

## Fish Fauna of Himachal Pradesh: A Case Study



### Zoology

**KEYWORDS :** Fishfauna, Himachal Pradesh, biodiversity, cyprinidae

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### ABSTRACT

*Biodiversity affects the capacity of living systems to respond to changes in the environment, and is essential for providing goods and services from ecosystems (e.g., nutrient cycling, clean water). As well as having intrinsic value, biodiversity has aesthetic value: many of us have admired the wonderful colours and shapes of fishes. In Himachal Pradesh 61 species of fish observed, belongs into 13 families. The species wise and family wise distribution is Notopteridae (02), Cyprinidae (36), Cobitidae (05), Siluridae (02), Bagridae (04), Amblycipitidae (01), Sisoridae (03), Schilbeidae (01), Belonidae (01), Mugilidae (01), Channidae (03), Anabantidae (01), Mastocembelidae (01).*

### INTRODUCTION

Biodiversity is the variation in the genetics and life forms of populations, species, communities and ecosystems. Biodiversity affects the capacity of living systems to respond to changes in the environment and is essential for providing goods and services from ecosystems. As well as having intrinsic value, biodiversity has aesthetic value, many of us have admired the wonderful colors and shapes of fishes. Biodiversity also has cultural value when it is directly linked to the cultural fabric of human societies. Moreover, biodiversity is important for the future sustainability of natural resources that include commercial fisheries. Fisheries that exploit a range of species may have more stable catches than fisheries that exploit a single species (Coma Report 1994). A high genetic diversity within a fish population may protect it against environmental stressors and the spread of diseases.

Fish constitute about half of all known vertebrate species. Fish are an important resource worldwide, especially **as food**. These local losses represent an erosion of global biodiversity. Moreover, stresses due to other factors such as climate change, habitat loss, invasive species, eutrophication and pollution can accentuate fishing induced declines and inhibit or prevent recoveries (Hooper 2005).

About 22000 species of fishes have been recorded in the world of which, about 11% are found in Indian waters. Out of the 2200 species so far listed, 73(3.32%) belong to the cold freshwater regime, 544(24.73%) to the warm fresh waters domain, 143(6.50%) to the brackish waters and 1440 (65.45%) to the marine ecosystem. There are about 450 families of freshwater fishes globally. Roughly 40 are represented in India (warm freshwater species). About 25 of these families contain commercially important species. Number of endemic species in warm water is about 544 (Hilborn et al 2003).

The Indian fish fauna is divided into two classes, viz., Chondrichthyes and Osteichthyes. The Chondrichthyes are represented by 131 species under 67 genera, 28 families and 10 Orders in the Indian region. The Indian Osteichthyes are represented by 2,415 species belonging to 902 genera, 226 families and 30 orders, of which, five families, notably the family Parapsilorhynchidae are endemic to India.

Cyprinidae is one of the largest families and is well represented in India with species ranging from few millimeters in length (minnows) to more than a meter (major carps). Among the 544 freshwater fish species in India, Cyprinidae accounts for nearly 24.12% of them.

The state of Himachal Pradesh is spread over an area 55,673 km<sup>2</sup>. Population 6,856,509 (as per census 2011). Himachal is a mountainous region, rich in its natural resources. Elevation ranges from 450 meters to 6,500 meters above sea level.

The streams of Himachal Pradesh fall under two categories:

general waters and trout waters, with estimated length of 600 and 2400 kms respectively.

The aim of present work was to study the fish fauna of Himachal Pradesh with respect to available water resources.

### MATERIALS AND METHODS

For fish diversity and identification study used standard literature in the form books, research articles and also taken the help of Fishery Department, Himachal Pradesh.

The present work was carried out during May, 2012. The fishes were collected from fisherman's during the time of fishing and also from fish market. The fishes were identified by using standard literature (Jhingran 1991; Day 1878; Jayram 2002 and Beavan 1990).

### RESULTS AND DISCUSSION

In Himachal Pradesh 61 species of fish observed, belongs into 13 families. The species wise and family wise distribution is Notopteridae (02), Cyprinidae (36), Cobitidae (05), Siluridae (02), Bagridae (04), Amblycipitidae (01), Sisoridae (03), Schilbeidae (01), Belonidae (01), Mugilidae (01), Channidae (03), Anabantidae (01), Mastocembelidae (01).

The major State's streams includes - Beas, Sutlej, Ravi Tirthan, Sainj, Uhl, Baspa, Pabar, Lambadug, Giri, Rana, Nugal Gai, Baner, Bata, etc.

The major fishes available in these streams are Trout, Mahseer, Nemacheilus spp, Barilus sp, Schizothoracids Crossocheilus sp. Glyptothorax spp. etc.

Himachal Pradesh as earlier to this, the entire fish fauna of the State belonged to rheophylic type and none of the endemic fish was suitable for growing in impounded waters. Gobindsagar with water spread of 1600 ha, Pong reservoir with water spread of 24000 ha introduction of Indian Major Carps in Himachal Pradesh. Himachal became the first state to popularize the trout farming in private sector.

The thrust was only on sport fisheries. The trout being the focal fish, the seed of brown and rainbow trout used to be produced in three trout farms located at Chirgoan, Mahli/ Patlikuhl and Barot. Meanwhile during 1955, mirror carp was introduced in the State. In view of ideal ecological conditions, the introduced fish not only thrived successfully in the new water but also started propagating. The transplantation of mirror carp in fact laid the foundation of fish farming in Himachal Pradesh the abode of gods the land of snows a tourist's dream and delight, is also an angler's paradise. It has some of the finest trout streams in the north. The Pabar in the Rohru valley, the Baspa in the Sangla valley, the Uhl in the Barot valley and river Beas and its tributaries in the Kullu valley, abound in both brown and rainbow trout, while many rivers and streams in the Kangra valley are well-known for mahseer fishing. Each of these rivers has 32 to 40 km of angling reserve area, where one can fish with joy.

The fish production of Himachal Pradesh state increased to 7798 tonnes during year 2008-09 thus registering an increase of 461.57 tonnes over the year 2007-08. The revenue earned by the department reached a level of 185.5 lakhs during 2008-09 (Govt. HP).

As far the reservoirs, the state is blessed with four major man-made reservoirs namely Gobind Sagar, Pong, Chamera and Ranjeet Sagar with mean water spread of 26000 ha. The cumulative fish production from these water bodies during 2010-11 was 956.18 mt. Valued Rs. 588.69 lakh and provided livelihood to over 6000 fishermen families. The Fish fauna of both these water bodies differ widely, while Gobind Sagar is exclusively carp reservoir, the Pong reservoir is pre dominantly a cat fish reservoir.

Rainbow trout and Mahasheer are the important fishes in Himachal Pradesh. Rainbow trout are natives of the Sacramento river, flowing in the west coast of United States of America. The first successful transplantation of rainbow trout was achieved during 1912 when Mitchel hatched a consignment of trout eggs presented to him from Bristol water works, Blagdom, England. Later, the rainbow trout was distributed and spread to different states of India. Rainbow trout live mainly in cold rivers and streams at about 55°F to 60°F, but sometimes occupy small cold water lakes.

Such an approach however necessitates traceability for which appropriate genetic tools are required. Consumers can also support politicians who promote biodiversity friendly legislation. If actions such as those proposed here are implemented more widely and robustly, we will be able to reduce the loss of fish biodiversity and improve the chances that our ecosystems will continue to provide the goods and services that many of us now take for granted. If not, then our future images of diverse fish faunas may have to be extracted from archives rather than a leisurely snorkelling tour or a visit to a local fishmonger.

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**Table 1. Fish diversity of Himachal Pradesh.**

SPECIES	LOCAL NAME
FAMILY: NOTOPTERIDAE	
<i>Notopterus chitala</i> (Hamilton)	Pari
<i>N. notopterus</i> (Pallas)	Moh
FAMILY: CYPRINIDAE	
<i>Oxygaster bacailia</i> (Hamilton)	Parrand
<i>O. clupeoides</i> (Bloch)	Tuk
<i>O. gora</i> (Hamilton)	Bunchi
<i>Barilius barila</i> (Hamilton)	--
<i>B. bendelisis chedra.</i> (Hamilton)	Patha
<i>B. modestus</i> (Day)	Chilwa
<i>B. vagra</i> (Hamilton)	Lohari
<i>B. shacra</i> (Hamilton)	Chilwa
<i>Danio (danio)devario</i> (Hamilton)	Parrandah
<i>D. (Brachydanio) rerio</i> (Hamilton)	Kangi
<i>Esomus danricus</i> (Hamilton)	Makni
<i>Rasbora daniconius</i> (Hamilton)	Chindolachal
<i>Amblypharyngodon mola</i> (Hamilton)	Mukni
<i>Aspidoparia morar</i> (Hamilton)	Chilwa
<i>Tor putitora</i> (Hamilton)	Mahseer chiniaru
<i>Puntius chola</i> (Hamilton)	Chidu

<i>P. chrysopterus</i> (McClelland)	Pottiah
<i>P. chonchonius</i> (Hamilton)	Chidu
<i>P. sarana</i> (Hamilton)	Khangni
<i>P. stigma</i> (Hamilton)	Chidu
<i>P. tetrarupagus</i> (McClelland)	--
<i>P. terio</i> (Hamilton)	--
<i>Catla catla</i> (Hamilton)	Theila
<i>Cirrhhina mrigala</i> (Hamilton)	Mori
<i>C. reba</i> (Hamilton)	Sunni
<i>Garra gotyla</i> (Gray)	Kurka
<i>Labeo boga</i> (Hamilton)	Morah
<i>L. calbasu</i> (Hamilton)	Kalbasu
<i>L. dero</i> (Hamilton)	Gid
<i>L. dyocheilus</i> (McClelland)	Kunni
<i>L. gonius</i> (Hamilton)	--
<i>L. pangusia</i> (Hamilton)	--
<i>L. rohita</i> (Hamilton)	Rohi
<i>Oreinus plagiostomus</i> (Heckel)	Goolgali
<i>O. sinuatus</i> (Heckel)	Goolgali
<i>Crossocheilus latius punjabensis</i> (Hamilton)	Tiller
FAMILY: COBITIDAE	
<i>Noemacheilus botia</i> (Hamilton)	Sundal
<i>N. botia aeurus</i> (Hamilton)	Sunda
<i>N. corica</i> (Hamilton)	Talana
<i>N. kangrae</i> (Menon)	--
<i>Botia birdi</i> (Chaudhuri)	Chipar
<i>Lepidocephalus guntea balgara</i> (Hamilton)	Jiwa
FAMILY: SILURIDAE	
<i>Ompak bimaculatus</i> (Bloch)	Pallu
<i>Wallago attu</i> (Hamilton)	Mullae
FAMILY: BAGRIDAE	
<i>Mystus (Mystus) bleekri</i> (Day)	--
<i>M. (Mystus) vittatus</i> (Bloch)	Kingra
<i>M. (Osteobagrus) seenghala</i> (Sykes)	Singhara
<i>Rita rita</i> (Hamilton)	Khagga
FAMILY: AMBLYCIPITIDAE	
<i>Amblyceps mangois</i> (Hamilton)	Sundal
FAMILY: SISORIDAE	
<i>Glyptothorax conirostris</i> (Steind)	Nao
<i>G. pectinopterus</i> (Hamilton)	Mochi nao.
<i>G. stoliczkae</i> (Steind)	Naiya
FAMILY: SCHILBEIDAE	
<i>Clupisoma garua</i> (Hamilton)	Bachwa
FAMILY: BELONIDAE	
<i>Xenentodon cancila</i> (Hamilton)	Takla
FAMILY: MUGLIDAE	
<i>Mugil cascasia</i> (Hamilton)	Buah
FAMILY: CHANNIDAE	
<i>Channa gachau</i> (Hamilton)	Dauli
<i>C. marulius</i> (Hamilton)	Saul
<i>C. punctatus</i> (Bloch)	Daula
FAMILY: ANABANTIDAE	
<i>Colisa fasciata</i> (Bloch)	Chidu
FAMILY: MASTOCEMBELIDAE	
<i>Mastacembalus armatus</i> (Lacepede)	Bami

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