

Fish Environment of Garhwal Himalaya- A Socio-Economic, Religious and Cultural Analysis

Review Article

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Abstract

Fish has a sacred place in Indian culture since time immemorial. It is honored as an incarnation of Lord Vishnu, cultured at home in aquarium to get rid of stress and have a peace of mind, reared in ponds and rivers for protein rich diet, becomes a cheap source of food for needy and poor rural folk and also has been an important source of economy to the country. A socio-economic, religious and cultural aspect of Garhwal region of Uttarakhand was under study for a period of two years. Apart from various issues like historical development in functioning of society, cultural changes and economic source alterations, certain issues were taken up which were observed to have greatest impact on human life of this region. In present communication one such issue, "Fish environment of Garhwal Himalaya- a socio-economic, religious and cultural analysis" has been taken up for discussion.

Keywords: Fish; Fishery; Environment; Economy; Culture; Problems; Perspectives

Introduction

Fish is worshipped as GOD in ancient Indian (Hindu) literature. It has been believed that God Vishnu's first incarnated on earth was as a fish - God Matsya for the welfare of people. The story is like this that during early days of shrishti (earth) a demon named as Hayagreeva theft all important ancient literature and hide beneath earth (Patal Lok). To save the earth and all important ancient literature, Lord Vishnu has to incarnate as Lord Matsya. During this passage he narrated several knowledgeable and educative stories which were compiled in 291 chapters in the form of "MATSYA PURAN" [1,2]. Many of the stories are related to conservation of nature and natural resources. It has been stated and scientifically proved that just by keeping an aquarium in your house you may skip many stressful diseases like high blood pressure, insomnia, body pain, etc. [3,4]. According a scientific

study [5] in 2009 conducted on the patients diagnosed with Alzheimer's disease, it was observed that the patients exposed to the aquaria averaged an increase of 17.2 percent in the amount of food they consumed. Weight also increased significantly, and the patients required fewer nutritional supplements. The engineers of Vaastu shashtra believed that aquarium flashes out all negative aspects of Vaastu by producing high positive energy [6].

The medicinal value of fish is well established. It is rich in protein, vitamins, minerals and the leonelic acid which is considered good for cardiac health. In Garhwal region a considerable rural population falls below the poverty line and suffers from malnutrition. However fish which is cheaply available for them provide them certain relief. In present paper village life of Garhwal region in India, the wetland ecosystems, fish population dynamics and related socio-economic and cultural aspects are discussed here onwards.

Depiction of Fish in Religious Literatures

Vedas are considered as the most ancient literature of human civilization, roughly estimated as about 8000 years old. The fish is discussed in several occasions for different references [7] (Rigveda-7.18.06, 10.68.8.; Athrvaveda- 11.2.25; Yajurveda-24.11; Matsyapuran-24.41; Ramayana-3.73.15, 2.80.21; Mahabharata- Shanti parva, 265.09; Matsyapuran- 252.2, 285.6; Bhagwatpuran- 1.15.25). Diversified nomenclature of fish in ancient literature is indicative of different species (Shalki, Pathir, Pathin, Meenasi, Visar, Animesh, jalchar, timidwaya, Neerniketan and paneeyniket, etc). In Amarkosh (1.10.17-20), the name of fish are given depending upon their specific characters [2]. These are Matsya (*Madyati iti matsya*- means as fish gives you pleasure- it is matsya), Jhash (*Jhash hinsharthah*-as it feeds on other fishes), Rohit (*Raktawat*- blood coloured), Singhatundah- due to lion mouth shaped and Mahashalka (Large scales- which we today call mahseer), etc.

Garhwal Region and its Rural Life

Garhwal region is situated between the latitudes 29° 26'-31° 28' N and longitude 77° 49' - 80° 06' E with a total area of about 30,090 km². Most of the holy rivers owe their origin to the snow peaks of Chamoli and Uttarkashi Districts. Major rivers are Alaknanda, originating from around Badrinath, Mandakini, originating from around Kedarnath, Bhagirathi from Gomukh-Gangotri, Pinder from Pindari glacier and many more spring

fed streams. The pious Ganga is formed by the confluence of Alaknanda and Bhagirathi at Devprayag. All these stream are rich in fish and other aquatic biodiversity.

The rural life is hard in Garhwal region. Villages are mostly situated nearby rivers or small stream for routine requirement. Agriculture do not support the entire need of people. Males of the family usually go outside for job work so that they can earn money and send to their family. In terms of economics it is referred as money order economy. Women of the family are hard working. Entire agriculture work is look after by them. Apart from this they rear animals (cow, buffaloes, oxen, goats and sheep's) and equally contribute to the family economy. Location of most of the villages is so close to water bodies that the children mostly catch some fishes for their routine food requirement. In some families, one of the male members is doing a regular job of collecting fish.

Wetlands of Garhwal

As already stated the Garhwal region is full of natural aquatic ecosystems. According to Dobriyal [8] there are two types of stream in the region. The Snow-fed streams are Alaknanda, Bhagirathi, Bhilangana, Mandakini, Pinder, Nandakini, Vishnuganga, etc. These rivers have low water temperature and high velocity of water current [9-13]. The spring-fed streams are Nayar, Khoh, Mandal, Song, Suswa and hundreds of their minor tributaries. Various aspects of ecology of these streams are studied [14-16].

Table 1: Fish genera available in Garhwal region and their food value (10 point scale).

SN	Fish genera (species number)	Approximat Catch composition of total fishery(%)	Food value base on size and abundance
1	<i>Tor</i> (3)	20-30	10
2	<i>Schizothorax</i> (4)	60-70	10
3	<i>Garra</i> (2)	2-4	07
4	<i>Crossocheilus</i> (1)	2-4	07
5	<i>Barilius</i> (7) In small streams	1-2	05
6	<i>Puntius</i> (6) In small streams	1-2	03
7	<i>Pseudecheneis</i> (1)	1-2	04
8	<i>Glyptothorax</i> (4)	2-4	04
9	<i>Noemacheilus</i> (7) In small streams	1-2	02
10	<i>Schozothoraichthys</i> (2)	1-2	05
11	<i>Mastacembelus</i> (1)	1-2	04
12	<i>Amblyceps</i> (1) In small streams	0-1	01
13	<i>Botia</i> (2)	1-2	02
14	<i>Labeo</i> (1)	2-4	04
15	<i>Channa</i> (2)	1-2	02
16	<i>Xenetodon</i> (1)	0-1	02
17	<i>Lepidocephalichthys</i> (1) In small streams	0-1	01
18	<i>Balitora</i> (1) In small streams	0-1	02
19	<i>Colisa</i> (2)	1-2	02
20	<i>Channa</i> (1)	1-2	02

Table 2: Ichthyotoxic plant used by the folk.

SN	Local Name of Plants	Botanical Name of Plants	Family	Plant Part in use
1.	Khinna	<i>Sapium insigne</i>	<i>Euphorbiaceae</i>	Buds and leaves
2.	Mahua	<i>Madhuca longifolia</i>	<i>Sapotaceae</i>	Leaves, Bark and seed powder
3.	Sulla	<i>Euphorbia royleana</i>	<i>Euphorbiaceae</i>	Plant past
4.	Rambans	<i>Agave americana</i>	<i>Agavaceae</i>	Bark
5.	Jamuna	<i>Syzygium cumini</i>	<i>Myrtaceae</i>	Bark and leaves juice

Fish Population and Food Value

Garhwal hillstreams are full of aquatic life including fishes. The coldwater streams are enriched by schizothoracine and golden mahseer fishery while the spring fed streams are rich with minor carps, loaches and catfishes [7,8,17,18]. Available fish genera and their number of species along with food value is presented in Table 1. *Schizothorax* sp (snow trout) is the major fishery of region which contribute to about 70 % in quantum. *Tor* fishery makes 2nd position being about 25 % in catch quantum. *Crossocheilus* and *Garra* are prominent among others [19].

Ecological Problems due to Anthropological Activities

The colourful fish fauna of these streams is under great threat due to some human activities. Most important one is the damming of the rivers at regular interval for power generation. This has altered the ecology of streams at a larger area. The feeding and breeding grounds of fishes are under destruction. Mahseer is a potamodromous fish which locally migrates from large coldwater rivers to upward spring fed stream for spawning. The unscientific dam planning has hampered the mahseer population. Another issue is of overfishing. Illiterate folk uses various unscientific means of fishing like use of bleaching powder, electric shocks and toxic plants [Table 2]. This is doing great loss to fishery. Some university researchers are running some ecological awareness programs but the intervention or action at Government level is urgently required.

Possibilities for Conservation

It is required to make in-situ and ex-situ conservation of aquatic biodiversity. Migration passage should be allowed while damming the stream. Overfishing should be completely banned. Fish hatcheries and nurseries be established at the river banks. Induced breeding programmes through use of new generation drugs (Ovaprim/ovotide etc) are necessary. And finally extensive ecological awareness program is needed to be launched.

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