INTRODUCTION

STUDY AREA

In present study, the fresh water fishes were collected from the riverine system of following two districts;

1. DHULE DISTRICT

Dhule district, formerly known as West Khandesh, belongs to Northern Maharashtra region; lies between 20.38^0 to 21.61^0 North latitude and 73.50^0 to 75.11^0 East longitudes in upper Tapi basin and on the North west side of Maharashtra. The district is surrounded by Madhya Pradesh on the North, Nandurbar district and Gujarat State on the West, Nasik district on the South and Jalgaon district toward the East. It occupies an area of approximately 8063 square kilometers. There are nine important rivers flowing in the district. The largest river in length is Panzara. It is life line of Dhule district and one of the tributaries of interstate river Tapi that flows eastwards in to the Arabial sea. The river Panzara harbors rich fish fauna (Patole and Patil, 2009). Barring the relatively small area of Narmada drainage of the North part, the rest of the district is comparatively drained by the Tapi and its tributaries. The river Tapi is Major River flowing through district while other rivers are Panzara, Burai, Gomai, Amravati, Aner, Bori, Kan and Jamkhedi etc.

Collecting Stations

A total seven collecting station was made from where 127 fish sample were collected. Help was obtained from local fisherman. The collecting stations with river and number of sample collected are shown in parenthesis, these includes;

1. Pimpalner- Panzara and Jamkhedi river
2. Sakri- Kan river
3. Dhule- Panzara-Kan river
4. Kusumba- Panzara river
5. Shirpur- Tapi and Aner river

6. Shindkheda- Tapi and Amaravati river and
7. Nijampur- Burai river .

2. NANDURBAR DISTRICT

Nandurbar district lays northwest corner (Khandesh region) of Maharashtra. It is having strong mythological background. In Ramayana, Mahabharat, Sadashkumar Charitras the Region was known as "Krushik". After that in Yadava's region it was known as 'Sevundesh' after the kind Devunchandra. There is a mention of various regions in Bhishma Parva of Mahabharat i.e. Gomta, Mandka, Khana, Vidarbha and Rupvahika. As per western Historian the 'Khanda' represented Khandadesh means reach area. Being on straight on same line to Dwarka Nandurbar is also called Nandnagari in reminiscence of Lord Krishna. Nandurbar district is a tribal district. The Nandurbar district was one of the taluka falling under the jurisdiction of Dhule district. However, with effect from 1st july 1998 the Nandurbar was separated from Dhule district and it came into existence as new district. Nandurbar district has six tahsils viz., Akrani (Dhadgaon), akkalkuwa, Taloda, Shahada, Nandurbar and Navapur. It belongs to Nasik Division of Maharashtra State situated between 73.31^0 and 74.32^0 East longitudes and 21.03^0 and 22.00^0 North latitude. The district is surrounded by Madhya Pradesh State on the North, Dhule district on the East, Gujarat State in the West and Nasik district on the South. The principal river in the district is Tapi river, which flows through Shahada and Nandurbar block and other rivers Vir and Gomai flows through Shahada block.

Collection Stations

A total nine collection centers were made from where fishes were purchased from local fishermen. The inventory reports from these centers of total 83 specimens of 32 species of fishes have been collected. The collection stations include;

1. Nndurbar – Shivan river,
2. Shahada - Gomai river,
3. Prakasha - Tapi river,
4. Navapur - Rangavali river,
5. Visarwadi - Local stream,
6. Sarangkheda - Tapi river,
7. Taloda - Tapi river,
8. Khapar - Daheli + Tapi river and
9. Dhadgaon - Unai river.

Tapi River

The River Tapti flows from the East to the West and is second largest inter-state rivers, spread across the areas of Maharashtra, Madhya Pradesh and Gujarat. It originates from Mahadeva Mountain at Baitul (Dist-Nemad, M.P.) Its basin is located at 21^0- 48 North latitude and 78^0-15 East longitude. The basin of Tapi is surrounded by Saputara mountain range in the North, Ajanta and Satmala mountain range in the South and Mahadeva mountain range in the East. It meets the Arabic Ocean in the West. The river surrounded from three sides, flows through Madyapradesh (282 K.M.), Maharashtra (228 K.M.) and Gujarat with its estuaries (262 K.M.). Its total catchment area is around 65145 sq. Kms, out of which 80% lies in the Maharashtra region.

Objective of study

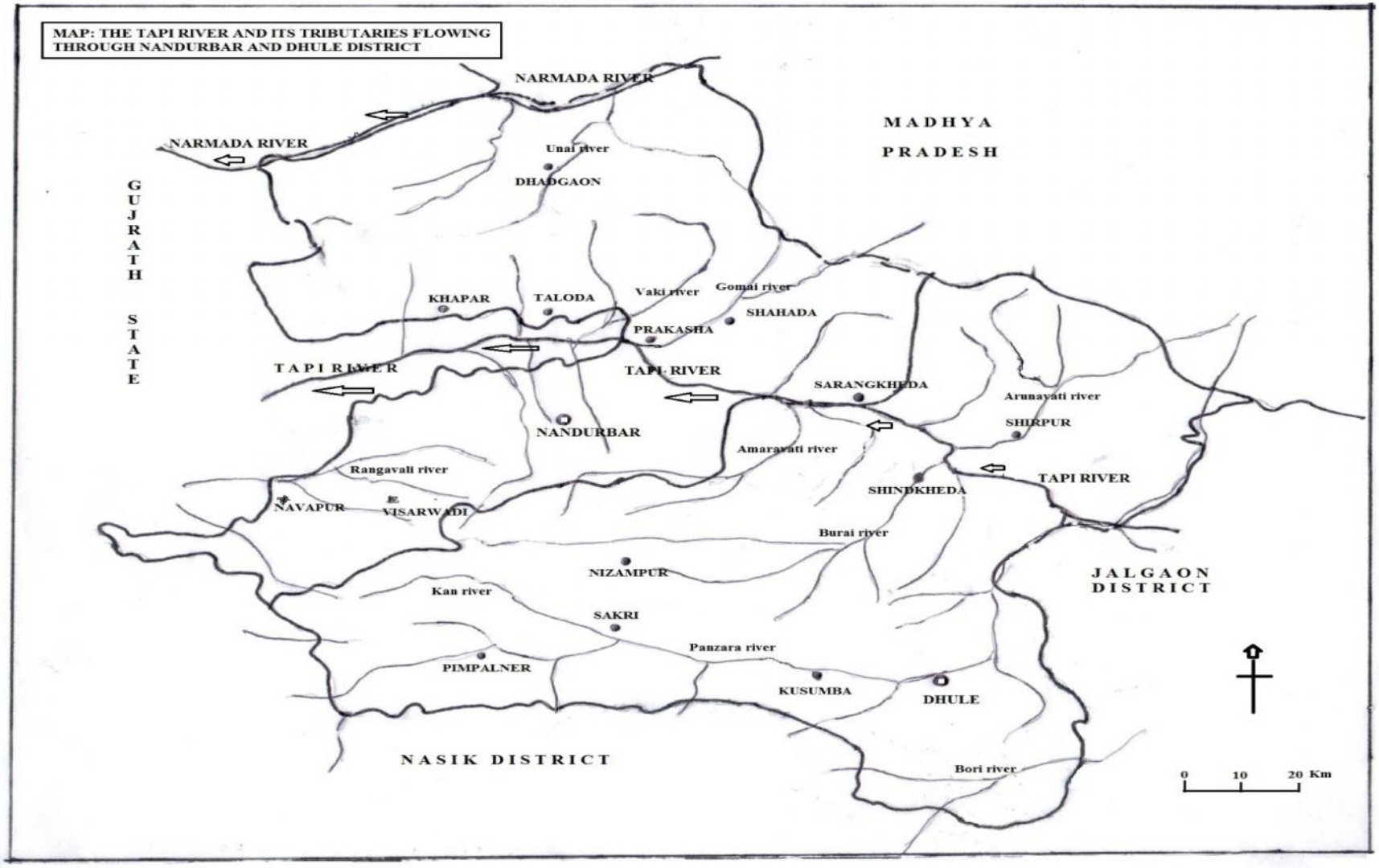
- To report the freshwater fish diversity from Dhule district (West Khandesh) of Maharashtra State.
- To analyze the present status and categories of riverine fishes from this region.
- To initiate and encourage the conservation movement among fisherman.
- To popularize importance of fish as a cheapest source of animal protein.

Table -1: List of tributaries and sub tributaries of Tapi River flowing through Nandurbar and Dhule districts of Maharashtra State, India.

Sr. No	Tributary	Origin at	Latitude	Longitude	Meet Tapi river at	Length (Km)	Sub-tributaries
01	Panzara	Hanuman Near Pimpalner, Tal- Sakri Dist- Dhule (MS).	20^0 – 52' N	73^0 – 55'E	Mulavad Tal- Shindkheda Dist- Dhule (MS).	136	Kan, Jamkhedi, Umbara nala, Katsal nala, Khara nala, Hirakhan, Kanher nala, Sonwad nala.
02	Kan	Dhaner, Tal- Sakri	210-3' N	73-59'	Datarti (Sakri)	54	--
03	Burai	Kondaibari Tal-Sakri Dist- Dhule (MS).	21^0 – 10' N	74^0 – 4' E	Shindkheda Dist- Dhule	88	Pan, Rodi
04	Madari	Chimthana Tal- Shindkheda Dist-Dhule	--	--	Shirpur Dist- Dhule	--	--
05	Arunavati	Satpuda mountain- Kolki, near Salvan Dist- W. Nemad (MP)	21^0 – 33' N	75^0 – 11'E	Vanaval, near Shirpur Dist- Dhule (MS)	53	Zirbavi, Dhul, Chondi, Ambad
06	Amravati	Thanepada, Tal & Dist- Nandurbar (MS)	21^0 – 13' N	74^0 – 15'E	Sarangkheda Tal- Shahada (Nandurbar)	--	Nai, Bhogvati, Kanan.
07	Gomai	Satpuda mountain near Morvani village Dist- Nemad (MP)	21^0 – 47' N	74^0 – 46'E	Prakasha Dist- Nandurbar	70	Tipriya, Umari, Sukhi, Susri, Bharmer

08	Vaki	Satpuda mountain near Ban village Dist- Dhule	21^0 – 44 N’	74^0 – 18’E	Bahurupa – Balda, Tal- Nizar Dist- Surat(Gujrat)	70	--
09	Daheli	Hira village, Tal-Taloda Dist- Nandurbar (MS)	--	--	Vadgaon Tal- Nizhar (Gujrat)	38.5	--
10	Bhad	Dhanora mountain Dist- Nandurbar	--	--	Nizhar (Gujrat)	--	--
11	Nagan	Kondaibari Tal- Sakri Dist- Dhule (MS)	--	--	Near Surat (Gujrat)	--	Kodari, Vandriyaval, Sanpal
12	Nesu	Near Ashta Dist- Nandurbar	21^0 – 16’ N	74^0 – 9’ E	Narayanpur Dist- Surat	--	--
13	Shiva/ Shivan	Khadaki Dist- Nandurbar	21^0 – 12’ N	74^0 – 6’ E	Velda Tal- Nizar (Gujrat)	--	--
14	Rangavali	Mountains of Dist- Nandurbar / Dhule (MS)	--	--	Villages of Dist- Nandurbar / Dhule (MS)	--	--
15	Survad						
16	Patalganga						
17	Kordi						
18	Valer						
19	Manki						

“—“Indicate Information not available. *Tribuaries data Source* - Bhalerao, S. M., 2007.


MAP: THE TAPI RIVER AND ITS TRIBUTARIES FLOWING THROUGH NANDURBAR AND DHULE DISTRICT
NARMADA RIVER
NARMADA RIVER
MADHYA PRADESH
Unai river
DHADGAON
GUJRATH STATE
KHAPAR
TALODA
Vaki river
Gomai river
SHAHADA
PRAKASHA
TAPI RIVER
TAPI RIVER
SARANGKHEDA
Arunavati river
SHIRPUR
NANDURBAR
Amaravati river
Rangavali river
TAPI RIVER
SHINDKHEDA
NAVAPUR
VISARWADI
Burai river
NIZAMPUR
JALGAON DISTRICT
Kan river
SAKRI
Panzara river
PIMPALNER
KUSUMBA
DHULE
NASIK DISTRICT
Bori river
0 10 20 Km

LITERATURE SURVEY

Diversity of freshwater fishes has long been the subject of human curiosity and need. Fishes are cold blooded aquatic vertebrates which breathe by means of pharyngeal gills, propelling and balancing themselves by means of fins. Some 20,000 species of fish are known to inhabit water bodies of various descriptions. Over a thousand species of fish occur in India. Several workers have been tried for diversity study; some reports are as follows;

- Singh and Kamble (1987) the ichthyofauna of jalgaon district was surveyed by making 32 collecting stations spread over the entire district and all major rivers and lakes were visited. 1241 specimens were examined comprising of 32 genera of fishes.
- Singh (1990) explore fish faunal wealth of Dhule district. He was examined 428 fish specimen collected from 41 stations have been studied. There are 26 species of fishes are dealt with under 20 genera.
- Sakhare (2001) reported 23 species belonging to 7 orders where Cyprinidae family was dominant with 11 species from Jawalgaon reservoir Solapur district (M.S.).
- Wagh and Ghate (2003) studied freshwater fishes from Mula and Mutha rivers flowing through Pune (M.S., India). They reported total 62 species belonging to 5 orders. The order cypriniformes was dominated with 38 species followed by Siluriformes (10), Perciformes (9), Cyprinodontiformes (4) and Osteoglossiformes with single specimen.
- Yadav, B. E. (2003) reported ichthyofauna of northern part of Western Ghats (India). The study area constitutes significant piscine fauna comprising 135 species of 57 genera under 22 families.
- Yadav, B. E. (2004) reported fish fauna in various water bodies of Pench National park. He reported 33 species comprising 23 genera, 11 families under 8 orders of fishes. Order Cypriniformes forms major bulk of 20 species, while the family Cyprinidae represents 17 species.

- Khedkar and Gynanath (2005) reported 37 species from Issapur dam in district Yavatmal (M.S.) where Cyprinidae family was dominant with 20 species.
- Yadav, B. E. (2005) reported piscine fauna from Melghat tiger reserve (M.S. India). The present ichthyofaunal accounts submit 96 species under 52 genera belonging to 19 families and 8 orders.
- Yadav, B. E. (2006) Reported freshwater fishes from Andhari river, Tadoba (M.S., India). The inventory of fishes comprising 84 species of 52 genera in 7 subfamilies of 18 families under 9 orders.
- Battul et al (2007) reported 18 species from Ekruch lake Solapur district where Cyprinidae family was dominant with 8 species.
- Sharma (2008) reported 87 species under 36 genera belonging to Cyprinidae family from freshwater of Nepal.
- Yadav, B. E. (2008) represented ichthyofaunal study of Goa of total 58 species belonging to 31 genera under 20 families spread over 8 piscine orders.
- Patole and Patil (2009) collected and identified ichthyofauna of Panzara river of Dhule district (M.S., India). They were examined 56 species comprising of 22 genera and 25 species. The order Cypriniformes was dominated with 15 species followed by Siluriformes (4), Synbranchiformes (4), Osteoglossiformes and Synbranchiformes each with single species.
- Shinde et al (2009) observed 11 species under 10 genera under the Cyprinidae family form Harsul Savangi dam in the district Aurangabad (M.S.).
- Patole and More (2010) reported freshwater fish diversity from Sakri tahsil of Dhule district (M.S., India). They were examined 221 specimen comprising 31 species (25 genera) belonging to 5 orders. Order Cypriniformes was dominated with 18 species followed by Perciformes (6), Siluriformes (5), Synbranchiforems and Osteoglossiformes contribute single species.

- Patole, S. S. (2010) reported freshwater ichthyofauna of Kan and Burai river of Sakri tahsil (Dist- Dhule) of Maharashtra. He examined 65 species comprising of 17 genera of 21 species of 5 orders. Order Cypriniformes reports maximum (14) number.
- Jadhav et al (2011) studied the freshwater fish fauna of Koyana river, northern western Ghat, India. They reported 58 species belonging to 16 families and 35 genera.
- Joshi et al (2012) recorded 20 species belonging to 7 families from Purna river and its tributaries from Buldhana district (M.S., India). The highest number of species were recorded from family Cyprinidae (10) followed by Ophiocephalidae (4), Mastacembelidae (2). Family Notopteridae, Cobittidae, Siluridae, Saccobranchidae and Clariidae reported one species each.
- Kharat et al (2012) studied freshwater fish fauna of the Krishna river at Wai and Dhom reservoir upstream of Wai (M.S., India). They were recorded 51 species belonging to 14 families and 33 genera.
- Ubharhande and Sonawane (2012) studied freshwater fish fauna at Paintakli dam from Buldhana district (M.S., India). They were observed that the ichthyofauna belong to 7 orders, 10 families, 19 genera and 21 species were Cyprinidae family dominated with 10 species followed by Channidae and Mastacembelidae with 2 species. Whereas family Balitoridae, Bagridae, Clarridae, Belonidae, Notopteridae, Cichlidae and Poecilidae contribute one species each.
- Kalbande et al (2013) represent ichthyofaunal diversity of Rawanwadi lake of Bhandara district (M.S., India). They studied total 29 species, among these 19 were of order Cypriniformes, 4 of Ophiocephaliformes, 2 of Perciformes and Siluriformes while single species from Clupeiformes and Synbranchiformes.
- Nagma and Khan (2013) ichthyofaunal studies were undertaken in the river, reservoir and ponds of district Bijanor (U.P., India). The result revealed that occurrence of 36 fish species belonging to 6 orders, 11 families and 23

genera. The Order Cypriniformes was dominated with 18 species followed by Siluriformes (10), Perciformes (4), Osteoglossiformes (2), Synbranchiformes and Clupeiformes with one species each.

- Sheikh, S. R. (2014) deals with variety of freshwater fishes in Pranhita river at Sironcha, Dist- Gadchiroli (M.S., India). The result of his presentation reveals that occurance of 37 species belongs to 21 different genera in 11 families and 8 orders were recorded. The member of order Cypriniformes were dominated by 18 species followed by Siluriformes with 8 species, Perciformes 3, Mastacembeliformes 3, Channiformes 2, Antheriniformes and Anguiliformes with each one species.

CLASSIFICATION SYSTEM

Animal and plants associated with water have from times immemorial signified fertility and abundance. The fish, one of the first forms of evolutionarily higher life to appear in water, is among the earliest vertebrates. It was, therefore, regarded as one of the '*nidhis*' (treasures) of the water.

Motifs and symbols that appeared in early Indian art, particularly the ones derived from water cosmology, depict the fish as beautiful and attractive. The double fish (*mina-mithuna*) connected by a cord held in the mouth of each, occurs frequently. It is also one of the *astamangalas* (eight auspicious signs). Symbols like the two fish *swastika* and *srivatsa* are auspicious.

Chamba has one of the finest representations of Vishnu's first incarnation as a fish (*Matsya*). A 12th century sculpture in the Belur temple illustrates how Arjun won Droupadi by shooting the revolving figure of a fish fixed high up, by looking at its reflection in the water kept below. A rosette formed of a number of fish is a prominent motif decorating the ceiling of Chalukyan temples at Aihole, Badmai and Pattadakal.

Minakshi (fish-eye) is a popular epithet used to describe a woman with beautiful eyes. Mewar paintings of Panchatantra folios on the fish and Rajasthani paintings of the fish parable showing big fish swallowing the small

(*Matsyanyaya*) are common. The fish symbol is used in Kolam designs, textile embroidery and also to provide an artistic shape for stringed instruments. An ear pendant from Taxila is a classic example of the employment of the fish motif to embellish jewellery.

The three-fish with a common head occurs in several countries of Asia, Africa and Europe where it was accepted as a symbol of fertility. This motif is, however of rare occurrence in India. Notable instance of its presence are on the foot-print of Buddha before the Vajrasan throne of the Mahabodhi and on the right palm of the Buddha (Sanchi Museum, 6th century A. D.).

The representational continuity of the fish in India is traceable from the pottery of Nal and Indus civilization. In sculpture and painting, its presence with other aquatic animals or plants is indicative of water (lake, river or sea). The *Matsya Jataka*, however, idealises the large fish, for the Bodhisattva, born as a huge fish, had offered himself as food to several hungry souls.

In the Hindu scripture, "*Bhagvat Gita*", there is a reference to 'fish' (Chapter 10, Stanza 31, line 2) in the lines ("Jhashanam Makarshachasmi Srotasamasmi Janhavi") according to which Lord Krishna, explaining to Arjuna his supremacy cover all the creatures and creations, tells that among fish, He is the '*Magar*' (Crocodile) and among the rivers, He is the 'Janhavi' or the Ganga. The above also throws light on the thought prevailing then that fish was classified in the same group of animals as the crocodile or vice verse. As the language has it, '*Magar*' in Hindustani is called '*Magarmachcha*' meaning a crocodile fish. In the "Kishkindha Kand" section of the Hindu epic "*Ramayana*" there are interesting references to fish in water in the lines "Jal Sankoch Bikal Bhai Meena; Abudh Kutambi Jimi Dhanheena", (due to paucity of water in the pond (in summer), the fish are in distress like a foolish householder who is in distress for want of money). And further "Sukhi meena je neer Agadha Jimi Hari Saran Na Akakun Badha" means that such fish as are in deep waters are as happy as a man under God's sheltering care.

There are also occasional references to aquatic life in "Balkand" and "Sunderkand" sections of Tulshidass "*Ramcharitra Manas*". In more recent times, in Sarat Chandara Chattopadhaya's novel in Bengali "*Ramer Sumati*", there are references to family pet-fish named 'Kartick' and 'Ganesh' to which the boy hero, Rama, was sentimentally attached. There is a suggestion of anthropomorphism in this reference.

History of ichthyology in India

The knowledge of the occurrence of fish in India dates back to three millennium B. C. (Hora, 1956). Fish remains with cut marks, indicative of their use as food, have been obtained from excavations at Mohenjodero and Harappa of the Indus Valley civilization (2500 B.C.–1500 B.C.) While Aristotle (384- 327 B.C.) is said to be the founder of ichthyology, King Somesvara, the son of King Vikramaditya VI, who composed the book, *Manasoltara*, in 1127 A.D., was the first to record the common sport fishes of India, grouping them into marine and freshwater riverine forms (Hora, 1951). The first modern writer on Indian fishes, according to Day (i978), was Bloch whose splendid work *Auslandiche Fishcewas* published in 1785. This work along with his ichthyologie, and its further extension by Schneider in 1801, contain many Indian marine forms. Later, Lacepede wrote *Historie des poisons* (1798-1803). In 1803, Russell described 200 species from Vishakhapatnam. In 1822, there appeared Hamilton's pioneer work, Fishes of Ganga, which contain a description of 269 species of fish from the Ganga and its tributaries. Cuvier and Valencienne's *Historie Naturelle des piossons*, published during 1828-1849, provided more impetus to the study of ichthyology than any other work till then. Other notable work includes McClelland (1839), Bleeker (1853), Blyth (1858-1860), Günther (1859-1870) etc. There is, however, no work of greater importance on Indian fishes than the epoch making contribution of Day's *Fishes of India and Fauna of British India, Burma and Ceylon* (1878-1889).

In the 20th century, valuable contribution on fishes Systematics have been made by Hora (1920-1959), which are being further extended by many zealous workder, notably Misra, Menon Silas and Jayaram. Mention may also be made of works of Mirsa (1962), Jayaram (1981) and Talwar and Kacker (1984) and others.

Classification of fishes

Various systems of fish classification have been propounded, Günther (1859-1870), Day (1878-1889), Weber and de Beaufort (1911), Jordan (1923), Berg (1940), Grasse (1958), Romer (1959), Nikol'skii (1962) and Greenwood et al., (1966).

One of the widely accepted classifications of fishes is due to Regan (1929). This was based on taxonomic foundations laid much earlier in the later half on 19th century or early 20th century works of Günther (1859-1870), Cope (1871), Gill (1872; and 1893), woodward (1901) and Boulenger (1904).

As per Nelson's (1976) classification, fishes belong to the phylum - Chordata, sub phylum- Vertebrata and Superclass- Pisces. All living fishes are mainly divided into two classes, Chondrichthys or Cartilaginous and Osteichthyes or Bony fishes. Further, they are classified in to Ordes, suborders, tribe, substibes, families and subfamilies etc. At present all living fishes are divided in to 202 families.

In the present investigation of fish collected from region (rivers) of two districts i.e. district Dhule and Nandurbar, mainly form river Tapi and its tributaries viz., Panzara, Kan, Burai, Shivan, Gomai, Rangavali, Arunavati, Daheli and Unai by making 16 collection stations centers at various places of both districts. I am reporting total 53 species (35genera) belongs to 8 different orders and 15 families. The details of general characteristics of these orders, their families and classification of fishes are as follows;

I) Order – Beloniformes

Family- Belonidae (Fresh water Gars)

Characteristics: Body elongate, slender, with small scales. Head with scales. Both jaws elongated as a beak armed with sharp teeth to their tip. Teeth on jaws; palate edentate in Indian species. Branchiostegal rays 12 to15. Gill openings wide. Dorsal fin placed far posterior of body without spines; dorsal fin rays varying in elevation, sometimes forming a lobe to the fin. Pectoral fins short, placed high on

sides, with 10 to 12 rays. Pelvic fins abdominal with six rays. No separate finlets. Lateral line on free portion of tail with or without a keel. Scales cycloid, deciduous.

Species – 1. *Xenentodon cancila* (Hamilton)

II) Order – Clupeiformes

Characteristics: Body short, oblong, not eel like, compressed in most with cycloid scales. Sometimes edge pectinated. Abdomen often with keeled scutes along ventral midline. Head scales. Margin of upper jaw formed by premaxillaries and maxillaries; one or two supramaxillaries. No gular plate. Gill membranes separated, free from isthmus. Branchiostegal rays four to eight. Radiating cutaneous canals on opercular bones. Pseudobranchiae present. No suprabranchial organ. Teeth present or absent on jaws and palate. A single dorsal fin without spines, may be absent in some genera. No adipose dorsal fin. Plelvic fins present or absent. Anal fin without spines. Mesocoracoids invariably present. Lateral line short, incomplete. Air bladder divided into two large vesicles which are lodged within ossified bullae or prootic and pterotic bones; thus the air bladder is intimately connected intracranially with the inner ear. Temporal foramina, pre-epiotic fossae and auditory fenestrae are constant features in the skull.

Family – Clupeidae (Herrings, Sardines, shads)

Characteristics: Maxillaries composed of three places not ossified together. Abdomen with scutes. Head without scales. Teeth when present, rudimentary and deciduous. Barbels absent. Gill membranes free. Opercular pieces four. A single dorsal fin with a few or a moderate number of weak rays. Anal fin generally short, lone in a few genera. Scales present on body. Lateral line mostaly absent. Pyloric appendages when present numerous.

Species - 2. *Tenualosa ilisha* (Hamilton)

III) Order - Cypriniformes

Characteristics: Body oblong, compressed, with small to large scales. Head without scales. Bony plates never developed. Mouth usually protractile and always toothless. Maxillaries reduced. Premaxilla excludes the maxilla from the gape. Preethmoid and median rostral are variously present or absent. Jaw's palatine and pterygoid bones are toothless. Orbital bones often reduced to simple tube bones. The lower pharyngeals have a reduced number of teeth, and the non-opposed upper pharyngeal are toothless. Branchiotegal rays three. No supra-branchial organ. A metapterygoid – quadrate fenetra absent. Subtemporal fossae often well developed, may be reduced. Post-temporal fossae variously developed. A single dorsal fin. No adipose dorsal fin except in some nemachelins and cobitins. Barbles often present around the mouth, may be absent. Pelvic fins abdominal. Lateral line present. Air – bladder free or often enclosed in a bony capsule in bottom dwelling forms. Weberian apparatus mostly modified, commonly as a fusion of the second and third centra.

i. **Family- Balitoridae** (Loaches)

Characteristics: Body covered with small cycloid scales. Greatly depressed, ventral surface flattened. Body, head and part or whole of ventral surface without scales. Jaws and palate elongate. Gill opening either greatly restricted and situated above base of pectoral fins or of moderate size extending to ventral surface for a short distance. Gill membranes united with isthmus. Pseudobranchiae absent. Paired fins may or may not be horizontally placed with one or two simple unbranched rays. Outer rays of paired fins provided with adhesive pads on ventral suface. Lateral line well marked and complete. Air bladder reduced, devided and enclosed in a bony capsule, formed by the dorsal ribs of the second and fourth vertebrae. Subtemporal fossa deep. Basipterygium provided with a lateral foramen and without any lateral horn. Operculam reduced. Posterior process of quadrate large.

Species 3. *Acanthocobitis botea* (Ham-Buch)

4. *Acanthocobitis mooreh* (Sykes)

5. *Oreonectus evezardi* (Day)
6. *Schistura denisoni* (Day)

ii. Family- Cyprinidae (Carps, Minnows)

Characteristics: Body with scales, generally compressed, abdomen rounded or cutting. Eyes never covered with skin. Mouth transverse, superior, inferior or terminal, with or without a sucker more or less protectile and toothless. Lower jaws may be prominent, sharp or rounded, sometimes provided with a knob at the symphysis which may be movable. Upper jaw usually bordered only by premaxilla. Lips usually thin, not with papillae, developed in various stages; sometimes absent form one of the jaws or closely infesting both jaws or reflected from one or the other. A labial fold continuous or interrupted present. Occasionally a few genera have a horny cartilaginous coverings to either or the lips or both. No sub-ocular spines. Gill openings wide. Opercular bones well developed. Barbells one or two pairs present or absent. Last undivided dorsal fin ray osseous or articulated. No adipose dorsal fin, pharyngeal teeth one to three rows, never more than eight teeth in any one row. Lateral line complete or incomplete. Air bladder usually large and divided into an anterior and a posterior chamber not surrounded by a bony capsule.

A very lager and most common group of primary freshwater fishes and the family itself is the largest. Cypriniform fishes have in general become the dominant freshwater group in any land mass to which they had access. Wherever they occur naturally in any considerable number they have differentiated into many more species than other groups. In most places the species of small sized cyprinids are the principal forage fishes on which predatory species feed. They swarm in great abundance in the lowland rivers (*Danio, Rasbora, Sal*mostoma) and in the highland brookes (*Barillius, Lepidocephalus, Nemacheilus*). Wherever the other large predators are few or are absent. Cyprinoids themselves have evolved into large predatory forms (e.g. *Puntius carnaticus*).

Species: 7. *Amblypharyngodon mola* (Hamilton)
8. *Barilius bendelisis* (Hamilton)

9. *Cirrihinus reba* (Hamilton)
10. *Crossocheilus latius* (Hamilton)
11. *Cyprinus carpio* (Linnaeus)
12. *Danio aequipinnatus* (Mc Clelland)
13. *Garra mullya* (Sykes)
14. *Hypophthalmichthys nobilis* (Richardson)
15. *Labeo boggut* (Sykes)
16. *Labeo calbasu* (Hamilton)
17. *Labeo rohita* (Hamilton)
18. *Lepidocephalichthys guntea* (Ham Buch)
19. *Lepidocephalichthys thermalis* (Valencinnes)
20. *Osteobrama cotio cotio* (Ham-Buch)
21. *Osteobrama vigorsii* (Sykes)
22. *Puntius amphibious* (Val)
23. *Puntius conchonius* (Ham-Buch)
24. *Puntius sarana sarana* (Ham – Buch)
25. *Puntius sophore* (Ham-Buch)
26. *Puntius ticto* (Ham-Buch)
27. *Rasbora daniconius* (Hamilton-Buchanan)
28. *Salmostoma bacaila* (Hamilton)
29. *Salmostoma balookee* (Sykes)
30. *Salmostoma clupiodes* (Day)
31. *Salmostoma* Phulo phulo (Ham Buch)

32. *Tor khudree* (Sykes)

IV) Order – Cyprinodontiformes

Characteristics: Body short, Compressed or elongate, with scales. Head with scales. Margin of upper jaw formed solely by premaxillaries. Upper jaw protractile in many species. Teeth in both jaws, also in the superior and inferior pharyngeal bones. Upper and lower pharyngeal bones well developed. Ceratohyal and epihyal joined together by dermal lamellae. Second circumorbital bone absent. Pseudobranchaie absent. Infraorbital series reduced to two, rarely three elements. Opercular and preoperculum bones unarmed. A single spineless dorsal fin. Pelvic fins abdominal, subabdominal or thoracic. Air-bladder physoclistic. Small to medium sized surface feeding fishes, Principally in fresh and blackish waters, some marine. Most freshwater species with pronounced secondary sexual dimorphism in size, color and in fin shape and function. Both oviparous and viviparous species are found.

Family- Aplocheilidae (Riverlines)

Characteristics: Body typically fusiform and compressed. Upper jaw protrusible bordered by premaxilla only. No spines. Rayed dorsal fin inserted on posterior third of body. Pelvic fin bases inserted close together.

Metapterygoid present. Basibranchials three. Scales large, usually cycloid. Lateral line chiefly on head, not on body. Brachiostegal rays six or seven. Males always larger than females.

Species - 33. *Aplocheilus panchax* (Hamilton)

V) Order – Osteoglossiformes

Characteristics: Body and head scaled, strongly compressed. Abdomen non keeled, non-serrated, caudal region very long, tapering. Maxillaries well toothed forming the greater part of the upper jaw. Maxilla and pre-maxilla firmly bound together and have restricted mobility. Supramaxillae absent. Teeth on pre

maxillaries, maxillaries, vomer, palaltines, pterygoid and tongue. No pharyngeal teeth. Gill membranes partlu united. Paired, usually ossified, rods well developed at base of second gill arch. Pseudobranchiae absent. Palatines fused with ectopterygoid. Dorsal fin present or absent. Pelvic fin abdominal. Barbells absent. Pectoral fin depressed. No adipose fin. Anal fin long, confluent with a small caudal fin. Upper hypurals fused with the uroneurals and apparently with the vertebral column. The air bladder diverticula is closely applied to the lateral aspects of two otic regions. Abdominal portion of air-bladder completely subdivided. Predominantly tropical freshwater fishes of extraordinary diverse body form and size. Most species are insectivorous or piscivorous.

Family- Notopteridae (Featherbacks)

Characteristics: Moderately large fishes, elongate, with the body broad, strongly compressed laterally, with fine scales on head also. Abdomen serrated before the pelvic fins. Dorsal profile not so convex as of ventral profile. Eyes large, superior. Maxilla extends to below middle of orbit, cleft of mouth lateral. Maxillae well toothed and firmly bound together with the premaxilla. Suboperculum absent. Branchiostegal rays eight or nine. No barbells. Dorsal fin single, belonging to the caudal portion of the vertebral column. Pelvic fins rudimentary or absent. Lateral line present. Air-bladder present, subdivided interally, transformed into an accessory respiratory organ.

Species 34 *Notopterus notopterus* (Pallas)

VI) Order – Perciformes

Characteristics: Skin with scales, commonly ctenoid. Mouth may be protractile, particularly upper jaw, with the premaxillary having ascending, articular amd lateral (maxillary) processes. Head and cheeks with muciferous canals, pores. Bones of head commonly with numerous pungent spines. Preopercle entire or serrated. Upper and lower pharyngeal well developed and toothed. Teeth may be present or absent on vomer and palatines, villiform on jaw with or without canines. Pseudobranchiae present. Two dorsal fins, first spinous. An adipose fin never

present. Pectoral fins inserted laterally and vertically on thesides. Pelvic fins, if present, thoracic or jugular, with spines, usually with five rays. Anal fin with spines.

A subocular shelf presents on the infraorbital series in many species. Infraorbital bones frequently in contact with preoperculum. Orbisosphenoid, mesocoracoid, intermuscular bones absent. Pleural ribs well developed. Lateral line when present continuous (exception- *Chanda*). Air bladder mostly physoclistic. Pyroric appendages in varying numbers. Scales usually ctenoid or absent. Caudal fin skeleton with five or fewer hypurals. No free second ural centum. Principal caudal fin rays never more than 17, often fewer.

This order is the largest and the most diversified of all fish orders. Classification is controversial since most families in many suborders are basically similar and are not easily definable in terms of common shared derived characters. About ¾ of all perciforms are marine shore fishes while only about 14 % normally occur only in freshwater (Jayaram, 2002).

i. Family- Ambassidae or Chandidae (Glass fishes)

Characteristics: Body short, elevated, oblong, compressed, slightly translucent. Moderate to small, deciduous cycloid scales on head and body. Pseudobranchiae well developed. Branchiostegal rays six. Lower point of preopercle with a double serrated edge. Opercle without spine, ending in a membranous flap. Teeth on jaws and palate, canines occasionally present. Two dorsal fins, with a spinous and soft part. Anal fin with spines. A forwardly directed recumbent spine in front of dorsal fin present. Lateral line complete or interrupted.

Species 35. *Chanda nama* (Hamilton-Buchanan)

36. *Parambassis lala* (Hamilton-Buchanan)

37. *Parambassis ranga* (Hamilton-Buchanan)

ii. Family – Channidae (Murrels)

Characteristics: Body elongate, cylindrical anteriorly. Body with large scales, head with plate-like scales. Cephalic pits present. Teeth on jaws, vomer and palate. Branchiostegal rays five. Gill membranes connected beneath isthmus. A suprabranchial organ present. A single long spineless dorsal fin present and a similar anal fin, both free from caudal fin. Lateral line abruptly curved or almost interrupted. Air – bladder present, not bifid posteriorly. Pyloric appendages few, when present.

Species 38. *Channa gachua* (Hamilton).

39. *Channa marulius* (Ham-Buch)

40. *Channa orientalis* (Bloch & Schneides).

41. *Channa punctata* (Bloch)

iii. Family – Cichlide (Cichlids)

Characteristics: Body oblong, elevated, compressed. Head and body with slightly ctenoid scales. A single nostril on each side of snout. Inferior pharyngeal bones triangular with a medium longitudinal suture. Teeth on jaws. Palate edentate. Pseudobranchiae absent. Branchiostegal ray six. Dorsal fin single with a spinous and soft part. Anal fin with spines and a soft part. Lateral line interrupted or abruptly ceasing. Air-bladder present, large and simple. Pyloric appendages absent, few when present.

Species 42. *Oreochromis mossambicus* (Peters)

iv. Family- Gobidae (Gobies)

Characteristics: Body varying from oblong to very elongate, eel-like in some genera. Head generally with mucous canals and open pores. Five Branchiostegal rays. Two dorsal fins united with each other or separated narrowly by a notch, or well separated, with soft flexible spines and/ or rays. First dorsal fin when present with spines separate from soft dorsal and with two to eight flexible spines. Pelvic fins united, usually forming an adhesive or sucking disc. Basal membrane present

or absent. Anal fin short, or long or continuous with caudal fin. Anal papilla present. Lateral line absent; exposed pit-organs present. Scales ctenoid or cycloid (rarely absent).

Species 43. *Glossogobius giuris* (Ham – Buch)

VII) Order – Siluriformes

Characteristics: Skin naked or with bony scutes or plates, never with true scales. Mouth not protractile, superiorly bordered by premaxillaries and dentaries, which are generally toothed as are the pterygoids. Palatine and vomer; maxillaries much reduced, toothless, serving as bases of maxillary barbles. Nearly always one to four pairs of barbles. Adipose fin generally present. Symplectic, subopercular and intermuscular bones parietals, first and second pharyngobranchials, epipleural and epineural bones absent. Pharyngeal bones with small conical or villiform teeth. Branchiostegal rays 4 to 17. no psuedobranchiae. Mesopterygoid reduced, preopercle and interopercle relatively small. Anterior vertebrae, second, third, fourth coosified to form "complex vertebra" additional posterior vertebral centra may be frequently fused to or united by exceedingly tight joints with complex vertebra. Ribs attached to lower surface of long parapophyses. Supracleithrum complicated; lower part deeply forked for reception of upper limb of cleithrum. First pectoral, and last dorsal fin rays modified as hard pungent spines or thick rays. Lateral line may be ramified, with or without short tubular ossicles enclosing the line. Pelvic fins abdominal in position. Principal caudal fin rays 18 or fewer, caudal skeleton generally have six hypural plates. Air-bladder subdivided, reduced in many species.

i. Family- Bagridae (Bagrid Catfishes)

Characteristics: generally large sized, more or less elongate fishes, with a compressed body. Teeth on premaxillaries, mandible and vomer. Nostrils widely separated, above angle of mouth, anterior tubular on tip of snout. Posterior nearer eye than tip of snout and with the nasal barbell. Barbells six or eight, generally well developed. Gill opening wide, extending to above base of pectoral fins.

Membranes free from each other and also from isthmus. Rayed dorsal fin short, inserted anteriorly above middle of pectoral fins, with six to eight rays and a

spine. Adipose dorsal fin smooth; not confluent with either rayed dorsal or with caudal. Paired fins inserted horizontally. Pectoral fins with a strong spine, generally serrated. Anal fin short or moderately long, not confluent with caudal. Caudal fin forked or deeply emerginate. Lateral line present, generally complete. Air – bladder large, free in the abdominal cavity, moderately thick-walled. Lateral ethmoid facet for articulation of palatines more ventral than lateral, usually from underside of skull. Palatines rod-like. Endopterygoid absent. Ecto-metapterygoids present, variously developed. Metapterygoid may not be durctly connected to hyomanibular. Vomer large or small, dentigerous. Autopterotics and autosphenotics provide ventrally articular facet or small, dentigerous. Autopeteroticus provide ventrally articular facet for hyomanibular, but variable, post-temporals present, united to skull by ligament. Mesocoracoid in pectoral girdle present.

Species
44. *Aorichthys aor* (Hamilton).
45. *Mystus cavasius* (Hamilto)
46. *Mystus bleekeri* (Day).
47. *Rita pavimentata* (Val)

ii. Family- Clariidae (Air breathing Catfishes)

Characteristics: Large sized elongate fishes with a compressed body. Teeth on premaxillaries, mandible and vomer. Nostrils widely separated, anterior tubular, situated near tip of snout, posterior slit like and with nasal barbell. Barbels eight, well developed. Gill opneiongs wide, extending to above base of pectoral fins. An air-breathinbg organ arising from the branchial arches may be present. Branchiostegal rays seven to nine. Rayed dorsal fin very long, separate or continuous with caudal fin without a spine. No adipose dorsal fin. Paired fins inserted horizontally. Pectoral fins with a strong spine, may be serrated; in some

genera fin vestigial. Anal fin long , not confluent with caudal. Caudal fin rounded. Lateral line present, complete. Air-bladder reduced, consisting of two thin walled sacs united by a transverse tube; two lateral chambers covered by incomplete bony capsule.

Species 48. *Heteropneustes fossilis* (Bloch)

iii. Family- Schilbidae (Schilbid Catfishes)

Characteristics: Medium to large sized fishes with medium body. Teeth on premaxillaries, mandible and vomer. Nostrils widely separated, anterior wide, along front border of snout; posterior slit-like or with a flap or simple, nearer eye than tip of snout. Barbels two, four or eight, fairly well developed. Gill openings very wide, extending up to lateral line, membranes free from each other and also from isthmus. Branchiostegal rays five to twelve. Rayed dorsal fin when present short, with five to seven rays and a spine, may be absent also. Adipose dorsal fin generally present, may be absent. Paired fins inserted laterally pectoral fins with a strong spines, usually serrated. Anal fin very long, not confluent with caudal fin. Caudal fin forked. Lateral line generally complete, simple.

Species 49. *Clupisoma garua* (Hamilton)

iv. Family- Silirudae (Sheat fishses)

Characteristics: Large sized, elongate fishes with a compressed body. Depressible teeth on premaxillaries, mandible and vomer. Nostrils separated from each other by a short distance, anterior tubular on tip of snout, posterior valved and situated before anterior border of eyes. Barbles four or six, generally well developed. Nasal barbells invariably absent. Gill openings very wide, extending up to lateral line, membranes free from each other and isthmus. Branchiostegal rays 8 to 21. Rayed dorsal fin mostly one short with four or five rays and without a spine.

Adipose dorsal fin absent. Paired fins laterally inserted. Pectoral fins with a strong spines, occasionally serrated. Anal fin very long, up to 93 rays extending from just posterior to anal opening to caudal or confluent with it. Pelvic fins small, not prominent, may be absent. Caudal fin rounded to weakly emarginate, with bluntly rounded lobes or forked. Lateral line straight, complete, and with short ventral branches, dendritic or not, but no dorsal branches.

Species 50. *Ompok bimaculatus* (Bloch)

VIII) Order – Synbranchiformes

Characteristics: Body eel like, compressed, with small scales if present, arranged in longitudinal rows, or absent. Margin of upper jaw formed by the pre-maxillaries, the maxillaries being internal and parallel to them. Humeral arch may not be attached to skull. Anterior nostril in the upper lip or farther forward, ectopterygoid enlarged, mesopterygoid reduced or absent. Premaxillary excluding the maxillary form the gape, non-protrusile, without ascending process, articulating directly with the skull and maxillary without palatine articulation. Teeth on jaws and palate.

Gill membranes attached to isthmus, and gill opening in the form of a slit or pore under head or throat. Three or four branchial arches. Accessory breathing apparatus in the form or air-sac may be present or absent. Vertical fin rudimentary in the form of mere folds of skin. No paired fins. Air bladder absent. Lateral line present. Found in freshwater and also in the sea.

Family- Matacembelidae (Spiny eels)

Characteristics: Body eel like, compressed and elongate, covered with minute scales. Mouth non-protractile. Snout elongate and supported by a cartilaginous rod and ending in a sensitive tip flanked by tubular nostrils anteriorly placed on the snout. Upper jaw formed by dentigerous premaxilla and elongate maxilla.

Branchiostegals five or six. Preopercululam with or without spines. Dorsal fin long with 7 to 40 detached depressible dorsal spines; anal fin with one to three spines. Pelvic fins and girdle absent. Pectoral fins with 17 to 27 rays. Caudal fin short, either confluent with dorsal and anal fins or narrowly separated; homocercal. Pyloric appendages two. Air-bladder without an open duct.

Species 51. *Macrognathus panicalus* (Hamilton)

52. *Mastacembelus armatus* (Laceped)

53. *Mastacembelu pancalus* (Ham-Buch).

Table- 2: Ichthyofaunal diversity of fishes Collected at sources from Dhule and Nandurbar districts.

Sr. No	Order	Family	Genus	Species	Local name	Collecting station –River with date of collection
01	I: Beloniformes (1)	Belonidae (1)	*Xenentodon*	*cancila* (Hamilton)	Vam	Taloda- Tapi. 09/11/2013. Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014
02	II: Clupeiformes (1)	Clupeidae (1)	*Tenualosa*	*ilisha* (Hamilton)	Bhat-masa	Taloda- Tapi. 09/11/2013. Khapar- Daheli- 10/11/2013 Sarangkheda- Tapi. 16/01/2014 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014
03	III: Cypriniformes (30)	Balitoridae (4)	*Acanthocobitis*	*botea* (Ham-Buch)	Mooree	Sakri- Kan river 12/11/2013.
04				*mooreh* (Sykes)	Mooree	Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014
05			*Oreonectus*	*evezardi* (Day)	Mooree	Sakri- Kan river 12/11/2013
06			*Schistura*	*denisoni* (Day)	Mooree	Sakri- Kan river 12/11/2013 Visarwadi- Local. 06/03/2014
07		Cyprinidae (26)	*Amblypharyngodon*	*mola* (Hamilton)	Kachi	Taloda- Tapi. 09/11/2013. Khapar- Daheli- 10/11/2013
08			*Barilius*	*bendelisis* (Hamilton)	Zora	Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Nizampur- Burai river 2/3/2014 Navapur- Rangavali- 08/03/2014

09	Cypriniformes	Cyprinidae	*Cirrhinus*	*reba* (Hamilton)	Aarali	Taloda- Tapi. 09/11/2013 Shirpur- Tapi river 17/01/2014 Shindkheda- Tapi 17/3/2014
10			*Crossocheilus*	*latius* (Hamilton)	Regadi	Shahada- Gomai. 01/01/2014 Pimpalner- Panzara river 1/2/2014
11			*Cyprinus*	*carpio* Linnaeus	Combda	Prakash- Tapi. 14/01/2014 Shirpur- Tapi river 17/01/2014
12			*Danio*	*aequipinnatus* (Mc Clelland)	Ger	Sakri- Kan river 12/11/2013
13			*Garra*	*mullya* (Sykes)	Mhya	Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Shahada- Gomai. 01/01/2014. Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Nandurbar- Shivan river. 15/2/2014 Dhule- Panzara river 16/2/2014 Visarwadi- Local. 06/03/2014 Navapur- Rangavali- 08/03/2014 Kusumba- Local river 26/3/2014
14			*Hypophthalmichthys*	*nobilis* (Richardson)	Silver	Sakri- Kan river 12/11/2013 Kusumba- Local river 26/3/2014
15			*Labeo* (3)	*boggut* (Sykes)	Ger	Taloda- Tapi. 09/11/2013. Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Sarangkheda- Tapi. 16/01/2014 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Dhule- Panzara river 16/2/2014 Nizampur- Burai river 2/3/2014 Visarwadi- Local. 06/03/2014 Navapur- Rangavali- 08/03/2014

						Shindkheda- Tapi 17/3/2014 Dhadgaon- Unai. 13/04/2014
16	Cypriniformes	Cyprinidae	*Labeo*	*calbasu* (Hamilton)	kayvatti	Taloda- Tapi. 09/11/2013. Khapar- Daheli- 10/11/2013 Shirpur- Tapi river 17/01/2014
17				*rohita* (Hamilton)	Rav	Khapar- Daheli- 10/11/2013 Shirpur- Tapi river 17/01/2014 Nandurbar- Shivan river. 15/2/2014 Dhule- Panzara river 16/2/2014 Kusumba- Local river 26/3/2014
18			*Lepidocephalichthys* (2)	*guntea* (Ham-Buch)	Mooree	Sakri- Kan river 12/11/2013
19				*thermalis* (Valencinnes)	Mooree	Sakri- Kan river 12/11/2013 Dhadgaon- Unai. 13/04/2014
20			*Osteobrama* (2)	*cotio cotio* (HamBuch)	Ger	Sakri- Kan river 12/11/2013
21				*vigorsii* (Sykes)	--	Dhule- Panzara river 16/2/2014 Shindkheda- Tapi 17/3/2014
22			*Puntius* (5)	*Amphibious* (Val)	Kanvar	Sakri- Kan river 12/11/2013 Shahada- Gomai. 01/01/2014, Prakash- Tapi. 14/01/2014 Dhule- Panjhara river 16/2/2014 Dhadgaon- Unai. 13/04/2014
23				*conchonius* (Ham-Buch)	Chhoti-Dhebri	Sakri- Kan river 12/11/2013 Dhule- Panzara river 16/2/2014 Nizampur- Burai river 2/3/2014
24				*sarana* (Hamilton)	Kunder	Taloda- Tapi. 09/11/2013. Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Sarangkheda- Tapi. 16/01/2014

						Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Dhule- Panzara river 16/2/2014
25	Cypriniformes	Cyprinidae	*Puntius*	*sophore* (Hamilton)	Lal-Dhebri	Sakri- Kan river 12/11/2013 Prakash- Tapi. 14/01/2014 Sarangkheda- Tapi. 16/01/2014 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Nandurbar- Shivan river. 15/2/2014 Dhule- Panzara river 16/2/2014 Nizampur- Burai river 2/3/2014 Navapur- Rangavali- 08/03/2014 Shindkheda- Tapi 17/3/2014 Kusumba- Local river 26/3/2014
26				*ticto* (Ham-Buch)	Dhebri	Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Prakash- Tapi. 14/01/2014 Pimpalner- Panzara river 1/2/2014 Dhule- Panzara river 16/2/2014 Nizampur- Burai river 2/3/2014 Navapur- Rangavali- 08/03/2014
27			*Rasbora*	*daniconius* (Hamilton)	Zora	Taloda- Tapi. 09/11/2013. Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Prakash- Tapi. 14/01/2014 Sarangkheda- Tapi. 16/01/2014 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Dhule- Panzara river 16/2/2014 Nizampur- Burai river 2/3/2014 Visarwadi- Local. 06/03/2014

						Shindkheda- Tapi 17/3/2014 Kusumba- Local river 26/3/2014 Dhadgaon- Unai. 13/04/2014.
28			*Salmostoma* (4)	*bacaila* (Hamilton)	Mavala	Sakri- Kan river 12/11/2013 Sarangkheda- Tapi. 16/01/2014 Pimpalner- Panzara river 1/2/2014 Dhadgaon- Unai. 13/04/2014
29	Cypriniformes	Cyprinidae	*Salmostoma*	*balookee* (Sykes)	Chal	Taloda- Tapi. 09/11/2013. Shahada- Gomai. 01/01/2014 Sarangkheda- Tapi. 16/01/2014 Shirpur- Tapi river 17/01/2014
30				*clupiodes* (Day)	Chal	Sakri- Kan river 12/11/2013 Dhule- Panzara river 16/2/2014
31				*phulo phulo* (Ham-Buch)	Chal	Sakri- Kan river 12/11/2013 Dhule- Panzara river 16/2/2014
32			*Tor*	*khudree* (Sykes)	Khavalya	Sakri- Kan river 12/11/2013 Pimpalner- Panzara river 1/2/2014 Dhule- Panzara river 16/2/2014 Navapur- Rangavali- 08/03/2014
33	IV: Cyprinoidonti-formes (1)	Aplocheilidae (1)	*Aplocheilus*	*panchax* (Hamilton)	--	Dhule- Panzara river 16/2/2014
34	V: Osteoglossi-formes (1)	Notopteridae (1)	*Notopterus*	*notopterus* (Pallas)	Patoda	Taloda- Tapi. 09/11/2013. Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Shindkheda- Tapi 17/3/2014 Kusumba- Local river 26/3/2014 Dhadgaon- Unai. 13/04/2014

35	VI: Perciformes (9)	Ambassidae (3)	*Chanda*	*nama* (Ham-Buch)	Kach-Masa	Taloda- Tapi. 09/11/2013. Prakash- Tapi. 14/01/2014 Pimpalner- Panzara river 1/2/2014
36			*Parambasis* (2)	*lala* (Hamilton)	Dhebri	Taloda- Tapi. 09/11/2013
37				*ranga* (Hamilton)	Dhebri	Taloda- Tapi. 09/11/2013. Sarangkheda- Tapi. 16/01/2014 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Dhule- Panzara river 16/2/2014 Dhadgaon- Unai. 13/04/2014
38	Perciformes	Channidae (4)	*Channa* (4)	*gachua* (Hamilton)	Dok	Khapar- Daheli- 10/11/2013 Shahada- Gomai. 01/01/2014 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Navapur- Rangavali- 08/03/2014 Dhadgaon- Unai. 13/04/2014
39				*marulius* (Ham-Buch)	Dok	Sakri- Kan river 12/11/2013
40				*orientalis* (Bloch & Schneides)	Dok	Sakri- Kan river 12/11/2013 Pimpalner- Panzara river 1/2/2014
41				*punctata* (Bloch)	Dok	Taloda- Tapi. 09/11/2013. Sakri- Kan river 12/11/2013 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Nandurbar- Shivan river. 15/2/2014 Shindkheda- Tapi 17/3/2014 Kusumba- Local river 26/3/2014
42		Cichlidae (1)	*Oreochromis*	*mossambicus* (Peters)	Shilpi	Shirpur- Tapi river 17/01/2014 Nizampur- Burai river 2/3/2014 Kusumba- Local river 26/3/2014

43		Gobiidae (1)	*Glossogobius*	*giuris* (Ham- Buch)	Khavalya	Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Nizampur- Burai river 2/3/2014
44	VII: Siluriformes (7)	Bagridae (4)	*Aorichthys*	*aor* (Hamilton)	Ek- Kati	Khapar- Daheli- 10/11/2013 Shirpur- Tapi river 17/01/2014
45			*Mystus* (2)	*cavasius* (Hamilto)	Chichva	Shirpur- Tapi river 16/01/2014
46				*bleekeri* (Day)	Chichva	Taloda- Tapi. 09/11/2013 Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Shahada- Gomai. 01/01/2014 Sarangkheda- Tapi. 16/01/2014 Shirpur- Tapi river 17/01/2014 Pimpalner- Panjzra river 1/2/2014 Dhule- Panzara river 16/2/2014 Dhadgaon- Unai. 13/04/2014
47	Siluriformes	Bagridae	*Rita*	*pavimentata* (Val)	Sisava	Sakri- Kan river 12/11/2013
48		Clariidae (1)	*Heteropneutes*	*fossilis* (Bloch)	Tochya	Sakri- Kan river 12/11/2013 Pimpalner- Panzara river 1/2/2014 Nandurbar- Shivan river .15/2/2014
49		Schilbidae (1)	*Clupisoma*	*garua* (Hamilton)	Vavadi	Khapar- Daheli- 10/11/2013 Sakri- Kan river 12/11/2013 Shahada- Gomai. 01/01/2014 Sarangkheda- Tapi. 16/01/2014 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014 Dhule- Panzara river 16/2/2014
50		Silirudae (1)	*Ompak*	*bimaculatus* (Bloch)	Papada	Taloda- Tapi. 09/11/2013. Khapar- Daheli- 10/11/2013 Shahada- Gomai. 01/01/2014 Shirpur- Tapi river 17/01/2014 Pimpalner- Panzara river 1/2/2014

						Dhule- Panzara river 16/2/2014 Shindkheda- Tapi 17/3/2014
51	VIII: Synbranchi-formes (3)	Mastacembelidae (3)	*Macrognathus*	*panicalus* (Hamilton)	Vam	Sakri- Kan river 12/11/2013 Pimpalner- Panzara river 1/2/2014
52			*Mastacembelus* (2)	*armatus* (Laceped)	Vam	Sakri- Kan river 12/11/2013
53				*pancalus* (Ham-Buch)	Vam	Sakri- Kan river 12/11/2013 Pimpalner- Panzara river 1/2/2014

TAXONOMY AND MORPHOLOGY OF FISHES

1. *ACANTHOCOBITIS BOTIA* (Ham-Buch) (Photoplate- 1)

2. *ACANTHOCOBITI MOOREH* (Sykes) (Photoplate-2)

Local name : Mooree

Locality : Sakri, Pimpalner, Shirpur, Khapar

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Cypriniformes

Family : Balitoridae

Sub family : Nemacheilinae

1822. *Cobitis botia* Hamilton, *Fish, Ganges*, pp. 350, 394 (type-locality : the rivers of north-eastern parts of Bengal).

1861. *Acanthocobitis* Peters, Monats. *Akad, wiss*. Berlin. P. 712 (type-species, *Acanthocobitis longipinnis* Peters = *Cobitis pavonaceus* McClelland, by monotypy).

1889. *Nemacheilus botia* Day, *Fauna Brit. India*, Fish., 1, 277.

1987. Menon, *Fauna India*, 4 (1), p. 140 (as a subgenus).

1990. Kottelat, *Verlag. Dr. Friedrich Pfeil*, Munchen, p. 18.

1995. Banarescu & Nalbant, *Trav. Mus. Hist. nat.* "*Grigroe Antipa*". 35, p. 430 (as a valid genus).

Diagnosis : Body deeper than in most other nemacheilines, strongly compressed posteriorly. Head slightly compressed 4.5 to 5.5,depth 4.7 in total length. Eyes 3.7 to 4 in head. Snout blunt. Barbles, 6, maxillary pair extending to below hind border of eye. Dorsal origin slightly nearer to snout than to caudal base; dorsal rays 12-14, dorsal base equals head. Pelvic origin under middle of dorsal. Caudal slightly notched. Scales indistinct. Lateral line complete; 12 rows of scales between it and pelvic base. Grayish, with 10-14 short, vertical barbs on lateral line and a number of blotches above, which often form bands over back; a black ocellus on upper part of the base of caudal which bears 7 irregular bars of a greater shape; dorsal orange, with rows of black spots.

Distribution : *A. botea*- In India- Fresh waters of Ganga, Brahmaputra river system. Pakistan- Indus river system. *A. mooreh* – Peninsular-India.

Remarks : It attains at least 76 mm. (3 inches) in length.

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3. *AMBLYPHARYNGODON MOLA* (Hamilton) (Photoplate – 3).

Local name : Kachi

Locality : Taloda, Khapar .

Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Cyprinidae
Sub family	:	Danioninae
Tribe	:	Danionini

1860. *Amblypharyngodon* Bleeker, *Nat. Tijdschr. Neder – Indie*., 20, p. 433 (type- species, *Cyprinus mola* Hamilton-Buchanan, type being a replacement name).

Diagnosis: Body moderately elongated, subcylindrical. Abdomen rounded. Head well compressed. Snout with thin integuments, obtusely rounded. Mouth wide, anterolateral, not protractile. Eyes large, centrally placed, not visible from below ventral surface. Upper lip absent. Lower lip with a short labial fold. Lower jaw prominent with a thin sharp edge and a symphyseal knob fitting into upper jaw. Pharyngeal teeth molariform. No barbells. Dorsal fin inserted slightly behind insertion of pelvic fins, with nine rays

and no spine. Anal fin short with seven rays. Caudal fin forked. Scales very small. Lateral line incomplete with 55 to 75 scales.

Distribution: Throughout India (except Kerala), Bangladesh, Myanmar, Nepal, Pakistan, Sri Lanka.

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4. *AORICHTHYS AOR* (Hamilton) (Photoplate-4)

Local name	:	Ek- kati
Locality	:	Shirpur, Khapar .
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Siluriformes
Family	:	Bagridae
Sub family	:	Bagrinae

1939. *Aorichthys* Wu, 1939, *Sinensia*, 10, p. 131 (Proposed originally as substitute name for Aoria Jordan, 1991, Preoccupied in Insecta =Macrones Dumeril, 1856 again preoccupied in insect, type

species Pimelodus aor Hamilton-Buchanan, by subsequent designation.

1973. Jayaram. Proc. Zool. Soc. Calcutta. 24. P. 149 (replaces Osteobagrus Jayaram elevated to a generic rank).

Diagnosis: Body elongate, compressed. Abdomen rounded. Head large, slightly depressed. Snout spatulate or rounded. Mouth subterminal, transverse, moderately wide. Eyes large supralateral, in middle of head, not visible form below ventral surface. Lips thin. Jaws subequal. Teeth uniformly villiform on jaws and palate in bands. A distinct interneural shield in between basal bone of dorsal fin and occipital process present. Four pairs of barbels, one each of maxillary, nasal and two of mandibular; Gill membranes free from each other; overlapping but free from isthmus. Branchiostegal rays 12.

Distribution: India up to Krishna river system in the south normally but now extending below. Bangladesh, China, Myanmar, Pakistan.

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5. *APLOCHEILUS PANCHAX* (Hamilton) (Photoplate-5)

Local name : --

Locality : Dhule

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Acanthopterygii

Order : Cyprinodontiformes

Family : Aplocheidae

Sub family : Aplocheilinae

1839. *Aplocheilus* McClellend, 1839, *Asiat. Res*., 19, p. 301 (type-specie, *Aplocheilus chrysostignus* McClellend by subsequent designation.

1981. Parenti, 1981, *Bull. Amer. Mus. Nat. Hist*., 168 (4), p. 471 (definition).

1846. *Panchax* Valenciennes, 1846, *Hist. nat. Poiss*., 18, p. 380 (type-species, *Panchax buchanani* Valenciennes = *Esox panchax* Hamilton-Buchanan).

Diagnosis : Body somewhat elongate and compressed. Upper surface of head and nape board and depressed. Abdomen rounded. Head conical but not sharp. Snout spatulate. Mouth terminal, directed slightly upwards, moderately wide, its cleft however not extending to front border of orbit. Eyes small, superior in middle of head, not visible form below ventral surface. Mandibular bones united at symphysis. Lips thin. Jaws not prolonged. Upper jaw protractile, lower jaw attenuated. Teeth villiform on jaws, may be present or absent on palate. Barbels absent. Dorsal fin inserted above or behind posterior end of anal fin, with six to eight rays and no spine. Anal fin with 13 to 16 rays, with an

elongate base. Caudal fin rounded. Scales cycloid of moderate size, 25 to 31 in lateral series. Lateral line absent.

Distribution: Inida, Tropical Africa, Bangaladesh, Madagascar, Malay, Archipelago, Pakistan, Thailand and Sri Lanka.

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6. ***BARILIUS BENDELISIS*** **(Hamilton) (Photoplate-6)**

Local name	:	Taradya / Zora.
Locality	:	Sakri, Nijampur, Navapur, Pimpalner, Shirpur, Khapar.
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Cyprinidae
Sub family	:	Danioninae (Rasborinae)

1807. *Cyprinus bendelisis* Hamilton, *Journey Mysore*, 3, p. 345, pl. 32 (type-;locality: rivers of Mysore).

1822. *Barilius* Hamilton-Buchanan, *Fish Ganges*, p. 266, 384 (type-species, *Cyprinus barila* Hamilton-Buchanan, by subsequent designation).

1889. *Barilius bendelisis* Day, *fauna Brit., India*, Fish, 1, p. 347.

1980. Howes, *Bull. Mus. Nat. Hist.*, (*Zool*), 37 (3), pp 189-198 (revision).

Diagnosis: Body moderately elongate, compressed, subcylindrical. Abdomen rounded. Head sharply pointed. Snout compressed, pointed may be 'Pearl organs' and tubercles. Head 4.6 to 5.2, depth 4.5 to 5.2 in young in total length. Eyes 4.2 to 4.6 in head. Maxilla reaches to anterior third of eye. Third suborbital bone varying from equal to twice as high as uncovered part below it. Four short barbles, rostral pair occasionally absent. Dorsal origin nearer to caudal base than to snout end, its base, not extending to over anal. Anal rays 9-10. pectorals with outer rays thickened. Lateral line scales 40-43; 2 ½ to 3 ½ rows between lateral line and pelvic base. Predorsal scales 20. Slaty gray above, becoming purplish silvery at sides; short, vertical bars which become indistinct in adults; dorsal and caudal edged with gray; other fins whitish, tinged with orange.

Distribution : India- Freshwaters of Assam, W. Bengal, Punjab (I), Simla, U. P., Bihar, Coimbatore, Palghat, Mettupalayam, Nilgiris. Pakistan- freshwater of W .Punjab, E. Pakistan. Ceylon.

Remarks : It attains at least 152 mm (6 inches) in length.

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7. *CHANDA NAMA* (Hamilton) (Photoplate-7)

Local name	:	Kach - masa.
Locality	:	Pimpalner, Prakasha, Taloda.
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Acanthopterygii
Order	:	Perciformes
Sub order	:	Percoidei
Family	:	Chandidae (Ambassidae)

1822. *Chanda* Hamilton-Buchanan, *Fish Ganges*, pp. 103, 370 (type-species, *Chanda nama* Hamilton-Buchanan by designation of ICZN; opinion II2I (1979).

1822. *Chanda nama* Hamilton, *Fish Ganges*, pp. 109, 371 (type-locality: ponds throughout Bengal).

1889. *Ambasis nama* Day, *Fauna Brit. India*, Fish., 1 p. 484.

1971. Talwar, *Bull. Zool. Nomencl*., 28 (3-4), pp. 104-105.

1976. Greenwood, *Bull Brit. Mus. Nat. Hist*., 29 (1), pp. 10-11.

1991. Talwar and Jhingran, Inland Fish, 2: 799.

1994. Roberts, *Nat. Hist. Bull. Siam. Soc*., 42, p. 265 (revision).

1999. Menon, *Rec. Zool. Surv. India, Occ. Paper No*. 175: 283-284.

Diagnosis :Body ovate, deep, Compressed, more or less diaphanous. Abdomen rounded. Head short, compressed, 4 to 4.5, depth 2.7 to 3 in total length. Eyes 3 in head. Snout sharp. Mouth wide, protractile, extending to front border of orbit or slightly beyond. Posterior nostril vertically oval. Eyes large, superior, may be visible from below ventral surface. Preorbital edge with four serrae. Lips thin. Lower jaw strongly projecting (thus differing from all other ambassids). Jaws, palate, and tongue with villiform teeth; jaw teeth in two main rows, teeth in outer row with strongly curved crowns directed laterally and those in inner row with similarly curved crowns directed medially. Lower limb of preopercle with a double serrated edge; opercle without a prominent spine. Two dorsal fins, the first with about seven spines; and second 15 to 17 rays (one simple), the two fins continuous. A forwardly directed recumbent spine present in the dorsal fin. Anal fin with three spines and 17 rays. Caudal fin forked. Scales cycloid, very small, about 125 in lateral series, frequently deciduous. Cheek, gill cover, predorsum above lateral line and body just below base of dorsal fin without scales. Lateral line complete, rays indistinct. Yellowish olive, covered with minute black dots; fins orange.

Distribution : Ganga, Krishna, Mahanadi basins. Bangladesh, Nepal, Pakistan and Indus.

Remarks : It grows to about 76 mm (3 inches) in length.

8. *CHANNA GACHUA* (Hamilton) (Photoplate-8)

9. *CHANNA MARULIUS* (Ham-Buch) (Photoplate-9)

10. *CHANNA ORIENTALIS* (Bloch and Schneides) (Photoplate-10)

11. *CHANNA PUNCTATA* (Bloch) (Photoplate-11)

Local name	:	Dok.
Locality	:	Sakri, Dhule, Shahada, Navapur, Pimpalner, Shirpur, Dhadgaon, Kusumba, Shindkheda.
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Acanthopterygii
Order	:	Perciformes
Sub order	:	Channoidei
Family	:	Channidae

1822. *Ophiocephalus marulius* Hamilton, *Fish. Ganges*, pp. 65, 367, pl. 17, fig. 19 (type-locality: the Ganges).

1889. *Ophiocephalus marulius* Day, *Fauna Brit., India*, Fish. 2, p. 360.

1999. Menon, *Rec. Zool. Surv. India, Occ. Paper No*. 175: 366. 1763.*Channa Gronov, Zoophyl. Gronovius Animal*, p. 155 (type- *Channa orientalis* Bl. Schn., inadmissible).

1777. Channa Scopoli, *Introd. Hist. Nat*., p. 459 (type- *Channa orientalis* Bl. Schn.

1793. *Ophiocephalus* Bloch, *Naturg. Ausland. Fische*, 7, p. 137. (type- *Ophiocepahlus punctatus* Bl).

1801. *Channa orientalis* Bloch and Schneider, *Syst. Ichth*. : 496, pl. 90. fig. 2 (type-locality: India).

1981. Jayaram, *HBFW Fish Inida*. : 305.

Diagnosis : Body elongated, subcylindrical anterioly. Abdomen rounded. Head large, depressed with plate like scales. Snout somewhat obtuse. Mouth fairly large, opening moderate to wide, may extend to below orbit. Eyes lateral, moderate, in anterior part of head, not visible from below ventral surface. Lips moderate. Jaws subequal, lower jaw protruding beyond upper. Teeth on jaws and palate. Gill opening wide, membranes of two sides connected beneath isthmus. An accessory respiratory organ in the form of a thin bony laminate present in a cavity in gill chamber. Dorsal fin long, inserted almost above pectoral fins with 29 to 55 rays and no spine. Anal fin long, with 21 to 36 rays. Both dorsal and anal fins free from caudal. Caudal fin rounded. Scales small, cycloid or ctenoid; scales on head larger than those on body and with concentric rings towards their margin, a few arranged in the form of a rosette. Lateral line abruptly curved or almost interrupted with 37 to 110 scales.

Distribution : Throughout India and Afghanistan. India- freshwaters of West Bengal, Deccan, Mysore, TRavancore-Cochin, Ahmedabad.

Pakistan - freshwaters of E. Pakistan. Burma, Ceylon, Siam, China.

Remarks : Species attains as much as few inches to 4 feet in length and takes a live bait pretty well.

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12. *CIRRHINUS REBA* (Hamilton) (Photoplate-12)

Local name : Arali

Locality : Shirpur, Taloda, Shindkheda.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Cypriniformes

Family : Cyprinidae

Sub family : Cyprininae

Tbibe : Labeoninae

Sub tribe : Labeones

1817. *Cirrhinus* (Oken), Cuvuer, 1817, V. Kl. *F*ische. In: *Isis order Encyclopedische Zeituny*, 8, p. 113 (type- species, *Cyprinus cirrhosus* Bleeker, by monotypy).

1983. Banarescu, 1983, *Rev. Roum. Biol*. (Zool) 28 (1) pp. 13-17 (revision).

Diagnosis : Body moderate , elongate, compressed. Abdomen rounded. Head short. Snout obtusely rounded, with thin skin covering it may be with pores. Mouth wide, transverse. Eyes moderately large in the anterior half or middle of head, not visible form below ventral surface. Upper lip fringed or entire not continuous with lower. Lower lip reflected off from the mandible and closely adnate to lower jaw. Lower jaw sharp with a small tubercle at the symphysis and without any cartilaginous covering inside the jaw which may be thinly present in some species. Barbels small, four, two or none. Dorsal fin inserted ahead of pelvic fins, with 10 to 19 rays and without any spine. Anal fin short, with seven or eight rays. Caudal fin forked or lunate. Scales of varying sizes. Lateral line complete with 35 to 45 scales.

Distribution : Throughout India, Bangladesh, Nepal, and Pakistan.

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13. *CLUPISOMA GARUA* (Hamilton) (Photoplate-13)

Local name : Vavadi

Locality : Sakri, Dhule, Shahada, Pimpalner, Sarangkheda, Shirpur, Khapar.

Phylum : Chordata

Sub-phylum : Vertebrata

Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Siluriformes
Family	:	Schibeidae

1822. *Silurus garua* Hamilton. *Fish, Ganges* pp. 156, 375, pl. 21, fig. 50 (type-locality: Freshwater rivers of the Gangetic Provinces).

1838. *Clupisoma Swainson, Nat. Hist. Animal. Fish*., 2, p. 347, 351, 354 (type-species, *Pimelodus argentea* Swainson = *Silurs garua* Hamilton-Buchanan, by monotypy).

1869. *Pseudeutropius garua* Day, *Proc. Zool. Soc*., p. 307.

1889. *Pseudeutropius garua* Day, *Fauna Brit. India*, Fish., 1, p. 141.

1937. Hora, *J. Bombay nat. Hist. Soc*., 39 (4), pp. 659-678 (review).

Diagnosis : Body elongate, compressed, almost herring-shaped; with the part between pelvic fins and vent or abdominal edge keeled. Head moderate siz3d, oval, blunt, 5.5 to 6.5, depth 5.5 to 7 in total length. Eyes 3.5 to 4 in head; with broad, circular, adipose lid and situated partly on the lower surface of head. Upper jaw longer. Width of gape of mouth 2/5 in head length. Occipital process nearly 4 times as long as it is wide at its base, not reaching basal bone of dorsal. Barbles 8, maxillary pair extending to middle or

end of pelvic fin. Palatine teeth in a semilunar band; teeth on vomer contiguous with those on palate, each patch being semicircular internally; vomerine patches often with an interspace between them. Dorsal spine slender, serrated, as long as head behind nostrils. Pectoral spine stronger, serrated, as long as or a little longer than dorsal spine. Adipose dorsal present in the young and absent in the adult. Anal rays 29-36. Caudal fin deeply forked. Lateral line complete, simple. Air bladder greatly reduced, thick-walled, flat; closely applied to the ventral surface of anterior vertebrae. Silvery gray above, lighter below; fins tinted gray.

Distribution : India- freshwaters of E. Punjab, U. P., Bihar, Darjeeling, Dt., W. Bengal, Assam, Nepal, Orissa, M. P., Poona valley. Pakistan- Freshwater of Sind, W. Punjab, E. Pakistan. Burma.

Remarks : It attains upwards of 609 mm (2 feet) in length.

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14. *CROSSOCHEILUS LATIUS* (Hamilton) (Photoplate-14)

Local name : Regadi

Locality : Shahada, Pimpalner.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Cypriniformes

Family : Cyprinidae

Sub family : Garrinae

1822. *Cyprinus latius* Hamilton, *Fish, Ganges*, pp. 345, 393 (type-locality: The Tista).

1823. *Crossocheilus* Kuhl & Van Hasselt, *Algem-Konst. Letter-Bode*, 2, p. 132 (type-species, *Crossocheilus oblongus* Kuhl & Van Hasselt, by monotypy).

1889. *Cirrhina latius* Day, *Fauna Brit. India*, Fish., 1, p. 279.

1934. Mukerji, *J. Bombay nat. Hist. Soc*., 37 (1), pp. 49-54.

1986. Banarescu, *Trav. Mus. Hist. natn. Gr. Antipa* 28, pp. 142-154 (revision).

1987. Kottelat, *Jap. J. Ichthyol*., 33 (4), p. 371 (discussion).

Diagnosis : Body more or less compressed. Ventral profile horizontal or slightly curved. Abdomen rounded. Head small, 6 to 6.5, depth 5.5 to 7 in total length. Eyes slightly behind middle of head in adult, 3.5 to 5 in head. Dorsal profile more convex than ventral profile. Snout overhanging mouth, with a small lateral lobe. Upper lip indented on the edge; lower lip with a sharp horny covering. Barbles 4. Dorsal origin midway between snout and caudal base in the young and nearer to snout in the adult. Lateral line scales 38-40; 3 ½ to 4 ½ rows of scale between lateral line and pelvic base. Brownish olive superiorly and lighter on sides,

with and irregular black spots; dorsal and caudal yellowu=ish, other fins orange.

Distribution : India- Hill streams from plains level to 2000 ft. of U. P., Bihar, W. Bengal, Deccan. Pakistan- E. Pakistan.

Remarks : It grows up to 152 mm (6 inches) in length.

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15. *CYPRINUS CARPIO CARPIO* LINNAEUS. (Photoplate-15)

Local name	:	Combada
Locality	:	Prakasha, Shirpur.
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Cyprinidae
Sub family	:	Danioninae
Tribe	:	Cyprininae

Sub tribe : Cyprini

1758. *Cyprinus* Linnaeus, 1758, *Systema Naturae*, Ed. 10,1, p. 320

(type – species, *Cyprinus carpio* Linnaeus, by subsequent

Designation).

Diagnosis : Body robust anteriorly, more or less compressed. Abdomen rounded. Head moderate. Snout obtusely rounded. Mouth terminal, obloque, cleft not extending to anterior margin of eyes. Eyes moderate, superolateral in anterior part of head, not visible from below ventral surface. Lips fleshy. Upper jaws more or less projecting. Maxillary protractile, reaching to anterior nostril. Barbels two pairs, one pair each of rostral and maxillary. Dorsal fin very long inserted above tip of pectoral fins with three spines and 17 rays, third spine strongly serrated. Anal fin short with three spines and five rays. Caudal fin deeply emarginated, lobes pointed. Scales large, pentagonal, cycloid. Lateral line straight with 36 scales.

Distribution : Distribution as of the genus. Introduced into India in 1939.

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16. *DANIO AEQUIPINNATUS* (Mc Clelland) (Photoplate-16)

Local name : Ger.

Locality : Sakri.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Cyprinidae
Sub family	:	Danioninae (Rasborinae)
Tribe	:	Danionini

1822. Danio Hamilton-Buchanan, Fishes of Ganges, pp. 321, 390 (type-species, Cyprinus (Danio) dangila Hamilton-Buchanan, by subsequent; designation).

1839. *Perilampus aequipinnatus* Mc Clelland, *Asiat. Res*., 19, p. 393, pl. 60, fig. 1., (tuype-locality: Assam).

1889. *Danio aequipinnatus* Day, *Fauna Brit. India*, Fish, 1, p. 356.

1934. Hora & Mukherji, *Rec. Indian, Mus*., 36 (1) pp. 123-138 (Key).

Diagnosis : Body elongate, compressed, subcylindrical. Abdomen rounded. Head moderate, blunt. Head 5, depth 4 to 4.5 in total length. Eyes 4 in head. Cleft of mouth oblique extending to below front margin of eye. A blunt knob at the symphysis of lower jaw. Third suborbital almost touches pre-opercular ridge. Barbles 2 pairs, rostral half as long as and maxillary much shorter than eyes. Dorsal origin midway between centre of eyes and base of caudal. Pectorals as long as head without snout, nearly reaching pelvics. Lateral line scales 32-34; 1 ½ rows between lateral wide bluish, lateral band, extending from eye to centre of caudal base; another

narrow band above and two other lighter ones bellows them; fins yellowish, dorsal and anal with a broad, bluish band.

Distribution : India- freshwaters of Andhra Pradesh, Tamilnadu, Assam, Manipur, W. Bengal, Eastern Himalayas, Darjeeling, Sikkim, Nagpur, Satara, Poona, western Ghats, Mysore, Travancore, Cochin, Malabar etc. Pakistan, Burma, Ceylon, Siam.

Remarks : It attains 152 mm (6 inches) in length.

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17. *GARRA MULLYA* (Sykes) (Photoplate-17)

Local name : Mhya/Kanava/ Zora/ Kanthya.

Locality : Sakri, Dhule, Nandurbar, Shahada, Navapur, Shirpur, Visarwadi, Pimpalner, Kusumba, Khapar.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Cypriniformes

Family : Cyprinidae

Sub family : Garrinae

1822. *Garra* Hamilton-Buchanan, *Fish Ganges* pp. 343, 393 (type-species, *Cyprinus lamta*, by subsequent designation).

1841. *Chondrostomata mullya* Sykes, *Trans, Zool, Soc. Lond*., 2, p. 359, pl. 62. fig. 3 (type-locality : Poona waterways).

1843. *Discognathus* Heckel, in Russengger's *Reissen in Europe, Asien and Africa*, 4, p. 27 (type- species, *Discognathus variabilis*)

1889. *Discognathus lamta* Day, *Fauna Brit., India*, Fish.,1. p. 246 (part)

1964. Menon, *Mem. Indian Mus*., 14 (4), pp. 173-260, 13 pls (world - revision).

1975. Mirza, *Bijdr. Dierk*., 45 (2), p. 156 (status discussed).

1999. Menon, *Rec. Zool. Surv. India. Occ. Paper No*., 175: 148-150.

Diagnosis : Body short, subcylindrical, ventral surface flat. Head slightly depreesed anteriorly, 5 to 5.5, depth 5 to 6 in total length. Eyes 5 in head. Snout blunt, without well developed proboscis. Barbles 4. Mouth inferior, transverse, semi-circular. Eyes small, in the posterior half of head, lateral, not visible from below ventral surface. Lips thick, fleshy, upper and lower lip continuous, without any lateral lobes. A proboscis may of may not be present. A suctorial disc of semi-cartilagenous pad present on the chin, formed on the lower lip. Jaws subequal. Gill openings restricted to sides. One or two pairs of barbels, often only rostral pair or entirely absent. Dorsal fin inserted slightly ahead of pelvic fins, with 9 to 12 (six to nine branched) and no spine. Paired fins horizontally inserted and not plaited. Anal fin short with six to

eight rays. Caudal fin slightly emarginate. Scales moderate, no sheath-like row anywhere. Lateral line complete with 32 to 36 scales. Air bladder reduced, but free.

Distribution : Freshwaters, throughout India except Assam and the Himalaya.

Remarks : It attains about 127 mm (5 inches) in length.

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18. *GLOSSOGOBIUS GIURIS* (Ham-Buch) (Photoplate-18)

Local name	:	Var- doya/ Khavalya.
Locality	:	Pimpalner, Nijampur, Shirpur.
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Acanthopterygii
Order	:	Perciformes
Sub order	:	Gobioidei
Family	:	Gobiidae
Sub family	:	Gobiinae

1822. *Glossogobius giuris* Hamilton, *Fish, Gasnges*, pp. 51, 366, pl. 33, fig. 15 (type- locality: ponds and fresh water rivers of this Gangetic province).

1859. *Glossogobius* Gill, *Proc. Acad. Nat. Sci. Philad*., p.46 (type-species, *Gobius platycephalus*, Richardson, by monotypy).

1889. *Glossogobius giuris* Day, *Fauna Brit. India*, Fish. 2, p. 266.

1991. Talwar and Jhingran, *Inland Fish*. 2: 936.

1992. Rema Devi, *Rec. Zool., Surv. India*, 90 (1-4), p. 174. (ennore estuary).

1999. Menon, *Rec. Zool. Surv. India, Occ. Paper No*. 175: 294-295.

Diagnosis : Body elongate, interiorly cylindrical, compressed. Abdomen rounded. Head depressed and pointed, 307 to 4.2 depths, 5 to 6.5 in total length. Eyes 4 to 8 in head. Lower jaw prominent, snout pointed. Tongue bilobate. Two dorsals, placed close together; first dorsal lower than depth of body, with 6 weak spines. One weak anal spine. Pelvics united forming a disc. Lateral line scales 21-30. Olive to dusky green above, lighter below; 2 alternating rows of 4 to 6 blotches on body; a dark blotch on first dorsal may be present. Lips thick, jaws with villiform teeth in several rows, outer and inner one enlarged, and uneven, widely set outer row curved.

Distribution : Fresh and brackish waters of India and Pakistan. Burma, Ceylon, E. and S. coast of Africa, Mauritius, Malaya, Malay, Archipelago, Siam, China, Japan, Philippines, Melanesia, Polynesia and Australia.

Remarks : It grows up to 304 mm (a foot in length).

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19. *HETEROPNEUTES FOSSILIS* (Bloch) (Photoplate-19)

Local name	:	Tochya.
Locality	:	Sakri, Pimpalner, Nandurbar.
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Siluriformes
Family	:	Heteropneustidae

1794. *Silurus fossilis* Bloch, *Naturg, Ausland, Fische*, 8, p. 46., pl. 370, fig 2 (type-locality: Tranquebar).

1840. *Heteropneustus* Muller, *Arch. Anat. Physiol*., p. 115 (type-species, *Silurus fossilis* Bloch by monotypy).

184. *Saccobranchus* Velenciennes. *Hist. Nat. Poiss*., 15 p. 399 (type-species, *Silurus singio* Hamilton-Buchanan = *S. fossilis* Bloch).

1889. *Saccobranchus fossilis* Day., *Fauna Brit. India*. Fish., 1, p. 125, fig. 53.

1936. Hora, *Rec. Indian Mus*., 38 (2), pp. 208-209 (review).

1980. Jayaram,, *Occ*. *Papers ZSI* No. 23: 23, p. 11.

Diagnosis : Body elongate, compressed. Abdomen rounded. Head moderate sized, greatly depressed, its dorsal and lateral parts covered with bony plates. Head 5.5 to 7, depth 5 to 8 (depending on the food or season) in total length. Eyes 2 to 3 diameters from snout end. Snout flat. Mouth terminal, transverse, narrow. Eyes small, lateral in anterior part of head, not visible from below ventral surface. Lips fleshy, papillated. Jaws subequal. Teeth villiform in broad bands on jaws and in two oval patches on palate. Four pairs of barbles; one pair each of maxillary, nasal and tow of mandibular. Gill membranes separated by a deep notch, not united with isthmus. Rayed dorsal fin short, inserted above tip of pectoral fins with six to eight rays and without any spine. Adipose dorsal absent or represented by a low adipose ridge, along posterior third of caudal region. Pectoral fins with seven or eight rays and a strong spine serrated along inner edge. Pelvic fins with 6 rays. Anal fins long with 60 to 79 rays, just reaching or confluent with caudal fin. Caudal fin almost rounded. Lateral line complete, simple. Air-bladder greatly reduced, consisting of two walled pyriform sacs enclosed in incomplete bony capsules. Sacs united by a transverse tube which is connected with oesophagus through a slender tube. Adults with two lateral yellowish bands; young sometimes reddish brown.

Distribution : Fresh waters throughout India, Bangladesh, Pakistan, Burma, Srilanka, Siam, Thailand, Laos, Myanmar, Nepal.

Remarks : It attains 304 mm (a foot) in length or more.

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20. *HYPOPHTHALMICHTHYS NOBILIS* (Richardson) (Photoplate-20)

Local name : Silver

Locality : Sakri, Kusumba.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Cypriniformes

Family : Cyprinidae

Sub family : Leuciscinae

Tribe : Chondrostomini

1859. *Hypophthalmichthys* Bleeker, 1859, *Nat. Tijdschr. Ned. Indie*, 20 p. 433 (type-species, *Leuciscus molitrix* Valencinnes by subsequent designation).

1981. Howes, 1981, *Bull. Br. Mus. Nat. Hist.*, (*Zool*). 41 (1), pp 1-48 (Status relationship).

Diagnosis : Body stout, compressed. Abdomen strongly compressed with a sharp keel from breast to vent. Head moderate. Snout bluntly rounded. Mouth anterior, large, wide, cleft not extending to anterior margin of eyes. Eyes rather small, anterior, subinferior, visible from below ventral surface. Lips thin. Upper jaw a little protruded upward, a little longer than the lower; lower jaw with a tubercle. No barbels. Dorsal fin inserted behind origin of pelvic fins, or above tip of pectoral fins with ten rays. Anal fin with 14 to 17 rays. Caudal fin forked. Scale minute, cycloid. Lateral line decurved, continuous with 110 to 115 scales.

Distribution : Amur river drainage, U. S, S. R., China: Yangtze, West river, Kwangsi, Kwangtung in south and central China. Introduced in India and elsewhere in 1959.

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21. *LABEO BOGGUT* (Sykes) (Photoplate-21)

22. *LABEO CALBASU* (Hamilton) (Photoplate-22)

23. ***LABEO ROHITA* (Hamilton) (Photoplate-23)**

Local name : Ger

Locality : Sakri, Pimpalner, Dhule, Nijampur, Nandurbar, Navapur, Visarwadi, Sarangkheda, Shirpur, Taloda, Khapar, Shindkheda. Dhadgaon.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Cyprinidae
Sub family	:	Cyprininae
Tribe	:	Labeonini
Sub-tribe	:	Labeones

1816. *Labeo* Cuveri, *Regne Animate*, 2 (ed. 1), p. 194. (type-species, *Cyprinus niloticus* Forsskal, by subsequent designation).

1841. *Chondrostoma boggut* Sykes, *Trans, Zool, Soc. Lond*., 2, p. 359 (type-locality: Poona water ways).

1889. *Labeo boggut* Day, *Fauna Brit. India*, Fish., 1, p. 269.

1922. *Bangana* Hamilton-Buchana, *Fish Ganges*, p. 277, 385 (type-species, *Cyprinus dero* Hamilton-Buchanan, by subsequent designation.

1999. Jayaram & Dhas, *Occ. Papers Zool. Surv, India*, In Press (revision).

Diagnosis : Body small or large sized, elongated to deep with abdomen rounded. Head fairly large, 5.5 to 6, depth 5.5 to 6.2 in total length. Eyes 4.5 to 5 in head. Snout more or less swollen,

rounded or truncated, often projecting beyond mouth covered by a groove across and with or without tubercles, mostly overhanging the mouth. Mouth moderate or narrow, curved, semilunar, somewhat inferior, rarely anterior. A pair of short maxillary barbles. Dorsal with 11-12 rays; origin nearer to snout than to caudal base. Lateral line with 60-65 scales in the longitudinal and 11-12 / 14 in transverse series. Silvery darkest above; fins orange often with a few lateral line or a bluish band and a dark spot near caudal base.

Distribution : India- freshwater of E. Punjab, U. P., Bihar, W. Bengal, M. P., Ahmedabad, Cutch, Bombay, Deccan, Poona, Deolali, Madras. Pakistan- freshwaters of W .Punjab, E. Pakistan. Malaya.

Remarks : It attains at least 190 mm (7 inches) in length.

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24. *LEPIDOCEPHALICHTHYS GUNTEA* (Ham-Buch) (Photoplate-24)

25. *LEPIDOCEPHALICHTHYS THERMALIS* (Valen.) (Photoplate-25)

Local name : Mooree.

Locality : Sakri, Dhule, Dhadgaon.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Cypriniformes

Family : Cobitidae

Sub family : Cobitinae

1822. *Lepidocephalichthys* Bleeker, *Verst. K. Akad. Wet. Amsterdam*, 18, pp. 38, 42 (type-species *Cobitis hasselti* Vasenciennes).

1846. *Cobitis thermalis* (Valenciennes), (in C &V), *Hist., Nat. Poiss.* 18: 78 (type-locality: Hot springs of Kanniya, E. P., Sri Lanka).

1849. *Cobitis carnnaticus*, *Mysorensis* and *rubripinnis*, Jerdon, M. J. L. and S., pp. 331-333.

1858. *Lepidocephalus* Bleeker, *Nat. Tijdschr. Ned. Inde*. 16, p. 303 (type-species, *Cobitis macrochir* Bleeker).

1864. *Lepidocephalichthys thermalis* Bleeker, *Verh. Holl. Maat. Haar.* Cyprin and Coibit Ceylon, p. 6, fig. 1. *Proc. Zool. Soc*.

1981. Tilak & Hussain, *Occ. Papers Zool. Surv. India*, 32, pp. 3-28 (revision).

1992. Menon, *Fauna, India. Pisces*, 4(2): 60 pl V figs 1-8. pl 8. figs 3-5.

1999. Menon, *Rec. Zool. Surv. India. Occ. Paper No* 175: 164.

Diagnosis : Body elongate with a laterally compressed caudal peduncle. Abdomen rounded. Head short. Length of head 5 ½ , of caudal 6, height of body 5 ½ in the total length. Eyes -almost entirely in the anterior 1/2 of the head. Suborbital spine strong. Barbles- 8, the longest extending to below the anterior margin of the orbit. Fins-

origin of dorsal slightly in advance of the ventral and nearer the root of the caudal than the snout. Caudal slightly emarginate. The inner pectoral ray is modified in some adult males in to a flat osseous spine which is used for diving down into the mud. Scales – distinct, about 30 rows between the base of the anal fin and the back. Color- sandy, with irregular blotches on the lateral line and other along the back; a black spot generally exits at the base of the upper half of the caudal fin. Dorsal fin with black spot or bars, caudal with four bands. A dark streak often extends from the eye to the snout.

Distribution : India- South India of Krishna river system, Karnataka, Malbar coast and Kerala. Sri- Lanka.

Remarks : It attains at least 76 mm (3 inches) in length.

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26. *MACROGNATHUS PANICALUS* (Hamilton) (Photoplate-26)

Local name : Vam.

Locality : Sakri, Pimpalner.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Acanthopterygii

Series : Percomorpha

Order : Synbranchiformes

Sub order : Mastacembeloidei

Family : Mastacembelidae

Sub family : Mastacembelinae

1800. *Macrogna*thus Lacepede, 1800, Hist. Nat. Poiss., 2, 283 (type-species, *Ophidium aculeatum* Bloch, by subsequent designation).

1953. Sufi, 1953, *Bull. Raffles Mus.*, No. 27, pp. 99-105 (synoptic review).

1980. Roberts, 1980, *Copeia*, No. 3, pp. 385-391 (revision).

1984. Travers, 1984, *Bull, Brit. Mus. Nat.* Hist. (Zool.), 47 (2), pp. 141-145 (Revision).

1986. Roberts, 1986, *Jap. J. Ichthyol*., 33 (2), pp. 97-103.

Diagnosis : Body deep eel like, elongated, compressed. Head long, pointed. Snout long, fleshy, accommodating a concave prolongation of the upper jaw consisting of a paired series of tooth plates. Mouth inferior, cleft narrow. Eyes small, superior, in middle of head, not visible from below ventral surface. Lips thin. Jaws sub equal. Small pointed teeth present on both jaws and on the segmented anterior extension of the upper jaw, also on palate and on vomer. Rim of anterior nostril guarded by six fimbriae. No spines on either preorbital or preoperculum. No gill rakers. Dorsal fin inserted far behind end of pectoral fins with 13 to 32 detached, depressible spines and 42 to 58 rays. Anal fin with three spines and 42 to 58 rays. Caudal fin rounded, distinctly separated from

the dorsal and anal fins. Scales small, cycloid, present between and around eyes and posterior nostril and up to maxilla. Top of snout, interorbital space, internasal space and top of head as far as hind edge of preoperculum naked. Lateral line present. Air-bladder elongate.

Distribution : Throughout India, Bangladesh and Pakistan.

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27. *MASTACEMBELUS ARMATUS* (Lacepede) (Photoplate-27)

28. MASTACEMBELUS PANCALUS (Ham-Buch) (Photoplate-28)

Local name : Vam.

Locality : Sakri, Shirpur, Khapar.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Acanthopterygii

Series : Percomorpha

Order : Synbranchiformes

Sub order : Mastacembeloidei

Family : Mastacembelidae

Sub family : Mastacembelinae

1777. *Mastocembelus* Scopoli, *Introd. Hist. Nat*., p. 458 (type-speices, *Ophidium mastacembelus* Banks and Solander, by subsequent monotypy).

1822. *Macrognathus pancalus* Hamilton, *fish, Ganges*, pp. 30, 364, (type-locality: tanks of the Gangetic provinces).

1889. *Mastacembelus pancalus* Day, *Fauna Brit., India*, Fish., 2. p. 333.

1956. Sufi, *Bull. Raffles. Mus*.,No. 27, pp. 105-143 (Systematic review).

1984. Travers, *Bull. Brit. Mus. Nat. Hist*. (Zool). 47 (2), pp. 141-145 (review).

1986. Roberts, *Jap. J. Ichthyol*., 33 (2), pp. 103-107 (review).

1990. Yazdani, *Rec. Zool. Surv. India, Occ. Paper No*. 124: 1-36.

Diagnosis : Body eel-like, elongated, compressed, long, pointed, snout long, conical without any transversely striated tooth plates on the under surface. Mouth inferior, cleft narrow. Head, 5 to 5.5, depth 6.5 to 7 in total length. Eyes one diameter apart, small, superior, in middle of head, not visible from below ventral surface. Rim of anterior nostrils with two finger-like fimbriae and two flaps. Lips thin. Jaws subequal. Minute teeth on jaws and on palate. Preopercle generally spiny at its angle; a preorbital spine may be absent. Dorsal fin inserted above middle of pectoral fins, with 32 to 40 detached, depressible spines and 67 to 90 rays. Anal fin with three spines and 46 to 90 rays. Caudal fin rounded; dorsal and anal fins may or may not be confluent with the caudal. Scales

present. Air bladder elongated. Greenish olive above yellowish below, with yellowish white spots on scales; posterior part of body often vertically striped.

Distribution : Fresh and brackish waters of India and Pakistan.

Remarks : It attains at least 177 mm (7 inches) in length.

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29. *MYSTUS BLEEKERI* (Day) (Photoplate-29)

30. *MYSTUS CAVASIUS* (Hamilton) (Photoplate-30)

Local name : Chichva

Locality : Sakri, Dhule, Shahada, Pimpalner, Khapar, Sarangkheda, Shirpur, Taloda, Dhadgaon.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Siluriformes

Family : Bagridae

Sub-family : Bagrinae

1777. *Mystus* Scopoli, *Introductio ad historiam naturalem*, p. 151 (type-species, *Bagrus halepensis* Valeciennes IN: Cuvier & Valenciennes = *Mystus pelusius* (Solander), by subsequent selection).

1877. *Macrones bleekeri* Day, *Fish, India*, p. 451, p. 101, fig. 1 (type-locality: Sind, Jamuna, upper waters of Ganges, Burma).

1889. *Macrones bleekeri* Day, *Fauna Brit. India*, Fish., 1, p. 162.

1962. Jayaram, *Proc. First All India Congr. Zool*. Part. 2, p. 633 .

1966. Jayaram, *Int. Revue ges. Hydrobiol*., 51 (3), p. 444.

Diagnosis : Body short or moderately elongated. Abdomen rounded. Head of moderate size compressed, 5.2 to 5.5, depth 5 in total length. Eyes 4.5 in head. Snout rounded or obtuse. Width of gape of mouth equals half of head length. The median, longitudinal groove on head shallow, reaching to base of occipital process. Occipital process not grooved, twice as long as broad at its base, touching basal bone of dorsal. Barbles 8, maxillary extending to anal. Teeth on palate in an uninterrupted, semilunar band. Pectoral spine serrated, stronger than dorsal, of the same length as head without snout. Origin of adipose dorsal just behind rayed dorsal, its base twice head length. Anal rays 9-10. brownish gray with two light longitudinal bands one above the other below the lateral lines; a dark shoulder spot and dark band along middle of anal.

Distribution : India- freshwaters of E. Punjab, Darjeeling Dt., W. Bengal, Assam, Baroda, Jamuna and Upper waters of the Ganges. Pakistan- Freshwaters of Sind. Burma, Malaya.

Remarks : It attains at least 89 mm (3 ½ inches) in length and descends the upper reaches of the tidal rivers of Bengal.

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31. *NOTOPTERUS NOTOPTERUS* (Pallas) (Photoplate-31)

Local name : Patoda.

Locality : Sakri, Pimpalner, Shirpur, Kusumba, Taloda, Khapar, Shindkheda, Dhadgaon.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Osteoglossomorpha

Order : Osteoglossiformes

Sub order : Notopteroidei

Family : Notopteridae

1769. *Gymnotus notopterus* Pallas, *Spicil. Zool*., 7:40, pl. 6, fig. 2 (type-locality : Indian Ocean and ponds and rivers of Bengal).

1800. *Notopterus* Lacepede, Hist. nat. poiss., 2, p. 190 (type- species, *Notopterus notopterus* Pallas, by absolute tautonomy).

1889. *Notopterus kapirat* Day, *Fauna Brit. India,* Fish., 1, p. 406.

1992. Roberts, *Ichthyol, Explor. Freshwaters*, 2 (4), pp. 361- 383 (revision).

1999. *Notopterus notopterus,* Menon, *Rec. Zool. Surv, India Occ. Paper No.* 175: 9-10 (Checklist).

Diagnosis : Body oblong, laterally compressed. Craniodorsal profile straight or slightly concave. Abdomen with 25 to 28 *pre-pelvic double serrations*. Head compressed, cavernous (hollow). Length 5 to 5.5, depth 3.5 to 4 in total length. Eyes 4.5 to 5 in head. Snout obtuse and convex. Mouth wide, cleft or mouth extending *up to posterior border of eye*. Mandible with two rows of strongly developed serrations and on inner margin of mandible, the other on ventro-median ridge lateral to manibular sensory canal. Eyes moderate, dorso-lateral, not visible from below ventral surface. Lips thin. Jaws equal; growth of jaws isometric with head. Teeth on jaws and palate and also on tongue. Muciferous channels on head well developed. Preopercle serrated. Larger scale on operculum than those of body. Gill membranes partly united. Dorsal fin small, tuft-like, inserted near middle of body with 8 to 10 rays. Anal fin very low, ribbon-like with 100 to 135 rays, united with the caudal fin. Pelvic fins rudimentary. Caudal fin small. Scales small. Lateral line complete more or less arched with about 180 scales. Silvery becoming grayish on back; with some gloss of yellow on head, many fine grayish spots all over body. Eyes golden.

Distribution : Fresh and brackish waters of India. Bangladesh, Indonesia, Malaya, Nepal, Pakistan, Thailand and West Africa.

Remarks : It grows up to 609 mm (2 feet) or more in length.

32. *OMPAK BIMACULATUS* (Bloch) (Photoplate-32)

Local name	:	Papada.
Locality	:	Dhule, Shahada, Shirpur, Pimpalner, Taloda, Khapar, Shindkheda
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Siluriformes
Family	:	Siluridae

1797. *Silurus bimaculatus* Bloch, *Syst. Ichth.*, 11, p. 17, pl. 369 (type-locality: Malabar).

1803. *Ompok* lacepede, *Hist. Nat. Poiss*., 5, p. 49 (type- species, *Ompok siluroides* Lacepede, by monotypy).

1822. *Callichrorus* Hamilton Buchanan, *Fish Ganges*, p. 149 (type-species, *Silurus* (*Callichrorus) pabda* Hamilton-Buchanan.

1849. *Silurus bimaculatus*, Bloch, t. 364 ; Bl. Schn. P. 377; McClell. Cal. J. N. H. iv, p. 401; Jerdon, M. J. L. and Sc., p. 334.

1889. *Callichrorus sindensis* Day, *Fauna Brit. India*, Fish., 1, p. 130.

1889. *Callichrorus bimaculatus* Day, *Fauna Brit. India*, Fish.,1, p. 131.

1889. *Callichrorus malabaricus* Day, *Fauna Brit. India*, Fish.,1,p. 133.

1889. *Callichroruspabda* Day, *Fauna Brit. India*, Fish., 1, p. 133.

1889. *Callichrorus macrophthalmus* Day, *Fauna Brit. India*, Fish.,1, p.152.

1950. Haig, *Rec. Indian Mus*., 48, p. 103 (review).

1967. Parameswaran, *J. Zool. Soc. India*, 13 (1 & 2), p. 90 (review).

1999. Menon, *Rec. Zool. Surv. India, Occ. Paper No*. 175: 216-217.

Diagnosis : Body elongated, compressed. Abdomen rounded. Head small, broad, depressed 5 to 7, depth 5 to 6 in total length. Snout bluntly rounded, depressed. Mouth superior, moderately wide, its cleft oblique, not extending to front border of eyes. Eyes small, their ventral border on level with corner of mouth, visible from below ventral surface of head. Eyes 4 to 5 in head. Lips thin. Jaws subequal, lower jaw prominent, more or less elevated at symphysis. Teeth uniformly villiform, depressible in bands on jaw, in two separate patches on palate, no teeth on palatines. Two Paris of barbles, one pair each of maxillary and mandibular; latter occasionally rudimentary or small. pelvic fins much nearer to snout end than to caudal base. Pectoral with a moderately strong spine, serrated or entire (11 to 14 rays). Pelvic with 8 rays. Anal very long, with 54 to 73 rays, close to forked causal fin. Silvery, shot with purple ; a black spot on shoulder and often one or two faint, black, lateral bands in upper part of body. Lateral line complete, simple.

Distribution : Throughout India. Bangladesh, Malaya, Sumatra, Pakistan, Sri Lanka, Thailand, Vietnam, Yunnan, Malay Archipelago, Siam.

Remarks : It attains at least 304 mm (a foot) in length.

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33. *OREOCHROMIS MOSSAMBICUS* (Peters) (Photoplate-33)

Local name	:	Shilpi.
Locality	:	Nijampur, Ahirpue, Kuaumba
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Acanthopterygii
Order	:	Perciformes
Sub order	:	Labroidei
Family	:	Cichlidae

1889. *Oreochromis* Gunther, *Ann. Mag. Nat., Hist.*, (6) 4, p. 70 (type-species, *Oreochromis hunteri* Gunther, by monotypy).

1983. Trewavas, *publ. Brit. Mus. Nat. Hist.*, No. 878, pp. 139-373 (revision).

Diagnosis : Body or less elongate. Abdomen rounded. Head compressed, with concave upper profile. Mouth terminal, large at least ¾ width if head or often nearly as wide as head, cleft extending to below anterior border of eyes, or not quite so far. Snout rounded. Eyes large, lateral, in middle of head, not visible from below ventral surface. Lips thin. Jaws equal. Teeth in three to five rows. Palate edentate. Dorsal fin inserted above base of pectoral fins with 15-16 spines and 10-12 rays. Spinous portion longer than soft part, latter may be prolonged with filamentous tip. Anal fin with three spines (rarely four), third spine a little longer than last dorsal. Caudal fin rounded, may be truncate in the young. Scales cycloid. Lateral line incomplete, with 30 to 32 cycloid scales. Air-bladder large and simple.

Distribution : East Africa to Natal., widely introduced in India. Bangaldesh, Pakistan, Sri Lanka.

Remarks : Length (less than a foot)

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34. *OREONECTUS EVEZARDI* (Day) (Photoplate-34)

Local name : Mooree.

Locality : Sakri

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Balitoridae
Sub family	:	Nemachelinae

1868. *Oreonectes* Gunther, *Cat. Fish Brit. Mus*., 7, p. 369 (type-species, *Oreonectes platycephalus* Gunther, by monotypy).

1990. Kottelat, *Verlag. Dr. Friedrich pfeil*, Munchen, p. 20 (valid).

1995. Banarescu & Nalbant, *Trav. Mus. Hist. nat. "Grigore Antipa"*, 35, p. 453, figs. 26 to 18 (as valid genus).

Diagnosis : Body elongate, low and thick, sub-cylindrical. Head depressed, wider than deep. Eyes small, dorsal in position. Anterior nostrils prolonged in to a long nasal barble. Lips fleshy, both lips interrupted in the middle. Dorsal fin inserted nearer to base or caudal fin than tip of snout. Dorsal adipose crest present. Caudal fin rounded. Scales imbricate, well developed covering the entire body, including breast. Lateral line incomplete ending above middle of pectoral fins. Contrary to most other genera of nemacheilines the pelvic fins are in advance of the dorsal fin insertion, caudal fin rounded or almost straight.

Distribution : Western Ghats, Keral, Krishna and Godavari basins and also Satpura ranges. Panchmarhi hills.

Remarks : It attains 3 to 4 inches in length.

35. *OSTEOBRAMA COTIO COTIO* (Ham-Buch) (Photoplate-35)

36. *OSTEOBRAMA VIGORSII* (Sykes) (Photoplate-36)

Local name	:	Ger
Locality	:	Sakri, Dhule, Shindkheda
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Cyprinidae
Sub family	:	Cyprininae
Tribe	:	Systomini
Sub-tribe	:	Osteobramae

1822. *Cyprinus cotio* Hamilton. *Fish. Ganges*, pp. 339. pl. 39 fig. 93 (type-locality: Ponds and ditches of Bengal).

1843. Heckle, *Ichth. Russegger's Reisen in Europe, Asian and Africa*. I, p. 1033 (type-species *Cyprinus cotio* Hamilton-Buchanan).

1889. *Rohtee cotio* day, *Fauna, Brit. ,India* , Fish, 1. p. 340.

1940. *Rohtee* (*nec* Sykes) Hora and Misra, *Rec. Indian Mus*. 42 (1), pp. 155-178 (revision).

1952. Silas, *Proc. Nat. Inst. Sci*. India, 18 (5), p. 430 (position clarified).

Diagnosis : Body short, deep, compressed. Abdominal edge sharp, keeled entirely or only from pelvic fin base to vent. Head short, 5.5 to 6, depth 3 to 3.3 in total length. Eyes 2.5 to 3 in head. Snout bluntly rounded. Mouth small, somewhat directed upwards and forwards. Eyes large, lateral, may be visible from below ventral surface. Lips thin, plain. Upper jaw slightly longer. Barbles four or two to none. Dorsal fin inserted slightly behind pelvic fins extending over anal fin with 11 or 12 rays and a strong serrated spine. No procumbent predorsal spine. Anal fin long ,with 14 to 36 rays. Caudal fin deeply forked. Scales moderate. Lateral line incomplete with scales. Predorsal scales 24. silvery, darkest superiorly; often with a silvery lateral band.

Distribution : India- Freshwaters throughout India except Malabar and south of the Kistna. Pakistan- freshwater of W. Punjab, E. Pakistan. Burma and China.

Remarks : It attains at least 152 mm (6 inches) in length.

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37. *PARAMBASIS LALA* (Hamilton) (Photoplate-37)

38. *PARAMBASIS RANGA* (Hamilton) (Photoplate-38)

Local name : Dhebaree.

Locality : Dhule, Pimpalner,Taloda, Sarangkheda,

Shirpur, Dhadgaon.

Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Acanthopterygii
Order	:	Perciformes
Sub order	:	Percoidei
Family	:	Chandidae

1822. *Chanda ranga* Hamilton, *fish, Ganges*, pp. 113, 371. pl. 16, fig. 38. (type-locality: freshwater of all parts of the Gangetic Provinces).

1874. *Parambassis* Bleeker, *Nat. Verh. Holland. Maatsch. Wetensch*., 2 (2), p. 86, (type-species, *Ambassis apogonoides* Bleeker by original designation).

1889. *Ambassis ranga* Dya, *Fauna Brit. India.*, Fish., 1. p. 485.

1975. Guha and Talwar, *J. Inland Fish, Soc. India*, 8 p. 76 (status discussed).

1989. Roberts, *Mem. Calif. Acad. Sci*. 14, p. 161 (Synonymy).

1994. Roberts, *Nat. Hist. Brit. Siam, Soc*., 42 pp. 271-289 (revision).

Diagnosis : Body elongate, compressed. Abdomen rounded. Head short, compressed, 3.2 to 4, depth 2.3 to 2.5 in total length. Eyes 2.5 in head, large, superior not visible from below ventral surface. Snout pointed. Mouth large, gape oblique, extending to anterior border of orbit. Vertical limb of preopercle entire or finely serrated.sub and interopercles entire. Preorbital serrated. Teeth villiform in jaws, vomer and palate. Two dorsal spine united at their base; first dorsal with 7 spines; a recumbent dorsal spine present. Anal spines 3. Lateral line rays 60-70. Olive with margins of the vertical fins gray.

Distribution : Throughout freshwaters of India, Pakistan, Burma, Malaya, Siam.

Remarks : It attains 72-102 mm (3 to 4 inches) in length.

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39. *PUNTIUS AMPHIBIOUS* (Val) (Photoplate-39)

40. *PUNTIUS CONCHONIUS* (Ham-Buch) (Photoplate-40)

41. *PUNTIUS SARANA SARANA* (Hamilton) (Photoplate-41)

42. *PUNTIUS SOPHORE* (Hamilton) (Photoplate-42)

43. *PUNTIUS TICTO* (Ham-Buch) (Photoplate-43)

Local name : Kunder/ Nakatya/ Chhoti-Dhebaree/ Lal-Dhebaree

Locality : Sakri, Dhule, Nandurbar, Nijampur, Prakasha, Navapur, Pimpalner, Sarnagkheda, Shirpur, Kudumba, Shindkheda.

Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Cyprinidae
Sub family	:	Cyprininae
Tribe	:	Systomini
Sub- tribe	:	Systomi

1822. *Cyprinus sarana* Hamilton, *fish, Ganges*, pp. 307, 388 (type-locality: ponds and rivers of India).

1822. *Puntius* Hamilton-Buchanan, *Fish Ganges*, pp. 310, 388 (type-speices *Cyprinus sophore* Hamilton-Buchanan, by subsequent designation).

1849. *Barbus sarana* Cuv. and Val. Xvi, p. 151; Bleeker Beng. P. 60; Jerdon, M. J. L. and Sc. 1849, p. 312; Günter catal. Vii, p. 115; Day *Proc. Zool. Soc*, 1869 p. 374.

1889. *Barbus sarana* Day, *Fauna Brit., India*, Fish., 1. p. 300.

1889. *Barbus chrysopoma* Day, *Fauna Brit., India*, Fish., 1. p. 301.

1889. *Barbus pinnauratus* Day, *Fauna Brit., India*, Fish., 1. p. 301.

1991. Jayaram, *Occ. Papers ZSI*, No. 135, pp. 1-178 (revision).

Diagnosis : Body short to moderately elongate, deep, compressed. Abdomen rounded. Head short, 5 to 5.2, depth 3.5 to 3.6 in total length. Eyes 4.5 to 4.7 in head. Dorsal profile more elevated than ventral profile. Barbles 4, rostral pair as long as and maxillary equal to or 1.5 times eye diameter. Dorsal origin slightly nearer to snout than to caudal base, opposite pelvic origin; dorsal spine strong, bony serrated. Lateral line complete, 32-34 scales in the longitudinal series; 3 ½ to 4 rows between it and pelvic base. Predorsal scales 10-11. Dark gray above and silvery below, often with horizontal bands along the rows of scales in the upper half of body.

Distribution : Freshwaters throughout India and Pakistan, Burma, Ceylon, Siam and China.

Remarks : It attains few inches to foot in length.

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44. *RASBORA DONICONIUS* (Hamilton) (Photoplate-44)

Local name : Kanava/ Zora/ Valori/ Kanthya.

Locality : Sakri, Dhule, Prakasha, Nijampur, Visarwadi, Shirpur, Pimpalner, Sarangkheda, Kusumba, Taloda, Khapar, Shindkheda. Dhadgaon.

Phylum : Chordata

Sub-phylum : Vertebrata

Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Cyprinidae
Sub family	:	Danioninae (Rasborinae)

1822. C*yprinus daniconius* Hamilton, *Fish. Ganges*,pp. 327, 391, pl. 15, fig. 89 (type- locality: the rivers of southern Bengal).

1849. *Leuciscus Malabaricus, Caverii* and *Flavus,* Jerdon, M. J. L. and S. pp. 320, 321.

1854. *Mong. Inst Sci. & Techn., Manila,* 3, p. 134 (revision).

1859. *Rasbora Bleekar, Acta Sac. Sci. Indo-Neeri*. 7, p. 435 (type-species, *Cyprinus rasbora* Hamilton-Buchanan, by tautonymy).

1864. *Rasbora dandia,* Bleekar, Cyp & Cobit. Ceylon, p.18, pl.1,fig. 3.

1867. *Rasbora wooleree* and *Neilgherriensis*, Day, *Proc. Zool. Soc*., p. 298. Günther, Catal. Vii, p. 197.

1889. *Rasbora doniconius* Day. *Fauna Brit. India.* Fish., 1 p. 336.

Diagnosis : Body elongate, compressed. Abdomen rounded. Head large, pointed, 4.5 to 5, depth 4.5 to 6 in total length. Snout slightly

pointed. Mouth large, cleft oblique. Eyes placed laterally, not visible from below, 3.6 to 4 in head. Dorsal profile more convex than ventral profile. No barbles. Pharyngeal teeth one or two rows. Dorsal origin nearer to caudal base than to snout end, equidistant between pelvic and anal origins or nearer to pelvic origin. Pectorals do not reach base. Lateral line scales 31-34 (with 25 to 37); 2 rows between lateral line and pelvic base. Predorsal scales 14. Greenish yellow above, silvery at sides with blue-back lateral stripes narrowly edged with golden yellow; often the lateral stripe exists at its termination towards caudal region or in some young specimens it may bright silvery; fins pale orange, caudal lobes often tipped gray. Caudal fin emrginate or forked, scales large or moderate

Distribution : Fresh waters of all the Indian states. Pakistan- freshwaters of W. Punjab, E. Pakistan. Burma, Ceylon and Malaya.

Remarks : It attains about 203 mm (8 inches) in length.

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45. *RITA PAVIMENTATA* (Val) (Photoplate-45)

Local name : Shisava

Locality : Sakri

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Siluriformes

Family : Bagridae

Sub-family : Ritinae

1822. *Pimelodus rita* Hamilton, *fish Ganges*, pp. 165, 376, pl. 24, fig. 53 (type- locality: estuaries of Bengal).

1832. *Arius pavimentata* (Val) *Jacg. Voy. Ind. Ori. Arl. Poiss*. 2, pl 17, fig. 2 (type-locality: India).

1853. *Rita* Bleeker, *Verh. Batav. Genootsch. Kunst. Wet*., 25, p. 122 (type-species, *Rita buchanani* Bleeker = *Pimelodus rita* Hamilaton-Buchanan, by monotypy).

1867. *Gogrius* Day, *Proc. Zool. Soc. Lond*., p. 563. (type- speices, *Pimelodus gogra* Sykes, by monotypy. Species *gogra* needlessly renamed *Sykesi* by Day).

1889. *Rita buchanani* Day, *Fauna Brit., India*. Fish., 1, 165, fig. 66.

1966. Jayaram, *Int., Rev. ges Hydrobiol*., 51 (3), p. 434 (revision of genus).

1991. Talwar and Jhingran, *Inland Fish*, 2: 577.

1999. Menon, *Rec. Zool. Surv. India, Occ. Paper No*. 175: 197.

Diagnosis : Body short, compressed. Abdomen rounded. Head large, depressed. 4 to 4.3, depth 5.5 to 6 in total length. Eyes 8 to 10 in head. Snout obtuse. Upper jaw longer. Width of mouth nearly half of head length. The occipital process about as long as wide at

its base, notched in front to accommodate basal bone of dorsal. Cubito-humeral process about ¾ of head, granulated. Barbles 6, nasal very short, mandibular extending to end of head. Teeth villiform in upper jaw and in the anterior part of lower jaw; internally 2 or 3 rows of rounded teeth ; palatine teeth rounded, in two elliptical patches, wide apart along the median line. Dorsal spine very strong, serrated, as long as or 1/3 longer than head. Pectoral spine serrated rather shorter than dorsal spine. Anal fin short with 8 to 13 rays. Caudal fin forked. Lateral line well developed. Greenish gray above becoming lighter below.

Distribution : India- freshwaters of U. P., Bihar, Darjeeling Dt., W. Bengal. Pakistan- freshwater of Sind, E. Pakistan. Burma.

Remarks : It attains at least 1219 mm (4 feet) in length.

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46. *SALMOSTOMA BACAILA* (Hamilton) (Photoplate-46)

47. *SALMOSTOMA BALOOKEE* (Sykes) (Photoplate-47)

48. *SALMOSTOMA CLUPIODES* (Day) (Photoplate-48)

49. *SALMOSTOMA PHULO-PHULO* (Ham-Buch) (Photoplate-49)

Local name : Chal/ Mavala

Locality : Sakri, Dhule, Dhadgaon, Shahada, Sarangkheda, Shirpur, Pimpalner, Taloda,\.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Ostariophysi
Order	:	Cypriniformes
Family	:	Cyprinidae
Sub family	:	Cyprininae
Tribe	:	Systomini
Sub-tribe	:	Systomi

1782. *Cyprinus clupeoides* Bloch, *Naturg. Aus. Fische*, 12: 49, pl. 409, fig 2. (Type-locality: Tranquebar).

1839. *Salmostoma* Swainson, *Nat. Hist. Fish*., 2, p. 184 (type-species, *Cyprinus oblonga* Swainson = *Cyprinus bacaila* Hamilton-Buchanan, by subsequent designation).

1968. Banarescu, *Rev. Rom. Biol. Zool*., 13 (1), pp. 3-14 (revision).

1980. Howes, *Bull. Br. Mus. Nat. Hsit*., (Zool). 37 (3), pp. 190-191.

1999. Menon, *Rec. Zool. Surv. India, Occ. Paper No*. 175: 366. (Checlist).

Diagnosis : Body elongated, compressed. Abdomen keeled from below pectoral fin to anus, keel not hardened. Head moderate to long, compressed. Snout blunt may be short, or long and pointed. Mouth oblique to body axis, cleft reaching anterior margin of orbit or slightly ahead. Eyes moderate or large, lateral or

superolateral, not visible from below ventral surface. Suborbital bones broad. Lips thin. Lower jaw longer, with a knob at the junction of the tow bones. Dorsal fin short, inserted, mostly opposite anal fin, ahead in some with 9-10 rays. Pectoral fins long with an elongated axillary scale may or may not reach the pelvic fins. Pelvic fin outer ray generally not elongated. Anal fin short with 14-20 rays. Caudal fin deeply forked. Scales small to moderate, often deciduous. Lateral line complete, generally decurved with 39-112 scales.

Distribution : India- Cauvery, Godavari, Krishna, Narmada and Tapi river systems. Recorded from Naik, Deolali, Jabalpur. Also Myanmar according to Day (1878).

Remarks : It attain at least 228 mm (9 inch) in length.

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50. *SCHISTURA DENISONI* (Day) (Photoplate-50)

Local name : Mooree.

Locality : Sakri, Visarvadi.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Cypriniformes

Family : Balitoridae

Sub family : Nemacheilinae

1839. *Schistura* McClelland, 1839, *Asiat, Res.*, 19 p. 306, 439 (type-species, *Cobitis (Schistura) rupecula* McClelland by subsequent designation).

1987. Menon, 1987, *Fauna India*, 4(1), p. 37 (as a subgenus).

1990. Kottelat, 1990. *Verlag, Dr. Friedrich Pfell,* Munchen, p. 90 (revision)., Banarescu and Nalbant. *Trav. Mus. Hist. nat. "Grigore Antipa"*, 35, p. 438 (as a genus).

Diagnosis : Body elongate of almost uniform depth, compressed posteriorly. Head either depressed or compressed. Snout usually blunt. In a few species posterior nostril may be prolonged as a tube. Upper lip slightly furrowed, continuous or with a narrow median interruption; lower lip interrupted in the middle, moderately furrowed. Processus dentiformis of upper jaw present with a corresponding incision on the lower jaw in many species. Dorsal fin short, inserted ahead or opposite pelvic fin with seven or eight rarely ten branched rays. Caudal fin slightly emerginate, forked or truncate, never rounded. Adipose crest mostly absent, is present only in the posterior part of the body. Lateral line complete or incomplete. Scales present over body, may be without it, naked. A very characteristic colour pattern as given in the key to genera.

Distribution :In India, Pamba and the Kollur drainages of Kerala and Karnataka state respectively on the S .W. coast. Also from

Deolali , Maharashtra. Javadi hills, Eastern Ghats. Bangladesh, South China, Pakistan and Nepal.

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51. *TENUALOSA (HILSA) ILISHA* (Hamilton) (Photoplate-51)

Local name : Bhat-masa

Locality : Pimpalner, Sarangkheda, Shirpur, Taloda, Khapar.

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Clupeomorpha

Order : Clupeiformes

Family : Clupeidae

Sub family : Alosinae

1917. *Hilsa* Regan, 1917. *Ann, Mag. Nat. Hist*., (8) 19, p. 303 (type species, *Clupea durbanensis* Regan, type a replacement name for *Paralosa* Regan, 1916 preoccupied by Bleeker, 1868 in fishes).

1985. whitehead, 1985. *FAO Fish Synop*. (125) 7 (1), pp. 220-221.

1934. *Tenualosa* Fowler, 1934, *Proc. Acad. Nat. Sci., Philad*. 85 p.. 246 (type-species, *Alosa reevesii* Richardson,- Whitehead, 1985, FAO Fish Synop., (125) 7 (1), pp. 222-227 (review).

Diagnosis : Body compressed, oblong. Abdomen serrated, with 15 or 16 pre-pelvic and 11 to 16 post pelvic scutes present. Head large, high, compressed. Snout rounded. Mouth terminal, cleft not extending to orbit. Eyes large, lateral, with adipose lid, in anterior part of head and not visible form below ventral surface. Lips moderately thick. Jaws subequal. Lower jaw not projecting beyond upper. Jaws and palate edentate. Dorsal fin inserted in advance of pelvic fins, with 13 to branched rays. Anal fin short with 16 to 20 branched rays. Caudal fin forked. Scales large, 37 to 47 in lateral series. Lateral line absent.

Distribution : India- Cauvery, Ganga, Godavari, Krishna, Narmada, Pennar, Tapi, Yamuna rivers. Bangladesh, Myanmar, Pakistan, Sri Lanka

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52. *TOR KHUDREE* (Sykes) (Photoplate-52)

Local name : Khavalya.

Locality : Sakri, Dhule, Navapur, Pimpalner,

Phylum : Chordata

Sub-phylum : Vertebrata

Group : Gnathostomata

Super class : Pisces

Class : Actinopterygii

Sub class : Neopterygii

Division : Teleostei

Sub division : Euteleostei

Super order : Ostariophysi

Order : Cypriniformes

Family : Cyprinidae

Sub family : Cyprininae

Tribe : Cyprini

Sub-tribe : Tores

1834. *Tor* Gray, *Illustrations of Indian Zoology*, 2 pl. 96 (type-species, *Cyprinus tor* Hamilton-Buchanan, by monotypy).

1838. *Barbus khudree* Sykes, *Proc. Zool. Soc. Lond*., p. 159 (type-locality: Mota mola river, 8 miles east of Poona).

Diagnosis : Body elongate, moderately compressed. Abdomen rounded. Head small, broadly pointed. Head 4.5 to 4.7, depth 4.3 to 4.6 in total length. Eyes 5.5 to 7 in head, in the anterior half of head. Snout angularly rounded, often with tubercles. Mouth inferior to subinferior, arched. Eyes far forward, large and not visible from below ventral surface. Lips fleshy, continuous at angles of mouth; posterior lip with a median lobe (mentum) and the postlabial groove continuous; lip condition variable, may be hypertrophied. Pharyngeal teeth in 3 rows 5,3,2. Four barbles, a pair each of maxillary and rostral. Dorsal fin inserted above pelvic fins, with 12 to 13 rays (8 or 9 branched) and a strong, stout, smooth spine. Anal fin with seven or eight rays (five branced). Caudal fin deeply forked. Scales large, with numerous parallel striae. Lateral line complete with 22 to 37 scales. Dark olive superiorly

becoming creamy, yellowish white below; fins bluish gray, often tipped yellowish pink.

Distribution : In India – Peninsular India, especially Karnataka, Kerala, Maharashtra hill streams, U. P., and Orissa. Bangaldesh, China, Myanmar, Nepal, Pakistan, Peninsula south to Yemen.

Remarks : It is a game fish growing to 1,447 mm (4 feet and 9 inches) in length.

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53. *XENENTODON CANCILA* (Hamilton) (Photoplate-53)

Local name	:	Vam
Locality	:	Pimpalner, Shirpur, Taloda.
Phylum	:	Chordata
Sub-phylum	:	Vertebrata
Group	:	Gnathostomata
Super class	:	Pisces
Class	:	Actinopterygii
Sub class	:	Neopterygii
Division	:	Teleostei
Sub division	:	Euteleostei
Super order	:	Acanthopterygii
Order	:	Beloniformes
Sub order	:	Belonoidei
Family	:	Belonidae

1911. *Xenentodon* Regan, 1911, *Ann, Mag, nat, Hist*., (8) 7, p. 332 (type-species, *Belone cancila* Hamilton-Buchanan, by subsequent designation).

1989. Roberts, 1989, *Mem. Catif, Acad. Sci.*, No. 14, p. 152 (review).

Diagnosis : Body very elongate, subcylindrical, compressed. Abdomen rounded. Head pointed. Snout sharply pointed. Mouth superior, wide, cleft extending to orbit. Eyes moderate, superior, in anterior part of head, not visible from below ventral surface. Both jaws prolonged into a beak, with fine rugosities with large canine teeth alternating with much more numerous conical teeth. In juvenile jaws may not be much prolonged. Teeth villiform on jaws; palate edentate. A deeply longitudinal groove along upper surface of head present. Gill rakers absent. Dorsal fin usually inserted above anal fin, with 14 to 19 rays, and no spine. Anterior dorsal rin rays sometimes form a lobe to the fin, without any finlets. Anal fin with 15 ti 19 rays. Caudal fin truncate. Scales small, to extremely small. Lateral line on posterior half of body without a keel.

Distribution : India, Bangladesh, Myanmar, Nepal, Pakistan: Sind, Punjab.

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Note: Above fish taxonomy, morphology and distribution taken from the references i. e. Day, F., 1978; Beaven, 1990; Misra, 2003; Jayaram, 2002; Yadav, 2005 and 2008.

INTRODUCTION

Fishes are used by human beings in different forms from time immemorial. Millions of human beings suffer due to hunger and malnutrition, and fishes form a rich source of food and provide good staple food to tide over the nutritional need of man. Most of the captured fishes are utilized as food. While others are distasteful and considered unsuitable for human consumption. Similarly, the material discarded during fish processing also become a waste. Such fishes and discarded material become an important source of raw materials to fish by-product industries and are used to produce several useful by-products. The per capita consumption of fish has been 3.2 kg on an average up to 1992 as against estimated requirement of 11.0 kg. Pisciculture has the potentiality of popularity due to its on-the-spot food characteristic, balanced nutrients and above all affordable prices (Vidya and Rao, 2004).

Fish is rightly considered as the "**Poor man's diet**". It costs much less in comparison to its food value. It is an almost zero-carbohydrate food, good for diabetics and other such patients. Fish is a rich source of protein, vitamins and minerals with approximate composition as crude protein (14.2-22.8 %), fat (0.6-2.4%) and energy (76-161 Kcal) per 100 g (Pandey and Shukla, 2010). A special feature of fish flesh is content of vitamin B_{12} which is almost absent in plant food and also good source of calcium and vitamin-A. Fish also contains poly unsaturated fatty acids which are known to provide protection against cardio vascular diseases. Fish proteins comprise all the ten essential amino acids in desirable strength for human consumption. Further, unsaturated fatty acids belonging to limolinic acid series present in fish flesh and fish oils are considered to be essential for the prevention of coronary heart disease (shukla and Pandey, 1984). In present study, various fresh water fish species captured from different riverine system of Dhule and Nandurbar districts were analyzed for estimation of total proteins, total lipids and moisture contents.

a) ESTIMATION OF TOTAL PROTEINS (%)

The amount of total proteins (g/ 100 g) was estimated by Lowry's method, described by Lowry et al (1951). For estimation of total proteins, following reagents were utilized.

Reagents:

1. **Solution A:** 2 % anhydrous Sodium Carbonate (Na_2Co_3) in 0.1 N NaoH.
2. **Solution B:** 0.5 % copper Sulphate ($CuSO_4.5H_2O$) in 1 % Sodium potassium tartrate.
3. **Solution C (Alkaline Copper solution):** Mix 50 ml of solution A with 1 ml of solution B just before use.
4. **Folin Ciocalteau reagent (FCR):** Dilute the commercial reagent (2 N) with an equal volume of water on the day of use.
5. **Stock standard protein solution:** weigh 50 mg of Bovine Serum albumin (BSA) and dissolve in 50 ml distilled water that gives 1mg /ml concentration.
6. **Working standard solution:** Dilute 10 ml of the stock solution to 50 ml with water to obtain 200 µg protein / ml.
7. **Protein sample:** for extraction of protein from sample; grind 1 g wet tissues with 5 ml distilled water in mortar and pestle. Centrifuge the content at 3000 rpm for 15 minutes. Use 0.1 and 0.2 ml supernatant for protein estimation.

Calculations

Draw the standard graph of BSA and plot the values of unknown samples.

From graph, X = 0.1 ml sample contain …….. µg of protein

Y = 5 ml = 1 g = X x 50 ……. µg of protein

Therefore, 100 g of tissue = Y x 100 µg of protein / 100 g tissues.

Observation table for protein estimation

Sr. No.	BSA working sol. 'ml'	Distilled water 'ml'	Solution 'C' 'ml'	Incubate for 15 minutes	FCR solu. 'ml'	Incubate for 30 minutes at room temperature in the dark.	O. D. at 660 nm
Blank	0.00	1.00	5.0		0.5		0.00
1	0.20	0.80	5.0		0.5		
2	0.40	0.60	5.0		0.5		
3	0.60	0.40	5.0		0.5		
4	0.80	0.20	5.0		0.5		
5	1.00	0.00	5.0		0.5		
Sample -1	0.10	0.90	5.0		0.5		
Sample 2	0.20	0.80	5.0		0.5		

b) EXTRACTION OF TOTAL LIPIDS

For extraction of total lipids, following steps described in method by Bligh and Dyer, 1959 was applied.

1. Homogenize about 10 g wet tissues in blender for 2 minutes in mixture of Chloroform: Methanol (1:2 v/v).
2. Add 10 ml Chloroform and homogenize further for 1minute.
3. Add 10 ml of distilled water and homogenize further for 1 minute.
4. Filter on Buchner funnel using What man filter paper No. 1.
5. Transfer the filtrate into burette. Wash filter paper and blender with 10 ml Chloroform, refilter and transfer to burette.
6. Allow few minutes to separate two phases.
7. Remove lower layer of Chloroform containing lipids into Petridish.
8. Evaporate and weigh amount of lipid.

c) MOISTURE CONTENT (%)

Fish is aquatic animal and their body content maximum amount of water. The moisture content of fish was determined by air oven method (Anonymous, 1996). For this 10 g of fish tissue was used. The weight of box with its lid was taken. The tissue was placed in the box and distributed evenly over the bottom surface. Then it was dried in an oven at 110 ^{o}C for 60 min. After drying the tissue were taken out and the dish was covered immediately and it was placed in a desiccator to cool for 20-30 min. The weight of box with tissue and lid was noted. Moisture content was calculated on wet weight basis and expressed in percentage by using formula.

$$\text{Moisture content (\%)} = \frac{(M_2 - M_3)}{(M_2 - M_1)} \times 100.$$

Where,

M_1 = Weight of box with lid (g)

M_2 = Weight of box with lid and tissue before drying (g).

M_3 = Weight of box with lid and tissue after drying (g).

Table -3. Nutritional values of freshwater fishes collected from Dhule and Nandurbar districts (M.S.).

Sr. No.	Name of fish species	Protein (g) /100 g tissue	Lipid (%) mg / 100 g	Water content (%)
01	*Acanthocobitis botia* (Ham-Buch)	21.70 ± 01.20	06.70 ± 01.40	76.50 ± 02.50
02	*Acanthocobiti mooreh* (Sykes)	21.00 ± 01.00	07.20 ± 01.20	73.50 ± 02.00
03	*Amblypharyngodon mola* (Hamilton)	16.50 ± 01.40	01.80 ± 00.50	82.00 ± 03.50
04	*Aorichthys aor* (Hamilton)	15.00 ± 01.00	01.50 ± 00.20	79.50 ± 03.00
05	*Aplocheilus panchax* (Hamilton)	13.00 ± 00.50	01.20 ± 00.20	81.00 ± 02.30
06	*Barilius bendelisis* (Hamilton)	17.20 ± 01.30	02.60 ± 00.85	77.50 ± 02.80
07	*Chanda nama* (Hamilton)	14.40 ± 01.20	01.40 ± 00.90	80.00 ± 03.50
08	*Channa gachua* (Hamilton)	21.00 ± 01.40	05.50 ± 01.10	69.00 ± 03.30
09	*Channa marulius* (Ham-Buch)	20.70 ± 01.60	05.00 ± 00.40	72.00 ± 04.00
10	*Channa orientalis* (Bloch and sch.)	20.60 ± 01.40	04.80 ± 00.60	73.00 ± 03.50
11	*Channa punctata* (Bloch)	20.50 ± 01.20	06.80 ± 01.20	70.00 ± 02.00
12	*Cirrhinus reba* (Hamilton)	16.80 ± 01.00	02.00 ± 00.50	75.00 ± 03.10
13	*Clupisoma garua* (Hamilton)	18.50 ± 01.60	01.60 ± 00.60	80.00 ± 03.00
14	*Crossocheilus latius* (Hamilton)	16.50 ± 01.40	01.50 ± 00.50	78.00 ± 02.90
15	*Cyprinus carpio carpio* Linnaeus	19.00 ± 01.40	03.50 ± 00.90	73.00 ± 02.80
16	*Danio aequipinnatus* (Mc-Clellend)	15.00 ± 01.20	02.70 ± 00.40	77.00 ± 03.00
17	*Garra mullya* (sykes)	17.85 ± 01.20	03.60 ± 00.70	75.90 ± 03.50
18	*Glossogobius giurus* (Ham-Buch)	11.90 ± 01.25	01.70 ± 00.30	81.50 ± 03.50
19	*Heteropneutes fossilis* (Bloch)	13.90 ± 01.00	01.80 ± 00.60	83.00 ± 03.30
20	*Hypophthalmichthys nobilis* (Richard)	16.00 ± 02.10	01.80 ± 00.10	78.00 ± 03.20
21	*Labeo boggut* (Sykes)	17.20 ± 00.90	02.20 ± 00.60	75.00 ± 02.00

22	*Labeo calbasu* (Hamilton)	14.70 ± 01.80	02.00 ± 00.30	81.00 ± 03.10
23	*Labeo rohita* (Hamilton	16.60 ± 01.40	02.40 ± 00.30	76.90 ± 02.50
24	*Lepidocephalus guntea* (Ham-Buch)	15.40 ± 00.80	02.30 ± 00.20	76.00 ± 02.50
25	*Lepidocephalus thermalis* (Valen.)	15.25 ± 01.50	02.30 ± 00.50	81.95 ± 03.50
26	*Macrognathus panicalus* (Hamilton)	18.50 ± 01.80	06.80 ± 00.90	69.00 ± 02.90
27	*Mastacembelus armatus* (Lacepede)	20.00 ± 01.40	08.00 ± 00.80	70.00 ± 02.40
28	*Mastacembelus pancalus* (Ham-Buch)	19.00 ± 02.10	07.00 ± 00.70	72.00 ± 02.30
29	*Mystus bleekeri* (Day)	13.00 ± 01.20	01.50 ± 00.40	81.00 ± 02.10
30	*Mystus cavasius* (Hamilton)	14.50 ± 01.40	01.80 ± 00.50	79.50 ± 03.50
31	*Notopterus notopterus* (Pallas)	16.50 ± 01.40	01.40 ± 00.20	79.00 ± 03.50
32	*Ompak bimaculatus* (Bloch)	14.50 ± 01.40	01.20 ± 00.20	83.00 ± 03.20
33	*Oreochromis mossambica* (Peters)	13.10 ± 00.90	01.40 ± 00.20	82.00 ± 03.00
34	*Oreonectus evezardi* (Day)	13.10 ± 01.00	02.80 ± 00.30	74.50 ± 03.50
35	*Osteobrama cotio cotio* (Ham-Buch)	16.50 ± 01.10	01.40 ± 00.50	82.30 ± 03.00
36	*Osteobrama vigorsii* (Sykes)	16.00 ± 01.80	02.00 ± 00.20	76.00 ± 03.00
37	*Parambasis lala* (Hamilton)	13.00 ± 00.90	01.50 ± 00.30	81.00 ± 02.30
38	*Parambasis ranga* (Hamilton)	12.80 ± 00.80	01.50 ± 00.40	80.00 ± 03.30
39	*Puntius amphibious* (Val)	16.50 ± 01.20	02.50 ± 00.30	76.00 ± 03.20
40	*Puntius conchonius* (Ham-Buch)	16.50 ± 01.50	02.80 ± 00.50	75.80 ± 03.50
41	*Puntius sarana sarana* (Hamilton)	18.40 ± 01.80	03.00 ± 00.60	73.50 ± 03.70
42	*Puntius sophore* (Hamilton)	15.20 ± 01.10	01.80 ± 00.30	75.80 ± 03.00
43	*Puntius ticto* (Ham-Buch)	18.00 ± 01.50	04.00 ± 00.50	73.00 ± 03.60
44	*Rasbora doniconius* (Hamilton)	16.90 ± 01.40	01.40 ± 00.20	81.20 ± 03.50
45	*Rita pavimentata* (Val)	14.50 ± 01.60	02.50 ± 00.60	78.50 ± 03.50
46	*Salmostoma bacaila* (Hamilton)	14.00 ± 01.30	01.50 ± 00.30	75.00 ± 03.50

47	*Salmostoma balookee* (Sykes)	14.00 ± 01.40	01.40 ± 00.50	76.00 ± 02.90
48	*Salmostoma clupiodes* (Day)	15.00 ± 01.60	01.80 ± 00.40	77.00 ± 02.50
49	*Salmostoma phulo-phulo* (Ham-Buch)	14.50 ± 00.30	01.80 ± 00.50	77.50 ± 03.00
50	*Schistura denisoni* (Day)	22.00 ± 02.10	08.00 ± 00.90	73.00 ± 03.10
51	*Tenualosa (Hilsa) ilisha* (Hamilton)	21.80 ± 02.20	10.50 ± 00.50	67.70 ± 02.60
52	*Tor Khudree* (Sykes)	16.40 ± 01.40	02.80 ± 00.80	76.50 ± 03.60
53	*Xenentodon cancila* (Hamilton)	21.00 ± 02.10	09.00 ± 00.90	67.00 ± 02.60

Data was obtained from mean values ± SD (n = 4).

RESULTS AND DISCUSSION

Life process in a living organism is sustained by a chemical process derived from food for growth, maintenance and reproduction. Fishes are rich in proteins, fats and vitamins. The fats provide energy and produces body fats, whereas proteins provide energy and material for growth and repair and sometimes the formation of fats.

In present nutritional analysis or Food values i.e. Proteins, Lipid and moisture content of fresh water fishes were estimated immediately on same day of collection. The values are presented in table 1.

1. **Total proteins (%):** The amount of protein in freshwater fishes is ranges from 15 to 20 g /100 g. In some species, the amounts of protein were found to be more than this range, these includes; *A. botia* (21.70), *A. mooreh* (21.00), *C. gachua* (21.00), *C. marulius* (20.70), *C. orientalis* (20.60), *C. punctata* (20.50), *M. armatus* (20.00), *S. denisoni* (22.00), *T. ilisha* (21.80) and *X. cancila* (21.00). The highest amount of protein is reported from *Schistura denisoni* i.e. 22.00 g/100 g tissues. Whereas the lowest amount is found in *Parambasis ranga* i.e. 12.80 g/100 g tissue.

2. The amount of lipid in freshwater fishes is ranges between 1.0 to 3.0 g/ 100 g tissues. In present study 15 fish species collected from study area of both districts possess appreciable amount of lipid e.g. species like *A. botia* (6.7), *A. mooreh* (7.2), *C. gachua* (5.5), *C. marulius* (5.0), *C. orientalis* (4.8), *C. punctata* (6.8), *M. panicalus* (6.8), *M. armatus* (8.0), *M. pancalas* (7.0), *S. denisoni* (8.0), *T. ilisha* (10.5) and *X. cancila* (9.0). The higher amount of lipid was reported in *T. ilisha* while lowest level i. e. 1.20 g was found in two fish species e.g. *A. panchax* and *O. bimaculutus.*
3. **Water content (%):** Percentage of water content in the fishes is entirely depends on total fat content. From the collected species, higher amount of water content i.e. more than 80 % were seen in 15 fish species. Least water percentage was reported from species like *C. gachua* (69), *M. panicalas*

(69), *T. ilisha* (67.7) and *X. cancila* (67). Remaining species ranges from 70 to 80 % water content.

CONCLUSION

The fishes are good and chief source of animal proteins and fats along with essential amino acids as well as vitamins. The palatability and nutritious properties of the fishes therefore, depends on higher content of proteins and lipids. According to Winton and Winton (1993), several factors viz; age, sex, loss of solids during spawning, richness of fish food in river system and storage at freezing temperature etc are responsible for variation in protein and lipid contents of fishes. It is seen from above table is that the amount of protein and lipids are inversely proportional to the moisture (water) content of fish i.e. higher amount of protein and lipid of fish contains comparatively less amount of water. It is conclude that, the higher amount of both protein and lipid content was found in fish, like *A. mooreh, M. armatus, S. denisoni, T. ilisha* and *X. cancila* etc.

HEMATOLOGICAL VALUES AND ENDOPARASITE STUDY

As per plan of work I am unable to find out hematological parameters such as Total RBC count, Total WBC count, ESR, Hb percentage, MCH, PCV and MCHV etc mentioned in the plan of work. In present piece of MRP, the fishes collected from various collection centres are actually dead fishes purchased from local fisherman. Though they doesnot have sufficient blood for hematological study. Like that for endoparasitic study, the fishes are so small in size. Therefore, I was unable to report endoparasite from these fishes.

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