Fish fauna of Tehsil Mendhar, District- Poonch, Jammu Region, J & K State, with a new record of Botia birdi, Ompok pabda and Glyptothorax punjabiensis from Poonch District

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ABSTRACT

Fish survey in lentic and lotic water bodies of Tehsil Mendhar, District Poonch has revealed the presence of 21 fish species belonging to 04 orders, 07 families and 16 genera. There is a dominance of Cypriniformes (17 species) followed by Siluriformes (2 species) and Mastacembelliformes and Perciformes (one species each). Among the enlisted fishes Botia birdi, Ompok pabda and Glyptothorax punjabiensis are the new records for Poonch District. Maximum monthly perennial contribution, sometimes 100%, in fish catches is shared by Schizothorax richardsonii. Fishing methods commonly employed include rod and hook, cast net, wall gill net, hand net, pot trap, hand picking, baskets, buckets, poisoning (bleaching powder, extract of Euphorbia royalaena, seed powder of Xanthoxylum alatum), electric shocking, light traps and dynamiting and grenading. Decline in fish diversity and conservation measures in the area have also been discussed.

Key Words: New record, Poonch District, Botia birdi, Ompok pabda and Glyptothorax punjabiensis

INTRODUCTION

Action plan for fish exploitation and fishery development in any area requires fish resources assessment. Ichtyofaunistic survey in District Poonch has earlier been conducted by Das and Nath (1965, 1971), Sharma and Sharma (1974), Nath (1969, 1973, 1981a,b, 1984 and 1986), Guglani (2000) & Dutta (2003). However, there is no detailed analysis of fish fauna of Tehsil Mendhar, District Poonch. Extensive fish survey in Tehsil Mendhar has been undertaken to provide a base line data to the state fishery department to explore the possibilities of aquaculture potentials in this Himalayan region. Earlier, state fishery department, without detailed fish survey in Tehsil Mendhar, has stalked exotic carps viz., Cyprinus carpio communis, Hypopthalmichthyes molitrix and Ctenopharyngodon idellus in fish ponds and among these fishes Cyprinus carpio communis, has entered in Mendhar stream and has an adverse impact on indigenous fish fauna. Fish survey has revealed the new records of Botia birdi, Glyptothorax punjabiensis and Ompok pabda for Poonch District. Fishing methods commonly employed in by fishermen the area have also been reported. The information generated will be of great help to state fishery department and scholars working in the field of fish systematics.

Topography

Mendhar Tehsil located at 33°: 36’ N and 74°:07’E is bowl shaped and enclosed on all sides by off shoots of Rattan Pir Ridge which is a western off shoot of Pir Panjal range of outer Himalaya. The area is drained by Mendhar nullah (Fig 1a & b), an important tributary of Poonch River, having a length of about 30
kilometres and is formed by the confluence of western slopes of Jharan Wali Gali and Gursai Moorie Ridge at the base of the same. It is joined by six tributaries namely Gursai Kus, Naka Manjhari Kus, Dhar Kus, Saghliad Kus, Mankote Kus and Balnoi Kus before entering into Pakistan at Balnoi and joins Poonch River at Mandhol. Since the ridges receive a very little snow fall in the months of January and February, all the tributaries and so is the Mendhar nullah have purely spring source (Fig 2a-c) and perennial in nature. These tributaries have rapid flow, steep slope and mountainous course. Bottom is coarse having big boulders, cobbles and gravels. At the base of bowl Mendhar nullah enters into almost plain forming pot holes and braided channels and deposit sand, gravels, coarse grained sand etc., on its bed (Fig 2a-c). There are a good number of perennial springs in the area (Fig 3a-c) and support a rich fish diversity.

MATERIALS AND METHODS
Dead fishes collected by fishermen were preserved in 10% formaldehyde solution and identified following the work of Hamilton (1822), Day (1994), Misra (1962), Dutta and Malhotra (1984), Talwar and Jhingren (1991) and Jayaram (1999).

RESULTS AND DISCUSSION
Fishing Methods: Fishing methods employed in Mendhar Tehsil fall in to the following four types viz., Entangling types, Disabling types, Traps and Barriers and Miscellaneous Type:

A. Entangling Types
1. Stringed Cast Net (Fig 4): It is conical in shape, measuring 4 feet long with mesh size of 2cm and forms a circle of 08 feet diameter and 22 feet circumference when spread out. The foot rope along the circumference of the net, has many small iron weights (sinkers) attached all around in sets of four. Within a set a sinker is placed at an interval of 1.5 to 2cm and the interval between two sets is 4cm. Each weight is cylindrical, 3cm long, 2cm in diameter and weighing about 28g. A string or line, measuring about 17 feet long, passes from the center and is held in the hand for operating the net. The central line (rope) branched out into several lines and also into sub-branches, finally connected to the free edge of the net. The edges of the net are woven with slightly thick thread with mesh size smaller than rest of the net (1.5cm) and is folded inwardly and are fixed by twines to form pockets. The fisherman operates the net, while in water. A man holds the net so that it can be skillfully thrown out on water to land horizontally and enclosed (entrap) the fish as it sinks.

   Cast net is also used in night fishing and stone covering. In night fishing fisherman during night hold the torch in mouth or tie it around throat to create light at water surface. Attracted by light fishes come to the surface and are collected by cast net. In the Mendhar nullah a large number of boulders are present and fishes hide under them. In stone covering method (Fig 5) a boulder inside the water is covered over by cast net and with the help of stick fishes taking shelter under the boulders are driven out. The escaping fishes enters into pockets of the cast net and are collected.

2. Gill Net (Fig 6): It is a rectangular net about 61 feet long and 7 feet high with mesh size of 3 cm. It has two lines (ropes) viz., head and foot rope tied along the length of net. The foot rope of the net has sinkers (stones ranging in weight between 40-130gms and wrapped in cloth) attached all along its length at an intervals of 20 – 30 cm and 40 – 50 cm alternatingly. To keep the net vertically floating in the column of water the head rope is provided with floats, made up of cut pieces of rubber chappal and tied at an intervals of 50-60cm. Holding the net (with the help of head and foot rope) across the width of nullah two men move upward and downward the river and fish while trying to cross the net get entangled along its operculum. This net is also fixed vertically on two shores of nullah in the evening, fish moving upstream and downstream the nullah are unable to pass through the net and get entangled. These entangled fishes are collected in the morning.
B. Disabling Type. Disabling type include the following four methods:

1. **Rod and Hook (Fig 7):** This method of fishing is very common in all types of waters. A baited metallic hook is tied to a wooden stick through a plastic thread. Bait commonly used for attracting the fish include flour pills, earthworm, intestine of chicken and even fish flesh. A small float (wooden or thermocoal piece) is also attached to the thread at about middle of the length which keep the baited hook suspended inside the water column. Holding the rod in hand, baited hook is kept in the pool section of the river. Attracted by the bait, the fish engulfs the hook and is judged by the jerks made by the fish while trying to get free. The hook along with entangled fish is pulled out of the water with the help of rod and is collected.

2. **Electrofishing:** One wire is connected to the electric line and is dipped in a pool. Fishes in the area receive electric shock and die. Dead fishes are handpicked or collected with basket.

3. **Blasting:** A dynamite and sometimes grenade is thrown in a pool of water. After blasting dead fishes start floating on the surface and are collected.

4. **Poisoning:** This method is used to collect the fishes from pools and is achieved through following ways:
   a) Poisoning by Chemicals: During winter, water flow is reduced and due to low temperature fishes take shelter under stones. DDT or bleaching powder is mixed in a bucket of water and is poured in shallow pools. After poisoning fishes start floating and are collected.
   b) Poisoning by Plants Product: Cactus (Euphorbia royaleana) is crushed and its milky extract is taken in an earthen pot and its mouth is sealed. A long rod of wood is tied along the pot and is lowered in a pool with a force to break earthen pot. The cactus extract spread along the bottom of pool and dead fishes start floating and are collected.
      Sometimes seed powder of Timber (Xanthoxylum alatum) is mixed with water in a container and solution is poured in water. Fishes hiding under stones come out and start running here and there in pool and are collected.

C. Traps and Barriers:

1. **Pot Traps (Fig 8a and b):** A circular net with diameter of 4 feet and a periheral mesh size of 2cm and large holes in the center is tightened to the mouth of bucket like plastic or metallic container and is placed on the bottom of a pool. Stones are also placed inside the container to keep it on the bottom. Traps are taken out at intervals and fishes entrapped are collected.

2. **Water Diversion:** In small streams, water is diverted to a narrow channel and allowed to fall at the outlet. At the fall either a cloth or net bag or mulberry/bamboo woven basket is fixed and left overnight. Fishes moving down the channel fall in the bag or basket and are collected in the morning.

D. Miscellaneous Methods

1. **Hand Net (Fig 9a & b):** This bag shaped net is made by sewing a net or cloth to badminton shuttle. It is used to catch small sized fishes in the narrow pools and springs where cast net cannot be operated.

2. **Hand Picking (Fig 10a & b):** During wet season large numbers of pools along the streams get filled with water and fishes migrate into them. After rain water from these pools is drained out and fishes are handpicked.

3. **Simple Cloth:** A rectangular bed sheet/ ladies duppatta is hauled through water in pools by two persons. Periodically, the cloth is brought to the surface and fishes are collected.

4. **Sticks:** As soon as fish is seen in concrete areas under the bridges, in the culverts or in the concrete channels it is struck with a wooden stick and is immediately collected.
Illegal fishing methods like electrofishing, poisoning and blasting are most destructive as they kill eggs, larvae and adults of fishes and all other types of animals serving as fish feed and indicting health of the water body. These poisons are not only detrimental to aquatic animals in the area of application but also in the downstream area of any water body and require a check by the state fishery department.

Fish collected over a period of three years in lentic and lotic water bodies of Tehsil Mendhar are:

<table>
<thead>
<tr>
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<tr>
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<tr>
<td>1. B. vagra</td>
<td>Sona Machhii</td>
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<tr>
<td>Genus</td>
<td>Tor (Gray)</td>
</tr>
<tr>
<td>2. T. putitora</td>
<td>Chhirrk / Mahseer Nullah</td>
</tr>
<tr>
<td>Genus</td>
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<td>3. P. conchonius</td>
<td>Keheddo</td>
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<tr>
<td>Genus</td>
<td>Labeo (Ham. – Buch.)</td>
</tr>
<tr>
<td>4. L. dero</td>
<td>Kehedd Nullah during flood</td>
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<tr>
<td>5. L. dyocheilus dyocheilus (McClelland.)</td>
<td>Kehedd Nullah during flood</td>
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<tr>
<td>6. L. bata</td>
<td>Kehedd Nullah during flood</td>
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<td>Genus</td>
<td>Cyprinus (Linnaeus)</td>
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<td>7. Cyprinus carpio communis (Linn.)</td>
<td>Common carp Nullah</td>
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<td>Genus</td>
<td>Hypophthalmichthyes (Bleeker)</td>
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<td>8. H. molitrix</td>
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<td>Ctenopharyngodon (Steindachner)</td>
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<td>9. C. idellus</td>
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<td>Leuciscinae (= Hypophthalmichthyesinae)</td>
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<td>Genus</td>
<td>Schizothorax (Heckel)</td>
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<td>10. S. richardsonii</td>
<td>Luss Nullah</td>
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<td>Genus</td>
<td>Garrinae</td>
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HUSSAIN AND DUTTA
Ichthyofaunistic survey in Tehsil Mendhar has shown the presence of 22 fish species belonging to 04 orders, 07 families and 16 genera. *Glyptothorax pectinopterus* (McClelland) reported by Javed et al (2012) from Mendhar nullah in Pakistan has not been observed in the presently investigated segment of
Mendhar nullah. *Cyprinus carpio communis*, *Hypophthalmichyes molitrix* and *Ctenopharyngodon idellus*, among the enlisted fishes, are stocked by State Fishery Department in the ponds in the area. Among these three species *Cyprinus carpio communis* is well adopted in Mendhar nullah and is commonly seen in fish collections during rains. Among the enlisted fishes *Botia birdi*, *Ompok pabda* and *Glyptothorax punjabiensis* are the new records for Poonch District. The fish fauna of Mendhar is dominated by Cypriniformes (17 species) followed by Siluriformes (2 species) and Mastacembelliformes and Perciformes (One species each). Dominance of Cypriniformes has also earlier been reported from Doda district (Dutta and Fayaz, 2003), Jammu district (Dutta et al, 2002b), Rajouri district (Dutta et al, 2002a), the river Chenab (Dutta et al, 2002b), river Basantar (Dutta et al., 2001a), river Tawi (Dutta et al., 2003), district Poonch (Dutta, 2003), tributaries of river Ravi (Dutta et al., 2006), lotic and lentic water bodies of Kathua district (Dutta and Kour, 2005) and river Ujh (Rathore and Dutta 2015).

When compared with 40 fish species enlisted from Poonch (Dutta, 2003), present record of 22 fish species in tehsil Mendhar is low. Complete isolation of Tehsil Mendhar by mountains from the rest three Tehsils of District Poonch most probably prevented the entry of fish from river Poonch and its tributaries. Moreover, Mendhar nullah as compared to drainage system of river Poonch is slightly warmer, water flow is highly irregular and catchment area is small.

Monthly fish catch analysis at most of the places in Mendhar nullah has revealed the maximum contribution, sometimes 100%, by *Schizothorax richerdsonii*. This is in conformity with the observations of Badola and Singh (1981), Sunder and Subla (1984), Sharma (1988), Dutta et al. (1999), Dutta & Fayaz (2003), Mohan et al (2002), Dutta (2003) from some Himalayan streams. *Garra* spp and *Crossochelius* sp are also seen in fish collections. *Labeo* spp, *Ompok pabda* and *Cyprinus carpio communis* are rare and during the present survey have been recorded during rainy season of July and August. It is possible that *Labeo* spp and *Ompok pabda* migrate upstream from river Jehlum in Pakistan for breeding in river Poonch and its tributaries whereas *Cyprinus carpio communis* has entered the Mendhar nullah from fish pond in the area. *Channa* spp, *Puntius* spp and *Schistura* spp have been recorded from springs only.

Overall study has shown a decline in fish diversity and density and is attributed to increased fishing pressure (increase in licensed fishermen whose number at present is 51 in Mendhar), illegal fishing methods, fishing during breeding season, damage to the breeding ground (installation of stone crusher, deforestation, increased soil erosion) and irregular scanty rain. Mendhar nullah is a tributary of Poonch river and latter inturn joins the Jehlum in Pakistan. Fish fauna of the river Jehlum has adversely been affected in term of fish diversity due to construction of reservoir in Pakistan and has acted as barrier in the upstream migration of fish into their breeding grounds.

The action plan for fishery development in the area requires resource assessment before issuing license, establishment of hatcheries for *Schizothorax* sp, *Crossochelius* sp, *Tor* sp, *Labeo* sp and *Garra* spp as they form major source of livelihood to a section of people in Mankote area. There are great prospects of stocking the Mendhar nullah with *Tor* sp and *Labeo* spp and these fishes have been seen only during rainy season. Considerable attention should be paid to conserve cat fishes like *Ompok* sp as the latter has already been enlisted in The IUCN Red List of Threatened Species (Tenzin, K. & Ng, H.H., 2010). In the hatcheries fishery department must stock larvae of various fish species breeding in streams in fish ponds. After attaining a particular size, these larvae should be released back in stream at selected places. Fishing during breeding season is serious threat and should be banned. Illegal fishing methods such as poisoning and fishing of small sized fishes should be monitored regularly. Licensed must be issued based upon the stock available in the water body and unnecessary issuing of licensed must be avoided.

ACKNOWLEDGEMENTS

Thanks are due to Prof. Shabbir Hussain Shah, Principal PG College Rajouri; Prof. Qasim Mir and
Fig 1a & b. General view of Mendhar Town & Nullah

Fig 2a-c. General view of Mendhar nullah

Fig 3a-c. Spring Sources of Mendhar Nullah
Fig 4. Cast Net

Fig 5. Stone Covering with cast net

Fig 6. Gill Net

Fig 7. Rod and Hook

a) Showing pot trap

b) Pot trap inside a pool

Fig. 8a & b Showing pot trap method
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REFERENCES


Rathore, V. and S. P. S. Dutta 2015. Fish fauna of river Ujh, an important tributary of river Ravi, District Kathua, Jammu. Environmental Conservation Journal, 16(1&2) 81-86..


