Studies on the Ichthyofauna of Kararia Lake of Motihari, East-Champaran, Bihar, India

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Abstract
The present study was undertaken to analyse the Ichthyofauna of Kararia lake of Motihari (District- East Champaran) of Bihar for duration of one year from January to December 2012. Among vertebrates, fishes are one of the most important groups of varied diversity. Fishes provide cheap sources of protein, fat, vitamin A and D, minerals as well as several fish by-products and recreation. During the ichthyofaunal studies, the fishes collected from Kararia lake were contributed by 33 species which belongs to 21 genera, 14 families under 9 orders. Out of these 33 species family Cyprinidae was dominant of all with 11 species.

Keywords: Kararia lake, Motijheel lake, Dhanauti river, Ichthyofauna, ox-bow lake, Motihari, Twin lakes.

Introduction
The ichthyofauna is an important aspect of fishery potential of water body. Among vertebrates fishes are one of the most important groups. Fishes provide cheap sources of protein of animal origin, fat, vitamin A and D, minerals. Fishes are also an important indicator of ecological health and the abundance and health of fish will show the health of water bodies. Among mega biodiversity countries in the world, India occupies ninth position in terms of freshwater biodiversity. There are 2500 piscine species in India out of which 930 are freshwater while 1570 are marine. Thus fishes occupy a remarkable position from socio-economic point of view.

Bihar is a land locked state of India with huge water resources. The East-Champaran district of Bihar (HQ-Motihari) is located between 26°15' to 27°01’ N latitudes and 84°28’ to 85°18’ E longitudes. The total geographical area of the district is 4155 sq. km and is the second largest district of Bihar in terms of geographical area. The East-Champaran district is bestowed with large number of natural freshwater resources in the form of rivers, tributaries, ox-bow lakes (Mauns), wetlands (Chaurs), ponds, tanks etc. The total wetland area of the district is 12477 ha. These water bodies have enormous importance in the socio-economics of the people of East-Champaran and one of the major sources of livelihood for thousands of fishermen living in their vicinity.

The present study site, i.e., Kararia lake is an ox-bow lake located between 26°39' 49" N to 85° 35' 3" E geo-coordinates. This lake is natural, perennial and is almost ‘U’-shaped in extension (figure 1). This lake is located about 2 km east of Motihari town (MSL 66.141m) and having a water spread area of around 120 ha. The depth of this lake ranges between 2.5 m to 5.5 m. Figure 1, 2 and 3 depicts the map and different sites of Kararia lake. This lake is connected with river Dhanauti on one hand and with Motijheel on the other. There is a canal which connects the Kararia lake to the eastern side of Motijheel lake at Bariyarpur near NH-28 (figure 4). Kararia lake has an outlet which got connected during rainy season to the Dhanauti river for the discharge of excess flood water. Hence Kararia and Motijheel ox-bow lakes may be also called ‘Twin Lakes’ (figure 1). Kararia Lake is an important and prime resource of fishes in East-Champaran and provides good fishing ground for local people. This lake provides a rich diversity of ichthyofauna but only small part of this lake is utilised for pisciculture. The Kararia ox-bow lake receives effluents from Motihari sugar factory. This lake is also called ‘Maun Kararia’ by local people of Motihari.

Material and Methods
Fish samples were collected every month during January to December 2012 with the assistance of local skilled fishermen. Wooden boat, gill nets of different mesh sizes, drag nets, cage traps, hooks etc. were employed for capturing fish samples. Collected fish samples were placed in water contained bucket at the study site. Quickly fishes were sorted out on species basis and identified to species level. Unidentified specimens were preserved in 10 % formalin solution. The preserved specimens were identified and classified in laboratory to genus and species level by using taxonomic keys, standard literatures and reference books.

Results and Discussion
The result of the present study revealed that the Kararia lake was rich in ichthyofaunal biodiversity. During the present study, 33 fish species belonging to 9 orders, 14 families and 21 genera were collected and identified. Details of these fishes along with their local name and IUCN status are listed in table-1 and figures 5-10.
<table>
<thead>
<tr>
<th>Order</th>
<th>Family</th>
<th>Scientific Name</th>
<th>IUCN Status</th>
<th>Local Name</th>
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<td>Cypriniformes</td>
<td>Cyprinidae</td>
<td>1. <em>Labeo rohita</em> (Hamilton)</td>
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<td>6. <em>Puntius Sarana</em> (Hamilton)</td>
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<td>7. <em>Cirrihina mrigala</em> (Hamilton)</td>
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<td>Rewa/Reba</td>
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<td>47. <em>Aspidoparia morar</em> (Hamilton)</td>
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The order cypriniformes was most abundant with 11 species, 6 genera and 1 family followed by order siluriformes (6 species, 5 genera and 4 families), perciformes (5 species, 4 genera and 3 families), channiformes (4 species, 1 genus and 1 family), clupeiformes (2 species, 1 genus and 1 family) and mastacembeliformes (2 species, 1 genus and 1 family). Three orders such as symbranchiformes, tetraodontiformes and beloniformes were represented only by single species, genus and family.

Among family cyprinidae Labeo rohita, Labeo calbasu, Labeo gonius, Cirrihina mrigala, Cirrihina reba, Catla catla, Puntius ticto, Puntius sophore, Puntius sarana, Amblypharyngodon mola and Aspidoparia morar were recorded. Family siluridae (siluriformes) was represented by two species Wallago attu and Ompak bimaculatus while bagridae was represented by M. aor and M. vittatus. Family heteropneustidae and claridae were represented by a single species Heteropneustes fossilis and Clarias batrachus respectively. These fish species were the major composition of ichthyofaunal biodiversity of this lake.

In order perciformes, family anabantidae was represented by two species (Anabas testudineus and Colisa fasciatus), centropomidae was also composed of two species (Ambassis nama and Ambassis ranga) while family gobiidae was represented by a single species, Glossogobius giuris. Family channidae (order channiformes) was represented by 4 species Channa punctatus, Channa striatus, Channa gachua and Channa marulius. Other species such as Notopterus notopterus, N. chitala, Tetradon cutcutia, Xenentodon cancila, Amphipnous cuchia, Macrognathus aria and M. aculeatus were also found.

L. rohita, L. calbasu, L. gonius, C. catla, C. mrigala (Carp), Heteropneustes fossilis, Mystus vittatus M. aor (cat fishes) and Macrognathus aria are economically important ichthyofauna of this lake. Freshwater ichthyofaunal biodiversity of different water bodies have also been reported by several workers throughout the country18-24.
Figure-1
Map of Motihari Town showing Kararia Lake

Figure-2
Kararia lake at Bariyarpur Chhath Ghat

Figure-3
Kararia Lake Near Chhatauni Bus Stand

Figure-4
Canal Near NH-28 Through Which Kararia Lake is Connected to Motijheel
Figure-5
Amphipnous cuchia

Figure-6
Channa punctatus

Figure-7
Channa gachua

Figure-8
Heteropneusteus fossilis

Figure-9
Xenentodon cancila

Figure-10
Tetradon cutcutia
Conclusion

The result of this study concluded that Kararia lake is an important lake of East-Champaran district which provides a wide diversity of ichthyofauna with good economic potential. Major carps are the abundant group followed by cat fishes. This lake is highly significant from fisheries point of view and is one of the major sources of livelihood for the fishermen living in its vicinity. The proper utilization and care of this lake for the propagation of fish culture will be highly beneficial for the people of this area who are still socially and economically poor. Thus the fish productivity of Kararia lake is very high, therefore it should be conserved and protected.

References

12. Day F., The fauna of British India including Ceylon and Burma, Fishes, 1 (1889)