



# International Journal of Fisheries and Aquatic Studies

ISSN: 2347-5129

IJFAS 2014; 2(3): 23-30

© 2013 IJFAS

www.fisheriesjournal.com

Received: 01-11-2014

Accepted: 04-12-2014

**B. Laxmappa**

*Fisheries Development Officer,  
Department of Fisheries,  
Mahbubnagar-509001,  
Telangana, India.*

**S. Jithender Kumar Naik**

*Professor, Department of Zoology,  
Osmania University College for  
Women, Koti, Hyderabad-  
500095, Telangana, India.*

**S. Vamshi**

*Research Scholar, Department of  
Zoology, Osmania University  
College for Women, Koti,  
Hyderabad- 500095, India.*

## Ichthyofaunal diversity of Koilsagar reservoir in Mahbubnagar district, Telangana, India

**B. Laxmappa, S. Jithender Kumar Naik and S. Vamshi**

### Abstract

The survey was under taken for Ichthyofaunal diversity study in the Koilsagar Reservoir of Mahbubnagar District, Telangana state in India. A total of 30 fish species belong to 6 orders, 12 families and 22 genera were recorded during the study. Cyprinidae were most dominant group represent by 13 species, Bagridae with 3 species, Siluridae 1 species, Clariidae 1 species, Heteropneustidae 1 species, Channidae with 4 species, Cichlidae 2 species, Ambassidae 1 species, Gobiidae 1 species, Notopteridae 1 species, Anguillidae 1 species and Mastecembelidae 1 species. This is considered the first study on the ichthyofaunal diversity of Koilsagar Reservoir.

**Keywords:** Telangana, Mahbubnagar District, Koilsagar Reservoir, Ichthyofaunal Diversity.

### 1. Introduction

Studies have been made on Ichthyofaunal diversity of various freshwater bodies in India during the last few decades [2, 4, 6, 7, 8]. As far as Koilsagar reservoir is concerned poor attention has been paid towards systematic investigation on diversity of fish fauna. So it is felt that there is a need to generate information on diversity of fishes from Koilsagar reservoir. Hence, the present investigation was undertaken to prepare a check list of fishes from Koilsagar reservoir and it is the first effort in this direction.

### 2. Materials and methods

Reservoirs were considered the single largest inland fisheries resources in India in terms of potential area of fish production. Koilsagar Reservoir is one of the most important reservoirs, about 35 kms away from the district headquarters and 132 kms away from the state capital Hyderabad. Koilsagar Reservoir is situated in Devarkadra Mandal (Tehsil) of Mahbubnagar district in Telangana state. The district has rich fish fauna and there is need to contemplate measures to protect the genetic resources.

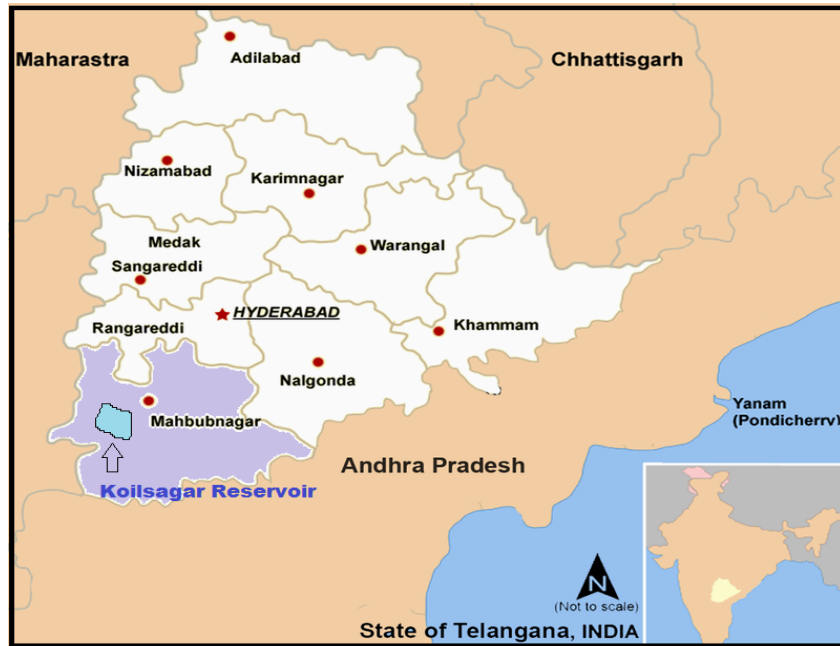
Koilsagar is the medium size irrigation project located at Koilsagar (Bollaram) village, Devarkadra Mandal of Mahbubnagar district in Telangana state and is situated between 16° – 44' N latitude and 77° – 45' E longitudes (Fig. 1). It is about 12 km away from the Devarkadra Mandal headquarters. The main purpose of the construction of this reservoir was to protect the economically backward areas of (4) Mandals viz Koilkonda, Dhanwada, Devarkadra and Chinna Chintakunta of the district and also to eliminate the scarcity of food grains and water problems. Now the Koilsagar Reservoir has become prime importance for irrigation, drinking water to Mahbubnagar town and also for aquaculture practices.

Koilsagar is the first reservoir in the district and was constructed during the year 1955. It is a beautiful project and was constructed in a picturesque location between two mountains across the Peddavagu stream which is tributary of Krishna River in Mahbubnagar district (Fig. 2 & 3). At the site of reservoir, the catchments area of the stream is 1835.60 Sq. kms. Out of which 534.64 Sq. km is free and the rest is intercepted. The total length of the dam is 1036.40 m which is composed of 274.39 m of Ogee dam, 655.32 m of Composite dam and 106.70 m of Gravity dam. Total water spread area of the reservoir is 1036 ha. The salient features of the Koilsagar reservoir is furnished in Table 1.

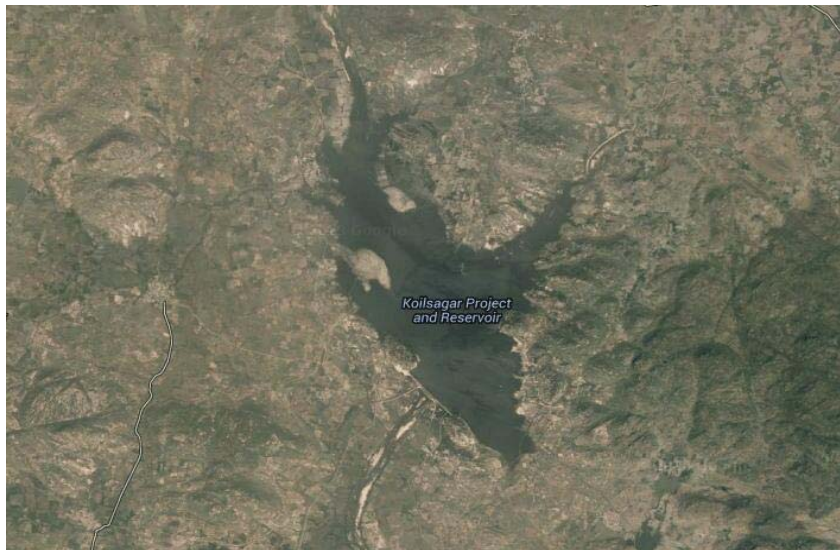
### Correspondence

**B. Laxmappa**

*Fisheries Development Officer,  
Department of Fisheries,  
Mahbubnagar-509001,  
Telangana, India.*



**Fig 1:** Location of Koilsagar Reservoir in Mahabubnagar District of Telangana, India.



**Fig 2:** Satellite image of Koilsagar reservoir.



**Fig 3:** Inner view of Koilsagar reservoir

**Table 1:** Salient features of Koilsagar Reservoir in Mahabubnagar district

Sl. No.	Attribute	Value
1	Location of the Reservoir	Longitude : 77° – 45' Latitude : 16° – 44'
2	Year of completion	1955
3	Catchments Area	709 Sq. miles.
4	Water Spread Area at FRL	1036 Ha.
5	Water Spread Area at DSL (at sill level)	466 ha.
6	Length of Dam	1036.40 m.
7	Water level	32.5 Feet.
8	Water Source	Monsoon run-off
9	Type of Dam	Gravity + Masonry
10	Height above Lowest foundation	16 m.
11	Volume content of Dam (10 <sup>3</sup> m <sup>3</sup> )	76
12	Reservoir Area (10 <sup>3</sup> m <sup>3</sup> )	1099
13	Gross Storage Capacity (10 <sup>3</sup> m <sup>3</sup> )	64614
14	Effective Storage Capacity (10 <sup>3</sup> m <sup>3</sup> )	38214
15	Purpose	Irrigation + Drinking water to Mahbubnagar town from 2011

Source: 1 National Register of Large Dams. 2. Irrigation & CAD Dept., Mahbubnagar.

**2.1 Study Area:** Present work has been conducted on 2 sampling sites of Koilsagar Reservoir for the estimation of its fish diversity. Site 1 was fixed at near the Ankill village and site 2 near the Koilsagar village side. Fish were collected for a period of one year from August 2013 to September 2014. The fishes were collected mainly by using cast net and gill nets of different mesh sizes with the assistance of local fishermen. A discussion was also made with the local fishermen to collect many types of information about fishes available in the reservoir. Immediately photographs were taken prior to preservation for the identification of fishes. Collected fish sample were preserved in 4 % formalin and identified with the help of standard keys mentioned in the taxonomic literature [3, 10]. The identification of the species was done mainly on the basis of the color pattern, specific spots or marks on the surface of the body, shape of the body, structure of various fins, mouth shapes etc.

Assuming that fishing efforts were constant for a given type of fishing net, the relative abundance of the fish was classified into four categories, namely: abundant (76-100% of the total catch), common (51-75% of the total catch), moderate (26-50% of the total catch) and rare (1-25% of the total catch).

### 3. Results and discussion

During the study a total of 30 species of primary freshwater fishes belonging to 12 families and 22 genera were recorded from the study sites. Number of species and their relative abundance is given in Table 2. On the basis of percentage composition and species richness, order Cypriniformes was dominant (13 species) followed by Perciformes (8 species), Siluriformes (6 species), Osteoglossiformes, Anguilliformes and Synbranchiformes (1 species each). During the present investigation the order of dominance is as follows (Table 2 & Fig. 4):

Table 2: Ichthyofaunal diversity of Koilsagar Reservoir in Mahbubnagar District

Sl. No.	Species	Family	* Abundance
<b>ORDER : Cypriniformes</b>			
1	<i>Catla catla</i> (Hamilton, 1822)	Cyprinidae	A
2	<i>Labeo rohita</i> (Hamilton, 1822)	Cyprinidae	A
3	<i>Labeo boggut</i> (Sykes, 1841)	Cyprinidae	C
4	<i>Cirrhinus mrigal</i> (Hamilton, 1822)	Cyprinidae	A
5	<i>Cyprinus carpio communis</i> (Linnaeus, 1758)	Cyprinidae	R
6	<i>Ctenopharyngodon idella</i> (Valenciennes, 1844)	Cyprinidae	R
7	<i>Puntius amphibius</i> (Valenciennes, 1840)	Cyprinidae	C
8	<i>Puntius chola</i> (Hamilton, 1822)	Cyprinidae	C
9	<i>Puntius ticto</i> (Hamilton, 1822)	Cyprinidae	C
10	<i>Amblypharyngodon microlepis</i> (Bleeker, 1853)	Cyprinidae	C
11	<i>Salmostoma bacaila</i> (Hamilton, 1822)	Cyprinidae	M
12	<i>Rasbora daniconius</i> (Hamilton, 1822)	Cyprinidae	M
13	<i>Barilius barila</i> (Hamilton, 1822)	Cyprinidae	M
<b>ORDER : Siluriformes</b>			
14	<i>Mystus cavasius</i> (Hamilton, 1822)	Bagridae	M
15	<i>Mystus tengra</i> (Hamilton, 1822)	Bagridae	M
16	<i>Mystus vittatus</i> (Bloch, 1794)	Bagridae	M
17	<i>Ompok bimaculatus</i> (Bloch, 1794)	Siluridae	M
18	<i>Clarias batrachus</i> (Linnaeus, 1758)	Clariidae	R
19	<i>Heteropneustes fossilis</i> (Bloch, 1794)	Heteropneustidae	M
<b>ORDER : Perciformes</b>			
20	<i>Channa gachua</i> (Hamilton, 1822)	Channidae	C
21	<i>Channa punctatus</i> (Bloch, 1793)	Channidae	R

22	<i>Channa marulius</i> (Hamilton, 1822)	Channidae	R
23	<i>Channa striatus</i> (Bloch, 1793)	Channidae	M
24	<i>Oreochromis mossambicus</i> (Peters 1852)	Cichlidae	C
25	<i>Eetroplus suratensis</i> (Bloch, 1794)	Cichlidae	M
26	<i>Chanda nama</i> (Hamilton, 1822)	Ambassidae	A
27	<i>Glossogobius giuris</i> (Hamilton, 1822)	Gobiidae	M
<b>ORDER : Osteoglossiformes</b>			
28	<i>Notopterus notopterus</i> (Pallas, 1769)	Notopteridae	M
<b>ORDER : Anguilliformes</b>			
29	<i>Anguilla bengalensis</i> (Gray, 1834)	Anguillidae	R
<b>ORDER : Synbranchiformes</b>			
30	<i>Mastacembelus armatus</i> (Lacepède, 1800)	Mastacembelidae	R

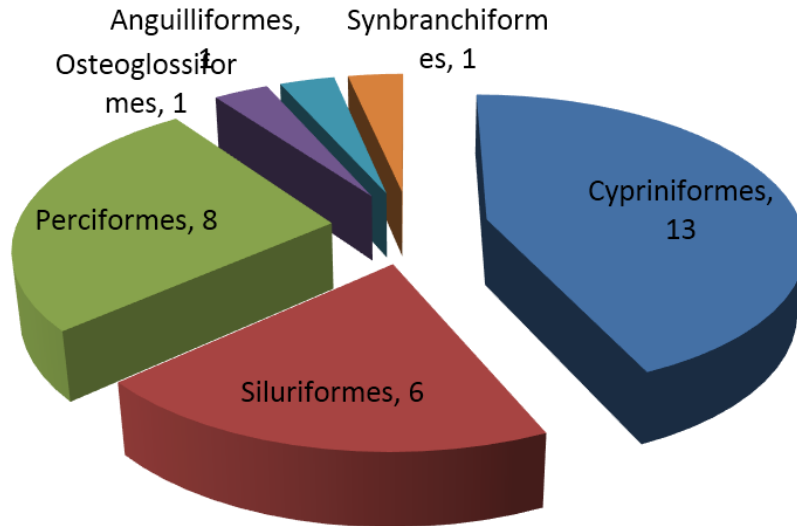


Fig 4: Order-wise fish species composition number of Koilsagar reservoir

\* **A: Abundant; C: Common; M: Moderate; R: Rare**  
**Cypriniformes > Perciformes > Siluriformes > Osteoglossiformes = Anguilliformes = Synbranchiformes**  
 The ichthyofaunal diversity of Koilsagar Reservoir comprises

of 12 families namely, Cyprinidae, Bagridae, Siluridae, Clariidae, Heteropneustidae, Channidae, Cichlidae, Ambassidae, Gobiidae, Notopteridae, Anguillidae and Mastacembelidae (Table 2 & Fig. 5).

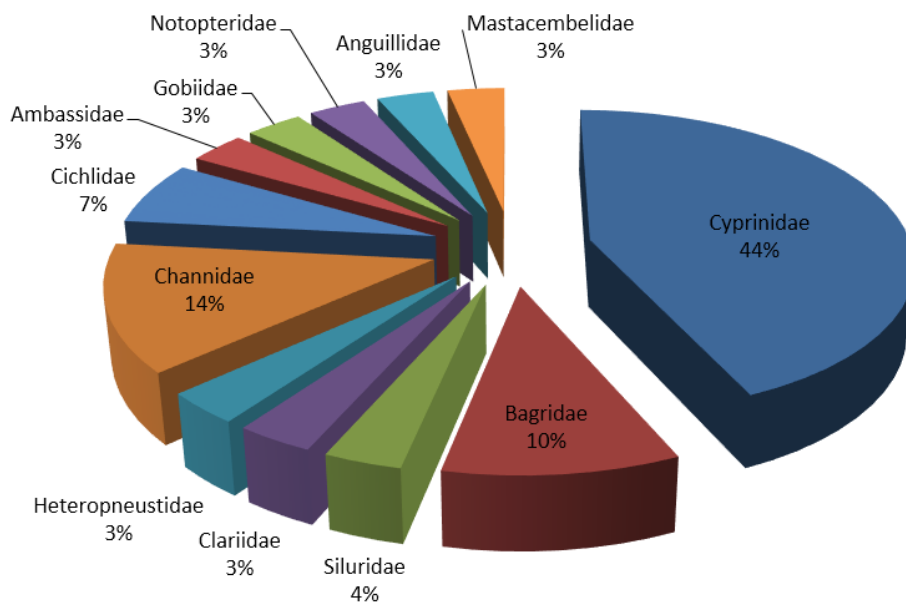


Fig 5: Family-wise fish species composition percentage of Koilsagar reservoir



**Fig 6:** a. *Amblypharyngodon microlepis*, b. *Puntius chola*, c. *Puntius amphibious*, d. *Rasbora daniconius*, e. *Mystus tengra*, f. *Glossogobius giuris*, g. *Salmostoma bacaila*



**Fig 7:** *Labeo boggut*



**Fig 8:** *Barilius barila*



**Fig 9:** *Puntius ticto*



**Fig 10:** *Etroplus suratensis*



**Fig 11:** *Oreochromis mossambicus*



**Fig 12:** *Heteropneustes fossilis*



**Fig 16:** *Chanda nama*



**Fig 13:** *Clarias batrachus*



**Fig 17:** *Channa striatus*



**Fig 14:** *Mystus cavasius*



**Fig 18:** *Channa marulius*



**Fig 15:** *Ompok bimaculatus*



**Fig 19:** *Channa gachua*



Fig 20: *Channa punctatus*



Fig 21: *Notopterus notopterus*



Fig 22: *Anguilla bengalensis*



Fig 23: *Mastacembelus armatus*

Ambassidae (3%) = Gobiidae (3%) = Notopteridae (3%) = Heteropneustidae (3%) = Anguillidae (3%) = Mastacembelidae (3%).

The family Cyprinidae was represented by 13 species, *Catla catla*, *Labeo rohita*, *L. boggut*, *Cirrhinus mrigal*, *Cyprinus carpio*, *Ctenopharyngodon idella*, *Puntius amphibius*, *Puntius chola*, *Puntius ticto*, *Amblypharyngodon microlepis*, *Salmostoma bacaila*, *Rasbora daniconius* and *Barilius barila*. Except, *Cyprinus carpio*, *Ctenopharyngodon idella*, *Clarias batrachus* and *Mastacembelus armatus* remaining species were found common to abundant.

The family Notopteridae was represented by 1 species, *Notopterus notopterus* and was found moderate. The family Bagridae was represented by 3 species, *Mystus cavasius*, *Mystus tengra* and *Mystus vittatus* were found common. The family Channidae was represented by 4 species, *Channa striatus*, *Channa marulius* and *Channa gachua*, of which *Channa striatus* and *Channa gachua* were found common and others are rare. The family Cichlidae was represented by 2 species, *Oreochromis mossambicus* and *Etilopius suratensis*, of which *Oreochromis mossambicus* was found common. The family Siluridae was represented 1 species, *Ompok bimaculatus* was found moderate and the family Clariidae was represented by only 1 species, *Clarias batrachus* and was found rare. The family Heteropneustidae was represented by only 1 species, *Heteropneustes fossilis* and was found moderate. The family Anguillidae and Mastacembelidae was represented by, *Anguilla bengalensis* and *Mastacembelus armatus* respectively was also found rare.

Out of 30 fish species found in the Koilsagar Reservoir, 13 species belong to the carp group. The carps, *Catla catla*, *Labeo rohita*, *Cirrhinus mrigal*, *Cyprinus carpio* and *Ctenopharyngodon idella* have highly commercial and economical importance. While the other carps *Puntius amphibius*, *Puntius chola*, *Puntius ticto*, *Amblypharyngodon microlepis*, *Salmostoma bacaila*, *Rasbora daniconius* and *Barilius barila* are less economically important.

Among the catfishes, *Mystus cavasius*, *Mystus vittatus* and *Mystus tengra* belonging to Bargidae family are of high economic importance while the *Ompok bimaculatus* belonging to family Siluridae and *Clarias batrachus* belonging to family Clariidae have high economic value. The fish *Heteropneustes fossilis*, *Anguilla bengalensis* and *Mastacembelus armatus* belonging to family Heteropneustidae, Anguillidae and Mastacembelidae respectively were also carry high economic value.

Among the murrels, *Channa stiatius* and *Channa marulius* bears high economic importance while *Channa gachua* and *Channa punctatus* have moderate economic importance. Among the family Notopteridae, *Notopterus notopterus* has less economic importance. The family Cichlidae representing *Oreochromis mossambicus* and *Etilopius suratensis* have practically little economic importance.

Many researchers have reported the strong dominance of Cyprinidae family in their investigation on ichthyofaunal diversity. Reported 23 species belonging to 7 orders where Cyprinidae family was dominant with 11 species from Jawalgaon reservoir of Solapur district in Maharashtra [9]. Reported 18 species from Ekrugh Lake in Solapur district where Cyprinidae family was dominant with 8 species [1]. Reported 37 species from Issapur dam in district Yavatmal where Cyprinidae family was dominant with 20 species [5]. Observed 27 species belonging to 11 families where Cyprinidae family was dominant with 13 species from Ambadi

The sequence of dominance of encountered families is as follows:

Cyprinidae (44%) > Channidae (14%) > Bagridae (10%) > Cichlidae (7%) > Siluridae (3%) = Clariidae (3%) =

dam in the district of Aurangabad, Maharashtra <sup>[11]</sup>. These studies also support the present study.

#### 4. Conclusion

The fish community in reservoirs includes the native species and the introduced species for the purpose of fish production. The present study is the first ever documentation of Ichthyofauna in the Koilsagar Reservoir of Mahbubnagar district in Telangana state. This study should open a new ways for incoming Ichthyofaunal research. Sustainable fish production by taking appropriate steps for sustaining fish diversity is necessary to conserve these resources.

#### 5. Acknowledgement

The cooperation provided by S. Anjaiah, Fisheries Development Officer and other fishermen of Koilsagar reservoir in data collection during the field visits is greatly acknowledged.

#### 6. References

1. Battul PN, Rao KR, Navale RA, Bagale MB, Shah VN. Fish diversity from Errukh Lake near Solapur, Maharashtra. *J Aqua Biol* 2007; 22(2):68-72.
2. Jayaram KC. The Fresh water fishes of India ZSI. 1981, 1-438.
3. Jayaram KC. The Freshwater fishes of the Indian region. Narendra Publication House, Delhi- 110006 (India), 1999.
4. Jhingran VG. Fish and fisheries of India, Edn 1, Hindustan Publishing corporation, New Delhi, 1983.
5. Khedkar GD, Gynanath G. Biodiversity and Distribution of the Fishes from the Back Waters of Issapur Reservoir District Yeotmal, Maharashtra State India. *Trends in Life Science (India)* 2005; 20(2):117.
6. Kulkarni MY, Kulkarni, AN, Somvamshi VS. A Study on some aspects of Reservoir Fisheries of Derala Tank, Dist. Nanded, Maharashtra. *Proceedings of Taal 2007; The 12th World Lake Conference, 2008, 568-570.*
7. Mishra S, Pradham P, Kar S, Chakraborty SK. Ichthyofauna diversity of Midnapore, Bankura and Hooghly districts of South West Bengal. *Rec ZSI Occ Paper* 2003, 1-66.
8. Ramu G, Ravindar B, Narasimha Ramulu K, Benarjee G. The Fish Fauna of Mylaram Reservoir in Warangal District, Andhra Pradesh. *Aquaculture* 2009; 10(2):313-316.
9. Sakhare VB. Ichthyofauna of Jawalgaon reservoir in Solapur District (M.S.). *J Aqua Bio* 2001; 16(1&2):31-33.
10. Talwar PK, Jhingran AG. *Inland Fishes of India and adjacent countries. Vol I and II, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi, 1991.*
11. Ubarhande SB, Jagtap JT, Sonawane SR. Ichthyofanal Diversity from Ambadi Dam, Taluka Kannad, District Aurangabad (Maharashtra). *Recent Research in Science and Technology* 2011; 3(6):34-37.