



“Assessment of Ichthyofaunal Diversity, Threat Status and Conservation Strategies of Dal Lake Srinagar”

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Abstract

Fishes are an integral component of any water body and play vital role in the economy of a region. Any change in the natural status of a water body has significant influence on its biotic as well as abiotic factors which eventually affect its flora and fauna, thereby modifying their IUCN status. This hypothesis was investigated in the present study wherein diversity, threat status and conservation strategies of fishes in Dal lake were studied. The fish samples were collected from three designated sites of the lake and during the course of this study only eight species of fishes were identified wherein the population of each species displayed significant decline to such a number which is quite less than the original number of fishes the lake used to inhabit. The result of this study indicate significant decline in fish species and demands urgent attention to restore its ichthyofaunal diversity. This study has great implication in predicting the ichthyofaunal status of any water body and conservation strategies needed.

Keywords: Conservation, Dal Lake, Diversity, Ichthyofauna, IUCN Status

Introduction

The splendid valley of Kashmir surrounded by massive mountains on all sides is renowned for several fresh water bodies both lotic and lentic in nature. Major Lentic water bodies found in the region are Dal Lake, Nigeen Lake, Manasbal Lake, Wular Lake and Anchar Lake. Out of these lentic water bodies, Dal Lake is one of the famous lakes situated in Kashmir valley. The lake is well known for high biological productivity wherein fishes make up the one of its major biotic components and is known to inhabit several species of fresh water fishes. These fishes due to being best source of proteins with high calorific value, play significant role in the economy of the region where majority of people living around the lake are busy with fish trade (Annah et al., 2006). Owing to rich source of proteins and other essential nutrients fishes are preferred source of food in Kashmir region (Sikoki et al., 1999). Despite being main source of fishes and offers several other benefits to the people in the region, unfortunately during the last decade, the condition of the lake is deteriorating at such a pace if not taken immediate care may lose all its biodiversity within near future. Several studies have been

carried out in the past to study the diversity of fish species in the lake wherein more than 14 species of fishes have been reported but during the present study only eight species have been reported indicating significant decline in the number of fish species (Yousuf et al. (2006). This study suggests that the lake under consideration is under immense anthropological pressure and demands instant attention to prevent further loss of its biological diversity. The present study was aimed to provide updated status of fish diversity of the Lake. Further the study aimed to determine the threat status of the lake and explore possible conservational measure to revive its natural status.

Material and Methods

The experiment to study the fish diversity, threat status and conservation strategies of Dal Lake was conducted in the Department of Zoology, AAA Memorial Govt. Degree College Bemina Srinagar-190018, and Jammu and Kashmir for a period of six months from January 2025 to June 2025. With the help of local fishermen, the fish samples were collected from three designated sites of the lake- Site I (Hazratbal beat), Site II (Nehru Park beat) and Site III (Nishat beat). The fishes were collected after every fortnight for a period of six months usually in the early hours of the day. The fish samples were brought to the laboratory in oxygen filled bags and were treated with 0.05% KMnO₄ to disinfect them for any dermal infection. Th fish samples were evaluated and identified using standard taxonomic works by Kullandar et al., 1999)

Result and Discussion

During the entire phase of this study a total of eight fish species were recorded from the designated water body wherein *Cyprinus carpio specularis* displayed maximum abundance at all the three sites followed by *Cyprinus carpio communis*. On the other hand *Schizothorax curvifrons* and *Schizothorax niger* displayed least abundance at all the three designed sites. Among other reported species *Carassius carassius*, *Crossochellus diplochilus*, *Puntius conchoni* and *Gambusia holbrooki* almost displayed normal presence at all the studied sites. However the serious concern is that out of many previously reported species such as *Botia birdi*, *Schizothorax curvifrons* none of the individual was reported. Thus according to the result of this study, the ichthyofaunal diversity of the lake is significantly declined and even few species remain unreported. This decline in fish diversity may mainly be attributed to discharging of untreated sewage and toxic agricultural runoff into the lake, eutrophication, introduction of invasive exotic species, the practice of overfishing, loss of breeding grounds etc., The recent discovery of alligator gar which is an invasive carnivorous fish feeding on fingerlings and fry of native *Schizothorax* species (snow trout) may also be attributed to the significantly decline in the number of *Schizothorax* species in the lake. Owing to this significant decline of fish species and for the revival of its natural status, immediate conservation steps like controlling untreated sewage input, preventing input of agricultural runoff, managing its delicate urban ecosystem, strict aquatic weed management must be applied. Among other conservation methods restocking native, endemic species, banning introduction of exotic invasive species, banning overfishing are urgently needed to save and restore lake's natural status.

Tab. Fish species reported from three sites of Dal Lake

Sr.No	Fish Species	Fishes reported from three designated sites of Dal lake		
		Site 1 (Hazratbal Beat)	Site II (Nehru Park Beat)	Site III (Nishat Beat)
1.	<i>Cyprinus carpio specularis</i>	52	65	48
2.	<i>Cyrinus carpio communis</i>	48	61	43
3.	<i>Carassius carassius</i>	45	53	42
4.	<i>Crossochellus diplochilus</i>	37	47	34
5.	<i>Puntius conchoni</i>	14	23	11

6.	<i>Gambusia holbrooki</i>	12	18	10
7.	<i>Schizothorax niger</i>	7	7	5
8.	<i>Schizothorax curvifrons</i>	4	7	4

Conclusion: The outcome of this study demonstrates that the ichthyofaunal status of Dal Lake is severely affected wherein few species are reduced to such a number that they are currently listed as vulnerable and therefore demand immediate conservation strategies.

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