



Trout Feed: A Vital Source of Livelihood and the Lifeline for Sustaining Trout Populations in the Trans Himalayan region of India

Aadil Hussain Magloo¹ and Rinkesh Nemichand Wanjari^{1*}

¹Faculty of Fisheries, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir

Corresponding Author

Rinkesh Nemichand Wanjari

Email: rinkeshwanjari0712@gmail.com

(Received- 14.12.2023, Revised- 5.02.2024, Accepted- 08.02.2024, Published: 23.02.2024)

How to cite this article:

Magloo, A. H. and Wanjari, R. N. 2024. Trout Feed: A Vital Source of Livelihood and the Lifeline for Sustaining Trout Populations in the Trans Himalayan region of India. *Chronicle of Aquatic Science* 1(9): 22-25.

ABSTRACT

Jammu and Kashmir emerged as a leader in trout culture in India, with key research institutes and the support of the European Economic Community contributing to its success. The privatization of trout farming under the Rashtriya Krishi Vikas Yojana (RKVY) Scheme in 2009-10 led to increased demand for trout feed and the establishment of a modern feed mill in 2012, further promoting trout farming and encouraging young entrepreneurs to enter the industry for their livelihoods.

KEYWORDS

Trout Farming, Kashmir, Feed mill, Brown trout, livelihood

Introduction

In 1899, F.J. Mitchell initiated the introduction of Brown Trout to the Kashmir Valley by importing a shipment of eyed-eggs from England (Mitchell, 1918). Unfortunately, this entire consignment perished during transit due to heat. However, in 1900, another batch of eyed-eggs of the same species was procured from Howeiton in Scotland. The swim-up fry from these eggs were successfully raised to adulthood, and the first spawning or egg collection of Brown Trout (*Salmo trutta fario*) occurred in December 1905 near Srinagar in Harwan, Kashmir. In the following year, 1905-1906, Mitchell successfully established a consistent Trout Hatchery at Harwan, Srinagar, with a capacity of 100,000 green eggs. Since then, Brown Trout has flourished throughout Kashmir and parts of Jammu, notably in Badarwah and Poonch, providing recreational fly and spoon fishing opportunities year after year for numerous anglers who visit the state. It was from Kashmir that Brown Trout was later introduced to other regions of the Himalayas. In 1912, Mitchell accomplished the hatching and rearing of rainbow trout (*Oncorhynchus mykiss*) eggs from a consignment gifted to him by the Bristol Water Works in England. Presently, the Jammu & Kashmir Fisheries Department has achieved remarkable success, with 32 trout rearing units operating in various districts of the UT. The department generates substantial revenue through the sale of trout from outlets located across the UT.

Livelihood

In hilly areas, people often have limited job options and struggle to access nutritious, protein-rich food. These regions also face high unemployment rates and a lack of job opportunities. In 2009-2010, the Jammu and Kashmir fisheries department identified trout farming as a way to create jobs for the young people. They began a program to encourage private investment in trout farming, and started privatization of trout culture under RKVY

(centrally sponsored scheme) offering an 80% subsidy, with the remaining 20% of the costs to be covered by the beneficiaries (Gawa et al., 2016). Jammu and Kashmir stands out as an incredibly unique union territory, defined by its remarkable ecological and environmental diversity across two distinct regions. The state is home to the prized cold-water fish species, trout, which originally hails from North America (Waweru, 2012). Within Jammu and Kashmir, we find two trout species, the Rainbow (Figure 1) and Brown trout (Figure 2) (Hassan and Pandey, 2012). Trout farming primarily takes place in the Kashmir region of the state, benefiting from its favourable climatic conditions (Gawa et al., 2016; Gawa et al., 2017). In addition to Jammu and Kashmir, trout is also found in several other Indian states, including Himachal Pradesh, Nilgiris in Tamil Nadu, Uttarakhand, Sikkim, and Arunachal Pradesh (Ayyappan et al., 2006). Among these, Jammu and Kashmir leads the way in pioneering trout culture, closely followed by Himachal Pradesh. The Directorate of Cold Water Fisheries Research in Bhimtal (India) and Faculty of Fisheries, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K) are the premier research institutes dedicated to advancing trout culture and promoting the farming of this high-value fish in the Trans-Himalayan region. Since trout culture relies on an intensive system and artificial feed, it is crucial to ensure a consistent supply of cost-effective feed to sustain the culture system. Both Jammu and Kashmir and Himachal Pradesh have established trout hatcheries and feed mills, with financial and technical support from the European Economic Community in the mid-80s. These facilities are still operational and contribute to the success of trout farming in the region (Ayyappan et al., 2006). The UT of Jammu and Kashmir operates two significant feed mills, one at the Kokarnag Trout Fish Farm in Anantnag district and the other at the Manasbal National Fish Seed Farm in Ganderbal district (Gawa et al., 2016). The Kokarnag Trout Fish Farm is the largest of its

kind in India and quite possibly the largest in all of Asia. The first feed mill was established at this farm in 1984 with financial and technical support from the European Economic Commission (EEC), which was imported from Holland. This feed mill remains in good working condition, with a reported production capacity of 0.5 to 0.6 tons per day. It is operated based on the farm's feed requirements.



Figure 1: Rainbow trout (*Oncorhynchus mykiss*)



Figure 2: Brown trout (*Salmo trutta fario*)

Dissemination of Trout Culture

When the state's fisheries department initiated the privatization of trout farming under the Rashtriya Krishi Vikas Yojana (RKVY) Scheme in 2009-10 (DoF, 2016), the demand for trout feed in the state surged due to the increasing number of private trout farmers. To meet this growing demand, the fisheries department successfully established a new feed mill at the Manasbal National Fish Seed Farm in 2012, also sourced from the Netherlands. This feed mill is fully computerized and has a reported production capacity of 1 ton per hour. With the addition of this new feed mill, the state's feed requirements have been met, and most of the feed used in the state is now supplied by this modern facility. This development has significantly boosted trout farming in the state, leading to a rise in the

number of young entrepreneurs taking up trout farming as a means of livelihood.

Conclusion

Trout farming has played a crucial role in the Trans-Himalayan region of India, particularly in Jammu and Kashmir. It was introduced to the region in the early 20th century and has since become a vital source of livelihood for the local population. The state's fisheries department has taken proactive steps to promote trout farming and create job opportunities, especially for the youth, by offering subsidies and encouraging private investment in the sector. Trout farming not only provides economic benefits but also addresses the challenges of limited job options, high unemployment rates, and the need for nutritious, protein-rich food in hilly areas. This development has led to the establishment of numerous trout rearing units and feed mills, making it a sustainable source of income for many in the region. The success of trout farming in Jammu and Kashmir has also had a positive impact on sustaining trout populations, which are crucial for recreational fishing and the preservation of these cold-water fish species. Furthermore, the availability of cost-effective feed through modern feed mills has significantly boosted the trout farming industry, making it an attractive option for young entrepreneurs seeking livelihood opportunities. Overall, trout farming has become a lifeline for sustaining both the local economy and trout populations in the Trans-Himalayan region of India.

Way Forward

Even though the government provides subsidies to trout farmers based on feed, yet the supply is insufficient to meet their demand. To make up for this shortfall, farmers in the trans-Himalayan states import feed from private companies in other regions. This results in additional costs due to transportation, labour and the profit margins of these companies, which ultimately increase the price of the feed. It is evident that there is a pressing need for the

government to establish more feed mills in the trans-Himalayan states to boost the economy of trout farming. Further the Department of Fisheries (Jammu and Kashmir) should carefully consider this issue and evaluate whether, before granting permission for a private company to import feed, we can utilize our domestic resources to their maximum capacity. This approach could potentially provide a solution to the problem. Here I would like to conclude it with a quote of George Orwell "If you want to keep a secret you must also hide it from yourself".

References

Ayyappan, S., Jena, J.K., Gopalakrishnan, A. and Pandey, A.K (2006). *Handbook of fisheries and aquaculture*. Indian Council of Agricultural Research. New Delhi 100012.
DoF (Department of Fisheries) (2016). Official website of Department of Fisheries, Jammu and Kashmir. RKVY Scheme. Accessed on 24 October 2023.
Gawa, S., Kumar, N.R., Tiwari, V.K., Prakash, S., Yadav, V.K and Wani, G.B (2017). *Trout*

culture in Kashmir- An opportunity for profitable enterprise. In: Social entrepreneurship in Aquaculture. (Ed. Sinha, V.R.P., Krishna, G., Keshavanth, P and Kumar, N.R). Narendra Publishing House, Delhi, India. 381-389pp

Gawa, S., Kumar, N.R., Wani, G.B., Hatte, V.M. and Vinay, A., (2016). Mapping the core processes and identifying actors along with their roles, functions and linkages in trout value chain in Kashmir, India. *World Academy of Science, Engineering and Technology, International Journal of Biological, Biomolecular, Agricultural, Food and Biotechnological Engineering*, 10(6):317-321
Waweru, P.T. (2012). *Trout fish value chain analysis*, Jitunze Environment Self Help Group, pp.33
Hassan, N.U. and Pandey, D.N., 2012. Present status of trout fisheries in Jammu and Kashmir. *IOSR Journal of Pharmacy*, 2(5):35-37.
Mitchell, F.J., (1918) - How trout were introduced in Kashmir. *Bombay Nat. Hist. Soc.* 26(1):176-79 and 295-99.

COPYRIGHT

This is an **open-access article** distributed under the terms of the **Creative Commons Attribution License (CC BY)**. The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms