

M. Sc. IV Sem.

Paper Elective Paper II

Fishery Science, Capture Fishery

Cold water fishery and its resources

The cold water fisheries have a great scope in the upland water masses of India which are significantly abundant in the Himalayan region of Kashmir, Himachal Pradesh, Uttarakhand, Meghalaya, North Bengal, Sikkim and Arunachal Pradesh and in the Deccan plateau region of the peninsular part of the country namely Tamil Nadu and Kerala.

The cold water fishery resources in India comprise high and mid altitude streams, rivers, their tributaries and lakes and small and large reservoirs dammed across such rivers. Such water bodies abundantly found in the Himalayan region and in the Deccan plateau region of the peninsular India. These are either fed by melting snow and the springs as in north or by the rain water as in Deccan plateau. These resources are poorly developed, primarily due to paucity of financial resources, scientific knowledge, technical supports and limited development efforts. These waters maintain relatively low temperature which supports low production or low yield levels. But its importance in the large context of comprising unique fish biodiversity with valuable indigenous germplasm and maintaining environmental quality of the hills.

Fishes adapted to live at a temperature tolerance, in lower level of which is in the range of 0 to 4 °C and the upper level in the range of 10 to 20 °C, constitute the cold water fisheries. Stenothermal varieties among these (trouts) have a limited distribution as compared to wide distribution of Eurythermal kinds (most indigenous fish species).

Fish Diversity

In India, cold water or uplands 258 species of indigenous and exotic fish are spread over in the Himalayas and the peninsular plateau, which belong to 21 families and 76 genera. The vast and varied fish diversity includes tiny loaches to mighty mahseers. As far as commercial importance of the available species is concerned, some of the cold water fishes are known for spots, food fishes and a few for their ornamental value.

Sport Fishes: An important of cold water fish of the uplands is the opportunity the species provide for sport or game. Brown trout (*Salmo trutta fario*), Rainbow trout (*Oncorhynchus mykiss*) and certain species of large-scaled like Golden mahseer (*Tor putitora*), Deep bodied mahseer (*Tor tor*), Copper mahseer (*Tor mosal*) and Chocolate mahseer (*Neolissocheilus hexagonolepis*) are the principal species of sport or game value in Jammu and Kashmir, Ladakh, Himachal Pradesh, Uttrakhand, North-eastern states, Nilgiris and Kodai hills. In certain regions of the country, sport fishery constitutes an important source of the revenue and employment.

Food fishes: The majority of the cold water fishes are caught individuals by local fishermen in the streams and rivers due to substratum structure and river course or path. A few such as Rainbow trout (*Oncorhynchus mykiss*), Snow trout (*Schizothorax* spp), mahseer (*Tor* spp and *Neolissocheilu hexagonolepis*), Common carp or China Rohu (*Cyprinus carpio*) and few minor carp (*Labeo dero*, *Labeo dyocheilus*) are some of the commercially important food fishes. Presently, the fish farming in the hilly region is based on exotic fish species with indigenous species. But there are some native species having cultivable traits, which could be classified as food fishes.

Ornamental fishes: Some colourful and fascinating species also inhabit different aquatic resource of the cold water zones. Some ornamental fishes are found as like *Danio devario*, *Botia almorhae*, *Barilius bendelisis*, *Barilius bakeri*, *Hara* spp and *Oriechthys* spp.

A large number of indigenous fish species and several others exotic species, thrive well in cold water or mountain water. But the total production or yield is negligible in comparison to other low land aquatic resources. With the growing realization for the establishment of fisheries at high altitudes and cultivation of cold water fishes, efforts have been made but have meet with the little success. The trout hatchery established in Kashmir (Harwan) is one of the potential sources, from where the brown trout (*Salmo trutta fario*) have been transplanted to the cold water or upland waters of Kashmir, Jammu, Kullu, Kangra, Simla, Nainital, Shillong and Arunachal Pradesh. Similarly, the rainbow trout (*Oncorhynchus mykiss*) have been transplanted to the hill streams of Nilgiris. Other hatcheries established at Avalanche (Nilgiris) and Eravikolam and Rajamallay (Kerala) also provide seeds for restocking the cold waters.

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