RESEARCH REVIEW JOURNALS
Volume-04
Issue-04
April -2019

ISSN: 2455-3085 (Online)
RESEARCH REVIEW International Journal of Multidisciplinary
www.rrjournals.com [UGC Listed Journal]

A Study on Present Status, Abundance and Threats of Fish Diversity in West Bengal

[1]Kinsuk Purkait & [2]Dr. Deepak Mittal

[1]Research Scholar, Department of Zoology , Sri Satya Sai University of Technology & Medical Sciences, Sehore , MP
[2]Research Guide, Department of Zoology , Sri Satya Sai University of Technology & Medical Sciences, Sehore , MP

ARTICLE DETAILS

Article History
Published Online: 15 April 2019

Keywords
Fish, Cyprinidae , IUCN, Vulnerable

ABSTRACT

The present examination was led in the water groups of East Kolkata Wetlands to create an essential database on fish decent variety of West Bengal, India. 71 indigenous fish species having a place with 27 families were distinguished. The family Cyprinidae spoke to the biggest decent variety obliging 14 genera and 23 species. As per IUCN (International Union for Conservation of Nature) and CAMP (Conservation Assessment and Management Plan), the protection status of the fishes are recorded as 1 (1%) species as Critically Endangered, 4(6%) species as Endangered, 16 (22%) species as Vulnerable, 21 (30%) species as at Lower Risk Near Threatened, 21 (30%) species as Lower Risk Least Concerned, 1(1%) species as Data Deficient and 7 (10 %) species as Not Evaluated. About 59% fish species are close to dangers, defenseless and jeopardized in this locale. Among the fish decent variety of East Kolkata Wetlands58 species were indigenous species and 13 species were fascinating. It is closed, that anthropogenic weight emerging out of modifications of wetland living spaces to rural grounds, territory obliteration, over abuse, wanton pulverization, sea-going contamination, ailment, extraordinary species present and by and large absence of consciousness of biodiversity significance, nonattendance of appropriate arrangement are contributing a lot to such disturbing defenselessness of the rich fish decent variety in their regular environment. Mindfulness programs among the angler, exacting restriction on isolating of huge water bodies into divided little lakes, continued drying of development lake, loss of characteristic rearing ground for imperiled species, utilization of bug sprays and pesticides in lakes to control undesirable species.

1. Introduction

East Kolkata Wetlands, a complex of normal and man-made wetlands lying east of the city of Kolkata, is the main Ramsar site in West Bengal. East Kolkata Wetlands is the biggest wastewater wetlands among the 26Ramsar Sites (Ramsar, 2013) in India. It gives job backing to a huge, financially oppressed populace of around 27,000 families which rely on the different wetland items, fundamentally fish and vegetables for sustenance (National Wetland Atlas, 2010). The wetland framework presently creates more than 15,000 MT for each annum from its 264 working aquaculture lakes, privately called bheries. Moreover, almost 150 MT of vegetables are created day by day by subsistence ranchers. In light of its tremendous environmental and socio social significance, East Kolkata Wetlands was assigned a "Wetland of International Importance" under the Ramsar Convention on August 19, 2002 (Ramsar 2007).The East Kolkata Wetlands is situated in such a low-lying district. It was once secured with salt-water bogs. Those salt-water swamps were between the River Hooghly toward the west and the River Bidyadhari, a tidal channel, toward the East. The mouths of a portion of the streams opened into the Bay of Bengal and were affected by tidal activity, which represented the tides and saltiness of these salt-water lakes. These lakes were really the spill-repositories of the tidal channel Bidyadhari which opened into the Bay of Bengal through the waterway Matla. At present the East Kolkata Wetlands includes 264 working bheries (Shallow crisp or bitter water bodies for pisciculture). Of the all out territory of 12,500 ha, roughly 45.93% contains water bodies and 38.92% is farming area. The rest of the part is involved by urban and rustic settlements (10.42%) and destinations for trash transfer (4.73%). East Kolkata Wetlands with rich biodiversity is under prompt risk of species eradication and territory annihilation because of anthropogenic variables.

The couple of givers on fish decent variety of East Kolkata Wetlands of West Bengal were De et al., (1989), Wetlands International (2008), Mahapatra and Lakra (2014) and Mahapatra et al., (2015). Since the current writings don't give present status, bounty and dangers of fish assorted variety of East Kolkata Wetlands. The present examination, consequently, is gone for to refresh the ichthyofaunal assorted variety in the East Kolkata Wetlands and to get a database of fish animal groups.

2. Materials and Methods

The investigation was directed in the lakes of East Kolkata Wetlands. The work was reviewed over a time of one year (September 2016 to August 2017) at month to month interim. Fishes were gathered from various destinations with the assistance of anglers utilizing various sorts of nets to be specific, gill nets, cast nets, plunge nets, drag nets. The gathered fishes are then protected in 10 %formaldehyde arrangement Jayaram(1999). Fish photos were taken from crisp examples by camera (Nikon, CoolpixL24) and were distinguished after their general body structure, morphometric and meristic attributes as indicated by Talwar and Jhingran (1991), Jayaram (1999), and Vishwanath et al., (2011). Protection status of fish isgiven according to Conservation

Assessment and Management Plan (CAMP, 1998) and International Union for Conservation of Nature (IUCN, 2016).

3. Results and Discussion

Seventy-one fish animal varieties having a place with 27 families were gathered and distinguished from the lakes of East Kolkata Wetlands. The family-wise understanding (Fig. 1) uncovered Cyprinidae as the biggest family obliging 14 genera and 23 species. The variety Puntius, positioned first among the genera with its numerical quality of 6 species. Family Bagridae with 7species. Mastacembelidae, Channidae and Loricariidae family spoke to 3 species. Ambassidae, Belontiidae, Mugilidae, Notopteridae, Pangasiidae, Siluridae, Schilbeidae, Synbranchidae, Cichilidae and Clariidae indicated 2 individuals from every family. Belonidae, Anabantidae, Aplocheilidae, Cobitidae, Badidae, Chacidae, Gobiidae, Heteropneustidae, Nandidae, Tetradontidae, Latidae and Serrasalmidae spoke to single part from each.

Information of above demonstrated that 11 species, for example, Puntius ticto, Puntius sophore, Mystustengra, Channa punctatus, Channagachua, Channamarulius, Mystusvittatus, Heteropneustesfossilis, Clariusbatrachus, Talapiamossambica and Puntius javanicus were bottomless in the East Kolkata Wetlands (Fig. 1).

Nourishment angles were prevailing over the elaborate fishes. 34 species have nourishment worth and 22 species the fancy worth. 15 species have both worth fancy just as nourishment (Table 1). An understanding into the preservation status of fishes according to CAMP (1998) and IUCN (2010) uncovered, under the various classes, One species was basically „Endangered" (CEN), 21 species are under „Low Risk Least Concern" (LRlc), 21 species were „Low Risk Near Threatened" (LRnt), 16 species were „Vulnerable" (VU), 4 species were „Endangered" (EN), one species were „Data Deficient" (DD) and 7 fish species were „Not Evaluated" (NE) classification and (Fig. 2).

All the three kinds of sustaining propensities for angles like flesh eating, omnivorous and herbivorous were accessible in this area. Forty types of fishes were meat eating, 29 species were herbivorous and 11 species were omnivorous fish (Fig. 3).

Hardly any creators revealed fish decent variety of various areas of West Bengal. Menon (1962) detailed 218 types of fish from entire Himalayas, Wetlands International (2008) announced 45 fish species from East Kolkata Wetland, Roshith et al., (2012) revealed 155 fish species from the tidal freshwater zone of the Hooghly estuary. Sanyal et al., (2012) announced 207 species from Sundarban. Mahapatra and Lakra (2012) detailed 50 species from East Kolkata Wetland, among the 50 species 17 are refined and 33 are wild species. Basu et al., (2012) revealed 70 Indigenous fancy fishes of west Bengal. PatraandSaha (2013) recorded 46 species from Damodar River, Burdwan locale.

Mahapatra et al., (2015) detailed 190 fish species from West Bengal. Acharjee and Barat (2013) detailed 65 species from Teestariver, Mahapatra and Lakra (2014) revealed 41 decorative fish from East Kolkata Wetland. Mahapatra et al., (2015) detailed 190 local, Dey et al., (2015a) revealed 138 species from Kaljani stream of Cooch Behar, Dey et al., (2015b) announced 141 species from waterways of East Himalayan district. The present examination indicated that 71 species were accessible in the investigation region, 58 were indigenous species and 13 were outlandish species.

East Kolkata wetlands, a naturally significant Ramsar site, situated on the peri-urban interface of Kolkata City have been under persistent weights of change for settlements and farming. These wetlands which are well known for fishery exercises get poisons like overwhelming metal, oil, oil and so forth through gushing of various enterprises like tannery, electroplating, plastic and color ventures of environment and modify the biological system. The rich fish germ plasma assets of East Kolkata wetlands have been experiencing different genuine anthro-illustrations stress prompting diminished plenitude as well as contacting the hereditary limit.

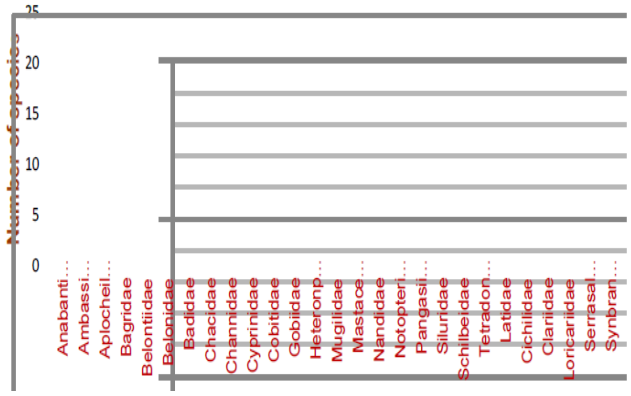

Fig.1 Total family wise distribution of fish diversity East Kolkata Wetlands

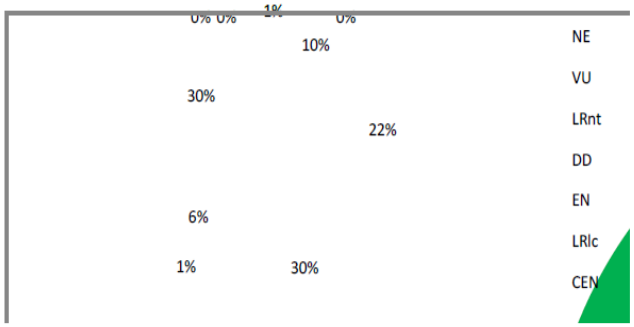

Fig.2 Bar diagram showing the present conservation status of fish in East Kolkata Wetlands

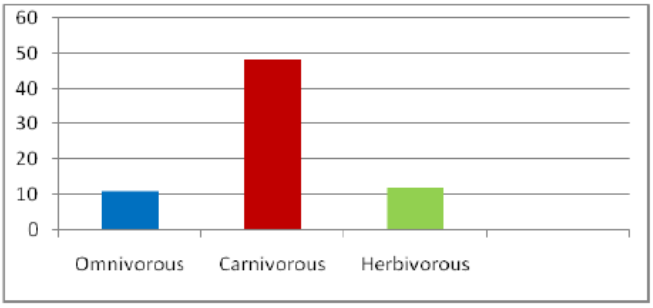

Fig.3 Bar diagram showing the numbers of available fish feeding habit of East Kolkata Wetlands

The burdens incorporate extreme infringement worry from urban extension, adjustments of wetland natural surroundings to agrarian grounds, routine decimation, over misuse, wanton pulverization, sea-going contamination, infection and

extraordinary and by and large absence of consciousness of biodiversity significance, nonattendance of appropriate strategy.

Presentation of extraordinary fishes, as a piece of aquaculture for business increases or incidental presentation of undesired colorful fishes are coming about loss of indigenous fish decent variety in East Kolkata wetlands. Great populaces of Pterygoplichthys, an across the board obtrusive fish species with solid capacity to endure even in hypoxic condition, were recorded in EKW in late time. Intrusive Pterygoplichthys, being enormous and bewilderingly strong scavenger species, may uproot littler or less forceful benthic fishes and furthermore may unexpectedly ingest eggs of local fishes while devouring the base periphyton (Hoover et al., 2004). The littler measured indigenous fishes with relatively short life expectancies, low fruitfulness, and constrained protection from hypoxia and parching, would not rival the more aggressive Pterygoplichthys sp. built up in the environments (Hoover et al., 2004) and along these lines odds of their dislodging is high. Another outsider fish species is Aristichthysnobilis (Bighead carp) which influenced the number of inhabitants in Indian Major Carps. Over-abuse of fishery assets because of its higher monetary worth has expanded the powerlessness of the populace in various biological systems, chitala, Ompokpabda, pangasius, etc in warm water (Mahapatra et al., 2015)

East Kolkata Wetland is an old style case of regular assets of the wetland framework for fisheries and agribusiness through resourcefulness of neighborhood networks with their conventional information. It is the biggest group of sewage for fish lakes in a single spot on the planet. Anthropogenic exercises are bringing about the loss of wetland biodiversity and biological system trustworthiness. Indigenous fish fauna of this wetlands are being compromised because of a few anthropogenic exercises for the most part presentation of intriguing fish species, environment debasement and contamination. Along these lines, mindfulness programs among the fishers, exacting prohibition on unlawful storm angling, uncontrolled presentation of outlandish fishes, continued drying of development lake and utilization of appropriate work size nets ought to be included. Additionally, the security of reproducing grounds from agrarian run-offs and aimless angling of industrially significant fish species ought to be built up which would at last ensure and preserve the jeopardized species. Receiving legitimate and adjusted techniques for improving fish decent variety of East Kolkata Wetland without influencing financial state of East Kolkata Wetland recipients is need of great importance to spare this world"s biggest wastewater reuse area. Approach producers and actualizing offices additionally be instructed about biodiversity significance for our reality.

References

1. Acharjee M.L. and Barat S., 2013. Ichthyofaunal Diversity of Teesta River in Darjeeling Himalaya of West Bengal, India. Asian Journal of Experimental Biological Sciences, 4(1): 112-122.
2. Basu A., Dutta D., and Banerjee S., 2012.Indigenous ornamental fishes of West Bengal. Recent Research in Science and Technology, 4(11): 12-21.
3. CAMP, 1998.Conservation Assessment and Management Plan Workshops, (Ed) Sanjay Molur and Sally Walker. Published by Zoo Outreach organization. National Bureau of Fish Genetics Resources. Lucknow, India.
4. De M., Bhunia, S. and Sengupta, T., 1989. A Preliminary Account on Major Wetland Fauna of Calcutta and Surroundings. Ecology, 3 (9): 5-11.
5. Dey A., Nur R., Sarkar D. and Barat S., 2015a. Ichthyofauna Diversity of river Kaljani in Cooch Behar District of West Bengal, India. International Journal of Pure and Applied Bioscience, 3 (1): 247-256.
6. Dey A., Sarkar K. and Barat S., 2015b. Evaluation of fish biodiversity in rivers of three districts of eastern Himalayan region for conservation and sustainability. International Journal of Applied Research, 1(9): 424-435.
7. HooverJ. J., Killgore J. and Murphy C. E., 2004. Ecological Impacts of Suckermouth Catfishes (Loricariidae) in North America: A Conceptual Model. Aquatic Nuisance Species Research Program Bulletin, 14 (1): 2-3. IUCN. 2010. Red List of Threatened Species.[http://www.iucnredlist.org/apps/redlist/search].
8. Jayaram K.C., 1999. The Freshwater Fishes of Indian Region. New Delhi: Narendra Publishing House.
9. Mahapatra B.K. and Lakra W.S., 2012. Indigenous Ornamental fish diversity of West Bengal: Conservation and management for sustainability. 23rd All India Congress of Zoology and National Conference on Conservation and Management of Faunal Resources at Guru Nanak College, Chennai.
10. Mahapatra B.K. and Lakra W.S., 2014. Ornamental Fishes of East Kolkata Wetland, West Bengal, India. International Journal of Scientific Research, 3 (12): 406-408.
11. Mahapatra B.K., Sarkar U.K., and Lakra W.S., 2015. A Review on Status, Potentials, Threats and Challenges of the Fish Biodiversity of West Bengal. Biodiversity, Bioprospecting and Development.
12. Menon A.G.K., 1962. A distributional list of fishes of the Himalayas. Journal of Zoological Society, India, 14: 23-32.
13. National Wetland Atlas, 2010. Ministry of Environment and Forests (MoEF), Government of India.
14. Patra B.C. and Saha M.K., 2013. Present Status of Ichthyofaunal diversity at Damodor River at Burdwan district, West Bengal, India. International Journal of Scientific and Research Publications, 3: 6.
15. Ramsar Secretariat, 2013. The List of Wetlands of International Importance. The Secretariat of the Convention on Wetlands, Gland, Switzerland.
16. Ramsar, 2007. Ramsar Sites Information Service. http://ramsar.wetlands.org.
17. Roshith C.M., Sharma A.P., Manna R.K., Satpathy B.B. and Bhaumik U., 2012. Ichthyofaunal diversity, assemblage structure and seasonal dynamics in thefreshwater tidal stretch of Hooghly estuary along the Gangetic delta. Publisher: Taylor and Francis, 16: 445-453.
18. Sanyal A.K., Alfred J.R.B., Venkataraman K., Tiwari S.K. and Mitra S., 2012. Status of Biodiversity of West Bengal. ZSI.
19. Talwar P.K. and Jhingran A.G., 1991. Inland Fishes of India and Adjacent Countries. New Delhi: Oxford and IBH Co., Private Limited, 1158.

20. Vishwanath W., Mahanta P.C., Anganthoibi N. and Sarma D., 2011. Coldwater Fishes of India-An Atlas. Directorate of Cold water Fisheries Research (ICAR), Bhimtal, Uttarakhand, India.

21. Wetlands International, 2008. Management Plan for East Kolkata Wetlands. Final Report submitted to East Kolkata Wetlands Management Authority. Wetlands International – South Asia, New Delhi, India

