



Ichthyofauna Diversity and Its Abundance in East Godavari District, Andhra Pradesh

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ABSTRACT

East Godavari district occupies a very important place in the fisheries map of Andhra Pradesh, which endowed with rich fishery resources of marine, inland and brackish water. The Ichthyofauna of East Godavari district was collected to record the biodiversity of fish fauna in the district. It is recorded that the fish fauna of this district comprises of 9 Orders, 59 Genera and 146 Species. The collection revealed that majority of the fish belong to order Cypriniformes which predominates with 83 species followed by Siluriformes with 30 species and Perciformes with 12 species. The Order Cypriniformes has most commercial importance fish such as Catla, Rohu, Mrigal and the Common Carp. The Order Channiformes represents all murrels *Channa striatus*, *Channa marulius*, *Channa gachua* and *Channa punctatus* which are of great commercial value. *Hilsa hilsa* belongs to the Order Clupeiformes is also recorded here, which is an anadromous migratory fish visiting River Godavari during early monsoon months. There is an immediate need to take measures to conserve this fish.

INTRODUCTION

Aquaculture has occupied a special status not only because of its contribution to food resources but also in view of its contribution to quality diet. Fish is one of the most important sources of animal diet. There are 24,600 species of known fishes (Groombridge 1992), which comprises almost half the number of total vertebrates. Nelson (1994) has estimated a total number of fish species recorded from different ecosystems in which only 400 species are commercially important. Among the available fish species of the world at least 20% of freshwater fish species are already extinct and in serious decline owing to the ecological degradation and mismanagement of natural resources and overexploitation. East Godavari district is rich in water resources and consists of variety of fish fauna. The vast stretches of these freshwater bodies have good scope for fisheries. The district has rich fish fauna and there is a need to contemplate measures to protect the genetic resources. The main threat for the decline of various fish fauna may be due to indiscriminate fishing of juveniles, industrialization, urbanization and destruction of natural environment, further deteriorating the situation. There is a need to take measures to protect the genetic resources of fish fauna, which are depleting enormously. The recent study henceforth has been contemplated to verify the fish germplasm resources in the freshwater bodies in the district. This study has given a vivid picture on the status of both torrential and plain water farms of Ichthyofauna and its biodiversity.

Studies have been made on Ichthyofaunal diversity of various freshwater bodies in India during the last few decades (Jayaram 1981, Jhingran 1991, Dutta et al. 2003, Mishra et al. 2003). However, scanty information is available from this region of India (Reddy & Reddy 1981, Visweswara Rao 1970, Murthy 2002). In the present study it is aimed to evaluate the freshwater fish fauna in the East Godavari district. This study is also aimed to suggest remedial measures for the development of fisheries sector and also to recommend some conservative measures so that the fish germplasm resources of this region may be protected and preserved for their richness.

MATERIALS AND METHODS

East Godavari is located at north eastern part of Andhra Pradesh State between 16°17'-18°30' north latitude and 82°37' east longitude. The District ranks 14th in the State in respect of area with 10,807 sq.km having 57 Mandals with 1409 villages. The district is bound on the north by Visakhapatnam district and Orissa State, on the east by Bay of Bengal and on the west by Khammam and West Godavari Districts. It can be broadly classified into three natural zones. They are the delta, plain and agency tracts. The freshwater bodies that were surveyed during the present investigation are mainly the River Godavari, its canals and minor reservoirs such as Pampa, Yeleswaram, Vattigadda, freshwater tanks of Kakinada and Rajahmundry divisions. Departmental, Grampanchayat, Perennial long seasonal, short seasonal

tanks of different Mandals and farmers dugout ponds. The material (fish) for the present study was collected from the different freshwater bodies such as tanks, reservoirs, canals and River Godavari of East Godavari District.

The classification morphometrics and systematics were studied based on the guidelines of Day (1889), Regan (1929), Berg (1940), Jayaram (1981), Murthy (2002), Visweshwara Rao (1961, 1970), Rajyalakshmi & Narayana Rao (1969), Babu Rao (1976) and Reddy & Reddy (1981).

RESULTS AND DISCUSSION

The Ichthyofauna of this region exhibits a combination of both torrential plain water and river forms and thus have occupied diverse ecological regimes in their distribution. The observations revealed that majority of the fishes were not found in regular catches and they were scanty. Some of the species are very rarely found. This is an indication that the fish species are in endangered condition. However, the fish fauna recorded in the present investigation belongs to 59 genera and 146 species. It is noticed that majority of the fish belong to Order Cypriniformes which predominates with 83 species followed by Siluriformes with 30 species and Perciformes with 12 species (Table 1). The Orderwise percent composition of the fishes is given in Fig. 1. The order Cypriniformes has most of the commercial importance fishes such as Catla, Rohu, Mrigal and common carp. The order Channiformes represents all murrels *Channa striatus*, *Channa marulius*, *Channa gachua* and *C. punctatus*, which are of great commercial value (Reddy & Reddy 1981). *Hilsa hilsa* belongs to the Order Clupeiformes is also recorded. It is an anadromous migratory fish, which visits River Godavari during flood season. This fish was found scanty (Babu Rao 1976).

Among the 146 species present in East Godavari district, 67 are herbivorous, 55 are omnivorous, 17 are carnivorous and 7 are larvivorous. The study revealed that the 146 species recorded in the present study could be categorized into less abundant, abundant, most abundant and rare groups. The less abundant species are 36, while most abundant are 7, abundant species are 17 and 86 very rare species (Table 2). The study also revealed that the fish production from River Godavari in East Godavari has been decreasing day by day. The Indian major carps have reached to the saturation point. The catfishes such as *Mystus seenghala*, *Wallago attu*, *Bangarus bagarius* and *Pangacitis pangacius* have declined in their population drastically. The drastic fall in the fish population may be due to destruction of fish breeding grounds, indiscriminate slaughtering of juveniles and also use of shore seine nets for the juvenile fish catch as observed in the present investigation. Earlier studies made by

Table 1: Order-wise Ichthyofauna diversity of East Godavari district.

S.No.	Order	Number of species present
1.	Anguilliformes	01
2.	Atheriniformes	07
3.	Clupiformes	03
4.	Channiformes	04
5.	Cypriniformes	83
6.	Mastacembelli formes	03
7.	Mugiliformes	03
8.	Perciformes	12
9.	Siluriformes	30
	Total	146

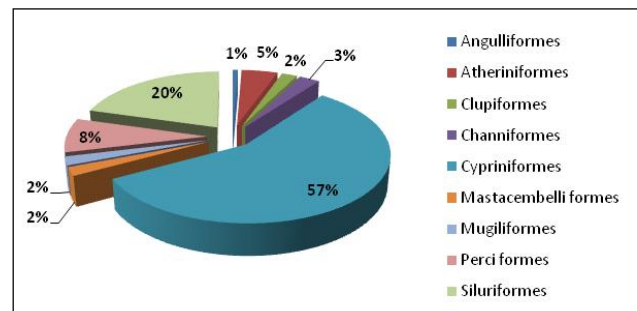


Fig. 1: Order-wise percent composition of the fish recorded in the study.

Rajyalakshmi & Narayana Rao (1969) have shown the continuous decline in the catch per unit, which has affected the mean size in the catch. This indicates that due to fishing, the situation has not been changed even after 35 years and it is further deteriorated. Although certain conservative efforts have been initiated but they did not have any impact on the improvement of genetic resource. It is also observed that due to biological diversity, the natural genetic resources of fish could not be preserved and most of the fishes gone astray and every year the fishes are entering the annihilation zone. The waning of fish fauna is mainly due to the obliteration of natural habitations. Hence, it is required to protect and conserve the fish fauna and there is a need to pay immediate attention of the serious decline of fish fauna, which may pave a way to monitor the conservation and further decline of native fish fauna of this reason. The anadromous migratory fish, *Hilsa hilsa*, which is seasonally found in this region alone in Andhra Pradesh, must be conserved by imposing ban on its catch.

The common goal of all of us is to conserve the fish genetic resources as the fish is an important food for mankind. Therefore, an attempt has been made to suggest certain remedies in order to protect fish genetic resources in the district, because the abundant water resources certainly provide a room to the field.

Table 2: Ichthyofauna diversity of East Godavari district.

S. No.	Name of the Fish	Most Abundant	Abundant	Less Abundant	Rare	Feeding habit		
						Herbivorous	Omnivorous	Carnivorous
1	Order- Anguilliformes <i>Anguilla bengalensis</i>		+					√
	Order - Clupeiformes							
2	<i>Hilsa hilsa</i>	++				√		
3	<i>Gudusia chopra</i>		+			√		
4	<i>Noropectus notopterus</i>	++				√		
	Order - Cypriniformes							
5	<i>Chela laubuca</i>			-		√		
6	<i>Salmostoma becaila</i>	++				√		
7	<i>S. clupeioides</i>	++				√		
8	<i>S. horai</i>			-		√		
9	<i>S. boopis</i>			-		√		
10	<i>S. phulo</i>			-		√		
11	<i>S. untrahi</i>			-		√		
12	<i>Esomus. dandricus</i>	++						√ (L)
13	<i>E. barbatus</i>		+			√		
14	<i>Danio rerio</i>	++				√		
15	<i>D. devario</i>			-		√		
16	<i>Rasbora danconius</i>		+			√		
17	<i>R. rasbora</i>		+			√		
18	<i>R. cavern</i>			-		√		
19	<i>Amblypharyngodon. mola</i>		++			√		
20	<i>A. microlepis</i>				-	√		
21	<i>Barilius bakeri</i>				-		√	
22	<i>B. barila</i>				-		√	
23	<i>B. bendilisis</i>				-		√	
24	<i>Ctenophonyngden idella</i>	+++						
25	<i>Cyprinus corpio</i>		++				√	
26	<i>Oreochthys cosuatis</i>				-		√	
27	<i>Puntius sarana</i>			+		√		
28	<i>P. chola</i>			+		√		
29	<i>P. conochonius</i>			+		√		
30	<i>P. dorsalis</i>				-	√		
31	<i>P. curmuca</i>				-	√		
32	<i>P. filamentosus</i>				-	√		
33	<i>P. guganio</i>				-	√		
34	<i>P. amphibious</i>			+		√		
35	<i>P. jerdoni</i>				-	√		
36	<i>P. kolus</i>				-	√		
37	<i>P. melanompyx</i>				-	√		
38	<i>P. neilli</i>				-	√		
39	<i>P. parrah</i>				-	√		
40	<i>P. sophore</i>			+		√		
41	<i>P. terio</i>				-	√		
42	<i>P. titco</i>			+		√		
43	<i>P. vittatus</i>				-	√		
44	<i>Rohtee. ogilbii</i>				-		√	
45	<i>Osteobrama. cotio</i>			+			√	
46	<i>O. neilli</i>				-		√	
47	<i>O. belangeri</i>				-		√	
48	<i>O. vigorsil</i>				-		√	
49	<i>Thynnichthys. sandkhol</i>				-	√		
50	<i>Schismatorhyncus. nukta</i>				-		√	
51	<i>Labeo. rohita</i>	+++				√		
52	<i>L. bata</i>		++			√		
53	<i>L. fimbriatus</i>			+		√		
54	<i>L. calabasu</i>			+		√		

Table cont....

..Cont Table				
55	<i>L. angra</i>		-	√
56	<i>L. ariza</i>		-	√
57	<i>L. boga</i>		-	√
58	<i>L. boggut</i>		-	√
59	<i>L. dussumieri</i>		-	√
60	<i>L. goniis</i>		-	√
61	<i>L. kawarus</i>		-	√
62	<i>L. pangusia</i>		-	√
63	<i>L. porcellus</i>		-	√
64	<i>L. potail</i>		-	√
65	<i>Tor. khudree</i>		-	√
66	<i>T. mussullah</i>		-	√
67	<i>Cirrhinus. reba</i>		+	√
68	<i>C. mrigala</i>	+++		√
69	<i>C. horai</i>		-	√
70	<i>C. cirrhosa</i>		-	√
71	<i>C. flungee</i>		-	√
72	<i>Ostecheilus nashii</i>		-	√
73	<i>O. thomassi</i>		-	√
74	<i>Catla catla</i>	+++		√
75	<i>Garra lamta</i>		-	
76	<i>G. mullya</i>		-	
77	<i>G. gotyla</i>		-	
78	<i>G. mccllelandi</i>		++	
79	<i>Hypothalmichthys molitrix</i>		-	
80	<i>Noemacheilus botia</i>		+	
81	<i>N. angulla</i>		-	
82	<i>N. denisoni</i>		-	
83	<i>N. evezardi</i>		-	
84	<i>N. moreh</i>		-	√
85	<i>N. striatus</i>		-	√
86	<i>Lepidocephalus guntea</i>		-	
87	<i>L. thermalis</i>		+	√
Order - Siluriformes				
88	<i>Rita, gogra</i>		-	√
89	<i>R. kuturnee</i>		-	√
90	<i>Mystus. bleekeri</i>		+	√
91	<i>M. vittatus</i>		+	√
92	<i>M. armatus</i>		+	√
93	<i>M. cavasius</i>		+	√
94	<i>M. gulio</i>		+	√
95	<i>M. malabaricus</i>		-	√
96	<i>M. menoda</i>		-	√
97	<i>M. montanus</i>		-	√
	<i>M. punctatus</i>		-	√
99	<i>M. tengara</i>		-	√
100	<i>Aorichthys. aor</i>		+	√
101	<i>A. seenghala</i>		+	√
102	<i>Ompak bimaculatus</i>		+	√
103	<i>O. pabda</i>		-	√
104	<i>O. pabo</i>		-	√
105	<i>Wallago attu</i>		+	√
106	<i>Ailia coila</i>		-	√
107	<i>Pseudotropius atherinoides</i>		-	√
108	<i>Proeutropiichthys taakree</i>		-	√
109	<i>Eutropiichthy goongwaree</i>		-	√
110	<i>Silonia childreni</i>		-	√
	<i>Pangasius pangasius</i>		++	√
112	<i>Bagarius bagarius</i>		-	√
113	<i>Nangra itckee</i>		-	√
114	<i>N. viridescens</i>		-	√
115	<i>Glypthotax ionah</i>		-	√

Table cont...

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116	<i>Clarius batrachus</i>	+++		√	
117	<i>Heterpneustus fossilis</i>		++		√
	Order - Atheriniformis				
118	<i>Xenentodon cancila</i>		+		√
	<i>Aplocheilichthys lineatus</i>			-	√ (L)
120	<i>A. panchax</i>			-	√ (L)
121	<i>A. rubrostigma</i>			-	√ (L)
122	<i>Oryzias melanostigma</i>			-	√ (L)
123	<i>Gambusia affinis</i>		++		√ (L)
124	<i>Labistes reticulatus</i>		++		√ (L)
	Order - Channiformis				
125	<i>Channa striatus</i>	+++			√
126	<i>C. marulius</i>		+		√
127	<i>C. gachua</i>		+		√
128	<i>C. punctatus</i>		++		√
	Order - Perciformis				
129	<i>Chanda nama</i>		+	√	
130	<i>C. ranga</i>		+	√	
131	<i>Nandus nandus</i>			-	√
132	<i>Etrorplus suratensis</i>		+		√
133	<i>E. maculatus</i>			-	√
134	<i>Tilapia mossambica</i>	+++			√
135	<i>Anabas testidaneus</i>		+		√
136	<i>A. oilgolepis</i>			-	√
137	<i>Awaous stamineus</i>			-	√
138	<i>Macropodus cupanus</i>			-	√
139	<i>Colisa fasciatus</i>			-	√
140	<i>Osphrornemus goramy</i>			-	√
	Order -Mastacembelliformis				
141	<i>Mastacembelus armatus</i>		+		√
142	<i>M. punctatus</i>		+		√
143	<i>Macrogonathus aculeatus</i>		+		√
	Order - Mugiliformis				
144	<i>Mugil cephalus</i>		++		√
145	<i>Liza parsia</i>		++		√
146	<i>Rhinomugil corsula</i>				√

+++ = Most Abundant ++ = Abundant + = Less abundant - Rare L- Larvivorous

REFERENCES

Babu Rao, M. 1976. Clupoid fishes of Godavary estuary. *Matsya*, 2: 32-37.

Berg, L.S. 1947. Classification of Fishes Both Recent and Fossil. *Trav. Inst. Zool. Acad. Sci.*, 87-517.

Day, F. 1889. Fish Fauna of British India Including Ceylon and Burma Fishes. Vol. I and II, Taylor and Francis, London.

Dutta, S. and Reddy, P.B. 1979. On the snake head fishes of Andhra Pradesh. *Mem. Soc. Zool. Guntur*, 1: 103-108.

Dutta, S.P.S., Kour, H. and Zutshi, N. 2003. Ichthyofauna of River Tawi and its tributaries, an important tributary of the River Chenab, J&K State. *J. Aqua. Biol.*, 18(2): 61-68.

Groombridge, B. 1992. Global Diversity: Status of the Earth Living Reservoirs. World Conservation Monitoring Centre, Chapman and Hall, London.

Jayaram, K.C. 1981. The Freshwater Fishes of India. Zoological Survey of India.

Jhingran, V.G. 1991. Fish and Fisheries of India. 3rd edn. Hindustan Publication Corporation, Delhi.

Mishra, S., Pradhan, P., Kar, S. and Chakraborty, S.K. 2003. Ichthyofauna diversity of Midnapur, Bankura and Hooghly districts of South West Bengal. *Rec. Zool. Surv. India, Occ. Paper*, 2220: 1-66.

Murthy, D.S. 2002. Highlights of fisheries development in Andhra Pradesh. *Fishing Chimes*, 22(1): 64-70.

Nelson, J.S. 1994. Fishes of the World. 3rd Edn., John Wiley and Sons, New York.

Rajya Laxmi, T. and Narayana Rao, P.L. 1969. In: Seminar on the ecology and fisheries of freshwater reservoir, Barrackpore, November, 27th and 29th.

Reddy, P.B. and Reddy, C.B. 1981. Studies on the taxonomy of Indian species of the Family Channidae (Pisces: Teleostei) and *Channa punctatus* (Bloch, 1793) from Guntur, Andhra Pradesh. *Geobios*, 6: 199-203.

Regan, C.T. 1929. Fishes, Encyclopedia Britannica.

Visweswara Rao, V. 1961. A new species *Incara multisquamatus* belonging to Family Elestridae from Godavari estuary. *J. Mar. Biol. Ass., India*, 3(1): 187-198.

Visweswara Rao, V. 1970. *Chiramenia fluviatilis* Gen et. Sp. Nov. (Pisces-Gobiidae) from Godavari estuary. *J. Mar. Biol. Ass.*, 12(1&2), 329-332.