

Fish Fauna of Muzaffarnagar District, Uttar Pradesh

BY

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(With a map)

SYNOPSIS

A collection of eighty-four species of fish representing forty-nine genera, twenty families, and eight orders is reported together with brief notes on the maximum size, seasonal availability, breeding habits, etc. of each species. The report is based on two and a half years' work on the fish fauna of district Muzaffarnagar in the upper Gangetic plain. Analysis of the different species reveals that 75% of them belong to a single order, the Order Cypriniformes (Berg 1940), thirteen of them air-breathing and eight hill-stream species. Thus, the fish fauna is typical of sub-tropical fresh waters with a mixture of Himalayan forms. The richness of water resources and the possibility of the area developing into a big fish-producing centre is indicated. Distribution and nomenclature of some of the species is discussed in the light of the previous work and the present study.

INTRODUCTION

No attempt has so far been made to explore the fish fauna of Muzaffarnagar District in the upper Gangetic plain in spite of the richness of the water resources and a possible zoogeographical significance. Faunal studies covering much wider areas, such as those of Hamilton (1822) or Day (1878), are the only sources of information. More recently fish collections from three adjoining areas have been reported : from Eastern Doons (Hora & Mookerjee 1936 ; Lal & Chatterjee 1962), Meerut (Sinha & Shiromny 1953), and Delhi State (Majumdar 1958). In an earlier communication the author (Mahajan 1961) briefly reported a collection of sixty-two species belonging to seventeen different families based on one year's (1959-60) study of the fish fauna of Muzaffarnagar District. The present paper records a more exhaustive study of the same area carried out for more than two and a half years (July 1959-February

1962). In all, eighty-four different species were collected representing forty-nine genera and twenty families as compared with sixty species reported by Sinha & Shiromny (loc. cit.) from Meerut and sixty-two by Majumdar (loc. cit.) from Delhi State.

MATERIAL AND METHODS

The fishes were obtained with the help of fishermen. Cast net was most commonly used although sweeping, towing, and bag nets were also frequently employed. Visits to the Muzaffarnagar fish market were made almost daily during this period (July 1959-February 1962) while collections at the fishing sites were done once every week. Brief notes on the nature and size of catch were made at the spot. Representative specimens of each species were brought to the laboratory. Coloration and any other feature of special interest was recorded from the fresh fish. This was followed by detailed taxonomic examination either in fresh or preserved specimens as convenient.

PHYSICAL FEATURES

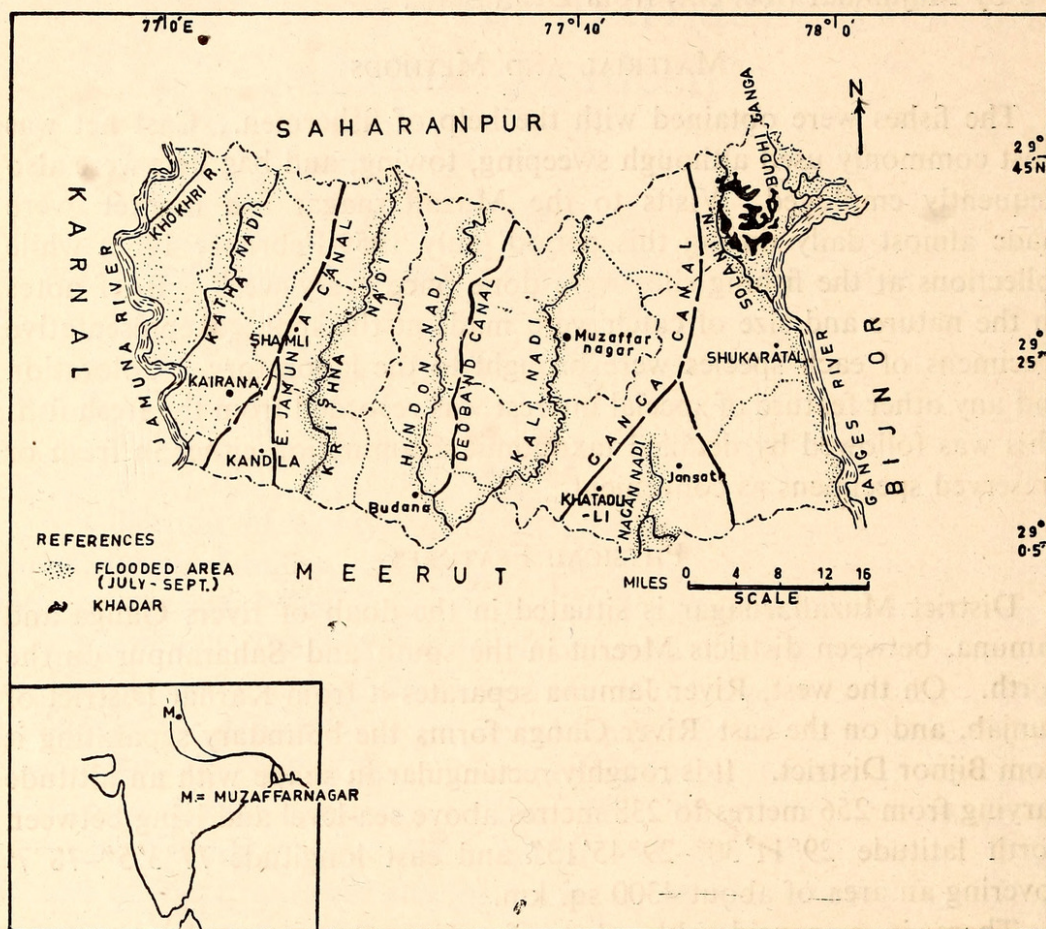
District Muzaffarnagar is situated in the doab of rivers Ganga and Jamuna, between districts Meerut in the south and Saharanpur on the north. On the west, River Jamuna separates it from Karnal District of Punjab, and on the east River Ganga forms the boundary separating it from Bijnor District. It is roughly rectangular in shape with an altitude varying from 256 metres to 238 metres above sea-level and lying between north latitude $29^{\circ}11'30''$ - $29^{\circ}45'15''$ and east longitude $77^{\circ}3'5''$ - $78^{\circ}7'$ covering an area of about 4300 sq. km.

~~There is a~~ considerable slope from north to south. This can be judged from the fact that within half a mile from the northern boundary of the district to within a short distance below the southern boundary no less than five falls are required on Ganges canal to moderate the otherwise *excessive slope* of the channel canal. This, coupled with the fact that the main rivers have just descended into the plains from the Himalayas, accounts for a number of hill-stream fishes recorded below.

FISHERY RESOURCES

The district has rich fishery resources (see map). Besides the two large rivers (Ganga and Jamuna) mentioned above, there are eight smaller ones which run through it from north to south. They are : Budi Ganga, Solani *nadi*, Nagan *nadi*, Kali *nadi*, Hindon *nadi*, Krishna *nadi*, Katha *nadi*, and Khokhar *nadi*. Moreover, there are four irrigation canals : Ganges canal, Anupshehr branch canal, Deoband branch canal, and East Jamuna canal. In addition to these ten rivers and four irrigation canals there are numerous perennial and seasonal ponds and lakes all over the

district which are fed by local canal distributaries, flood, and rainwater drains. Nevill (1903) in the District Gazetteer estimates that approximately 327,310 acres of land was under water. The average rainfall



varies from 84 cm. to 102 cm. in different parts of the district. This richness of water resources has resulted in a varied fish fauna fairly representative of the north Indian fresh waters.

THE FISH FAUNA

The detailed list of the fishes collected during the period is given below. The classification is after Berg (1940). Local names are given wherever available. Information about the maximum size observed, habitat, seasonal availability, breeding habits, or any other peculiarity noted during the course of the work is also recorded briefly.

DISCUSSION

An analysis of the fishes listed shows that 75% of the species belong to a single order, viz. Cypriniformes. About thirteen species are known to have varying degrees of air-breathing capacity. Of these, ten have remarkable accessory respiratory organs and one (*Amphipnous cuchia*) is in the words of Das (1940) the 'most highly evolved air-breathing fish

among the Indian teleosts'. It will also be observed that a number of genera, e.g. *Gagata*, *Glyptothorax*, and *Garra*, characteristic of hill streams are found here. The only possible explanation of their occurrence in considerable numbers, specially during winter and monsoon, is that they are swept along the current and find conditions at least tolerable for survival and growth. In this connection, the presence of an excessive slope as described in the physical features of this region assumes significance. Such genera as *Crossocheilus*, *Glossogobius*, *Noemacheilus*, and *Puntius*, characteristic of the upper reaches of rivers, are very well represented here. The fish fauna of the district may, therefore, be characterized as sub-tropical with a mixture of Himalayan forms.

The regular availability of *Clarias batrachus* (Linn.) from a number of ponds in the district throughout the year is interesting in view of the report by Sinha & Shiromny (1953) that the species has only a localized distribution 'being found only in few ponds at Garh-Mukteshwar in the months of April, May, and June'. It appears that *Clarias batrachus* is present throughout the year in these ponds, but these fishes are easily netted only in April, May, and June as most of the water dries up at that time and the level is the lowest. Netting from July onwards becomes increasingly difficult as the water level rises with the onset of rains. The fish finds a safe place in the bottom of the pond which is its natural habitat.

The distribution of *Mystus corsula* (Ham.) is reported (Day 1878) to be from 'Orissa through Bengal and Assam'. The only report of its occurrence in this region is by Sinha & Shiromny (1953) from Hindon nadi in Meerut District. Similarly *Sicamugil* (*Mugil*) *cascasia* (Hamilton) has been recorded by Day from 'rivers of N.W. Provinces and Assam'. The only report of the occurrence of this species in this region is from Jamuna River from Delhi State (Majumdar 1958).

Although Berg's classification (1940, 1955) has been followed, certain misspellings and changes in current generic names pointed out by Briggs (1961) and others have been duly taken note of and corrections made accordingly. For example, *Noemacheilus* (van Hasselt 1823), wrongly spelt as *Nemachilus* by Berg (1940, 1955) perhaps following Günther (1868); and *Channa* (Scopoli 1777, as pointed by Myers & Shapovalov 1931) instead of *Ophiocephalus* (Hamilton 1822) or *Ophicephalus* (Bloch 1793). Generic names *Rhinomugil* Gill and *Sicamugil* Fowler have been preferred following Pillay (1962). Briggs (1961) pointed out that *Synbranchus* (Bloch 1795) rather than *Symbranchus* (Müller 1841) is correct. If so, it would be reasonable to spell the order named after this genus Synbranchiformes instead of Symbranchiformes (Berg 1940).

For most of the fishes the breeding season is the monsoon (July-Sept.), but some species are known to breed much before the onset of the monsoon, as has been observed in *Mystus*, *Wallago*, *Channa*, and *Mastacembelus*.

The behaviour, courtship, spawning, migration, etc. of these fishes would be an interesting and important subject for further investigation.

At least 33% of the fishes listed are of considerable economic importance. A proper development of the fishery of the area can make it a great fish-producing centre, supplying fish to great consuming centres such as Calcutta and Delhi. Even at present all large-sized fish are sent to Calcutta. This aspect of the subject is proposed to be dealt in a separate paper.

ACKNOWLEDGEMENTS

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* References marked with asterisk have not been consulted in original and have been quoted from Briggs (1961).

TABLE

S. No.	Scientific name	Local name	Maximum size observed	Remarks (Habitat, seasonal availability, etc.)
Order CLUPEIFORMES				
I. Family Clupeidae				
1	<i>Gadusia chapra</i> (Hamilton)	Khera	16 cm.	Riverine, available throughout the year in large numbers.
II. Family Notopteridae				
2	<i>Notopterus chitala</i> (Hamilton)	Chital, Mor	1·2 m.	Mostly from Ganga and Jamuna
3	<i>Notopterus notopterus</i> (Pallas)	Phulai, Patra	45 cm.	Available from rivers, ponds, and lakes throughout the year in fairly good numbers. Sometimes marketed alive without water.
Order CYPRINIFORMES				
Division CYPRINI				
III. Family Cyprinidae				
4	<i>Oxygaster bacaila</i> (Hamilton)	Chal, Chilwa	31 cm.	Riverine, available throughout the year in large numbers.
5	<i>Laubuca atpar</i> (Hamilton)	Piocha	10 cm.	Riverine, available throughout the year in large numbers.
6	<i>Barilius bola</i> (Hamilton)	Gulab	31 cm.	Riverine. A few specimens available occasionally. Fished in greater numbers during winter (December-February).

S. No.	Scientific name	Local name	Maximum size observed	Remarks (Habitat, seasonal availability, etc.)
7	<i>Barilius barna</i> (Hamilton)	Popta	10 cm.	Rivers, ponds, and lakes. Rather uncommon.
8	<i>Barilius vaga</i> (Hamilton)			
9	<i>Barilius modestus</i> (Day)			
10	<i>Barilius blendensis</i> (Hamilton)	—	20 cm.	Mostly confined to Ganga.
11	<i>Barbus (Tor) tor</i> (Hamilton)	Mahseer, Tor	62 cm.	Mostly from Ganges or Hindon nadi.
12	<i>Puntius chagunia</i> (Hamilton)	Chhiban	45 cm.	Available from all the rivers throughout the year but more abundant during summer.
13	<i>Puntius sarana</i> (Hamilton)	Durai, Putha	30 cm.	The most common mahseer both from rivers and ponds.
14	<i>Puntius conchoniis</i> (Hamilton)	Puthi	Generally of small size not exceeding 12.5 cm.	Available from ponds and rivers alike throughout the year but specially after monsoon (September-November).
15	<i>Puntius stigma</i> (Hamilton)			
16	<i>Puntius chrysopterus</i> (Hamilton)			
17	<i>Puntius punjabensis</i> (Day)			
18	<i>Puntius sophore</i> (Hamilton)			
19	<i>Puntius ticto</i> (Hamilton)			

20	<i>Aspidoparia morar</i> (Hamilton)	Moraki	18 cm.	Both from rivers and ponds. Occasionally available throughout the year.
21	<i>Crossocheilus latius punjabensis</i> Mukerji	Rori	20 cm.	Riverine. Occasionally available specially after rains and during winter.
22	<i>Amblypharyngodon mola</i> (Hamilton)	Mohil	10 cm.	Often fished both from ponds and rivers in fairly good numbers.
23	<i>Rohitee cotio</i> (Hamilton)	Gurda	10 cm.	Most abundant among the minor carps, fished throughout the year from rivers and ponds.
24	<i>Catla catla</i> (Hamilton)	Katla	180 cm.	Available from ponds and rivers. Used for pisciculture. Highly prized as food. Mostly sent to Calcutta.
25	<i>Esomus danricus</i> (Hamilton)	—	10 cm.	Only occasionally netted but found both in ponds and rivers.
26	<i>Cirrhina mrigala</i> (Hamilton)	Naini, Narain, or Mrigal	90 cm.	More frequently available than either Catla or Rohu both from ponds and rivers. Large-sized fish mostly sent to Calcutta. Weighs up to ten kg.
27	<i>Cirrhina reba</i> (Hamilton)	Raibata, Reba	31 cm.	One of the most frequently seen fish in the market. Available from both ponds and rivers in large numbers.
28	<i>Labeo rohita</i> (Hamilton)	Rohu	90 cm.	The most prized food fish both from ponds and rivers. Used for pisciculture. Big-sized fish are sent to Calcutta.
29	<i>Labeo calbasu</i> (Hamilton)	Kalbauns	45 cm.	The most common major carp in Muzaffarnagar market.
30	<i>Labeo gonius</i> (Hamilton)	Kursa	45 cm.	Generally available throughout the year from both ponds and rivers. Less during monsoon (July-September), more common from October to February.
31	<i>Labeo deero</i> (Hamilton)	Chilwa	15 cm.	Mostly riverine, frequently available.

S. No.	Scientific name	Local name	Maximum size observed	Remarks (Habitat, seasonal availability, etc.)
7	<i>Barilius barna</i> (Hamilton)	Popta	10 cm.	Rivers, ponds, and lakes. Rather uncommon.
8	<i>Barilius vagra</i> (Hamilton)			
9	<i>Barilius modestus</i> (Day)			
10	<i>Barilius blendensis</i> (Hamilton)	—	20 cm.	Mostly confined to Ganga.
11	<i>Barbus (Tor) tor</i> (Hamilton)	Mahseer, Tor	62 cm.	Mostly from Ganges or Hindon nadi.
12	<i>Puntius chagunio</i> (Hamilton)	Chhiban	45 cm.	Available from all the rivers throughout the year but more abundant during summer.
13	<i>Puntius sarana</i> (Hamilton)	Durai, Putha	30 cm.	The most common mahseer both from rivers and ponds.
14	<i>Puntius conchoniis</i> (Hamilton)	Puthi	Generally of small size not exceeding 12.5 cm.	Available from ponds and rivers alike throughout the year but specially after monsoon (September-November).
15	<i>Puntius stigma</i> (Hamilton)			
16	<i>Puntius chrysopterus</i> (Hamilton)			
17	<i>Puntius punjabensis</i> (Day)			
18	<i>Puntius sophore</i> (Hamilton)			
19	<i>Puntius ticto</i> (Hamilton)			
20	<i>Aspidoparia morar</i> (Hamilton)	Moraki	18 cm.	Both from rivers and ponds. Occasionally available throughout the year.
21	<i>Crossocheilus latius punjabensis</i> Mukerji	Rori	20 cm.	Riverine. Occasionally available specially after rains and during winter.
22	<i>Amblypharyngodon mola</i> (Hamilton)	Mohil	10 cm.	Often fished both from ponds and rivers in fairly good numbers.
23	<i>Rohitee cotio</i> (Hamilton)	Gurda	10 cm.	Most abundant among the minor carps, fished throughout the year from rivers and ponds.
24	<i>Catla catla</i> (Hamilton)	Katla	180 cm.	Available from ponds and rivers. Used for pisciculture. Highly prized as food. Mostly sent to Calcutta.
25	<i>Esomus danricus</i> (Hamilton)	—	10 cm.	Only occasionally netted but found both in ponds and rivers.
26	<i>Cirrhina mrigala</i> (Hamilton)	Naini, Narain, or Mrigal	90 cm.	More frequently available than either Catla or Rohu both from ponds and rivers. Large-sized fish mostly sent to Calcutta. Weighs up to ten kg.
27	<i>Cirrhina reba</i> (Hamilton)	Raibata, Reba	31 cm.	One of the most frequently seen fish in the market. Available from both ponds and rivers in large numbers.
28	<i>Labeo rohita</i> (Hamilton)	Rohu	90 cm.	The most prized food fish both from ponds and rivers. Used for pisciculture. Big-sized fish are sent to Calcutta.
29	<i>Labeo calbasu</i> (Hamilton)	Kalbauns	45 cm.	The most common major carp in Muzaffarnagar market.
30	<i>Labeo gonius</i> (Hamilton)	Kursa	45 cm.	Generally available throughout the year from both ponds and rivers. Less during monsoon (July-September), more common from October to February.
31	<i>Labeo dero</i> (Hamilton)	Chilwa	15 cm.	Mostly riverine, frequently available.

S. No.	Scientific name	Local name	Maximum size observed	Remarks (Habitat, seasonal availability, etc.)
32	<i>Labeo pangusia</i> (Hamilton)	—	15 cm.	Both from rivers and ponds throughout the year in fairly good numbers.
33	<i>Labeo doycheilus</i> (Hamilton)	—	91 cm.	Fairly common throughout the year in both rivers and ponds.
34	<i>Garra gotyla</i> (Gray)	Pathar chat	15 cm.	A few specimens occasionally netted from Solani nadi and Kali nadi.
35	<i>Danio devario</i> (Hamilton)	—	10 cm.	Mainly from ponds.
IV. Family Cobitidae				
36	<i>Noemacheilus corica</i> (Hamilton)	—	5 cm.	Mostly netted during rainy season along the Ganges and Jamuna in pools and puddles formed after floods.
37	<i>Noemacheilus botia</i> (Hamilton)	—	7.5 cm.	Same as <i>Noemacheilus corica</i> except that <i>Noemacheilus botia</i> is more widely distributed.
38	<i>Noemacheilus zonatus</i> (McClelland)	—	5 cm.	
39	<i>Noemacheilus montanus</i> (McClelland)	—	10 cm.	
40	<i>Botia lohachata</i> (Chaudhri)	Billi, Bagatia	15 cm.	Available from ponds and small rivers like Kali nadi, Solani nadi, etc. More common than any of the species of <i>Noemacheilus</i> .
41	<i>Lepidocephalichthys guntea</i> (Hamilton)	—	10 cm.	Very rarely netted.

Division SILURI

V. Family Siluridae

42. *Wallago attu*
(Bloch & Schneider) Mulley, Ilaichi 150 cm. By far the most common cat-fish and economically one of the most important. Available from all rivers and many ponds of large size. Breeding starts towards the end of April. The fish becomes comparatively scarce during monsoon (July-September) but becomes plentiful in winter (November-March).
43. *Ompok bimaculatus*
(Bloch) Pabda 30 cm. Mostly riverine commonly available throughout the year.

VI. Family Bagridae

44. *Mystus (Osteobergus)*
seenghala (Sykes) Seenghara 90 cm. Next only to *Wallago attu* in its economic importance among cat-fishes and perhaps more prized as food. Less common during monsoon (July-September) but becomes increasingly abundant from October onward to April. Available from all rivers and big ponds. Breeding starts in March or April.
45. *Mystus (Mystus) cavasius*
(Sykes) Kevas 25 cm. Mostly from rivers although some ponds may also harbour them. Commonly available throughout the year.
46. *Mystus (Mystus) vittatus*
(Bloch) Tengan 15 cm. Very common from both ponds and rivers. Can be transported alive small distances (15 minutes to half an hour) without water.
47. *Mystus (Mystus) aor*
(Hamilton) Aor 75 cm. Mostly riverine. Much less common than Seenghara.
48. *Mystus bleekeri*
(Hamilton) Tengan 15 cm. Common in rivers and ponds.

S. No.	Scientific name	Local name	Maximum size observed	Remarks (Habitat, seasonal availability, etc.)
32	<i>Labeo pangusia</i> (Hamilton)	—	15 cm.	Both from rivers and ponds throughout the year in fairly good numbers.
33	<i>Labeo doycheilus</i> (Hamilton)	—	91 cm.	Fairly common throughout the year in both rivers and ponds.
34	<i>Garra gotyla</i> (Gray)	Pathar chat	15 cm.	A few specimens occasionally netted from Solani nadi and Kali nadi.
35	<i>Danio devario</i> (Hamilton)	—	10 cm.	Mainly from ponds.
IV. Family Cobitidae				
36	<i>Noemacheilus corica</i> (Hamilton)	—	5 cm.	Mostly netted during rainy season along the Ganges and Jamuna in pools and puddles formed after floods. Same as <i>Noemacheilus corica</i> except that <i>Noemacheilus botia</i> is more widely distributed.
37	<i>Noemacheilus botia</i> (Hamilton)	—	7.5 cm.	
38	<i>Noemacheilus zonatus</i> (McClelland)	—	5 cm.	
39	<i>Noemacheilus montanus</i> (McClelland)	—	10 cm.	
40	<i>Botia lohachata</i> (Chaudhri)	Billi, Bagatia	15 cm.	Available from ponds and small rivers like Kali nadi, Solani nadi, etc. More common than any of the species of <i>Noemacheilus</i> .
41	<i>Lepidocephalichthys guntea</i> (Hamilton)	—	10 cm.	Very rarely netted.

Division SILURI

V. Family Siluridae

42	<i>Wallago attu</i> (Bloch & Schneider)	Mulley, Ilaichi	150 cm.	By far the most common cat-fish and economically one of the most important. Available from all rivers and many ponds of large size. Breeding starts towards the end of April. The fish becomes comparatively scarce during monsoon (July-September) but becomes plentiful in winter (November-March).
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43	<i>Ompok bimaculatus</i> (Bloch)	Pabda	30 cm.	Mostly riverine commonly available throughout the year.
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VI. Family Bagridae

44	<i>Mystus (Osteobergus) seenghala</i> (Sykes)	Seenghara	90 cm.	Next only to <i>Wallago attu</i> in its economic importance among cat-fishes and perhaps more prized as food. Less common during monsoon (July-September) but becomes increasingly abundant from October onward to April. Available from all rivers and big ponds. Breeding starts in March or April.
45	<i>Mystus (Mystus) cavasius</i> (Sykes)	Kevas	25 cm.	Mostly from rivers although some ponds may also harbour them. Commonly available throughout the year.
46	<i>Mystus (Mystus) vittatus</i> (Bloch)	Tengan	15 cm.	Very common from both ponds and rivers. Can be transported alive small distances (15 minutes to half an hour) without water.
47	<i>Mystus (Mystus) aor</i> (Hamilton)	Aor	75 cm.	Mostly riverine. Much less common than Seenghara.
48	<i>Mystus bleekeri</i> (Hamilton)	Tengan	15 cm.	Common in rivers and ponds.

S. No.	Scientific name	Local name	Maximum size observed	Remarks (Habitat, seasonal availability, etc.)
49	<i>Mystus corsula</i> (Hamilton)	—	30 cm.	Only occasionally met with.
50	<i>Rita rita</i> (Hamilton)	Khagga	120 cm.	Mostly riverine. Very common during monsoon but suddenly disappears with the end of rains (beginning of October). From October to June only stray specimens up to 15 cm. in length are netted, but with the onset of monsoon specimens 30-120 cm. in length become suddenly abundant. These fish have a remarkable power of subsistence outside water and are frequently marketed alive (without water) although no special accessory respiratory organs are known to exist.
VII. Family Chacidae				
51	<i>Chaca chaca</i> (Hamilton)	—	16.2 cm.	Only one specimen from Ganga.
VIII. Family Schilbeidae				
52	<i>Eutropiichthys vacha</i> (Hamilton)	Charkhi, Bacha	35 cm.	Mostly riverine. Common throughout the year, but more so during winter. Excellent sport.
53	<i>Silonia silondia</i> (Hamilton)	Silond	170 cm.	Found only in Ganga, Jamuna, and Hindon <i>nadi</i> throughout the year. In Kali <i>nadi</i> , Solani <i>nadi</i> , and others only during monsoon.
54	<i>Clupisoma garua</i> (Hamilton)	Bachua	30 cm.	Mostly riverine, available throughout the year.



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