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Icthyofaunal Diversity of Dhaura Reservoir, Kichha, Uttarakhand, India

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Abstract

Dhaura reservoir is a freshwater reservoir near Kichha, Udham Singh Nagar, Uttarakhand (India). The water of reservoir is mainly used for irrigation purpose and also for fisheries. Dhaura reservoir gathered a wide variety of Icthyo fauna. The present study was conducted for one year that is November 2011 to October 2012. During the study a total of 10 families and 25 species are identified belonging to 9 Cyprinidae, 3 Bagridae, 3 Channidae, 3 Siluridae, 2 Notopteridae and a species each from Heteropneustidae, Claridae, Belonidae, Mastacemblidae and Clupeidae. The detailed taxonomic account of these fish species is documented in this research paper.

Keywords: Icthyo fauna, dhaura reservoir, kichha, Udham Singh Nagar, Uttarakhand.

Introduction

The number of reservoirs is increasing all over the world. There are 19,370 reservoirs are present in Indian soil with a surface area of 3.15 million hectors and they are expected to increase due to proposal of various hydro electric and irrigation project in the country[1]. Reservoirs contribute up to a significant mark to the inland fisheries of India which has been approximately 93,000 tonnes[2]. Icthyofaunal diversity of reservoir harbors the fish faunal diversity and composition of fish species. Reservoirs conserve a variety of native riverine fish species as well as introduced species which leads and supports commercial fisheries. In India potential of fish culture is yet to be fully exploited. Fish is one of the important sources of protein and have rich nutritive values. Significant development and improvement of aquaculture needs to be given priority after green revolution to feed ever growing population[3]. Considerable studies of fish diversity from different fresh water bodies of India and adjacent countries were performed by number of researchers[4-11]. The Dhaura Reservoir is situated at village Najimabad near about 14 km away from Kichha town of district Udham Singh Nagar. The location of reservoir is at $28^0$53'N latitude and $79^0$34'E longitude. The Main feeder river of this reservoir is river Dhaura. The construction year of reservoir is 1961. The FRL of Dhaura reservoir is 1280 hectares and the total catchment area is 134.68km^2. It is mainly constructed for the purpose of irrigation. According to the recent available records so far no scientific study on the fish diversity has been conducted here. This reservoir is known for the commercial fish production but the production is not sufficient. The present paper is an effort to understand the fish diversity and make a systematic classification of fish fauna of reservoir.

Methodology

Fish specimens were collected from the three different sampling sites of Dhaura reservoir. Specimens were collected with the help of local fishermen by using different types of nets such as dragnet, cast net and hooks. Fishes were immediately preserves in 10% formalin solution in glass jars and brought to laboratory. Identification and Taxonomic investigations of fishes were carried out in laboratory with the help of standard literature[12-15].

Results and Discussion

The Dhaura reservoir is managed by U.P. State irrigation department. It is major source of irrigation, while the fisheries and fish culture is managed by Uttarakhand State fisheries department. Dhaura reservoir shows a variety of Icthyofaunal species. All these species are commercially important. This is probably the first Icthyological investigation has been conducted in this water body for assessing the Icthyofaunal biodiversity which will be fruitful to the local fishermen and the reservoir authorities for upcoming planning of fisheries in Dhaura reservoir. During the study period 25 fish species have been observed in the reservoir. The results showed the reservoir conserves a wide Varity of Icthyo faunal diversity. Fishes were belongs to ten families and seven orders were collected from the reservoir. In Dhaura reservoir the fishing was done almost all the seasons. During the study a total of 25 species are identified belonging to 9 Cyprinidae, 3 Bagridae, 3 Channidae, 3 Siluridae, 2 Notopteridae and a species each from Heteropneustidae, Claridae, Belonidae, Clupeidae and Mastacemblidae. The different fish species found in the Dhaura reservoir are *Labeo rohita, Catla-catla, Cirrhinus mringla, Labeo calbasu, Labeo gonius, Labeo bata, Cyprinus carpio, Ctenopharngodon idella, Sperata seenghala, Mystus cavasius, Mystus tengara, Wallago-attu, Ompok pabo, Ompok bimaculatus, Clarius batrachus, Channa marulius, Channa gaucha, Channa puntatus, Mastacembelus armatus, Xenentoden cancila, Heteropneustes fossilis, Gudusia chapra, Notoptarus-chitala, Notoptarus-notoptarus, Hypophthalmichthys molitrix.* The systematic classification of different fish species were in table 1. Twenty five species were identified and recorded from

the Dhaura reservoir. Among these family Cyprinidae was most dominant consisting 36% of total species followed by the family Bagridae constituting 12%, family Channidae constituting 12%, family Siluridae constituting 12%, family Notopteridae constituting 8%, family Heteropneustidae, family Claridae, family Belonidae, family Mastacemblidae, family Clupeidae each constituting 4% each of total fish species showed in figure 1. The Biodiversity Status of fish species was categorized as according to the report of (C.A.M.P.[16]). 44% of total fish species were categorized as Lower risk-near threatened, 12% of fish species were in the category of vulnerable, 8% of fish species were categorized as Endangered, about 32% data of biodiversity status of fish fauna were not present. 4% of fish fauna were categorized as lower risk-least concern. All these twenty five species have a lot of economic importance and almost all these species are in heavy demand at the local fish market. The Biodiversity status and economic importance of fish species were showed in table 2. The percentage wise biodiversity status of Icthyofauna is shown in figure 2. It was observed that the fishery production of reservoir is remarkable at monsoon in comparison of summer and winter season.

Table-1
Icthyofaunal diversity of Dhaura reservoir, Kichha

Classification **Class: Actinopterygii** **Sub Class: Neopterygii**	**Scientific name of Fish**
Order: Clupeiformes **Family: Clupeidae**	*Gudusia chapra* (Hamilton-Buchanan)
Order: Osteoglossiformes **Family: Notopteridae**	*Notoptarus-notoptarus* (Pallas) *Notoptarus chitala* (Hamilton-Buchanan)
Order: Cypriniformes **Family: Cyprinidae**	*Labeo rohita* (Hamilton-Buchanan) *Catla-catla* (Hamilton-Buchanan) *Cirrhinus mringla* (Hamilton-Buchanan) *Labeo Calbasu* (Hamilton-Buchanan) *Labeo bata* (Hamilton-Buchanan) *Labeo gonius* (Hamilton-Buchanan) *Cyprinus carpio* (Linnaeus) *Ctenopharyngodon idella* (Valenciennes) *Hypophthalmichthys molitrix* (Valenciennes)
Order: Siluriformes **Family: Bagridae**	*Sperata seenghala* (Sykes) *Mystus tengara* (Hamilton-Buchanan) *Mystus cavasius* (Hamilton-Buchanan)
Family Heteropneustidae	*Heteropneustes fossilis* (Bloch)
Family: Siluridae	*Wallago-attu* (Bloch and Schneider) *Ompok pabo* (Hamilton-Buchanan) *Ompok bimaculatus* (Bloch)
Family: Claridae	*Clarius batrachus* (Linnaeus)
Order: Perciformes **Family: Channidae**	*Channa marulius* (Hamilton-Buchanan) *Channa gaucha* (Hamilton-Buchanan) *Channa puntatus* (Bloch)
Order: Synbranchformes **Family: Mastacembelidae**	*Mastacembelus armatus* (Lacepede)
Order: Beloniformes **Family: Belonidae**	*Xenentoden cancila* (Hamilton-Buchanan)

Table-2
Biodiversity status and Economic importance of fish species of Dhaura reservoir

Species	Biodiversity status	Commercial	Fine food	Course fish	Others
Catla-catla	VU	✓	✓	--	--
Cirrhinus mringla	LRnt	✓	✓	✓	--
Labeo rohita	LRnt	✓	✓	--	--
Labeo calbasu	LRnt	✓	✓	--	--
Labeo bata	LRnt	--	✓	✓	--
Labeo gonius	LRnt	--	✓	--	OF
Gudusia chapra	LRlc	--	✓	--	--
Notoptarus chitala	EN	--	✓	✓	OF
Notoptarus-notoptarus	LRnt	--	✓	✓	MD, OF
Cyprinus-carpio	--	✓	✓	--	--
Ctenopharyngodon idella	--	--	✓	--	--
Hypophthalmichthys molitris	--	--	✓	--	LV,WF
Wallago attu	LRnt	✓	✓	--	PF
Mystus cavasius	LRnt	--	✓	--	--
Mystus seenghala	--	--	✓	--	--
Mystus tengara	--	--	✓	--	--
Heteropneustes fossilis	VU	✓	--	--	PF
Ompok pabo	--	✓	✓	--	PF
Ompok bimaculatus	EN		✓	--	--
Clarius batrachus	VU	✓	✓	✓	PF
Channa marulius	LRnt	--	✓	--	--
Channa gaucha	--	--	✓	--	--
Channa puntatus	LRnt	--	✓	--	--
Mastacembelus armatus	--	--	✓	--	PF
Xenentoden cancila	LRnt	✓	--	✓	OF

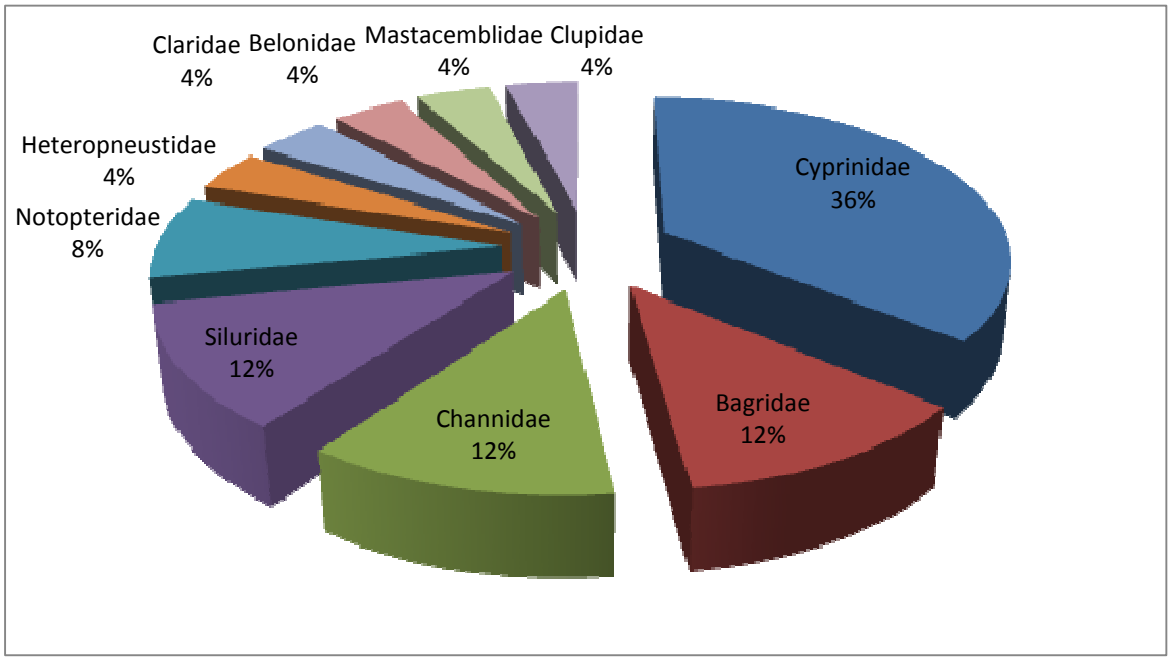

Figure-1

Percentage Occurrence of fish families of Dhaura reservoir, Kichha

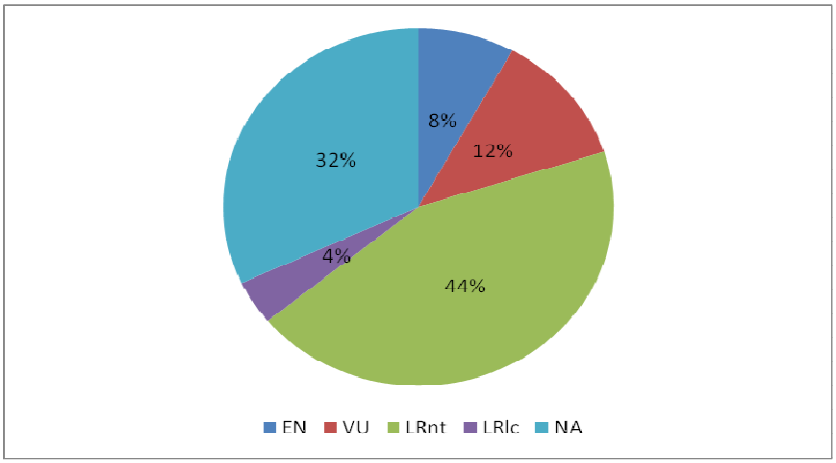

Figure-2
Biodiversity Status of fish species of Dhaura reservoir, Kichha

Conclusion

The conservation of Icthyo faunal biodiversity is one of the major environmental challenges. The present work will provide a latest database for reservoir authorities and fisheries department to help them for conservation of Icthyofaunal diversity of Dhaura reservoir. Fishing should be performs by scientific measures and unscientific fishing should be restricted. The control and eradication of unnecessary aquatic weed, silt, predatory birds and fishes is must. Fishing of threatened species should also restrict for fishermen. Fishing should be banned during the breeding season. Anthropogenic stress also impacts a negative impression on fish production as well as on entire reservoir ecology. Reservoir authorities should take necessary steps to minimize the human activities in and around the reservoir and they have to regularly check the physico-chemical and biological parameters to prevent any duplication on reservoir ecology.

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