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STATUS OF ORNAMENTAL FISH DIVERSITY OF RAIGARH DISTRICT, CHHATTISGARH, INDIA

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ABSTRACT
The present study was undertaken to know the status of ornamental fishes of Raigarh district, Chhattisgarh. A total eight water resources were selected based on lotic to lentic environment covering rivers, reservoirs and ponds of the district for a period of seven month (November, May, 2011). Water parameters were found suitable during the study period for fish growth. A total 61 species under 41 genera, 22 families and 7 orders were recorded from three rivers Mahandi, Mand, kelo; two reservoirs Chinkari, Kedar and three village ponds Chhapora, Pussore, Kodatarai. Out of 61 species recorded, 4 species (6.56%) had ornamental value and 18 species (29.51%) both ornamental and food value. Family Cyprinidae dominated the groups in aspect of ornamental and food fish category with 8 species followed by Channidae 3 species, Ambassidae 2 species and rest of 8 families with 1 species each. The present study revealed that Raigarh district of CG harbours wide varieties of ornamental fishes with economic importance and proper management measures should adopt to aware the fishers about value of the ornamental fishes for conservation measures.

KEW WORDS: Ornamental fish diversity, Conservation, Raigarh district, Chhattisgarh.

INTRODUCTION

Raigarh district covers an area of 6530 km^2 with a fish production of about 9656 .50 metric tons per year. There are 5268 ponds with an area of 5500 ha and 70 reservoirs with measuring 1456 ha (Anon, 2012). Knowledge of fish diversity of particular region is essential not only for rational management of ichthyo-fauna but also for their conservation strategies. Additionally, for the exploitation and scientific development of aquaculture, knowledge of existing fish fauna of the area is a prerequisite. Although a large number of workers have studied in aspects of ichthyofauna of lotic and lentic waters, very limited works been done on fish diversity in different districts of Chhattisgarh State and some were by Om Prakash, (2004), Singh (2004), Dev (2008), Choubey (2013), Tamboli and Jha (2010 and 2012), Mondal *et al.* (2014) and Sahu (2015). The present study was undertaken to know the status of ornamental fish species in Raigarh district of Chhattisgarh (CG) State.

MATERIALS & METHODS

To study the status of ornamental fishes of the Raigarh District, Chhattisgarh, a total eight water resources were selected based on lotic to lentic environment. Out of these seven resources three were rivers (Kelo-112.60 km, Mahanadi-113 km and Mand-174 km), two reservoirs (Chinkari dam-208 ha and Kedar dam) and two village ponds (Chhapora pond-5 ha, Pussore pond-4.5 ha and Kodatarai pond-3 ha). The study was conducted for a period of seven months (November, 2011 to May, 2012). The fish samples were collected from different landing centers of all water resources. The majority of the species were identified on the field itself and the unidentified specimen were preserved in 4-6% formalin and brought to laboratory for identification. The fishes were identified with the help of keys provided by Datta and Shrivastava (1988), Talwar and Jhingran (1991), Jayaram (1994), and Das *et al.* (2010). After identification fishes were categorized as ornamental fish, food fish and ornamental + food value fish for interpretation of this study. Water qualities were measured by the standard methods followed by APHA (1988).

RESULTS & DISCUSSION

The Water quality parameter in selected aquatic resources of Raigarh district was found suitable for fish growth during the study period. Temperature has shown only minor fluctuation in the entire area 25 to 28.20 $^{\circ}$C, lower temperatures of Chinkari dam being higher in Kodatarai. Transparency of water was higher with 31.80 cm in Mahanadi River to 152 cm in Chinkari dam. Water was always alkaline in reaction with pH ranged between Chinkari dam 7.30 to 8.23 Kodatarai pond and alkalinity values changed around 77 mg l^{-1} in Kodatarai pond while increased to 131 mg l^{-1} in Pussore pond. Total Hardness was low 63.50 mg l^{-1} in Chhapora pond where as 120 mg l^{-1} in Pussore pond.

During the study period, total 61 species under 41 genera, 22 families and 7 orders were recorded from three rivers Mahandi, Mand, kelo; two reservoirs Chinkari, Kedar and village ponds Chhapora, Pussore and Kodatarai in Raigarh district. Out of 61 species recorded (table 1), 4 species (6.56%) had ornamental value and 18 species (29.51%)

both ornamental and food value (Fig 1). Family Cyprinidae dominated the groups in aspect of ornamental and food fish category with 8 species followed by Channidae 3 species, Ambassidae 2 species and others 8 families with 1 species each group (Fig 2).

Debnath (2015) reported 16 species had ornamental value and 30 species had both ornamental and food value out of 73 species from Gadadhar River at Cooch Behar District, West Bengal. Dey *et al.* (2015) found 58 fish species with ornamental and 25 species with both ornamental and food value in Kaljani river in Cooch Behar district. Mahapatra and Lakra (2014) obtained 41 indigenous ornamental fishes from east Kolkata wetlands. Usha *et al.* (2013) could found only 12 ornamental fishes from Adda Hole steam, Kabbinale forest range, Western Ghats. A total 100 ornamental fish species been reported by the various works from river Mahanadi (Singh *et al*., 2013). Basu *et al.* (2012) reported 70 indigenous ornamental fish species belonging to 45 genera, 30 families and 9 orders from West Bengal. Bhattacharya *et al*., (2003) reported 52 indigenous ornamental fish species from North-East. The present study found that Raigarh district of CG is an important area for indigenous ornamental fish resources.

TABLE 1: Ichthyofaunal diversity of Raigarh district, CG and their conservation status

Family	Scientific Name	Common Name	Local name	Conservation status	Commercial importance
Cyprinidae	*Amblypharyngodon mola* (Hamilton, 1822)	Mola carplet	Mohroli	LC	FF/OR
	Barilius bendelisis (Hamilton, 1807)	Hamilton barila	Jori	LC	FF
	Catla catla (Hamilton, 1822)	Catla	Katla	LC	FF
	Cirrhinus mrigala (Hamilton, 1822)	Mrigal	Mrigal	LC	FF
	Cirrhinus reba (Hamilton, 1822)	Reba carp	Lohi	LC	FF
	Ctenopharyngodon idella (Valenciennes, 1844)	Grass carp	Grass carp	NE	FF
	Cyprinus carpio Linnaeus, 1758	Common carp	Common carp	VU	FF
	Garra mullya (Sykes, 1839)	Sucker fish	Gadela	LC	FF
	Hypophthalmichthys molitrix (Valenciennes, 1844)	Silver carp	Silver carp	NT	FF
	Hypophthalmichthys nobilis (Richardson, 1845)	Bighead carp	Bighead	DD	FF
	Labeo angra (Hamilton, 1822)	Labeo angra	Gadela	LC	FF
	Labeo bata (Hamilton, 1822)	Bata	Bata	LC	FF
	Labeo boga (Hamilton, 1822)	Boga Labeo	Lohia	LC	FF
	Labeo calbasu (Hamilton, 1822)	Orange-fin labeo	Kalbaz	LC	FF/OR
	Labeo gonius (Hamilton, 1822)	Kuria Labeo	Kulus	LC	FF
	Labeo rohita (Hamilton, 1822)	Roho Labeo	Rohu	LC	FF
	Ostreobrama cotio (Hamilton, 1822)	Cotio	Chilati	LC	FF/OR
	Pethia conchonius (Hamilton, 1822)	Rosy barb	Kotri	LC	OR
	Systomus sarana (Hamilton, 1822)	Olive barb	Kotra	LC	FF/OR
	Puntius sophore (Hamilton, 1822)	Pool barb	Kotri	LC	OR
	Pethia ticto (Hamilton, 1822)	Ticto barb	Kotri	LC	OR
	Salmophasia bacaila (Hamilton, 1822)	Large razorbelly minnow	Sarangi	LC	FF
	Tor tor (Hamilton, 1822)	Maseer	Mahseer	NT	FF
	Tor putitora (Hamilton, 1822)	Putitora Mahseer	Mahasol	EN	FF/OR
Balitoridae	*Acanthocobitis botia* (Hamilton, 1822)	Mottled Loach	Rudwa	LC	FF
Cobitidae	*Lepidocephalichthys guntea* (Hamilton, 1822)	Guntea loach	Rudni	LC	OR/FF
Siluridae	*Ompok bimaculatus* (Bloch, 1794)	Butter catfish	Bolia	NT	FF/OR
	Ompok pabda (Hamilton, 1822)	Pabdah cat fish	Bolia	NT	FF
	Wallago attu (Bloch & Schneider, 1801)	Wallago	Padhina	NT	FF
Sisoridae	*Gagata gagata* (Hamilton, 1822)	Gengetic Gagata		LC	FF
	Bagarius bagarius Hamilton, 1822)	Goonch	Rechha	NT	FF
Bagridae	*Sperata aor* (Hamilton, 1822)	Long-whiskered catfish	Singhar	LC	FF
	Mystus cavasius (Hamilton, 1822)	Gangetic mystus	Jaliya tegna	LC	FF
	Sperata seenghala (Sykes, 1839)	Giant river-catfish	Tengra	LC	FF
	Mystus tengara (Hamilton, 1822)	Tengara catfish	Tegna	LC	OR
	Neotropius atherinoides (Bloch, 1794)	Indian potasi	Potashi	LC	OR/FF
	Rita rita (Hamilton, 1822)	Rita	Bhunda	LC	FF
Pangasiidae	*Pangasius pangasius* (Hamilton, 1822)	Pangas catfish	Pangash	LC	FF
	Ailia coila (Hamilton, 1822)	Gangetic ailia	Banspatta	NT	FF

	Eutropiichthys (Hamilton, 1822)	Batchwa vacha	Bachra	LC	FF
	Eutropiichthys murius pangasius (Hamilton, 1822)	Butchua	Golmuhi	LC	FF
Heteropneustidae	*Heteropneustes fossilis* (Bloch, 1794)	Stinging catfish	Singhi	LC	FF/OR
Clariidae	*Clarias batrachus* (Linnaeus, 1758)	Philippine catfish	Magur	LC	FF/OR
	Clarias gariepinus (Burchell, 1822)	North Africa Catfish	Thai Magur	LC	FF
Clupeidae	*Gudusia chapra* (Hamilton, 1822)	Indian river shed	Chhuria	LC	FF
Engraulididae	*Gonialosa manmina* (Hamilton, 1822)	Ganges river gizzard shad	Chhuria	LC	FF
Notopteridae	*Notopterus notopterus* (Pallas, 1769)	Bronze featherback	Patola	LC	FF/OR
Belonidae	*Xenentodon cancila* (Hamilton, 1822)	Freshwater garfish	Gara	LC	FF
Channidae	*Channa gachua* (Ham.)		Karajia	LC	FF
	Channa marulius (Hamilton, 1822)	Great snakehead	Ghunda	LC	FF/OR
	Channa punctata (Bloch, 1793)	Spotted snakehead	Ghunda	LC	FF/OR
	Channa striata (Bloch, 1793)	Striped snakehead	Khokshi	LC	FF/OR
Ambassidae	*Chanda nama* Hamilton, 1822	Ganges river sprat	Chan-deni	LC	FF/OR
	Parambassis ranga (Hamilton, 1822)	Elongate glass-perchlet	Chan-dena	LC	FF/OR
Nandidae	*Nandus nandus* (Hamilton, 1822)	Gangetic leaffish	Bhedav	LC	FF
Cichlidae	*Oreochromis mossambicus* (Peters, 1852)	Mozambique tilapia	Tilapia	NT	FF/OR
Anabantidae	*Anabas testudineus* (Bloch, 1792)	Climbing perch	Kevai	DD	FF
Sciaenidae	*Johnius gangeticus* Talwar, 1991	pao	Pao	NE	FF
Gobidae	*Glossogobius giuris* (Hamilto, 1822)	Tank goby	Dheshra	LC	FF
Mastacembelidae	*Mastacembelus armatus* (Lacepède, 1800)	Zig-zag eel	Bamb	LC	FF
	Macrognathus pancalus Hamilton, 1822	Barred spiny eel	Bambi	LC	FF/OR

DD = Data Deficient, EN= Endangered, LC = Least Concern, NE= Not Evaluated, NT = Near Threatened, VU= Vulnerable, FF = Food fish, OR = Ornamental fish.

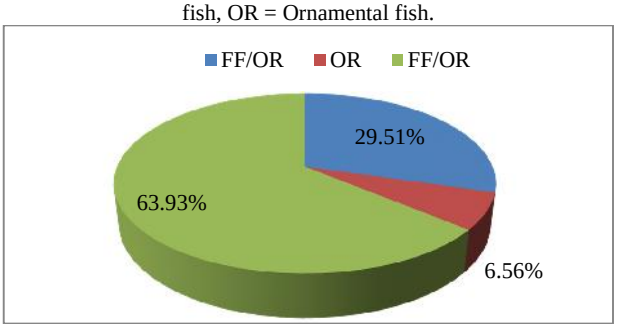

FIGURE 1: Percentage composition of ornamental and food species

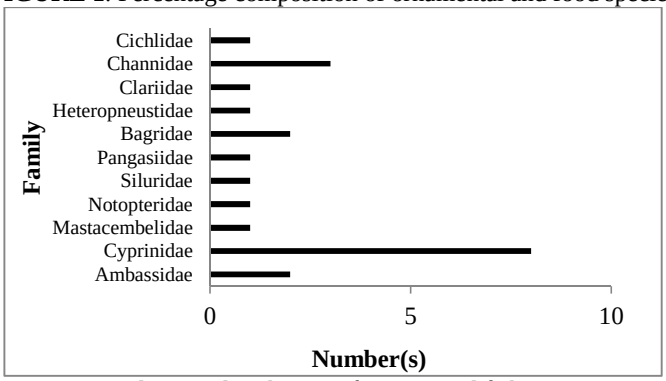

FIGURE 2: Family wise distribution of ornamental fish species in number

CONCLUSION

The findings of the present study revealed that Raigarh district of CG harbours wide varieties of ornamental fishes with economic importance in local and global trade. All the fishes of the district used to be caught for the means of

food purposes without knowing their proper ornamental value. The local fishers need to be organise and by proper training, counseling have to aware the value of the ornamental fish which will fetch more price in the domestic and international markets and helps them to earned extra profit.

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