

ON A COLLECTION OF FISHES FROM HINDON RIVER, DISTRICT SAHARANPUR (UTTAR PRADESH)

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INTRODUCTION

The fish fauna of district Saharanpur has been found to be taxonomically interesting by Tilak and Husain (1975, 1977, 1980, 1981) who described new taxa, discovered the distribution of eastern Indian forms in the streams of this area and confirmed the taxonomic validity of some specimens based on the collection from this district. The fish fauna of this district has earlier been studied by Day (1875-78), Falconer (1868), Myers (1960) etc. The above mentioned workers studied the fish fauna of this district with great enthusiasm because of the interesting topographical features of the region comprising montane, submontane and plain areas which depict ecologically different terrains harbouring specialised fish fauna. It should, therefore, be taxonomically and zoogeographically interesting to study the various ichthyo-faunal elements of different ecological niches available in the district. In order to achieve this end, a systematic study of the fish fauna of various waterways traversing through montane, submontane and plain areas have been envisaged so that a thorough ecological inter-relationships between the main faunal elements of fish from different ecologically specialised areas can be attempted. In this context, therefore, the results of the study of fish collected from Hindon river from montane, submontane and plain areas and presented in this paper. A study of the fish fauna of Hindon river in the extreme southern part which is completely plain has been done by Sinha and Shiromani (1953) and Mahajan (1966).

THE HINDON RIVER

The Hindon river begins as a small stream from Siwalik in the north of Muzaffarabad pargana in Saharanpur district. Kaluwal Rau and Chahchani streams also merge with Hindon river in pargana Haraura. Then it flows across that pargana to the western border, enters Nagal and passes south through pargana Deoband into district Muzaffarnagar. In the montane region, the river flows through large and medium sized boulders with a swift current. The river flows through the fields in the submontane region. In this region, the river has muddy bottom. In the plains, the river flows on a stretch of light sandy soil. Several seasonal rivers such as Nagdeo, Paondhoe and Dhamola also merge with Hindon in this district.

SYSTEMATIC ACCOUNT

The fishes from river Hindon have been collected from the montane and submontane

regions falling in Siwaliks and the plain areas in district Saharanpur for three years during all the seasons. As far as possible, the collection was made from all different ecological niches in the river i.e. understones, pools, by the side of the running streams, areas overgrown with vegetation, muddy and sandy bed etc. The specimens have been thoroughly examined and identified. The list of the fish fauna collected and studied is given below in a systematic order.

Super-order OSTARIOPHYSI
 Order CYPRINIFORMES
 Family CYPRINIDAE
 Sub-family RASBORINAE

1. *Amblypharyngodon mola* (Hamilton); 2. *Aspidoparia morar* (Hamilton); 3. *Barilius barila* Hamilton; 4. *Barilius bendelisis* Hamilton; 5. *Barilius vagra* Hamilton; 6. *Brachydanio rerio* (Hamilton); 7. *Danio devario* (Hamilton); 8. *Esomus danricus* (Hamilton); 9. *Parluciosoma daniconius daniconius* (Hamilton).

Sub-family CULTRINAE

10. *Chela (Chela) cachi* Hamilton

Sub-family CYPRININAE

11. *Puntius sarana* Hamilton; 12. *Puntius conchonus* Hamilton; 13. *Puntius chola* Hamilton; 14. *Puntius sophore* Hamilton; 15. *Puntius ticto* Hamilton; 16. *Catla catla* (Hamilton); 17. *Cirrhinus mrigala* (Hamilton); 18. *Cirrhinus reba* (Hamilton); 19. *Labeo calbasu* (Hamilton); 20. *Labeo rohita* (Hamilton).

Sub-family GARRINAE

21. *Crossocheilus latius* (Hamilton); 22. *Garra gotyla gotyla* (Gray).

Family COBITIDAE

Sub-family NOEMACHEILINAE

23. *Noemacheilus botia* (Hamilton)

Sub-family COBITINAE

24. *Lepidocephalus (Lepidocephalichthys) guntea* (Hamilton)

Order SILURIFORMES

Family BAGRIDAE

25. *Mystus bleekeri* (Day); 26. *Mystus vittatus* (Bloch); 27. *Rita rita* (Hamilton)

Family SILURIDAE

28. *Ompok bimaculatus* (Bloch); 29. *Wallago attu* (Schneider)

Family SISORIDAE

30. *Glyptothorax pectinopterus* (McClelland)

Family AMBLYCIPITIDAE

31. *Amblyceps mangois* (Hamilton)

Family HETEROPNEUSTIDAE

32. *Heteropneustes fossilis* (Bloch)

Super-order ATHERINOMORPHA

Order ANTHERINIFORMES

Family BELONIDAE

33. *Xenentodon cancila* Hamilton

Order CHANNIFORMES

Family CHANNIDAE

34. *Ophiocephalus gachua* Hamilton; 35. *Ophiocephalus marulius* Hamilton; 36. *Ophiocephalus punctatus* (Blotch); 37. *Ophiocephalus striatus* (Bloch).

Order PERCIFORMES

Family GOBIIDAE

38. *Glossogobius gutum* (Hamilton)

Family NANDIDAE

39. *Nandus nandus* Hamilton

Family CHANDIDAE

40. *Chanda ranga* (Hamilton); 41. *Chanda nama* (Hamilton)

Family BELONIIDAE

42. *Colisa fasciatus* (Schneider); 43. *Colisa lalius* (Hamilton)

Order MASTACEMBELIFORMES

Family MASTACEMBELIDAE

44. *Mastacembelus armatus* (Lacepede); 45. *Mastacembelus pancalus* (Hamilton).

REMARKS

Among the species recorded from this river, there is only one species i.e. *Glyptothorax pectinopterus* (McClelland) which is restricted to the montanus part of the

river because it needs strong flow of water and rocky bottom to adhere to and feed on the algae and insects entangled in them. This species is rarely recorded in submontane region unless it gets incidentally washed down due to floods. This represents 2.22% of the fish fauna of this river recorded here. In the submontane region, there are quite a number of species such as *Barilius barila* Hamilton, *Barilius bendelisis* Hamilton, *Barilius vagra* Hamilton, *Garra gotyla* (Gray) etc. which live both in the lower reaches of the hilly tract on the one side and on higher side of the plain region; they however mostly inhabit the submontane terrain where the flow of water is comparatively fast and the bed is stony or pebbly. They do not normally extend to the region with a muddy or clayey water. The species of the submontane region enumerated above represent 8.89% of the fish fauna of the river recorded here. The rest of the species mostly live in the plain area where the flow of water is slow, the stream is infested with aquatic vegetation and the bed is muddy. These species sometimes extend into the lower reaches of the submontane part of the stream. These species represent 88.91% of the total fauna recorded from the stream. Normally the species of the three ecological regions viz. montane, submontane and plain areas remain restricted to their respective habitats, but under exceptional circumstances particularly during floods or during breeding season, some of them do enter into the adjoining ecological areas. This ecological distribution of the species in a stream showing all the three types of ecological niches is normally of a fixed nature and changes only under exceptional circumstances. This affords an ecological distinction to the fauna of the respective ecological niches in the stream.

KEY TO IDENTIFICATION

1. The anterior vertebrae modified to form Weberian apparatus..... (2)
The anterior vertebrae not modified to form Weberian apparatus(33)
2. Body with scales; scales usually cycloid (3)
Body without scales.....(26)
3. Barbel one or two pairs or none; no sub-ocular spines present. Scales generally large; eyes never covered with skin..... (4)
Barbels three or four pairs; sometimes a sub-ocular spine present below the eye; scales generally small, embedded in skin or absent; eyes sometimes covered with skin.....(25)
4. Abdomen or a part of it keeled but not serrated; dorsal fin always in the posterior half of body.....
..... Sub-family Cultrinae : *Chela* (*Chela*) *cachius* Hamilton
Abdomen round or flat; dorsal fin not in posterior half of body (5)
5. Origin of dorsal fin opposite the ventral fin or little before..... (6)

- Origin of dorsal fin clearly behind the ventral fin.....(17)
6. Upper lip continuous with the skin of the snout; lower lip with or without a suctorial disc Sub-family Garrinae (7)
- Upper lip separated from the skin of the snout by a deep groove; lower lip without a suctorial disc..... (8)
7. Upper and lower lip continuous at the angles of the jaws; lower lip with a suctorial disc.....*Garra gotyla gotyla* (Gray)
- Upper and lower lips not continuous; lower lip without a suctorial disc *Crossocheilus latius* (Hamilton)
8. Upper lip absent *Catla catla* (Hamilton)
- Upper lip present (9)
9. A symphyseal knob present in lower jaw.....(10)
- No symphyseal knob in lower jaw.....(11)
10. Lateral line scales 35-38; dorsal fin rays 10-12.....
..... *Cirrhinus reba* (Hamilton)
- Lateral line scales 40-45; dorsal fin rays 15-16.....
.....*Cirrhinus mrigala* (Hamilton)
11. Lower lip with an inner transverse fold; mouth inferior(16)
- Lower lip without an inner transverse fold; mouth terminal.....(12)
12. Barbels present(13)
- Barbels absent(14)
13. Four barbels; last undivided ray of dorsal fin serrated; dorsal without colour markings.....*Puntius sarana* Hamilton
- Two maxillary barbels; last undivided ray of dorsal fin bony and smooth; dorsal with colour spot.....*Puntius chola* Hamilton
14. Last undivided ray of the dorsal fin bony and smooth; middle dorsal rays with the dark spot at the base*Puntius sophore* Hamilton
- Last undivided ray of dorsal fin bony and serrated.....(15)
15. Depth of body 2.7 to 2.9 times in length of body.....
.....*Puntius conchonus* Hamilton
- Depth of body three or more times in total length
.....*Puntius ticto* Hamilton

16. Branched dorsal rays 13-15; colour uniformly dark.....
*Labeo calbasu* (Hamilton)
 Branched dorsal rays 12-13; colour brownish on back and silvery on
 sides.....*Labeo rohita* (Hamilton)
17. Lateral line incomplete.....*Amblypharyngodon mola* (Hamilton)
 Lateral line complete(18)
18. Dorsal fin does not extend to above the anal fin; xanal fin with 5 to 11
 branched rays.....(19)
 Dorsal fin generally extending over the anal; anal fin with 7 to 33
 branched rays.....(21)
19. A symphysial knob present in the lower jaw fitting into an
 emargination in the upper jaw; mouth oblique; both lips present.....(20)
 No symphysial knob in the lower jaw present; mouth inferior; lower
 jaw with a sharp crescentic edge but with no lip.....
*Aspidoparia morar* (Hamilton)
20. Barbels absent*Parluciosoma-daniconius daniconius* (Hamilton)
 Maxillary barbels very long*Esomus danricus* (Hamilton)
21. Sub-orbital ring of bones distinctly broad and prominent; cleft of mouth
 often extending beyond anterior margin of eye(22)
 Sub-orbital ring of bones not broad; cleft of mouth extending beyond
 anterior margin of eye.....(23)
22. Dorsal fin with 7 branched rays; anal fin with 11 to 13 rays.....
*Brachydanio rerio* (Hamilton)
 Dorsal fin with 18 and 19 branched rays; anal fin with 15 to 16 rays.....
*Danio devario* (Hamilton)
23. Cleft of mouth extending upto below the middle of orbit; body with 10
 and 14 dark verticle bands*Barilius vagra* Hamilton
 Cleft of mouth extending to below anterior third of the orbit.....(24)
24. Anal fin with 7 to 8 branched rays.....*Barilius bendelisis* Hamilton
 Anal fin with 10 to 13 branched rays*Barilius braila* Hamilton
25. An erectile spine present near the orbit.....
*Lepidocephalus (Lepidocephalichthys) guntea* (Hamilton)

- An erectile spine absent near the orbit...*Noemacheilus botia* (Hamilton)
26. Anal fin long*Heteropneustes fossilis* (Bloch)
 Anal fin short or of moderate length(27)
27. Nostrils widely separated(28)
 Nostrils close together(30)
28. Barbels six; eyes sub-cutaneous *Rita rita* (Hamilton)
 Barbels eight eyes with free orbital margins(29)
29. Occipital process 1.5 to 2.0 times as long as wide at the base; body without longitudinal stripes*Mystus bleekeri* (Day)
 Occipital process 3 to 5 times as long as wide at the base; body with longitudinal stripes.....*Mystus vittatus* (Bloch)
30. Lower surface of the head and body flat; paired fins horizontal.....
*Glyptothorax pectinopterus* (McClelland)
 Lower surface of head and body not greatly flattened.....(31)
31. Dorsal fin spineless.....(32)
 Dorsal fin with a short spine embeded in the skin of the dorsal fin.....
*Amblyceps mangois* (Hamilton)
32. Eyes with a free orbital margin and lie above the level of corner of mouth and not visible from underside of head; gape of mouth oblique, wide and very long reaching to or beyond anterior border of eye; pectoral not reaching beyond origin of anal..... *Wallago attu* (Schneider)
 Eyes sub-cutaneous; lie posterior to corner mouth and visible from underside of head; pectoral usually surpassing the origin of anal.....
*Ompok bimaculatus* (Bloch)
33. Size small; branchiostegal rays 4 to 15; opercular bones unarmed; pelvic fins abdominal.....*Xenentodon cancila* (Hamilton)
 Size normal to large; branchiostegal rays 4; opercular bones sometimes armed.....(34)
34. Head snake like; suprabranchial organ present; only elongated dorsal fin present.....(35)
 Head not snake like; suprabranchial organ absent; dorsal fin normally short and 2nd dorsal fin usually present(38)

35. 15-20 scales between snout and origin of dorsal fin; 9-10 scales between the orbit and angle of pre-operculum; dorsal rays 37-55(36)
 12-13 scales between snout and origin of dorsal fin; 4-5 scales between orbit and angle of pre-operculum; dorsal rays 29-37(37)
36. 18-20 scales between the snout and the origin of dorsal fin; 9 scales between the orbit and the angle of pre-operculum; 37-45 rays in the dorsal fin.....*Ophiocephalus striatus* (Bloch)
 15-16 scales between the snout and the origin of dorsal fin; 10 scales between the orbit and the angle of pre-operculum; 45-55 rays in the dorsal fin.....*Ophiocephalus marulius* Hamilton
37. Ventral fin 2/5th of the length of pectoral; dorsal with 32-37 rays; pectoral fin with alternating orange and blue transverse bands and no band on body.....*Ophiocephalus gachua* Hamilton
 Ventral fin 2/3rd - 3/4th of the length of pectoral; dorsal fin with 29-32 rays; pectoral fin without transverse bands; bands or patches from back passes down the abdomen*Ophiocephalus punctatus* (Bloch)
38. Body cylindrical and elongated(39)
 Body neither cylindrical nor elongated(40)
39. Anal and dorsal fins confluent with the caudal.....
*Mastacembelus armatus* (Lacépède)
 Anal and dorsal fins distinct from the caudal fin
*Mastacembelus pancalus* (Hamilton)
40. Pelvics united to form a sucking disc.. *Glossogobius gutum* (Hamilton)
 Pelvics not united to form a sucking disc.....(41)
41. Accessory respiratory organ absent(42)
 Accessory respiratory organ present(44)
42. Spinous and soft dorsals connected at base; procumbent spine before dorsal fin present.....(43)
 Spinous and soft dorsals continuous; no procumbent spine before dorsal fin present*Nandus nandus* Hamilton
43. Lower jaw with two pairs of large crooked canniniform teeth.....
*Chanda nama* (Hamilton)
 No canniniform teeth in lower jaw; all teeth small and normal.....
*Chanda ranga* (Hamilton)

44. Soft rays of dorsal 9 to 13; body banded and sexual dimorphism not much pronounced..... *Colisa fasciatus* (Schneider)
Soft rays of dorsal 7 to 8; a marked sexual dimorphism present and the male is intensely banded with scarlet and azure blue bands.....
..... *Colisa lalius* (Hamilton)

SUMMARY

Hindon river at montane, submontane and the plain areas of Saharanpur district has been surveyed for three years covering all seasons. Altogether 45 species have been collected from the river and have been studied, identified and listed in the paper. The analysis of species occurring in different zones has also been given. A key to the identification of the species is provided.

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