

PISCINE DIVERSITY OF HILLSTREAM CHHIRAPANI IN CHAMPAWAT DISTRICT OF KUMAON HIMALAYA

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ABSTRACT

The streams play a vital role in maintenance of the fragile aquatic ecosystem and provide a natural habitat for aquatic biodiversity of Himalayan region. But the fast changing ecology of these upland streams seems to have primarily affected the well being of the fish species inhabiting in coldwater bodies. Chhirapani is a third order perennial stream of Champawat district and represents a typical hill stream of the region. The stream harbors only two fish species *Schizothorax richardsonii* and *Nemacheilus rupicola* in upper stretch and another 12 species of *Labeo*, *Tor*, *Puntius*, *Garra*, etc are found in the lower stretch of the stream near confluence of the Lohawati river. The catch per unit effort (CPUE) value on the basis of experimental fishing ranged from 0.0330 to 0.4609 gm/man/hr and *Schizothorax richardsonii* was always dominant (82-100 %) in total catch in both sites of the stream. But the fish population is drastically affected due to the soil erosion as a result of deforestation in catchment areas, human interference and over exploitation of the fish resources in the stream.

Key Words: *Piscine diversity, Chhirapani stream, catch percentage.*

INTRODUCTION

Indian uplands, particularly the Himalayas, are bestowed with a great wealth of constantly flowing river and streams from time immemorial. The mountain streams or rivers primarily consist of a series of tributaries which join each other and form the principal stream and river. These streams situated in different geographical zones though have ecological solidarity in their biota but there are great variations in abundance of the fish species and thus may be classified as high mountain, mountain and foothill streams and further described as trout, snow trout and mahseer streams (Sehgal, 1983).

Fishes have been associated with the human race in term of an important source of food, sport and recreation. But due to over exploitation of the fishery resources, pollution, siltation and excess water abstraction coupled with habitat destruction resulted in the shrinkage of fish population (Dehadrai *et al.* 1994). The present papers described the primary data on the fish diversity of a small coldwater stream with their habitat degradation, use of fishing method and suggest the conservation measures to restoration the natural habitat for the endemic fish fauna of the stream.

MATERIALS AND METHODS

The Chhirapani stream is a small perennial stream which originates from a spring in dense oak forest of Champawat district located at an altitude of 1620 m asl. (Long. 80°7' N, Lat. 29°30' E) in central Himalaya. Chhirapani is an important tributary of river Lohawati flow north-east and provide suitable spawning habitat for many hill stream fishes.

Fish samples were collected by the repeated netting in different sites of Chhirapani stream during 2002-2003. Besides personal fish collections, some fishes were procured also from the local fisherman and anglers at different sampling sites. Fish identification was done by using various morphometric and meristic characters of different fish species with the help of Day (1878) and Talwar and Jhingran (1991) and calculated the catch per unit effort (CPUE) for the assessment of fish productivity of the stream.

RESULTS AND DISCUSSION

The stream harbors diverse endemic fish fauna in different zones. The distribution of the fish species in any aquatic ecosystem depends upon the flow rate, nature of substratum, water level and availability of food materials in the form of plankton and benthic invertebrates. The fish diversity of the state is represented by 78 fish species in various hill ecosystems (Sehgal, 1983 and Singh & Sharma, 1998). But in the present observations, only fourteen fish species belongs to four families, six sub-families, three order and eleven genera identified from Chhirapani stream (Table-1). Similarly, Bhatt *et. al.* (1984) have reported 27 fish species from Kosi river and Joshi *et al.* (1993) reported 18 fish species from river Goriganga of Pithoragarh district of Kumaon region.

Only two fish species *Schizothorax richardsonii* and *Nemachelius rupicola* were encountered in the upper stretch while other species namely *Schizothorax plagiostomus*, *Tor putitora*, *Tor chelynoides*, *Barilius bendelisis*, *Barilius vagra*, *Garra gotyla gotyla*, *Nemachelius botia*, *Glyptothorax pectinopterus*, *Crossocheliu latius latius*, *Labeo dero*, *Botia almorhae* and *Mastacembalus armatus* along with *Schizothorax richardsonii* and *Nemachelius rupicola* were encountered in the lower stretches of Chhirapani stream.

The maximum fish catch with largest size specimen were registered during post monsoon season, whereas minimum during the month of May-June. The stream has a good population of snow trout (*Schizothorax richardsonii*) during monsoon and post monsoon period and constitutes the most dominant fish species (98-100 %) and (82-87 %) of dominance exhibited in upper and lower stretches of Chhirapani hill-stream respectively. Similarly, *Schizothorax richardsonii* is

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REFERENCES

- Anonymous 1999-2000. *Annual Report of NRC on Coldwater Fisheries, Bhimtal (Nainital)*. 80p.
- Badola, S.P. and Singh, H. R. 1981. Fish and fisheries of river Alaknanda. *Proc. Nat. Acad. Sci. India*, B51: 133-142.
- Badola, S.P. and Badola, S. 1999. Observations on destructive fishing methods and recommendations to protect fish fauna in Garhwal Himalaya. *Sustainable Eco System & Environment* (D.R. Khanna, A. Gautam and Aditya Gautam Eds.). pp: 165-168.
- Bhatt, S.D. and Pathak, J.K. 1992. Fish and Fisheries. In: "*Himalayan Environment : Water quality of the drainage basins.*" Shree Almora Book Depot, Almora. pp. 209-259.
- Bhatt, S.D., Bisht, Y. and Negi, U. 1984. Ecology of the limnofauna in the river Kosi of the Kumaon Himalaya, U.P. *Proc. Indian Nat. Sci. Acad.*, 50 (2): 396-405.
- Das, P. and Joshi, K.D. 1993. Why sustainable fish harvesting? *Intensive Agriculture*, 31 (5-6): 18-22.
- Day, F. 1878. *The fishes of India*. William Dowson & Sons, Ltd. London. pp: 778.
- Dehadrai, P.V., Das, P. and Verma, S.R. 1994. *Threatened fishes of India*. Natcon Pub. 4: 1-412.
- Joshi, K.D. and Kapoor, D. 1994. Endangered mahseer of Kumaon Hills. In: *Threatened Fishes of India*. (Eds. P.V. Dehadrai, P. Das and S.R. Verma). Natcon Publication, 4: 169-171.
- Joshi, S.N., Tripathi, G and Tiwari, B.C. 1993. Fish and Fisheries of Goriganga. In: Singh, H.R. (ed.). "*Advances in Limnology.*" Narendra Publishing House, Delhi. pp: 361-366.
- Sehgal, K.L. 1971. Coldwater Fisheries and their development in India for sport and profit. *Silver Jubilee CIFRI Souvenir*. pp: 125-131.
- Sehgal, K.L. 1983. Fishery resources and their management. In. T.V. Singh and J. Kaur (Eds.). "*Studies in ecodevelopment: Himalayas Mountain and Men.*" Print House India, Lucknow. pp: 225-272.
- Singh, D. and Sharma, R.C. 1998. Biodiversity, ecological status and conservation priority of the fishes of river Alaknanda, a parent stream of the river Ganges (India). *Aquatic Conservation: Marine & Freshwater Ecosystem*, 8(6): 716-772.
- Talwar, P.K. and Jhingran, A.G. 1991. Inland fishes of India and adjacent countries. Vols. 1 and 2, Oxford & IBH Publication, New Delhi. pp: 1-1158.
- Valdiya, K.S. 1987. *Environmental Geology: Indian Context*. Tata-McGraw Hill, New Delhi. pp: 583.
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