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COMMENTARY

Remembering the remnants of trout fisheries in the Nilgiris, Western Ghats, South India

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Trout fisheries first began in the Ooty region in the Nilgiris Mountains of South India during the late 1800s, followed by other cold-water regions in India. Trout fisheries are well established in North India but are not developed in South India. Efforts were taken to know the present status of the trout population in the montane regions of Ooty as it is a very pristine place for the trout species to flourish and investigations revealed that the trout stock is in an endangered state but proper conservative measures taken can help in its sustainable development.

The British in the late 1800s found the cool water streams of the Nilgiris region in South India suitable for trout culture. Hence initial attempts to establish trout in India were made in the Ooty region towards the end of the 19th century¹. It began with the introduction of brown trout (*Salmo trutta fario*) and Loch Leven trout (*Salmo levensis*) in 1863 by Francis Day, but failed even after four decades of effort². Later in 1909, Henry. C. Wilson introduced rainbow trout (*Oncorhynchus mykiss*) from New Zealand successfully along with a hatchery constructed in 1910. Decrease in size and number was noticed in 1913, indicating high fishing pressure. Attempts to improve the stock was done in 1920 with rainbow trout from Kashmir³ followed by introductions from Japan in 1968 with golden rainbow trout (*Oncorhynchus mykiss aquabonita*), brown trout, tiger trout (hybrid between brown trout and brook trout) and Sockeye salmon (*Oncorhynchus nerka*). The golden rainbow trout established itself as the dominant strain, while rest of the introduced species failed to establish. In 1974, 10,000-eyed ova of albino strain of rainbow trout was introduced⁴, but perished

due to fungal infection⁵. Stock improvement was again done in 1989 by introducing trout strains from Munnar and hybrids were formed, but no study has been made on the performance of these hybrids⁶. In 1997, the National Bureau of Fish Genetic Resources initiated a cross-breeding programme, but it failed due to untimely weather conditions with a poor success rate of 0.5% (ref. 7). Though the trout fisheries got established in the Ooty region, angling (trout fishing) evidence was available from 1966 to 1970 (refs 8, 9) and 1997 to 1998 (ref. 6), after which no reports were available in subsequent years.

Present status of trout fisheries in Ooty

In 2015 (after 16 years), fish biologists from Madurai Kamaraj University assessed the present status of trout fisheries in Ooty. The Assistant Director of Fisheries of Ooty revealed that angling activities have been banned from 2000 to avoid fishing exploitation. Every year, the Fisheries Department raises fingerlings and stocks them in the Upper Bhavani reservoir of

Ooty, but the rate of recovery is not known. Ripe brooders from the Upper Bhavani reservoir are caught and stripped for eggs and milt, which are then mixed for fertilization in specialized containers and then taken to the hatchery in the Avalanche Forest zone. The maximum number of wild trouts taken annually for breeding ranges from 300 to 500. Rainbow trout are now designated as ‘wildlife fish’ (importance of protection of this species is equivalent to that of the tiger) to save them from poaching. Wild stocks of the trout exist in less numbers in the Avalanche Lake and Mukurthi Reservoir, but breeding operations are not done in these waterbodies. Commercialization of trout is not practised in this geographical location. Records for the available years from 2011 to 2019 showed that a total of 633,340 eyed ova were produced, and the total number of fingerlings stocked was 462,350 and success rate was 73%. The produced fingerlings have been stocked along with the wild brooders and so stocking density is high in the Upper Bhavani reservoir. But recently in 2019, torrential rainfall and landslides have caused massive damage to the hatchery. The Upper Bhavani reservoir which

is the only stocking site suffered damage of the reservoir wall, the repairing of which required the water and the entire trout stock to be flushed out. Thus, only a little stock is now available in the Upper Bhavani reservoir and with the remaining numbers in the Avalanche Lake and Mukurthi reservoir, trout stock in the Ooty region is in an endangered state.

Future management of trout fisheries in Ooty

The other Western Ghats regions in South India where rainbow trout is present are the hill stations of Munnar and Kodaikanal. Trout fisheries in Ooty hold ambient potential for growth, cultivation and farming, but are now bred on a small scale¹⁰. It is completely under the control of the Department of Fisheries, Government of Tamil Nadu. However, certain conservation measures can help in the sustainable development of this existing rainbow trout stock in the long run. Though the trout population has successfully adapted to the cold-water environment in this geographical location, for sustainable development in the near future there is a rising need for introduction of new rainbow trout strains for upgradation of genetic variability, which can make the population viable. New trout stocks need to be released in the

Upper Bhavani reservoir. Stripping and hatching sheds should be constructed along the banks of the Upper Bhavani reservoir, Avalanche Lake and Mukurthi reservoir. These can help in catching the brood fish and in stripping as well as fertilization and incubation of the fertilized eggs, thereby reducing their mortality. Catch and release angling with supervision of the fisheries officials can be beneficial for population monitoring. It needs implementation with stringent action against poaching of trout fish. Maintenance of hatchery premises using sanitary measures is necessary, along with protection from animal intrusion (mainly by otters). Cage culture of trout can also be implemented for the employment and benefit of rural communities in the trout zones. The rainbow trout population in the Ooty region of South India has high development potential. However, the above-mentioned conservative steps can contribute to sustainable development in the long run in this region of southern Peninsular India.

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