradiseus* (Linnaeus)
 Local name : Tapasi, Muni, Rishi

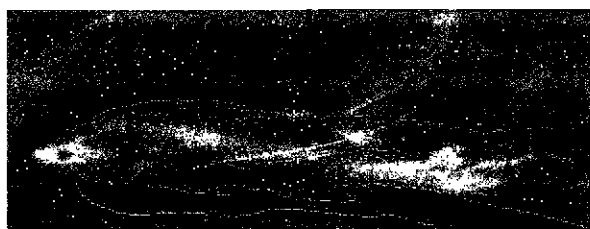


Fig: *Polynemus paradiseus* (Linnaeus)

Order: Perciformes
 Sub-order: Polynemoidei
 Family: Polynemidac
 Genus: *Polynemus*
 Species : *Polynemus indicus* (Shaw)
 Local name : Lakhua



Fig: *Polynemus indicus* (Shaw)

Order: Perciformes
 Sub-order: Polynemoidei
 Family: Polynemidac
 Genus: *Eleutheronema*
 Species : *Eleutheronema tetradactylum* (Shaw)
 Local name : Tailla

Order: Perciformes
 Sub-order: Polynemoidei
 Family: Serranidae
 Genus: *Epinephalus*
 Species: *Epinephalus malabaricus* (Schneider)

Order: Perciformes
 Sub-order: Polynemoidei
 Family: Serranidae
 Genus: *Epinephalus*
 Species: *Epinephalus coioides*
 Local name: Komlafota bale

Order: Perciformes
 Sub-order: Gobioidaei
 Family: Taenioidae
 Genus: *Trypauchen*
 Species: *Trypauchen vagina* (Bloch)
 Local name: Sada chewa

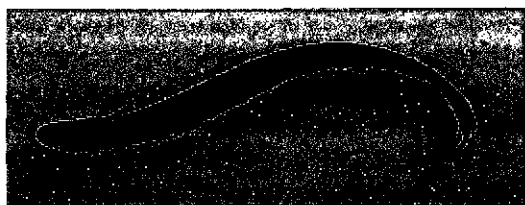


Fig: *Trypauchen vagine* (Bloch)

Order: Perciformes
 Sub-order: Gobioidaei
 Family: Taenioididae
 Genus: *Taenioides*
 Species: *Tenioides buchanani* (Day)
 Local name: Raja chewa

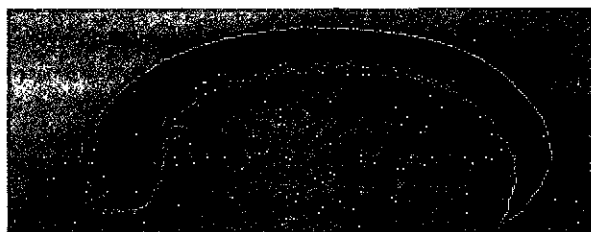


Fig: *Tenioides buchanani* (Day)

Order: Perciformes
 Sub-order: Gobioidaei
 Family: Taenioididae
 Genus: *Odontamblyopus*
 Species: *Odontamblyopus rubicundus* (Hamilton)
 Local name: Lal chewa



Fig: *Odontamblyopus rubicundus* (Hamilton)

Order: Perciformes
 Sub-order: Gobioidae
 Family: Gobiidae
 Genus: *Paragobiodon*
 Species: *Paragobiodon echinocephalus* (Ruppell)
 Local name: Bhut bale, Nondi bale

Order: Perciformes
 Sub-order: Gobioidae
 Family: Gobiidae
 Genus: *Brachygobius*
 Species: *Brachygobius nusus* (Hamilton)
 Local name: Nuna bale

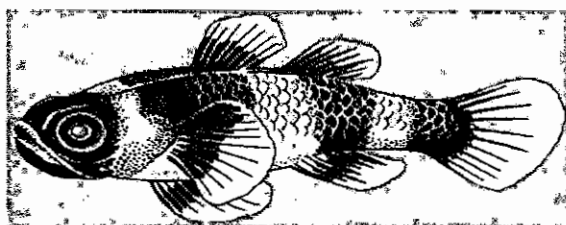


Fig: *Brachygobius nusus* (Hamilton)

Order: Perciformes
 Sub-order: Gobioidae
 Family: Gobiidae
 Genus: *Apocryptes*
 Species: *Apocryptes bato* (Hamilton)
 Local name: Gula/Dogri/Chiring

Order: Perciformes
 Sub-order: Gobioidae
 Family: Gobiidae
 Genus: *Pogonogobius*
 Species: *Pogonogobius planiformes* (Day)
 Local name: Bale



Fig: *Pogonogobius planiformes* (Day)

Order: Perciformes
 Sub-order: Gobioidae
 Family: Gobiidae
 Genus: *Oplopomus*
 Species: *Oplopomus oplopomus* (Valenciennes)
 Local name: Sona bale

Order: Perciformes

Sub-order: Gobioidae

Family: Gobiidae

Genus: *Glossogobius*

Species: *Glossogobius giuris* (Hamilton)

Local name: Bele



Fig: *Glossogobius giuris*(Hamilton)

Order: Perciformes

Sub-order: Percoidei

Family: Siliaginidae

Genus: *Siliaginopsis*

Species: *Siliaginopsis panijus* (Hamilton)

Local name: Tular dandi

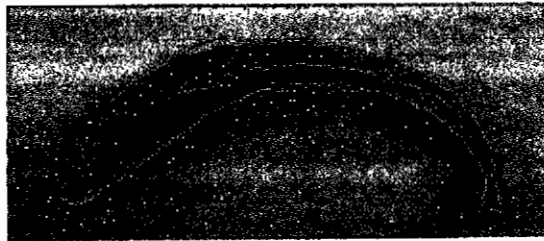


Fig: *Siliaginopsis panijus*(Hamilton)

Order: Perciformes

Sub-order: Percoidei

Family: Scatophagidae

Genus: *Scatophagus*

Species: *Scatophagus argus* (Linnaeus)

Local name: Bishtara



Fig: *Scatophagus argus* (Linnaeus)

Order: Perciformes

Sub-order: Percoidei

Family: Theraponidae

Genus: *Therapon*

Species: *Therapon jarbua* (Forsk.)

Local name : Rakha mach

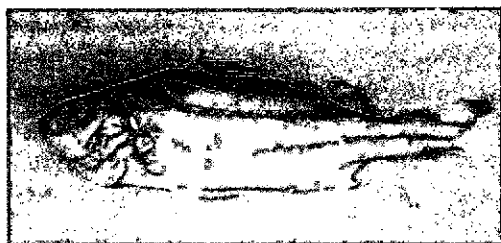


Fig: *Therapon jarbua* (Forskal)

Order: Perciformes

Sub-Order: Percoidei

Family: Nandidae

Genus: *Nandas*

Species: *Nandas nandas* (Hamilton)

Local name: Royna, Bheda, Meni

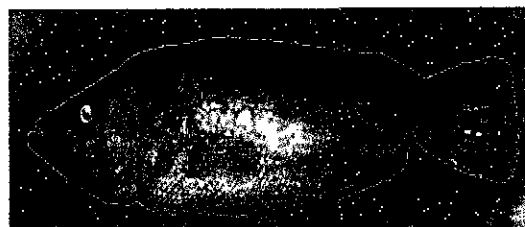


Fig: *Nandas nandas* (Hamilton)

Order: Perciformes

Sub-Order: Percoidei

Family: Centropomidae

Genus: *Lates*

Species: *Lates calcarifer* (Bloch)

Local name: Bhetki



Fig: *Lates calcarifer* (Bloch)

Order: Perciformes

Sub-Order: Percoidei

Family: Centropomidae

Genus: *Chanda*

Species: *Chanda nama* (Hamilton)

Local name: Nama chanda



Fig: *Chanda nama* (Hamilton)

Order: Perciformes

Sub-Order: Percoidei

Family: Centropomidae

Genus: *Chanda*

Species: *Chanda ranga* (Hamilton)

Local name: Chanda

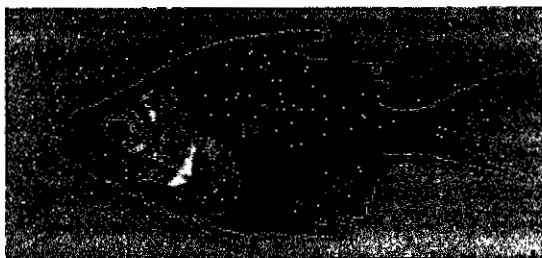


Fig: *Chanda ranga* (Hamilton)

Order: Perciformes

Sub-Order: Percoidei

Family: Centropomidae

Genus: *Chanda*

Species: *Chanda baculis* (Hamilton)

Local name: Chanda



Fig: *Chanda baculis* (Hamilton)

Order: Perciformes

Family: Carangidae

Genus: *Atropus*

Species: *Atropus atropus* (Bloch)

Local name: Kuweh/Mouri

Order: Perciformes

Family: Carangidae

Genus: *Carangoides*

Species: *Carangoides malabaaricus*

Local name: Mouri mach

Order: Perciformes
Family: Carangidae
Genus: *Chorinemus*
Species: *Chorinemus sancti-petri* (Cuvier)
Local name: Mouri mach

Order: Perciformes
Family: Carangidae
Genus: *Alepes*
Species: *Alepes malanoptera* (Hamilton)
Local name: Dora Mouri

Order: Perciformes
Family: Carangidae
Genus: *Scomberoides*
Species: *Scomberoides commersonnianus* (Lacepede)
Local name: Chapracori

Order: Perciformes
Family: Carangidae
Genus: *Megalaspis*
Species: *Megalaspis cordila*
Local name: Kaua mach

Order: Perciformes
Family: Haemulidae
Genus: *Pomadasys*
Species: *Pomadasys maculatus* (Bloch)
Local name: Guti datina

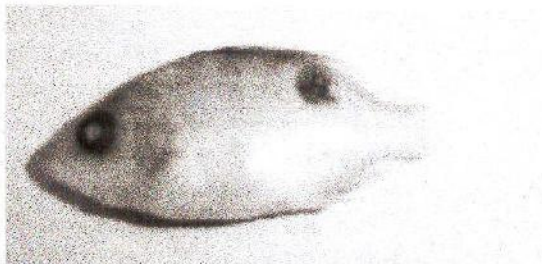


Fig: *Pomadasys maculatus* (Bloch)

Order: Perciformes
Family: Haemulidae
Genus: *Pomadasys*
Species: *Pomadasys argynreus* (Bloch)
Local name: Sada datina

Order: Perciformes
Family: Lutjanidae
Genus: *Lutjanus*
Species: *Lutjanus sanguineus* (Bloch)

Order – Perciformes
Family – Gerridae
Genus- *pentaprion*
Species- *Pentaprion longimanus* (Cantor)
Local name: Datina

Order: Perciformes
Family: Gerridae
Genus: *Pertica*
Species: *Pertica filamentosa* (Cuvier)
Local name: Datina

Order: Perciformes
Family: Haemulidae
Genus: *Pomadasys*
Species: *Pomadasys kaakan* (Lecepede)
Local name: Datina

Order: Perciformes
Family: Haemulidae
Genus: *Pomadasys*
Species: *Pomadasys argyreus* (Valenciennes)
Local name: Sada datina



Fig: *Pomadasys argyreus* (Valenciennes)

Order: Perciformes
Family: Mullidae
Genus: *Upeneus*
Species: *Upeneus vitatus*

Order: Perciformes
Family: Seiaenidae
Genus: *Otolithes*
Species: *Otolithes maculatus* (Cuvier)
Local name: Guti poa

Order: Perciformes
Family: Sciaenidae
Genus: *Pama*
Species: *Pama pama* (Hamilton)
Local name: Poa



Fig: *Pama pama* (Hamilton)

Order – Perciformes
Family – Sciaenidae
Genus- *Johnius*
Species- *Johnius coitor* (Hamilton)
Local name- Koitor, Vola

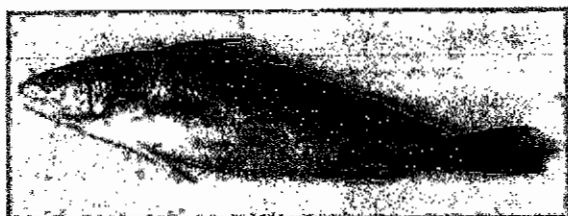


Fig: *Johnius coitor* (Hamilton)

Order: Perciformes
Family: Sciaenidae
Genus: *Johnius*
Species: *Johnius dussumieri* (Bloch)
Local name : Koitor/ Poa



Fig: *Johnius dussumieri*(Bloch)

Order: Perciformes
Family: Sciaenidae
Genus: *Johnius*
Species: *Johnius argentatus* (Bloch)
Local name: Rupa poa

Order: Perciformes
Family: Leiognathidae
Genus: *Leioganthus*
Species: *Leioganthus bindus* (Valenciennes)
Local name: Comla chanda

Order: Perciformes
Family: Chichlidae
Genus: *Oreochromis*
Species: *Oreochromis niloticus* (Peters)
Local name: Talapia

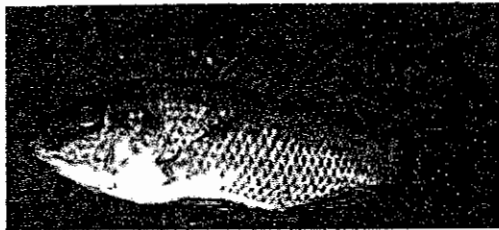


Fig: *Oreochromis niloticus*

Order: Perciformes
Family: Toxotidae
Genus: *Toxotes*
Species: *Toxotes chatareus* (Hamilton)
Local name: Putki

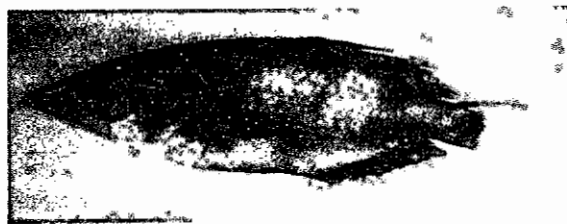


Fig: *Toxotes chatareus* (Hamilton)

Order: Perciformes
Family: Monidae
Genus: *Mene*
Species: *Mene maculata*
Local name: Mini mach

Order: Perciformes
Family: Sparidae
Genus: *Rhabdosargus*
Species: *Rhabdosargus sarba* (Forsk.)

Order: Perciformes
Family: Lutjanidae
Genus: *Lutianus*
Species: *Lutianus johni* (Bloch)
Local name: Patina

Order – Perciformes
 Family – Pentapodidae
 Genus- *Argyrops*
 Species- *Argyrops spinifer* (Forsk.)
 Local name- Lal datina

Order – Perciformes
 Family – Drepanidae
 Genus- *Drepane*
 Species- *Drepane punctata* (Linnaeus)
 Local name- Pan mach



Fig: *Drepane punctata* (Linnaeus)

Order: Perciformes
 Family: Plectorhynchidae
 Genus: *Spilotichthys*
 Species: *Spilotichthys pictus* (Thunberg)

Order: Perciformes
 Family: Lobotidae
 Genus: *Datnoides*
 Species: *Datnoides polota* (Hamilton)
 Local name: Bagh mach

Order: Perciformes
 Sub order: Scobroidei
 Family: Scombridae
 Genus: *Rastrelliger*
 Species: *Rastrelliger kanagurta* (Cuvier)
 Local name: Champa mach

Order: Perciformes
 Family: Scombridae
 Genus: *Euthynnus*
 Species: *Euthynnus affinis*
 Local name: Maitta mach

Order: Perciformes
 Sub order: Scobroidei
 Family: Thunnidae
 Genus: *Kishinoella*
 Species: *Kishinoella tonggol* (Bleeker)
 Local name: Maitta

Order: Perciformes
 Sub- order: Stromatoidei
 Family: Stromateidae
 Genus: *Parastromateus*
 Species: *Parastromateus niger* (Bleeker)
 Local name: Maissa chanda

Order: Perciformes
 Sub- order: Stromatoidei
 Family: Stromateidae
 Genus: *Pampus*
 Species: *Pampus chinensis* (Euphrasen)
 Local name: Rup chanda

Order: Perciformes
 Sub- order: Stromatoidei
 Family: Stromateidae
 Genus: *Pampus*
 Species: *Pampus argenteus* (Euphrasen)
 Local name: Foli chanda

Order – Perciformes
 Sub- order: Trichiuroidei
 Family – Trichiuridae
 Genus- *Trichiurus*
 Species- *Trichiurus haumela* (Linnaeus)
 Local name- Churi

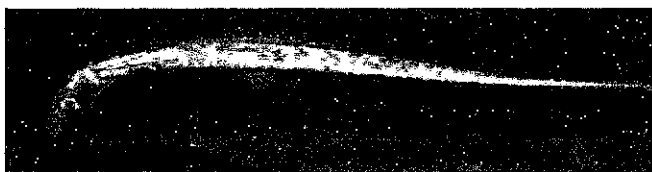


Fig: *Trichiurus haumela* (Linnaeus)

Order: Perciformes
 Sub- order: Tetodontoidae
 Family: Diodontidae
 Genus: *Diodon*
 Species: *Diodon hystrix*

Order: Perciformes
 Sub order: Cottoidei
 Family: Platycephalidae
 Genus: *Thysanophrys*
 Species: *Thysanophrys indicus* (Linnaeus)

3.13. Order: Rajiformes

The order was represented by three family and four species.

Order: Rajiformes

Family: Rhinobatidae

Genus: *Rhynchobatus*

Species: *Rhynchobatus djiddensis* (Forsk.)

Local name: Dagi pitambori

Order: Rajiformes

Family: Trygonidae

Genus: *Gymnura*

Species: *Gymnura poecilura*

Local name: Projapati ray

Order: Rajiformes

Suborder: Myliobatidoidei

Family: Dasyatidae

Genus: *Dasyatis*

Species: *Dasyatis zugei* (Muller and Henle)

Local name: Sapla pata

Order: Rajiformes

Family: Rhinobatidae

Genus: *Rhynobatos*

Species: *Rhynobatos granulatus* (Cuvier)

Local name: Pitambori

3.14. Order: Lamniformes

The order was represented by a single family and two species.

Order: Lamniformes

Family: Carcharhinidae

Genus: *Scoliodon*

Species: *Scoliodon laticaudus* (Day)

Local name: Hangor

Order: Lamniformes

Family: Carcharinidae

Genus: *Scoliodon*

Species: *Scoliodon walbeehmi* (Bleeker)

Local name: Dudh Hangor

3.15. Order: Torpediniformes

The order was represented by a single family and single species.

Order: Torpediniformes

Family: Torpedinidae

Genus: *Narcine*

Species: *Narcine brunnea* (Annandale)

English name: Brown electric ray

3.16. Order: Batrachoidiformes

The order was represented by a single family and single species.

Order: Batrachoidiformes

Family: Batrachoididae

Genus: *Allenbatrachus*

Species: *Allenbatrachus grunniens* (Day)

Local name: Gongonia

3.17. Order: Spiroidiformes

The order was represented by a single family and single species.

Order: Spiroidiformes

Family: Sepiidae

Genus: *Sepia*

Species: *Sepia latimanus* (Quoy)

A total of 14 species were found under 4 families and 1 orders. The table 2, shows the list of the order, families and the species obtained in this families.

Table 2: Number of species found under different orders and families.

	Name of the orders		Name of the families	Available species
18	Decapoda	F67	Penaeidae	6
		F68	Palaemonidae	4
		F69	Scyllaridae	3
		F70	Portunidae	1
			Total species	14

3.18. Order: Decapoda

The order was represented by four family and ten species.

Order:Decapoda

Family:Penaeidae

Genus:*Penaeus*

Species: ***Penaeus monodon***

Local name: Bagda



Fig: *Penaeus monodon*

Order:Decapoda

Family:Penaeidae

Genus:*Penaeus*

Species: ***Penaeus indicus***

Local name: Sada chingri

Order:Decapoda

Family:Penaeidae

Genus:*Penaeus*

Species: ***Penaeus mergulensis***

Local name: Bagha chingri

Order: Decapoda

Family: Penaeidae

Genus: *Metapenaeus*

Species: ***Metapenaeus monoceros*** (Fabricius)

Local name: Harina chingri

Order: Decapoda

Family: Penaeidae

Genus: *Metapenaeus*

Species: ***Metapenaeus lysianassa***

Local name: Kucho chingri

Order: Decapoda

Family: Penaeidae

Genus: *Metapenaeus*

Species: ***Metapenaeus affinis***

Local name: Kerani chingri

Order: Decapoda
Family: Palaemonidae
Genus: *Macrobrachium*
Species: *Macrobrachium rude*
Local name: Goda chingri

Order: Decapoda
Family: Palaemonidae
Genus: *Macrobrachium*
Species: *Macrobrachium rosenbergii* (De man)
Local name: Golda chingri

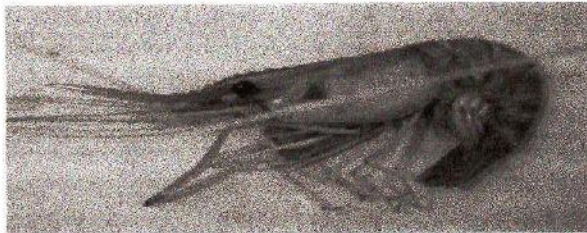
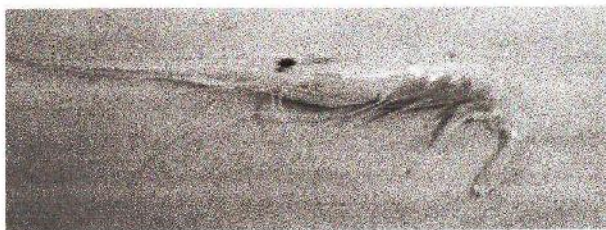


Fig *Macrobrachium rosenbergii* (De man)

Order: Decapoda
Family: Palaemonidae
Genus: *Macrobrachium*
Species: *Macrobrachium malcomsonii*
Local name: Chatka chingri

Order: Decapoda
Family: Palaemonidae
Genus: *Macrobrachium*
Species: *Macrobrachium dolichodactylus*
Local name: Brammani chingri



Order – Decapoda
Family – Scyllaridae
Genus- *Panulirus*
Species- *Panulirus ornatus* (Fabricus)
English name- Yellow ring spiny lobster

Order: Decapoda
Family: Scyllaridae
Genus: *Thenus*
Species: *Thenus orientalis*
English name: Sand lobster



Order – Decapoda
 Family – Scyllaridae
 Genus- *Panulirus*
 Species- *Panulirus ornatus*
 English name- lobster

Order: Decapoda
 Family: Portunidae
 Genus: *Scylla*
 Species: *Scylla serrata*
 Local name: Kakra



Fig: *Scylla serrata*

A total of 148 finfish species were found under 66 families and 17 orders (Table 1). The orders were – Pleuronectiformes, Symbranchiformes, Anguiliformes, Channiformes, Mugiliformes, Rajiformes, Lamniformes, Torpediniformes, Batrachoidiformes, Spiroidiformes, Perciformes, Clupeiformes, Siluriformes, Scopeleiformes, Tetraodontiformes, Beloniformes, Cyprinodontiformes, Cypriniformes and Scorpaeniformes. From the foregoing list of the species, it was seen that the order Perciformes was most prominent being represented with a total of 66 species. Next to this stood the Cypriniformes order with 44 species; the other genera were Clupiformes with 7 species, Channiformes with 5 and Laamniformes with 3 species, Beloniformes and Rajoformes each with 4 species and Mugiloformes with 3 and Tetraodontiformes with 2 species, Scopeliformes with 2. (Table 1)

The available information suggested that the species under the order Perciformes are majority of estuarine and marine dwellers and since the collections were made from the coastal water of the greater Khulna region their number was thus more represented in study. The order Cypriniformes is though mainly a freshwater one, their presence in the present collection made from the waters of the greater Khulna region which are fresh and often semi saline, is also noteworthy.

The composition of species in different orders has been shown in the following pie chart.

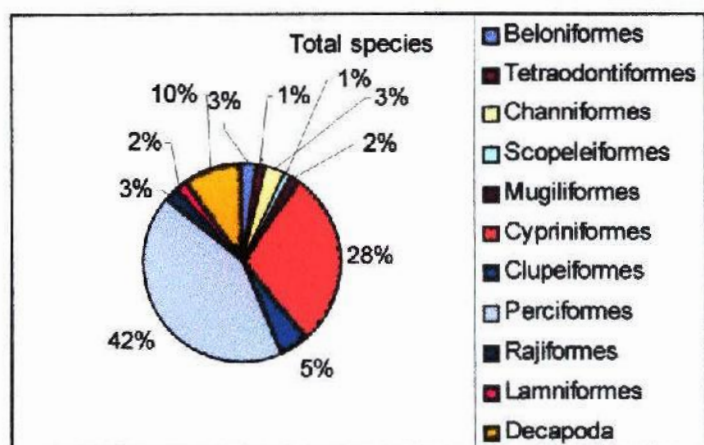


Fig 1: Percentage of species under different major orders.

Crustacean species:

It was seen that the order Decapoda was most prominent being represented with a total of 14 species. Next to this stood the family penaeidae with 6 species, Palaemonidae with 4 species, Scyllaridae with 3 species, Portunidae with 1 species. (Fig 2). Among the arthropod species found the most commercially important are five species, *Penaeus monodon*, *Penaeus indicus*, *Metapenaeus monoceros* and *Macrobrachium rosenbergii*. *Macrobrachium rude*. One important crab species were found under the family Portunidae locally known as chila kakra, *Scylla serrata*. From the present study only 11 species of shrimp and prawn were found. Study period was winter. Availability of fish and crustacean species depends on the different season. But due to limitation of time it was not possible to collect more species of shrimp.

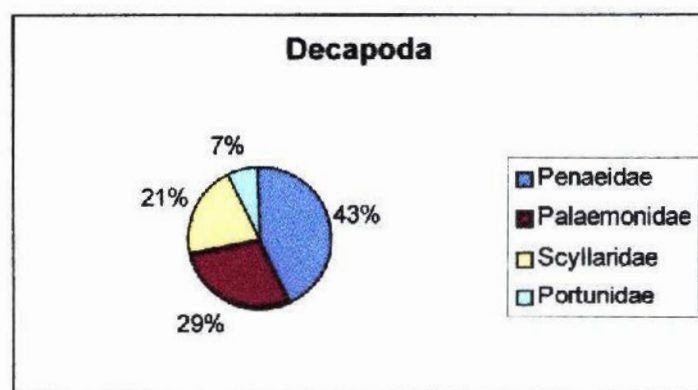


Fig: 2 Number of species under Decapods

Rahman (1985) provided a list of 260 species of fish from Bangladesh waters. He included species available from entire Bangladesh; however, he did not include species from the estuarine, offshore and marine waters of the country excepting some saline water ones which are

often available in the freshwater rivers. Most of the species he identified had previously been collected and preserved in the Museum of the Riverine Fisheries Research Station at Chandpur during the year 1964 to 1975. However, number of species being reported in this study could not be as high as the number of species reported by Rahman (1985), but this recent study has great prospect for systematic study of fishes that are available in the southwestern part of Bangladesh. Number of species reported in this study is high as the number of species reported by Shafi and Quddus(1982).

In the six months long survey on the abundance of aquatic finfish and shellfishes, a total of one hundred sixty two (162) aquatic species were collected, preserved, photographed and kept in the Laboratory of Fisheries and Marine Resource Technology Discipline, Khulna University, Bangladesh. It has been mentioned else where above that there was limitation in the collection process; it was not possible to make collection from the offshore / marine waters of the region, thus many of the unconventional species from the offshore waters could not be included in the collection. The fishermen catching fish from the offshore waters do not bring the species in the inland market either; rather they discard them in the sea. Thus if the unconventional species could be obtained, the list could have been longer. However, because of this limitations, number of species reported in this study could not be as high as the number of species reported by Seidensticker and Hai (1978), IUCN (1974) or Bernacsek (2000) from the Sundarbans waters. Also it could not be known about the actual collection and establishment of museum of the specimens of fish and crustaceans available in the Sundarbans waters by anybody. This is by far the first ever effort to establish a museum of the specimens of fish and crustaceans available in the southern region of the country as a whole.

4. CONCLUSION

The principal aim of the study was to collect, identify and to establish a museum of specimens of the fish and crustacean species available in the southwest coastal region the country. It also helped to obtain an idea about dwindling species in the area as a whole. It helped to show the real picture of species abundance of an area and to take the necessary measures if required. The region is rich in ecological diversity due to the presence of the Sundarbans. The collection, though, had limitation, it resulted a list of 148 species of finfish and 15 species of arthropods belonging to 18 orders, 70 families. The species are preserved, labeled and shelved in a museum in the Fisheries and Marine Resource Technology Discipline, Khulna University. It is hoped that the museum would play a great role in education and research for fish biology and systematic in the southwest region of the country. The study of the biodiversity of coastal aquatic animals in Bangladesh needs sufficient time, money and skilled manpower. It is hoped that the present short-term study will open a new avenue in this regard. Considering the immense importance of the coastal aquatic animals and their effect on our environment, livelihood and the socio-economics, the Government, NGOs, and national and international donors will come forward for a wider study on the aquatic animals of Bangladesh.

5. REFERENCES:

- Acharya, G. and D. Kamal.1994. Fisheries, Mangrove of the Sundarbans. Volume 2, Bangladesh IUCN. The Conservation Union, Bangkok, Thailand. 101-114 pp.
- Ameen, M.1987. Fisheries Resources and Opportunities in Freshwater Fish Culture in Bangladesh. Part. NRD-ii/DANIDA, Noakhali, Bangladesh. 244 p.
- Bernacsek, G.2000. Annotated checklist of aquatic biodiversity of the Sundarbans. Sundarban Biodiversity Conservation Project, Khulna, Bangladesh. 25p.
- Berg, L.S. Classification of fishes both recent and fossil. Trav. Inst. Zool. Acad. Sci., U.S.S.R, 5(2), 517p
- BFDC, 2001. Role of fish landing center in Bangladesh. In: Saronika of Matshya Pakkha. Ministry of fisheries and Live Stock. Government of the Peoples Republic of Bangladesh. 56 p.
- Day, F. 1958. The fishes of India, vol. I and II. William Dawson and sons Ltd, London .
- Hamilton, F. and G. Buchanon. 1822. An account of the fishes found in the river Ganges and its branches. Archibald, Constable and Company, Edinburgh and London, 400-505 pp.
- Hossain, M. A. 1979. Small Fish as a resource in rural Bangladesh. *Fish byte*. 9(2):16-18.pp
- Hussain, M.G. and M.A. Hossain. 1999. Controlled breeding technology and step for conservation of gene pool of certain endangered fish species of *Bangladesh Fish. Newsl.* 7 (1-3):2-3.pp
- Hussain, M. M. 1970. Marine and freshwater fishes of the northeastern part of Bay of Bengal. *Scientific Researches* 7(1): 26-55.pp
- IUCN, 2000. Red List of Threatened Animals of Bangladesh. Eds. Islam, M.A., M. Ameen and A. Nishat. The World Conservation Union. Dhaka, Bangladesh.

- Kader, M.A.1995. Proper management and utilization of the marine resources of Bangladesh. Proceedings of Workshop on Coastal Aquaculture and Environmental Management. Cox's Bazar, April 25-28, 1995. Institute of Marine Sciences, University of Chittagong, Bangladesh. 35-38.pp
- Khan, M.G. and Latif, M.A.1995. Potential, constraints and strategies for conservation and management of open brackishwater and marine fisheries resources. Report of the national workshop on Fisheries resources development and Management in Bangladesh. 29 Oct.-1 Nov., Dhaka, Bangladesh. Ministry of Fisheries and Livestock and BOBP, FAO and ODA. 55-77. pp.
- Munro, I.S. 2000. The Marine and freshwater fishes of Ceylon. Dept. of Ext. Affairs, Canberra publications.
- Rahman, A. K. A. 1976. The freshwater pipe fishes of Bangladesh with the description of a new species. *Bangladesh J. Zool.* 4(2); 43-50.pp
- Rahman, A. K. A.1989. Fresh water fishes of Bangladesh. The Zoological Society of Bangladesh, Department of Zoology, University of Dhaka.
- Shah, M.S. 2003. Research Needs for the Sustainable Management of the Fisheries Resource of the Sundarbans Mangrove Ecosystem. In Proceedings of the Seminar on the Sundarbans, the Largest Mangrove Forest on the Earth. A world Heritage site, held on 25-26 June, 2003, Khulna University, 153-162pp
- Shafi, M. and M. M. A. Quddus. 2001. *Bangladesher Matshya Sampad* (in Bangla), Bangla Academy, Dhaka. 400 p.
- Seidensticker, J. and M.A. Hai. 1978. the Sujdarans Wild Life Management Plan. Conservation in the Bangladesh coastal zone. IUCN. Bovernment of the peoples Republic of Bangladesh. Forest Department, Dhaka. A wildlife fund report, 129p.
- Talwar P. K. and A.G. Jhingran. 1991. Inland Fishes of India and Adjacent Countries. TYK Prokason, Yasin Bhavan, Tejgaon, Dhaka 1215, Bangladesh. 545-573 pp.
- www.banglapedia.com (browsed in 30.11.05). Aquatic Biodiversity of Bangladesh.