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# Fish Fauna of the River Ravi and Its Some Tributaries with a New Record of *Ailia puncata* and *Clupisoma naziri* for Punjab State and Union Territory of Jammu and Kashmir, India

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## Abstract

Fish fauna of the river Ravi and its some tributaries in Chamba district (H.P.) and from Shahpur (H.P.) to Gogga Mahal, Amritsar (Punjab) reported earlier and present survey from Ranjit Sagar dam to Kathour, Pathankot, Punjab, including Kathua district, has revealed the presence of 97 fish species belonging to 8 orders, 18 families and 53 genera. Among various orders, there is dominance of Cypriniformes (54 spp.) followed by Siluriformes (26 species), Percformes (9 species), Synbranchiformes (3 species), Osteoglossiformes (2 species) and Clupeiformes, Salmoniformes and Beloniformes (1 species, each). The list also includes a new record of *Ailia punctata* and *Clupisoma naziri* (reported earlier from Pakistan) for Punjab state and Union territory of Jammu and Kashmir. *Salmo trutta fario* noticed in Sewa River is also included in the present list. Like other Indian states, fish fauna is rapidly declining due to overfishing, fishing during monsoon breeding and illegal fishing methods (Dynamiting, electric shocking, poisoning etc.). Conservation status based on IUCN observations has also been discussed.

***Keywords:*** *Fish fauna, The River Ravi, New record of Ailia punctata and Clupisoma naziri*

## Introduction

Our knowledge of fish fauna of the river Ravi is by [1] from Chamba area of Himachal Pradesh; Kumar and Dua [2] from Punjab, [3] from Shahpur (H.P.) to Gogga Mahal, Amritsar, Punjab and [4] from Madhopur to Kathour (Pathankot). Earlier [5-12] surveyed fish fauna of some tributaries of the river Ravi in Kathua and Samba districts of Jammu. During the survey of river Ravi for the last ten years from Ranjit Sagar Dam to Kathour, Pathankot, some new records of fish have been observed and enlisted along with the earlier reports [1-4]. This work shall be helpful for the fishery biologists and fishery departments of Jammu, Punjab and Himachal Pradesh to undertake various fishery developmental programmes for the perennial river Ravi and its various tributaries.

## Topography of the Area and Methods

The perennial Ravi River originates in the Himalayas in the Multhan tehsil of Kangra district, H.P., India. It is the smallest of the five Punjab Rivers that rises from glacier fields at an elevation of 14000 feet on the southern side of the Mid Himalayas. It flows through Bara Bhanghal, Bara Bansu and Chamba districts, H.P. It is joined by the Budhil River that rises in Lahul range of hills and is sourced from Manimahesh Kailash Peak and Manimahas Lake, at an elevation of 4080 meters above sea level. The second important tributary is the Nai or Dhona that rises at Kali Debi pass and flows 48 km before joining the river Ravi. Another major tributary that joins the Ravi River just below Bharmour, the old capital of Chamba, is the Seoul River. One more major tributary that joins the river Ravi near Bassohli, Kathua is Sewa River. The main river Ravi flows through the base of Dalhousie hill. Downstream it enters the Punjab plain near Madhopur and Pathankot. On its right bank, is the town of Lakhanpur and Kathua of Jammu Region. In Kathua district, the river Ravi is joined by Kathua Khad, Wajoo nullah, Tarna nullah, Jhandi nullah etc. Ujh River is another major tributary of the river Ravi in Kathua district. Its source is in the Kailash Mountains at an elevation of 14100 feet, close to the Bhaderwah Mountains in Doda district. It joins the river Ravi at Nainkot in Pakistan. Below Pathankot the river Ravi flows along the Indo Pak border for 80 kms before entering Pakistan and joining the river Chenab. Basantar River, draining Samba district of Jammu region, joins the river Ravi in Pakistan.

Fishes collected by fishermen by using various methods were purchased, studied for colour patterns, photographed and fixed in 10% formaldehyde. For identification works of [13-21] have been consulted. For the systematic arrangement of the reported fish species, classification referred by [21] has been followed.

## Observations and Discussion

Fish fauna of the river Ravi including earlier reports [1-4] is represented by 97 fish species belonging to 8 orders, 18 families and

**Table 1:** Fish fauna of the river Ravi including the earlier reports by Sehgal (1974), Kumar and Dua (2012) and Moza (2014).

| | **Conservation Status** |
|---|---|
| | **IUCN (2020)** |
| Superclass: Gnathostomata | |
| Class: Actinopterygii | |
| Subclass: Neopterygii | |
| Division: Teleostei | |
| Subdivision: Osteoglossomorpha | |
| Order: Osteoglossiformes | |
| Suborder: Notopteroidei | |
| Family: Notopteridae | |
| Genus: *Notopterus lacepede* | |
| 1. *N. notopterus* (Pallas) | LC |
| Genus: *Chitala* Fowler | NT |
| 2. *C. chitala* (Ham.-Buch.) | |
| Sub division: Clupeomorpha | |
| Order: Clupeiformes | |
| Family: Clupeidae | |
| Subfamily: Aliosinae | |
| Genus: *Gudusia* Fowler | |
| 3. *G. chapra* (Ham.-Buch.) | LC |
| Subdivision: Euteleosostei | |
| Superorder: Ostariophysi | |
| Order: Cypriniformes | |
| Family: Cyprinidae | |
| Subfamily: Danioninae (= Rasborinae) | |
| Genus: *Salmophasia* Swainson | |
| 4. *S. bacaila* (Ham.-Buch.) | LC |
| 5. *S. phulo* (Ham.-Buch.) | LC |
| 6. *S. punjabensis* (Day) | NE |
| Genus *Securicula* Gunther | |
| 7. *S. gora* (Ham.-Buch.) | LC |
| Genus: *Asidoparia* Heckel | |
| 8. *A morar* (Ham.-Buch.) | LC |
| Genus: Barilius Ham.-Buch. | |
| 9. *B. vagra* vagra (Ham.-Buch.) | LC |
| 10. *B. barila* (Ham.-Buch.) | LC |
| 11. *B. modestus* Day | NE |
| 12. *B. radiolatus* Gunther | DD |
| 13. *B. bendelisis* (Ham.-Buch.) | LC |
| Genus: *Raiamas* Jordan | |
| 14. *R. bola* (Ham.-Buch.) | LC |
| *Genus: Chela* (Ham.-Buch.) | |
| 15. *Chela cachius* (Ham.-Buch.) | LC |
| 16. *Chela laubuca* (Ham.-Buch.) | LC |
| Genus: *Esomus* Swainson | |
| 17. *Esomus danricus* (Ham.-Buch.) | LC |
| Genus: *Danio (*Ham. Buch.) | |
| 18. *D. devario (*Ham.-Buch.) | LC |
| Genus: *Rasbora* Bleeker | |
| 19. *R. daniconius* (Ham.-Buch.) | LC |
| Genus: *Amblypharyngodon* Bleeker | |
| 20. *A. mola* (Ham.-Buch.) | LC |
| Subfamily: Cyprininae | |
| Genus: *Cyprinus* Linnaeus | |
| 21. *C. carpio communis* Linn. | NE |
| 22. *C. carpio specularis* Lacepede | NE |
| Genus: *Tor* Gray | |
| 23. *T. tor* (Ham.-Buch.) | DD |
| 24. *T. putitora* (Ham.-Buch.) | ENDN |
| Genus: Osteobrama Heckel | |
| 25. O. cotio cotio (Ham.-Buch.) | LC |
| Genus: Puntius Ham.-Buch. | |
| 26. P. sarana sarana (Ham.-Buch.) | LC |
| 27. P. conchonius (Ham.-Buch.) | LC |
| 28. P. terio (Ham.-Buch.) | LC |
| 29. P. ticto (Ham.-Buch.) | LC |
| 30. P. chola (Ham.-Buch.) | LC |
| 31. P. sophore (Ham.-Buch.) | LC |
| Genus: Cirrhinus Cuvier | |
| 32. C. mirgala (Ham.-Buch.) | LC |
| 33. C. reba (Ham.-Buch.) | LC |
| Genus: Catla Valenciennes | |
| 34. C. catla (Ham.-Buch.) | LC |
| Genus: Labeo Cuvier | |
| 35. L. bata (Ham.-Buch.) | LC |
| 36. L. boga (Ham.-Buch.) | LC |
| 37. L. calbasu (Ham.-Buch.) | LC |
| 38. L. dero (Ham.-Buch.) | LC |
| 39. *L. dyocheilus* (McClelland ) | LC |
| 40. L. gonius (Ham.-Buch.) | LC |
| 41. L. pangusia (Ham.-Buch.) | NT |
| 42. L. rohita (Ham.-Buch.) | LC |
| *43. L. lippus**** Fowler | DD |
| Subfamily: Oreininae (=Schizothoracinae) | |
| Genus: Schizothorax Heckel | |
| 44. S. richardsonii (Gray) | VULN |
| Sub-family: Garrinae | |
| Genus: Crossocheilus Kuhl and van Hasselt | |
| 45. C. latius diplocheilus (Heckel) | NE |
| 46. C. latius punjabensis* | NE |
| Genus: Garra Hamilton – Buchanan | |
| 47. G. gotyla gotyla (Gray) | LC |
| 48. G. lamta (Ham.-Buch.) | LC |
| Family: Balitoridae | |
| Subfamily: Nemacheilinae | |
| Genus: Nemacheilus Bleeker | |
| 49. N. corica (Ham.-Buch.)* | LC |
| Genus: Acanthocobitis Peters | |
| 50. A. botia (Ham.-Buch.) | LC |
| Genus: Schistura McClelland | |
| 51. S. prashadi (Hora) | VULN |
| 52. S. montanus (Mc Clelland.)* | NE |
| 53. S. punjabensis (Hora) | NE |
| Family: Cobitidiae | |
| Subfamily: Botinae | |
| Genus: Botia Gray | |
| 54. Botia almorhae Gray | LC |
| 55. Botia birdi Chaudhuri | NE |
| 56. Botia lohachata Chaudhuri | NE |
| Subfamily: Cobitinae | |
| Genus: Lepidocephalus Bleeker | |
| 57. L. guntea (Ham.-Buch.) | LC |
| Order: Siluriformes | |
| Family: Bagridae | |
| Subfamily: Ritinae | |
| Genus: Rita Bleeker | |

| | |
|---|---|
| 58. R. rita (Ham. Buch.) | LC |
| Subfamily: Bagrinae: Genus: Mystus Scopoli | |
| 59. M. bleekeri (Day) | LC |
| 60. M. cavasius (Ham.-Buch.) | LC |
| 61. M. vittatus (Bloch.) | LC |
| 62. M. tengara (Ham.-Buch.) | LC |
| Genus: Aorichthys Wu | |
| 63. A. seenghala (Sykes) | LC |
| 64. A. aor (Ham.-Buch.)** | LC |
| Family: Siluridae | |
| Genus: Ompok Lacepede | |
| 65. O. pabda (Ham.-Buch.) | NT |
| Genus: Wallago Bleeker | |
| 66. W. attu (Bloch. & Schn.) | VULN |
| Family: Schilbidae | |
| Subfamily: Ailinae | |
| Genus: Ailia Gray | |
| 67. A punctata (Day) | DD |
| Sub family: Schilbinae | |
| Genus: Neotropius Kulkarni | |
| 68. N. atherinoides (Bloch.) | LC |
| Genus: Clupisoma Swainson | |
| 69. C. garua (Ham.-Buch.) | LC |
| 70. C. nazri Mirza and Awan | NE |
| Genus: Eutropiichthys Bleeker | |
| 71. E. murius (Ham.-Buch.) | LC |
| 72. E. vacha (Ham.-Buch.) | LC |
| Family: Amblycipitidae | |
| Genus: Amblyceps Blyth | |
| 73. A mangois (Ham.-Buch.) | LC |
| Family: Sisoridae | |
| Genus: Bagarius Bleeker | |
| 74. B. bagarius (Ham.-Buch.) | NT |
| Genus: Gagata Bleeker | |
| 75. G. cenia (Ham.-Buch.) | LC |
| Genus: Glyptosternum McClelland | |
| 76. G. reticulatum McClelland* | NE |
| Genus: Glyptothorax Blyth | |
| 77. G. cavia (Ham.-Buch.) | LC |
| 78. G. conirostre conirostre( Steindachner)* | DD |
| 79. G. pectinopterus (McClelland)* | LC |
| 80. G. stoliczkae (Steindachner) | LC |
| 81. G. telchitta (Ham.-Buch.) | LC |
| Family: Clariidae | |
| Sub-Family: Heteropneustinae | |
| Genus: Heteropneustes Muller | |
| 82. H. fossilis (Bloch.) | LC |
| Sub-Family: Clariinae | |
| Genus: Clarius Scopoli | |
| 83. C. batrachus (Linneaus) | LC |
| Superorder: Protacanthopterygii | |
| Order: Salmoniformes | |
| Family: Salmonidae | |
| Genus: Salmo Linnaeus | |
| 84. S. trutta fario Linn. | NE |
| Superorder: Acanthopterygii | |
| Order: Beloniformes | |
| Suborder: Belonoidei (=Exocoetoidei) | |
| Family: Belonidae Genus: Xenentodon Regan | |
| 85. X. cancila (Ham.-Buch.) | LC |
| Order: Synbranchiformes | |
| Suborder: Mastacembeloidei | |
| Family: Mastacembelidae | |
| Subfamily: Mastacembelinae | |
| Genus: Macroganthus Lacepede | |
| 86. M. aral (Bloch and Schn.) | LC |
| 87. M. pancalus (Ham.-Buch.) | LC |
| Genus: Mastacembelus Scopoli | |
| 88. M. armatus (Lac.) | LC |
| Order: Perciformes | |
| Suborder: Percoidei | |
| Family: Chandidae (Ambassidae) | |
| Genus: Chanda (Ham.-Buch.) | |
| 89. C. nama Ham.-Buch. | LC |
| Genus: Parambassis Bleeker | |
| 90. P. baculis (Ham.-Buch) | LC |
| 91. P. ranga (Ham.-Buch.) | LC |
| Family: Nandidae | |
| Subfamily: Nandinae | |
| Genus: Nandus Valenciennes | |
| 92. N. nandus (Ham.-Buch.) | LC |
| Sub order: Gobioidei | |
| Family: Gobiidae | |
| Genus: Glossogobius Gill | |
| 93. G. giuris (Ham.-Buch.) | LC |
| Suborder: Channoidei | |
| Family: Channidae | |
| Genus: Channa Scopoli | |
| 94. C. marulius (Ham.-Buch.) | LC |
| 95. C. orientalis Bloch&Schneider | LC |
| 96. C. punctatus (Bloch.) | LC |
| 97. C. striatus (Bloch.) | LC |

*Reported by Sehgal (1974) and not seen during present study
**Reported by Moza (2014) and not seen during present study
***Reported by Kumar and Dua (2012) and not seen during present study
LC = Least Concern
ENDN = Endangered
NT = Near Threatened
DD = Data Deficient
NE = Not Evaluated
VULN = Vulnerable

52 genera (Table 1). *Ailia punctata* reported earlier [22] from Pakistan segment of the river Ravi and *Clupisoma naziri* distributed in the rivers of Pakistan are the new records for Punjab and Jammu and Kashmir. Fish analysis in the Indian segment of the river Ravi has shown the dominance of Cypriniformes (54 spp.) followed by Siluriformes (26 species), Percformes (9 species), Synbranchiformes (3 species), Osteoglossiformes (2 species) and Clupeiformes, Salmoniformes and Beloniformes (1 species, each). In the river Ravi from the Ranjit Sagar dam to Kathour (Pathankot), including Kathua area, is more diversified (Table 1) in comparison to 16 fish species viz. *Barilius bendelisis, B. vagra, Puntius conchonius, Labeo dero, Cyprinus carpio specularis, C. communis, Garra gotyla, Schizothorax richardsonii, Crossocheilus latius punjabensis, Noemacheilus corica, N. montanus, Lepidocephalus guntea, Glyptosternum reticulatum, Glytothorax conirostres, G. pectinopterus and G. stoliczkae* belonging to 2 orders, 3 families and 11 genera reported by [1] from Chamba area, H.P., drained by the river Ravi.

[2] enlisted 38 fish species viz. *Notopterus notopterus, Catla catla, Cirrhinus mrigala, Cirrhinus reba, Cyprinus carpio communis, Labeo bata, L. calbasu, L. dero, L. lippus, L. rohita, Osteobrama cotio cotio, Puntius sarana sarana, P. terio, Salmostoma bacaila, Parluciosoma daniconius, Schizothorax richardsonii, Tor tor, Lepidocephalus guntea, Aorichthys aor, A. seenghala, Mystus bleekeri, M. cavasius, M. vittatus, Rita rita, Wallago attu, Clupisoma garua, Eutropiichthys murius, E. vacha, Bagarius bagarius, Clarias batrachus, Xenentodon cancila, Colisa fasciatus, Channa marulius, C. punctatus, C. striatus, Macrognathus aral, M. pancalus* and *Mastacembelus armatus* belonging to 5 orders, 12 families and 25 genera from the Indian segment of the river Ravi in Punjab.

Present record of fish diversity in the river Ravi is higher than the earlier reports of 31 fish species viz. *Notopterus notopterus, N. chitala, Chela bacaila, Tor putitora, Puntius sarana, Catla catla, Cirrhinus mrigala, C. reba, Labeo dyocheilus, L. gonius, L. rohita, L. calbasu, L. dero, L. bata, Cyprinus carpio specularis, Schizothorax richardsonii, Mystus aor, M. seenghala, M. tengara, Rita rita, Bagarius bagarius, Wallago attu, Eutropiichthys vacha, Clupisoma garua, Heteropneustes fossilis, Clarias batrachus, Xenentodon cancila, Mastacembelus armatus, M. pancalus, Channa marulius* and *Channa punctaus* belonging to 5 orders, 9 families and 20 genera enlisted by Moza [3] in the river Ravi from Shahpur (H.P) to Goga Mahal, Amritsar, Punjab.

Fish diversity in the Indian segment of river Ravi is even higher in comparison to the earlier reports of 75 fish species (*Notopterus notopterus, N. chitala, Gudusia chapra, Aspidoparia morar, Amblypharyngodon mola, Barilius bendelisis, B. modestus, B. vagra, Cirrhinus mrigala, C. reba, Cyprinus carpio, Carasius auratus, Crossocheilus diplocheilus, Chela cachius, Chela labuca, Esomus danricus, Gibleon catla, Garra gotyla, L. dyocheilus pakistanicus, Labeo rohita, L. gonius, L. calbasu, L. dero, Osteobrama cotio, Puntius punjabensis, P. sophore, P. ticto, P. chola, P. conchonius, Rasbora daniconius, Salmophasia punjabensis, S. bacaila, Securicula gora, Systomus sarana, Tor macrolepis, Nemacheilus sp., Botia lohachita, Ailia punctatus, Ailia coilia, Clupisoma garua, Eutropiichthys vacha, Gagata cenia, Heteropneustes fossilis, Mystus bleekeri, M. cavasius, M. vitatus, M. tengra, Ompok bimaculatus, Pseudoeutropis atherinoides, Wallago attu, Rita rita, Sisor pakistanicus, Sperata sarwari (Mystus seenghala and M. aor), Glyptothorax stocki, G. punjabensis, Xenetodon cancila, Macrognathus aculeatus, Macrognathus pancalus, Mastacembelus armatus, Monopterus cuchia, Colissa fasciata, Colissa latia, Chanda nama, Parambassius baculis, P. ranga, Glossogobius giuris, Nandus nandus, Oreochromis aureus, O. mosambicus, O. niloticus, Channa marulius, C. punctatus, Channa striatus, C. gachua* and *Sicamugal cascasia*) enlisted from Pakistan segment of the river Ravi by Ahmad* (1943, 49 fish species), Mirza* (1970, 65 fish species), Zahoor and Mirza* (2002, 49 fish species) and [22] (2018, 38 fish species). Recent study of the river Ravi in Pakistan segment by [22] has revealed the presence of 38 fish species (*Aspidoparia morar, Barilius bendelisis, B. modestus, B. vagra, Cirrhinus mrigala, C. reba, Cyprinus carpio, Carasius auratus, Gibleon catla, Labeo rohita, L. gonius, L. calbasu, L. dyocheilus pakistanicus, Puntius punjabensis, P. sophore, P. ticto, Salmophasia punjabensis, Securicula gora, Clupisoma garua, Eutropiichthys vacha, Heteropneustes fossilis, Wallago attu, Sperata sarwari, Chanda nama, Colissa fasciata, Colissa latia Channa marulius, C. punctatus, Channa striatus, C. gachua, Oreochromis aureaus, O. mosambicus, O. niloticus, Parambassius baculis, P. ranga Mastacembelus armatus, Notopterus chitala and N. notopterus)* belonging to 22 genera, 10 families and 8 orders. This fish decline during last few decades has been attributed to degrading water quality caused by increased anthropogenic activities and many fold decline in water flow in the rivers after Indus water Basin treaty with India.

*Cited from [22].

Rich diversity in the river Ravi downstream Ranjit Sagar Dam to Kathour is due to reduced water flow, shallowness and penetration of light upto the bottom, presence of pools supporting a rich diversity and density of fish food organisms viz. macrophytes, algae, benthos, zooplankton, fish, etc. and absence of any pollution. Moreover, there is an upstream fish migration, even from Pakistan, during summer and monsoon. During monsoon, there is downstream fish drift from upper catchment along with floods. It is during summer and monsoon when a rich diversity and density of fish in the river Ravi has been noticed. Moreover, a large number of tributaries join the river Ravi at various places and add to rich fish diversity.

Study of fish fauna of various tributaries of the river Ravi in Kathua district started with a survey by [5] who enlisted 12 fish species belonging to 4 orders, 6 families and 11 genera from Kathua Khad and 3 fish species viz. *Barilus vagra, Tor putitora* and *Channa punctatus* from Ujh River. [8] noticed 27 fish species belonging to 4 orders, 8 families and 20 genera from Ujh River; 16 fish species belonging to 2 orders, 4 families and 12 genera from Tarnah nullah and total absence of fish from seasonal Kathua Khad, Rathore and [11] noticed 42 fish species belonging to 5 orders, 10 families and 27 genera from river Ujh. [12] reported 64 fish species belonging to 7 orders, 17 families and 42 genera from Wajoo nullah and its tributaries. Dutta and Gupta (unpublished) noticed 8 fish species viz. *Schizothorax richardsonii, Barilius vagra vagra, B. bendelisis, Crossocheilus latius diplocheilus, Tor putitora, Cirrhinus reba, Salmo trutta fario* and *Glyptothorax stoliczkae* from Sewa river, an important tributary of the river Ravi in Bassohli, Kathua.

[7] surveyed fish fauna of river Basantar, an important tributary of the river Ravi, in Samba district of Jammu, and enlisted 59 fish species belonging to 6 orders, 15 families and 41 genera. Sharma and Dutta≠π documented 35 fish species belonging to 5 orders, 10 families and 25 genera, with maximum diversity and density during monsoon floods, in river Basantar.

The [23] redlist showed that, among 97 fish species in the river Ravi, only *Tor putitora* is endangered, *Chitala chitala*, *Labeo pangusia, Ompok pabda* and *Bagarius bagarius* are near threatened; *Schizothorax richardsonii, Schistura prashadi* and *Wallago attu* are vulnerable; *Tor tor, Barilius radiolatus, Labeo lippus, Ailia punctata* and *Glyptothorax conirostrae conirostrae* are data deficient; *Barilius modestus, Schistura punjabensis, Schistura mountanous, Salmophasia punjabensis, Crossocheilus latius punjabensis, Crossocheilus latius diplocheilus, Cyprinus carpio communis, Cyprinus carpio specularis, Botia birdi, Botia lohachata, Salmo trutta fario, Clupisoma naziri* and *Glyptosternum reticulatum* are not evaluated and remaining fishes are in the least concern category.

An overall study has revealed a decline in fish diversity and density in the river Ravi and its tributaries. This needs immediate attention by the fishery departments of Himachal Pradesh and Punjab states and Jammu & Kashmir union territory. Illegal destructive methods of fishing like dynamiting, poisoning and diversion of water for catching fish should be checked. Total ban on fishing during summer and monsoon spawning migration should be implemented. In the tributaries, Juveniles need protection when the water level goes low in summer months. To protect them from poaching certain artificial pools need to be created. Some areas along the river Ravi and its tributaries should be declared as protected and reserved waters. Cultural possibilities of native and other fish species need exploration in different segments of the river Ravi and its tributaries.

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