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Editorial

Editorial Note on Cold Water Fisheries

Rebeaca Frosty

Department of Fish, and Conservation Biology, University of California, Davis, USA

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Abstract: The diverse natural resource-base, wide climatic diversity of the cold water sector harbour plentiful gene pool which are conducive to conservation and rearing for developing domestic market, aquaculture and growing interest of people in fish farming, ornamental fish keeping and eco-tourism including angling. However, emerging anthropogenic pressure, flow regimes of streams, and climate change are adversely affecting coldwater resources and their fisheries; lead to reduce overall productivity. Nevertheless, technology developed for the culture, breeding and management of the economically viable cold water fish species has a positive impact on the production and productivity, employment generation and sustainable management of the aquatic resources and their piscine faunas.the theoretical tools of political philosophy to identify and distinguish features of harvesters' beliefs that might be relevant to policymakers.

***Correspondence to:** **Frosty R,** Department of Fish, and Conservation Biology, University of California, Davis, USA, E-mail: Rebeacafr@gmail.edu

Introduction

The present exploitation of fishery resources in upland regions comes mainly in the form of capture fisheries serving as subsistence fishery, though fish production through culture practices is gaining momentum. At present the total fish production from upland areas contributes about 3% of total inland fish production of India. The low contribution to the total fish production is attributable to several constraints such as low productivity of upland waters, comparatively slow growth rate in majority of fish species, low fecundity and poor landing and marketing facility. The Directorate of Coldwater Fisheries Research (DCFR) being a national organization catering the research and development need of the upland waters has achieved manifold success in the management of fish genetic diversity and establishment of aquaculture in the hill regions of India. DCFR has also developed technology of economically viable coldwater fish species such as mahseer, snow trout, minor carps and even trout for enhancing production and productivity which has a positive impact on the employment generation and sustainable management of the aquatic resources and their piscine fauna of the hill region.

Fish Biodiversity

The water bodies of the Himalayan region inhabit diverse kind of fish fauna. Out of total fish fauna available in India 17% fishes were documented from the mountain ecosystem establishing the status of the area as a center of origin and evolution of biotic forms (Ghosh, 1997). The vast mountain fishery resources of India inhabits around 258 fish species distributed in the Himalayan and peninsular region of the country of which indigenous mahseer, snow trout, exotic trout and common carp are commercially important (Singh et al, 2014). About 36 species of freshwater fishes (out of 1,300) are endemic to the Himalayan region (Ghosh, 1997). For the whole Himalayas, 218 species are listed (Menon, 1962). The distribution of fish species in the Himalayan streams depends on the flow rate, nature of substratum, water temperature and the availability of food. The species distribution in the upper reaches of the stream/ river where water has a torrential flow is different from the mid and lower reaches of the stream where flow is moderate and water current is soft. A number of fish species such as Noemacheilus gracilis, N. stoliczkae, Glyptosternum reticulatum, Diptychus maculates, Noemacheilus spp., Schizothoraichthys esocinus, S. progastus, Schizothorax richardsonii, Schizopygopsis stoliczkae, Garra gotyla, Crossocheilus diplochilus, Labeo dero and L. dyocheilus are found distributed in the different reaches of the river. The eastern Himalaya drained by the Brahmaputra has a greater diversity of Coldwater fish than the western Himalayan drainage. Among all these species a few supports the capture fishery while some are being cultivated in the farm condition at different altitudes based on their temperature tolerances.

Mountain Fisheries

The present exploitation of fishery resources in upland regions comes mainly from capture fisheries, though fish production through culture practices is gaining momentum. Fish production in hill region is confined to inland waters such as river streams, lakes and reservoirs. Data generated on the catch per unit efforts (CPUE) indicated low catch ranging from 200g to 1900g per hour for the middle and lower altitudes. Several constraints such as low productivity of upland waters, comparatively slow growth rate in almost all fish species, low fecundity in fishes and poor landing and marketing facility have been seen as major obstacles in the rapid development and expansion of coldwater fish production.