Available online at www.scientiaresearchlibrary.com

Scientia Research Library

ISSN 2348-0416
USA CODEN: JASRHB

Journal of Applied Science And Research, 2015, 3 (4):1-12

(*http://www.scientiaresearchlibrary.com/arhcive.php*)

Fish Biomass and Physico-Chemical Characteristics of Lower Manair Reservoir at Karimnagar Dt, Telangana, India

Rama Rao. K
Asst. Professor, Department of Zoology, Govt. Degree College,
Satavahana University,Jammikunta, Karimnagar, Dt. Telangana, India

ABSTRACT

Fish production in the Lower Manair Reservoir was studied from June-2013 to May-2014. Samples were collected bimonthly with help of local fishermen by using fishing Craft and Gear. The total approximate fish biomass was 33076.550 kilograms per year and 4.082 kg/ha an average fish production in Lower Manair Reservoir. The effect of physico-chemical parameters on fish production was investigated on a total of 64 species of fishes belonging to 8 orders. Group wise fish biomass was calculated on every month and year. The highest fish catch recorded during the month of December is reported to 4910.7 kgs, the second highest catch is reported in the month of November is 4141.8 kgs. The reported total of 64 ichthyo faunal species were divided into 12 groups, such as Major carps six species, nine species of Minor carps, eleven species of Minnows, eleven species of Catfishes, two species of Eels, two species of Beloiniformes, four species of Murreles, two species of Gobids, two species of Spiny eels, nine species of Perches, one species of Mugils and five species of Exotic species.

Keywords : Lower Manair Reservoir, Fish production, Biomass. physico-chemical parameters

INTRODUCTION

Lower Manair Reservoir is situated in Karimnagar District of Telangana state. This is a large new impoundment of Godavari basin with medium productive potential. The Lower Manair Reservoir is built across the Manair River, a tributary of the Godavari River. The construction of the Reservoir was started in 1974 and was finished in 1985. The Lower Manair Reservoir is situated at Kakatiya Canal about 146.00 km to 234 kms and Distributaries D 84 to D 94 and DBM 1 to DBM2. LMD water goes up to 2, 62,326 ac s. The maximum height of the dam is around 27 m and the catchment area of river 6,475 sq.km. Reservoir full level is 280.416 mt. Full capacity of reservoir is 0.68 TM Cusmecs. Water spread area is 81.024 sq. km. Lower Manair Reservoir is used to provide employment to over 1000 Fisher men every year. Fishing license is issued to 311 fishermen during fishing season. The waters of this Reservoir is used for drinking, agriculture and supports fish culture. The total area of the reservoir is about 8,103 hectare and maximum depth is 21.9m.

Government of India defines reservoirs as man-made impoundments created by obstructing surface flow, by erecting a dam of any description on a river, stream or any water course. However, water bodies less than 100 ha in area have been excluded from this definition. The Ministry of

Agriculture, Government of India has classified reservoirs as small (<1000 ha), medium (1,000 to 5,000 ha) and large (>5000 ha) for the purpose of fisheries management, although different states have varied classifications. The estimated cumulative areas are 1,485,557 ha, 507,298 ha and 1,160,511 ha of small, medium and large reservoirs, respectively [1] [2] [3].

Fish and fisheries form important economic activities in India. The total fish production in the country increased six fold from 0.75 million tonnes in 1950-51 to 4.95 in 1994-95. During the same period, inland fish production increased from 0.22 million tonnes to 2.09 million tonnes registering a near tenfold increase. Over the last four and one-half decades, the annual growth rate in inland fisheries was 11% and that of the marine segment was 9.0%. The contribution from inland fisheries to national fish production has been consistently increasing. India is one of the few countries in the world which has substantially exploited its inland fisheries potential. In India, reservoirs are considered the prime resource as regards capture fisheries and extensive aquaculture. The rivers, estuaries and other natural water bodies are threatened by increasing environmental degradation. With the great emphasis on conservation, there is little scope for a substantial increase in yields. The reservoirs, which already cover 3 million ha of surface area, are a growing resource with enormous potential for yield augmentation. The available estimates made by various agencies are conflicting and inaccurate. The most recent study [2] estimated the combined surface area of all reservoirs, irrespective of size, as 3135366 ha. Enumeration of the medium and large reservoirs in India is a relatively easy task as there are fewer of them and the details are readily available from the irrigation, power and public works authorities. However, compilation of data on small reservoirs is a tedious task as they are ubiquitous and too numerous to count. A reliable estimate of fish production from Indian reservoirs is not available. Compared with the impressive volume of data on limnological aspects of reservoirs collected by individual researchers and various institutions, the estimates of fish catch remain grossly inadequate. Furthermore, the production data available are at times inaccurate and unreliable. The main reasons for this deficiency is complications in the collection of data in some states because of the multiplicity of agencies owning fishing rights, widely dispersed and unorganized market channels, mostly controlled by unauthorized money lenders, an ineffective cooperative setup, diverse licensing/royalty/crop sharing systems practised by different state governments; and inadequate and poorly trained workforce at the disposal of the states to collect catch data by following statistically sound sampling procedures [4] [5] [6].

MATERIALS AND METHODS

Fish samples were collected from different corners of Lower Manair Reservoir surrounding areas mainly by fishermen, fish collectors, local fish markets, and fish sellers. Different types of nets (Drag nets, Push nets, Cast nets and Stationary gill nets) and Bamboo baskets (Traps) were used for collection of fishes reported by [7] [8] [9] [10] [11]. The fishery data collected bimonthly from Lower Manair Reservoir and the biomass calculated by multiplied with days of every one month except crop holiday harvesting policies but illegal fishing can be done [12] [13] [14] [15] [16]. The photographs of the collected fishes were taken at fresh condition immediately and preserve in 10% formalin without any post-mortem stages. Sample fishes were brought to the laboratory and fix in this solution in separate glass jars according to size. Smaller fishes were directly placed in the 10% formalin solution and larger fishes were given an incision on the abdomen and removed the gut content before they were preserved. The fishes collected and fixed were labelled giving serial numbers, date of collection, exact locality from where collected for identification [17]. The physio-chemical parameters were tested with standard procedure during the study period [18].

RESULTS AND DISCUSSION

The results of the present study revealed that the occurrence of sixty four fish species belong to eight orders, 19 families and 39 genera. The listed species in Icthyofaunal bio diversity is *Notopterus notopterus, Catla catla, Labeo ariza, L. bata, L.calbasu, L. fimbriatus, L. porcellus, L. rohita, Cirrhnus mrigala, C.reba, *Ctenopharyngodon idella, Garra gotyla gotyla, *Cyprinus carpio, Osteobrama cotio cotio, Puntius chola, P. ticto, P. sarana sarana, P. sophore, Rasbora daniconius, R. elanga, Salmostoma bacaila, S. phulo, Amblypharyngodon microlepis, A. mola, Danio devario, Lepidocephalicthys berdmorei, L. guntea, Schistura cirica, Mystus bleeker, M. cavasius, M. tengra, M. vittatus, Spherata oar, S. seenghala, Ompok bimaculatus, Wallago attu, Eutropneustes vacha, Pseudeutropius atherinoides, Clarias batrachus, *C. gariepinus, Heteropneustes fossilis, Anguilla bengalensis bengalensis, A. bicolor bicolor, Xenentodon cancila, Hyporhampus gaimardi, Channa marulius, C. orienalis, C. panctatus, C. striatus, Glosogobius giuris, Awaous grammepomus, Mastacembelus armatus, M. pancalus, Trichogaster faciatus, Colisa lalio, Anabas testudineus, Nandus nandus, *Oreochromis mossambicus, *O. variables, Etroplus suratensis, E. maculatus, Chanda nama, Ambassis ranga, Rhinomugil corsula,* reported by Rama Rao. K. (2014) including Larvivorus and Ornamental fishes in Lower Manair Dam [19] [20] [21].

Indian region fishes are about 2500 species, of these freshwater fishes are 930 species and remaining 1570 are marine reported by K.C Jayaram [22] Present freshwater fishes are recorded 801 (Fish base 2004). Mahapatra [23] reported 21species of catfishes were abounded in Hirakund reservoir, of the total 43 species were present in which 18 were commercially important. Sakhare and Joshi [24] reported 34 species of fishes in reservoirs of Parbhani Dist. of Maharashtra (India). Pisca *et al*., [25] reported a genera fish belonging to four orders and 28 species from Ibrahimbagh reservoir of Hyderabad. Sugunan and Yadava, [26] mentioned 40 fish species from Hirakhud reservoir of Orissa forming the commercial fishery. John Mark Hanson et al [27] was reported the relative constant relationship between fish biomass and macrobenthos biomass/mean depth implies a near-constant energy transfer from the benthos to the fish regardless of the number of fish species. Andrew et al [28] represented the fish biomass and understanding variability in fish production, biomass, production/biomass (*P*/*B*) ratios, and their relationship to exploitation is central to fisheries sustainability. The annual production, biomass, and *P*/*B* ratios ranges were 2.4–11.3 $kg \cdot ha^{-1} \cdot year^{-1}$, 9.1–49.4 $kg \cdot ha^{-1}$, and 0.15–0.30 $year^{-1}$, respectively. Scott Hale et al [29] resulted in research to develop and expand a program to stock saugeyes, a hybrid better suited for shallow, productive, and turbid reservoirs with short water-residence times. Development of successful production techniques increased saugeye stocking from fewer than 1.2 million to 6–10 million fingerlings (28–42 mm) per year during 1980 through 1990, presenting the challenge of determining stocking rates suited to available prey.

An approximate estimation of the average fish production of the reservoir is 33076.550 kgs per annum, this is first time scientifically estimated the fish population in Lower Manair Dam (Table : 1, Fig: 1). The highest fish catch recorded during the month of December 2013 is reported to 4910.7 kgs, the second highest catch is reported in the month of November 2013 is 4141.8 kgs, followed by October 2013 (3672 kgs), September 2013 (3641.3 kgs), February and March 2014 (2494.8 kgs), April 2014 (2455.6 kgs) May 2014 (2363.85 kgs), August 2013 (1872 kgs), June 2013 (1833 kgs), January (1793.7 kgs) and lowest catch was reported in the month of July 2013 (1403 kgs). Among 64 species four species of genus *Mystus* group was highest catch (3787 kgs) and dominated group in the Dam fishery, followed by *Mastacembelus sps* (2643 kgs) and *Glossogobius sps* (2405.7kgs). The total biomass of the fishery in the Lower Manair Reservoir is 33076.550 kgs per annum. It is estimated that 4.082 kg/ha an average fish production in Lower Manair Reservoir.

The Gobid family fish *Awaous grammepomus* catch was very less (2.7 kgs) and first report in the Lower Manair Dam at Telangana region by Rama Rao [20].

Sugunan [2] reported India has 19 370 small reservoirs with a total water surface area of 3 153 366 ha. At least 100 of them have been subjected to scientific studies. Habitat variables responsible for a reservoir's productivity can be summed up into climatic, morphometric and hydro-edaphic factors. The peninsular reservoirs are characterized by a narrow range of fluctuations in water and air temperature across seasons, a phenomenon which prevents the formation of thermal stratification. Many reservoirs in the Upper Peninsula show thermal stratification during summer. Wind-induced turbulence facilitates the return of nutrients to the trophogenic zone. Most reservoirs on the mountain slopes of Western Ghats, Himalayas and the other highlands are deeper, with steeper basin walls, compared to irrigation impoundments. Mean depth does not show any direct correlation with productivity, either at primary or fish level.

The estimation of on an average fish production from Indian reservoirs is only 6.7 Kg. /ha. It is estimated to be 6.2 Kg./ha and 39.0 Kg./ha. in Tungabhadra and Mettur respectively. During the study an average annual fish production in Mod sagar, with 82.50 ha water area available for fish culture, recorded was 40.31 Kg/ hectares which is far greater than those of the other Indian reservoirs. Fish production in the man - made lakes of Andhra Pradesh shows a great variety. Reservoirs of the Nellore district are particularly productive, the yield rate ranging from 93 to 142 kg ha^{-1}among the medium category, and 643 to 1 273 kg ha^{-1} among the small ones. All types of reservoirs yield less fish in Karimnagar, Hyderabad, Kurnool, Medak and Warrangal districts. Production figures are available for 38 small, 28 medium and three large reservoirs (Srivastava *et al.*, 1985). Wojciech Andrzejewski et al [30] studied in the Malta Reservoir a total of 16 fish species belonging to six families were recorded in 2008. In the Nordic multi-mesh gillnets 4528 fish belonging to 11 species, with the total weight of 149.5 kg, were caught.

In the present study (Fig: 3) represents the total of 64 Ichthyo faunal species are divided into 12 groups, such as Major carps it includes six species (Table: 2) and contributed 17.62% in the total biomass. nine species of Minor carps (Table: 3) contributed to 17.065, eleven species of Minnows (Table: 4) contributed to 0.55%, eleven species of Catfishes (Table: 5) contributed to 0.27%, two species of Eels (Table: 6) contributed to 1.09, two species of Beloiniformes (Table: 7) contributed to 2.61%, four species of Murreles (Table: 8) contributed to 8.58%, two species of Gobids (Table: 9) contributed to 7.27%, two species of Spiny eels (Table: 6) contributed to 7.99%, nine species of Perches (Table: 10) contributed to 2.81%, one species of Mugils (Table: 6) contributed to 2.07% and five species of Exotic species (Table: 11) contributed to 1.50%.
Limnological studies were conducted in the reservoir during October-December 1993. The reservoir is productive, with high values of total alkalinity (90 to 110 mg l^{-1}) and total hardness (80 to 100 mg l^{-1}). The water is warm (22.0 to 32.5 °C) and clear (transparency 43 to 178 cm), with a pH range of 7.4 to 8.4. Dissolved oxygen at the surface ranges from 2.0 to 8.8 mg l^{-1} and the carbon dioxide, when present, 4 to 6 mg l^{-1}. The rate of carbon fixation was high with values recorded at the surface and in sub-surface ranging between 41.66 mg C m^{-3} hr^{-1} and 104.16 mg C m^{-3} hr^{-1} as observed in the months October to December, 1993. Physico-chemical condition of water has direct impact on survival, growth, reproduction and distribution of fishes. Any adverse environmental condition affects the life of fishes. Gross physico-chemical characteristics of Indian reservoirs have been reported by several workers [31] [32] [33] [34] [35].

In the present study physico chemical parameters of water in Lower Manair Reservoir is tested in three seasons such as monsoon, winter and summer periods shown in table 13. The water

temperature, pH, Dissolved oxygen, free carbon-dioxide, Transparency, turbidity, Hardness, Biological oxygen demand, Chlorides, Nitrates and Total dissolved solids of Mean standard deviation values were calculated in monsoon, pre monsoon and post monsoon periods. These waters parameters are more suitable for plank tonic growth in the reservoir. These are directly or indirectly help to enhance the fish production.

Table:1 Species Wise Monthly Fish Landing Of Lower Manair Dam During The Year 2013 To 2014

Fish species / Monthly	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Catla catla	100	100	104	208	216	260	54	90	176	**270**	182	135	1895.000
Labeo ariza	140	40	78	130	135	156	54	54	**176**	54	81	108	1206.000
Labeo bata	0	0	26	**52**	0	0	0	18	0	0	0	0	96.000
Labeo calbasu	80	20	26	130	108	**260**	0	90	132	189	162	135	1332.000
Labeo fimbriatus	0	0	0	52	0	0	**135**	0	0	0	0	0	187.000
Labeo porcellus	**100**	20	26	52	54	52	67.5	0	44	54	52	54	575.500
Labeo rohita	60	40	78	78	108	**182**	54	126	22	108	104	108	1068.000
Cirrhinus mrigala	20	0	104	**130**	81	104	81	18	44	54	52	81	769.000
Cirrhinus reba	80	40	78	104	135	156	**162**	36	132	81	78	81	1163.00
Cyprinus carpio	0	0	0	0	40.5	26	0	**54**	0	0	0	0	120.500
Ctenopharyngodon idella	0	0	0	0	0	0	0	**36**	0	0	0	0	36.000
Garra gotyla gotyla	0	0	0	0	0	**7.8**	0	0	0	0	0	0	7.800
Osteobrama cotio cotio	100	30	52	130	**162**	156	54	18	88	81	104	54	1029.00
Puntius sps	40	100	130	156	135	130	**260**	72	22	27	52	27	1151.00
Puntius sarana sarana	10	20	26	52	27	52	**54**	72	44	27	26	13.5	423.500
Rasbora sps	0	**4**	2.6	3.9	0	3.9	1.3	0	0	0	0	0	15.700
Salmostoma sps	20	60	52	78	**135**	78	81	36	132	54	52	27	805.00
Amblypharyngodon sps	20	80	52	78	81	91	**94.5**	36	11	5.4	26	20.25	595.150
Danio devario	0	0	0	0	0	**3.9**	1.35	0	0	0	0	0	5.250
Lepidocephalichthys sps	0	0	0	0	0	**31.2**	14.85	0	0	0	0	0	46.050
Schistura corica	0	0	0	0	0	**5.2**	1.35	0	0	0	0	0	6.550
Mystus sps	100	140	130	390	432	416	**810**	270	352	270	234	243	**3787.00**
Spherata sps	160	60	104	**286**	216	260	135	72	154	189	156	216	2008.00
Ompok bimaculatus	20	10	26	52	81	156	162	0	**242**	54	39	27	869.000
Wallago attu	160	40	104	130	216	156	**270**	72	88	216	78	135	1665.000
Psud & Eutropiichthys	30	20	26	78	54	52	**135**	0	22	54	26	27	524.000
Clarias batrachus	5	0	0	0	**5.4**	0	0	0	0	0	0	0	10.400
Clarias gariepinus	0	0	0	0	0	0	**20.25**	0	0	0	0	0	20.250
Heteropneustes fossilis	0	2	5.2	5.2	0	**9.1**	3.375	9	4.4	5.4	2.6	2.7	48.975

Anguilla sps	40	0	0	0	8.1	65	**135**	63	0	0	39	0	350.100
Notopterus notopterus	40	40	78	**104**	81	52	13.5	0	15.4	21.6	52	81	578.500
Xenentodon cancila	10	40	52	78	135	52	**189**	36	110	54	39	13.5	808.500
Hyporhamphus gaimardi	0	0	0	**52**	0	0	4.05	0	0	0	0	0	56.050
Channa striatus	60	40	52	104	81	104	**540**	90	132	135	130	135	1603.000
Channa panctatus	40	40	39	52	54	130	**135**	54	44	81	65	81	815.000
Channa marulius	20	10	0	0	27	11.7	54	9	11	10.8	**78**	27	258.500
Channa orienalis	0	0	0	0	0	52	**108**	0	0	0	0	0	160.000
Glossogobius giuris	100	100	130	312	324	312	**405**	162	132	108	156	162	**2403.000**
Awaous gramme pomus	0	0	0	0	0	0	0	**2.7**	0	0	0	0	2.700
Mastacembelus sps	120	140	156	**390**	297	286	324	180	110	216	208	216	**2643.000**
Trichogaster faciatus	2	3	0	0	0	**7.8**	5.4	0	0	0	0	0	18.200
Colisa lalio	6	5	0	0	0	5.2	**8.1**	0	0	0	0	0	24.300
Anabas testudineus	20	15	0	26	27	26	27	0	22	13.5	**39**	0	215.500
Nandus nandus	0	0	0	18.2	**27**	0	8.775	0	0	0	13	0	66.975
Oreochromis sps	0	0	0	0	54	130	**135**	0	0	0	0	0	319.000
Etroplus sps	40	80	52	52	54	52	**81**	18	11	40.5	52	40.5	573.000
Chanda &Ambasis	**10**	4	5.2	0	0	0	5.4	0	0	2.7	0	5.4	32.700
Rhinomugil corsula	80	60	78	78	81	52	27	0	22	18.9	78	**108**	682.900
Total	**1833**	**1403**	**1872**	**3641 .3**	**3672**	**4141.8**	**4910. 7**	**1793 .7**	**2494. 8**	**2494 .8**	**2455 .6**	**2363. 85**	**33076.55 0**

Table: 2. Group Wise 6 species of Major Carps total Biomass / Monthly 2013-2014

Major Carps	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Catla catla	100	100	104	208	216	260	54	90	176	270	182	135	1895.00
Labeo rohita	60	40	78	78	108	182	54	126	22	108	104	108	1068.00
Labeo calbasu	80	20	26	130	108	260	0	90	132	189	162	135	1332.00
Labeo fimbriatus	0	0	0	52	0	0	135	0	0	0	0	0	187.00
Cirrhinus mrigala	20	0	104	130	81	104	81	18	44	54	52	81	769.00
Notopterus notopterus	40	40	78	104	81	52	13.5	0	15.4	21.6	52	81	578.50
Total biomass of Major carps in Lower Manir Dam													5829.50

Table: 3. Group Wise 9 species of Minor Carps total Biomass / Monthly 2013-2014

Minor Carps	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Labeo ariza	140	40	78	130	135	156	54	54	176	54	81	108	1206.00
Labeo bata	0	0	26	52	0	0	0	18	0	0	0	0	96.00
Labeo porcellus	100	20	26	52	54	52	67.5	0	44	54	52	54	575.50
Cirrhinus reba	80	40	78	104	135	156	162	36	132	81	78	81	1163.00
Puntius sarana sarana	10	20	26	52	27	52	54	72	44	27	26	13.5	423.500
Puntius sps	40	100	130	156	135	130	260	72	22	27	52	27	1151.00
Osteobrama cotio cotio	100	30	52	130	162	156	54	18	88	81	104	54	1029.00
Total biomass of Minor carps in Lower Manir Dam													5644.00

Table: 4. Group Wise 11 species of Minnows total Biomass / Monthly 2013-2014

Minnows	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Garra gotyla gotyla	0	0	0	0	0	7.8	0	0	0	0	0	0	7.800
Rasbora sps	0	4	2.6	3.9	0	3.9	1.3	0	0	0	0	0	15.700
Salmostoma sps	20	60	52	78	135	78	81	36	132	54	52	27	805.00
Amblypharyngodon sps	20	80	52	78	81	91	94.5	36	11	5.4	26	20.25	595.15
Danio devario	0	0	0	0	0	3.9	1.35	0	0	0	0	0	5.250
Lepidocephalichthys sps	0	0	0	0	0	31.2	14.85	0	0	0	0	0	46.050
Schistura corica	0	0	0	0	0	5.2	1.35	0	0	0	0	0	6.550
Total biomass of Minnows in Lower Manir Dam													1481.5

Table: 5. Group Wise 12 species of Catfishes total Biomass / Monthly 2013-2014

Cat Fishes	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Mystus sps	100	140	130	390	432	416	810	270	352	270	234	243	3787.00
Spherata sps	160	60	104	286	216	260	135	72	154	189	156	216	2008.00
Ompok bimaculatus	20	10	26	52	81	156	162	0	242	54	39	27	869.000
Wallago attu	160	40	104	130	216	156	270	72	88	216	78	135	1665.00
Psud & Eutropiichthys	30	20	26	78	54	52	135	0	22	54	26	27	524.000
Clarias batrachus	5	0	0	0	5.4	0	0	0	0	0	0	0	10.400
Heteropneustes fossilis	0	2	5.2	5.2	0	9.1	3.375	9	4.4	5.4	2.6	2.7	48.975
Total biomass of catfishes in Lower Manir Dam													8912.375

Table: 6. Group Wise 5 species of Eels, Spinyeels and Mugils of total Biomass / Monthly 2013-2014

Eels	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Anguilla sps	40	0	0	0	8.1	65	135	63	0	0	39	0	350.10
Spiny Eels													
Mastacembelus sps	120	140	156	390	297	286	324	180	110	216	208	216	2643.0
Mugils													
Rhinomugil corsula	80	60	78	78	81	52	27	0	22	18.9	78	108	682.90

Table: 7. Group Wise 2 species of Beloiniformes total Biomass / Monthly 2013-2014

Beloiniformes	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Xenentodon cancila	10	40	52	78	135	52	189	36	110	54	39	13.5	808.500
Hyporhamphus gaimardi	0	0	0	52	0	0	4.05	0	0	0	0	0	56.050
Total biomass of Beloniform fishes in Lower Manir Dam													864.550

Table: 8. Group Wise 4 species of Murreles total Biomass / Monthly 2013-2014

Murreles	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Channa striatus	60	40	52	104	81	104	540	90	132	135	130	135	1603.000
Channa panctatus	40	40	39	52	54	130	135	54	44	81	65	81	815.000
Channa marulius	20	10	0	0	27	11.7	54	9	11	10.8	78	27	258.500
Channa orienalis	0	0	0	0	0	52	108	0	0	0	0	0	160.000
Total biomass of Murreles fishes in Lower Manir Dam													2836.500

Table: 9. Group Wise 2 species of Gobids total Biomass / Monthly 2013-2014

Gobids	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Glossogobius giuris	100	100	130	312	324	312	405	162	132	108	156	162	2403.00
Awaous grammepomus	0	0	0	0	0	0	0	2.7	0	0	0	0	2.700
Total biomass of Gobid fishes in Lower Manir Dam													2405.700

Table: 10. Group Wise 8 species of Perches total Biomass / Monthly 2013-2014

Perches	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Trichogaster faciatus	2	3	0	0	0	7.8	5.4	0	0	0	0	0	18.200
Colisa lalio	6	5	0	0	0	5.2	8.1	0	0	0	0	0	24.300
Nandus nandus	0	0	0	18.2	27	0	8.775	0	0	0	13	0	66.975
Etroplus sps	40	80	52	52	54	52	81	18	11	40.5	52	40.5	573.00
Chanda &Ambasis	10	4	5.2	0	0	0	5.4	0	0	2.7	0	5.4	32.700
Anabas testudineus	20	15	0	26	27	26	27	0	22	13.5	39	0	215.500
Total biomass of Perches fishes in Lower Manir Dam													930.675

Table: 11. Group **Wise 5 species of Exotic species total Biomass / Monthly 2013-2014**

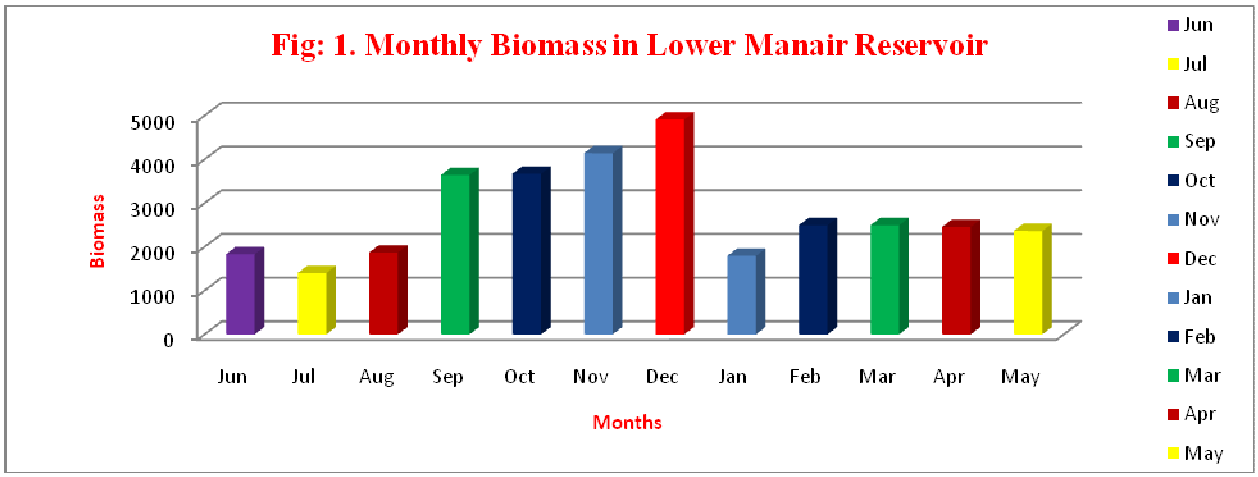
Exotic species	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Total
Cyprinus carpio	0	0	0	0	40.5	26	0	54	0	0	0	0	120.5
Ctenopharyngodon idella	0	0	0	0	0	0	0	36	0	0	0	0	36.00
Clarias gariepinus	0	0	0	0	0	0	20.25	0	0	0	0	0	20.250
Oreochromis sps	0	0	0	0	54	130	135	0	0	0	0	0	319.00
Total biomass of Exotic fishes in Lower Manir Dam													495.75

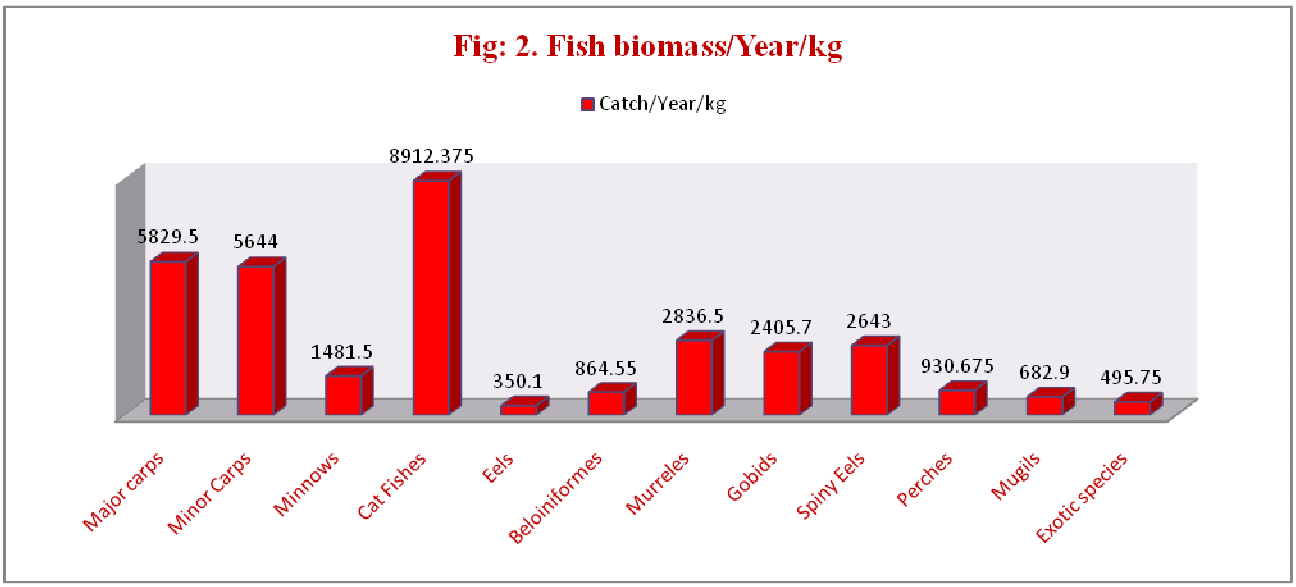
Table: 12. Twelve Individual Groups of total Biomass / Monthly 2013-2014

Fish Species	Catch/Year/kg	%	Fish Species	Catch/Year/kg	%
Major carps	5829.50	17.62	**Murreles**	2836.50	8.58
Minor Carps	5644.00	17.06	**Gobids**	2405.70	7.27
Minnows	1481.50	0.55	**Spiny Eels**	2643.00	7.99
Cat Fishes	8912.375	0.27	**Perches**	930.675	2.81
Eels	350.10	1.09	**Mugils**	682.90	2.07
Beloiniformes	864.55	2.61	**Exotic species**	495.75	1.50

Table: 13. Physical Parameters of Lower Manair Dam

parameters	Monsoon	winter	Summer
Water Temperature	25.0 ± 0.251	22.5 ± 0.122	30.5 ± 0.351
pH	7.25 ± 0.116	7.82 ± 0.153	8.16 ± 0.224
DO mg/l	8.05 ± 0.374	7.43 ± 0.267	6.85 ± 0.123
Free Co2 mg/l	1.9 ± 0.025	2.45 ± 0.013	2.85 ± 0.051
Transparency	16.83 ± 0.121	34.36 ± 0.325	32.52± 0.621
Turbidity	12.0 ± 0.251	1.5 ± 0.523	0.7 ± 0.254
Hardness mg/l	152.73 ± 2.524	165.3 ± 3.012	192.51 ± 3.962
BOD mg/l	2.62 ± 0.231	2.88 ± 0.352	3.975 ± 0.412
Chloride mg/l	16.52 ± 0.851	23.24 ± 0.654	28.81 ± 0.946
Nitrates mg/l	0.074 ± 0.008	0.151 ± 0.001	0.366 ± 0.004
Total dissolved solids mg/l	286.2 ± 4.204	254.01 ± 3.854	276.52 ± 4.251
Phosphate mg/l	0.151 ± 0.005	0.25 ± 0.002	0.66 ± 0.004





CONCLUSION

A total of 64 fish species belonging to eight orders, 19 families and 39 genera families of fish catch is 33076.550 kgs per annum, this is first time scientifically estimated the fish population in Lower Manair Dam .These fish species are divided in to 12 groups and biomass density is Major carps 5829.5 kgs, Minor carps 5644kgs, Minnows 1481 kgs, Catfishes 8912.38 kgs, Eels 350 kgs, Spiny eels 2643 kgs, Mugils 683 kgs, Beloiniformes 864.55 kgs, Murrels 2836.5 kgs, Gobids 2405.7 kgs, Perches 930.68 kgs, Exotic species 495.75 kgs. From the above discussion it can be concluded that the most of the physico-chemical characteristics of Lower Manair Dam not only provide favourable conditions but also gave an average requirement for growth, survival and production of fish.

ACKNOWLEDGEMENTS

The author would like to thank University Grant Commission for rendering financial assistance and Commissioner Collegiate Education Telangana, Govt. Degree College, Jammikunta, Satavahana University for providing necessary facilities.

REFERENCES

[1]. Sugunan, V.V. Reservoir Fisheries in India. *FAO Fisheries Technical Paper* No. 345. **1995**; Food and Agriculture Organization of the United Nations, Rome.
[2] Sugunan, V.V. Ecology and fishery management of reservoirs in India. Hydrobiologia. **2000**; Volume 430, Issue 1-3, pp 121-147.
[3]. Vass, K.K. Indian Reservoir Fisheries Development – Constraints and Solutions. *Fishing Chimes*, **2007**: 27(1): 76-81.
[4]. Jhingran, A.G. Reservoir Fisheries Management in India. Bulletin No. 45, **1986**;Central Inland Fisheries Research Institute, Barrackpore.
[5]. Jhingran V.G. Fish and fisheries of India, Hindustan Publishing Corporation (India), Delhi, **1988**.
[6]. CIFRI. *Annual Report*. Central Inland Fisheries Research Institute, Barrackpore, Kolkatta. **2006**.
[7]. Rama Rao. K . A Study On Fishing Craft And Gear In Lower Manair Dam, Karimnagar Dt. Andhra Pradesh, India. *International Journal Of Multidisciplinary Educational Research.* **2014**; Issn : 2277-7881; Impact Factor - 2.735; Ic Value:5.16 *Volume 3, Issue 5(2),*pp 113-131, *May* www.ijmer.in
[8]. Frederick SW, Peterman RM. Choosing fisheries harvest policies: when does uncertainty matter? Can. J. Fish. Aquat. Sci. **1995**; 52(2): 291-306.
[9]. Manna, Ranjan K Das, Archan K, Krishna Rao DS, Karthikeyan M and Singh Dn. Fishing crafts and gear in river Krishna. Indian Journal of Traditional Knowedge. **2011**;Vol 10 (3) pp 491-497.
[10]. Meenakumari P, B., M. Baiju, J. Barman D. Baruah and B. Kakati. Fish trapping devices and methods in Assam - a review. *Indian J. Fis.,* **2011**; *58(2)* : *127-135, 2011*.
[11]. Gurumayam SD, and Choudhury M . Fishing methods in the rivers of Northeast India. Indian Journal of Traditional Knowledge. **2009**; Vol 8 (2) pp 237- 241.
[12]. Kumar Varun and Kumar Kamad. A Preliminary Study on Fishing Craft and Gears in Dhaura Reservoir, Uttarakhand, India. Int. Res. J. Biological Sci. **2013**;Vol. 2(8), 76-78.
[13]. John Mark Hanson, William C. Leggett . Empirical Prediction of Fish Biomass And Yield *Canadian Journal of Fisheries and Aquatic Sciences*, **2011**; 39(2): 257-263, 10.1139/f82-036.
[14]. Hanson JM, Leggett WC. Empirical prediction of fish biomass and yield. Can. J. of Fish. Aquat. Sci. **1982**; 39(2): 257-263
[15]. Hilborn R, Walters CJ. Quantitative fisheries stock assessment: choice, dynamics and uncertainty. Rev. Fish Biol. Fish. **1992**; (2) 177-178.
[16]. McCann, J. Estimates of the fish populations of Clear Lake, Iowa. Ph.D. dissertation, Iowa State University. **1960**.
[17]. Talwar, P. K. and Jhingran, A. G. Inland fishes of India and adjecent countries, 2 Vol. Oxford and IBH Publishing Co.Pvt.Ltd. New Delhi. **1991**; p. 1158.
[18]. APHA, Standard methods for the examination of water and waste water, 20th Edition. APHA,Washington USA. **1998**.
[19] Rama Rao. K. Ichthyo faunal bio diversity in the lower Manair Dam at Karimnagar district; Telangana State: India. *Pelagia Research Library; Advances in Applied Science Research. **2014**;* ISSN: 0976-8610, CODEN (USA): AASRFC; 5(5):237-248. www.pelagiaresearchlibrary.com
[20]. Rama Rao K. Diversity of Ornamental Fishes in Lower Manair Dam at Karimnagar Dt. Andhra Pradesh. *IOSR* Abundence In Lower Manair Dam At Karimnagar Dt. Andhra Pradesh, India. *IOSR Journal of Pharmacy and Biological Sciences. **2014**; (IOSR-JPBS) e-ISSN: 2278-3008, p-ISSN:2319-7676. Volume 9, Issue 1 Ver. I , PP 20-24 www.iosrjournals.org*

[21].Rama Rao. K. A study on larvivorous fish species efficacy of lower Manair dam at Karimnagar, Andhra Pradesh, India. *Pelagia Research Library; Advances in Applied Science Research. **2014**;* ISSN: 0976-8610, CODEN (USA): AASRFC; *5(2):133-143*. www.pelagiaresearchlibrary.com
[22.] Jayaram, K.C. The freshwater fishes of Indian region, Narendra Publishing House, New Delhi. **1999**.
[23]. Mahapatra, D.K. Present status of Fisheries of Hirakud reservoirs, Orissa. Fishing Chimes. **2003**; 22 (10 & 11): 76-79.
[24]. Sakhare, V.B. and Joshi, P.K. Reservoir fishery potential of Parbhani District of Maharshtra. *Fishing Chimes **2003**;* 23(5): 13-16.
[25]. Pisca Ravi Shankar, Saraladevi, B. and Divakara Chary, K. The present status of Ibrahimbagh, a minor reservoir of Hyderabad, Fishing Chimes. **2000**; 20(2): 41-43.
[26]. Sugunan, V. V. and Yadava, Y. S. Hirakhud reservoir strategies for fisheries development. Bulletin 66, **1992**;CIFRI, Barrackpore, India.
[27]. John Mark Hanson, William C. Leggett . Empirical Prediction of Fish Biomass And Yield *Canadian Journal of Fisheries and Aquatic Sciences*, **2011**; 39(2): 257-263, 10.1139/f82-036.
[28]. Andrew L. Rypel, Daisuke Goto Greg G. Sass, M. Jake Vander Zanden. Production rates of walleye and their relationship to exploitation in Escanaba Lake. *Canadian Journal of Fisheries and Aquatic Sciences*, **2015**; 72(6): 834-844, 10.1139/cjfas-2014-0394.
[29]. Scott Hale. R, J. Degan Aquacoustics, Sterling, William H. Renwick, Shideler Hall and A. Stein. Assessing Fish Biomass and Prey Availability in Ohio Reservoirs. American Fisheries Society Symposium. **2008**; 62:517–541.
[30]. Wojciech Andrzejewski, Jacek Szlakowski, Jerzy Mastyński, Jan Mazurkiewicz, Małgorzata Godlewska. Fish biomass and species composition in the Malta Reservoir, Poland. Journal Of Water And Land Development J. Water Land Dev. **2010**; No. 14, 2010: 67–82.
[31]. Sakhare, V. B. and Joshi, P. K. Water quality of Migni (Pangaon) Reservoir and its significance to fisheries. **2003**.
[32]. Dagaonkar A. and Saxena D., N. Physico-chemical and Biological characterization of a temple tank, Kalia Sagar, Gwalior (M.P.), *Hydrobiologia.* **1992**; 8, 11-19.
[33]. David A., Ray P., Govind B.V., Rajgopal K.V. and Banerjee R.K., Limnology and fisheries of Tungabhadra reservoir, Bull. Cont. Inland, *Fish. Res. Inst.* **1969**; 13, 1-118.
[34]. S.K., Govind, B.V., Natarajan, A.V. A note on some distinctive limnological features of Gobindsagar reservoir. *Indian Journal of Animal Science*. **1977**; 47: 435–39.
[35]. Awadullah, R.M., Physical and chemical properties of Aswan High Dam lake waters, Water SA. 1990;16, 79-84.