The Bioscan AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES 20(2): S.I (2): 160-164, 2025 www.thebioscan.com

STUDY ON ICHTHYOFAUNALDIVERSITY AND SPECIES RICHNESS INNAVEGAON RESERVOIR, DISTRICT GONDIA (M.S.), INDIA

Makade S.H[1], TelkhadeP.M[2], BhogamH.A[3] and RamachandraP[4]

[1] Dept. of Zoology, Institution of Higher Learning Research and Specialized Studies, SardarPatelMahavidyalaya,Chandrapur(M.S.).

[2]P.G. Dept.ofZoology,Dr.KhatriMahavidyalaya,Chandrapur(M.S.).

[3]Town Planning Department,NagpurMuncipalCorporation,Nagpur(M.S.).

[4]Senior Geologist, Mohan Mutha Exports, Kilpauk, Chennai.

CorrespondentAuthor-mail:ID–shishirmakade1@gmail.com.

DOI: 10.63001/tbs.2025.v20.i02.S.I(2).pp160-164

KEYWORDS
Ichthyofauna, variation in Species Richness, Navegaon Reservoir, India.

Receivedon:

22-03-2025

Acceptedon:

25-04-2025

Published on

30-05-2025

ABSTRACT

Presenting data on the Navegaon Reservoir's Ichthyofaunal variety is the aim of the study. The reservoir is situated at 20°54'56.62"N latitude and 80°7'11.85"E longitude in the eastern part of Maharashtra State. Because of the numerous communities and forest area that encircle the reservoir, there is human incursion and cattle grazing. The 12-month study period began in November 2023 and ended in October 2024. There are several different kinds of fish at Navegaon Reservoir. In addition to providing baseline data on fish that can be utilized in subsequent research, this study provides information on the ichthyofaunal variation in this area. However, there is still more to be done, and new insights into Ichthyofaunal variety are emerging for the world to see. 23 species were investigates and identified by 8 families and 6 orders for the current investigation. Additionally, they recorded their IUCN Red and residential data status. Ichthyofaunal diversity in this study shows that species diversity rises during the post-monsoon season. The Cyprinidae family has eight species, while the Bagridae family has five. The Ambassidae family has four species, the Siluridae family has two, and the Clariidae, Notopteridae, Poecilidae, and Cichlidae families each have one. The Cyprinidae family dominates all of these families, as the current analysis shows. According to this study on ichthyofaunal variety, species diversity increases during the post-monsoon season, which is correlated with favorable conditions like a enough supply of food and water. Prior to the monsoon, the diversity was restricted, most likely as a result of the summertime water shortage.

INTRODUCTION

India is one of the world's top ten mega-diverse countries in terms of plant and animal biodiversity, accounting for approximately 10% of all species. India contains ten biogeographic zones and 26 biotic provinces, according to Singh and Kushwaha (2008). 7% of the world's plant species and 6.5% of its animal species are found there. It is essential to track the condition and trends of animal variety as well as the population levels of indicator species in order to evaluate the ecosystem's health, establish conservation priorities, and direct conservation decision-making.

The Navegaon Reservoiris situated in the monsoon belt,the eastern parts of the Vidarbha region receive a lot of rainfall, which leads to the formation of numerous water bodies, especially in the Gondia region. The production of fish has a significant economic impact. A significant part of both animal and human diets is fish. Around 22,000 fish species have been identified worldwide, with approximately 2420 species found in India, 930 in freshwater, and 1570 in marine environments (Kar et al., 2003). Freshwater biodiversity and inland rivers are important natural resources for education, research, culture, economy, and aesthetics (Vijayalaxmi et al., 2010). The study of fish biodiversity and identification is one of the most fascinating areas of biological research since it enables us to comprehend the morphological changes and population variety of fauna in both contaminated and unpolluted areas within any particular environment (Napit, 2013). With about 35,300 species, fish make up more than half of all vertebrates in the planet (Froese and Pauly, 2023). India's freshwater resources, such as rivers, canals, reservoirs, and lakes, support about 10.86 million people and their associated fisheries (Sarkar et al., 2015). Aside from their economic significance, fish have the greatest species variety of any vertebrate group.Fish in aquatic ecosystems are regarded to be useful biological indicators of environmental quality and human activities (Vijayasree and Radhakrishnan, 2014). Numerous commercially relevant species can be found in aquatic settings, particularly fish, which are important sources of protein

and contribute significantly to the socioeconomic growth of South Asian countries (Lodhi et al., 2020).As a result, comprehensive biodiversity conservation and management strategies are essential to ensure the long-term viability of these resources. Thus, gathering scientific information about the species and their habitats is crucial for working toward biodiversity conservation. Many researchers, such as Mahor et al. (2014), Shinde et al. (2009), Wani and Gupta (2015), Bhalerao (2012), Mishra and Pandey(2016), Bhadange M.G. and Joshi P.P.(2023 and Jambhulkar P.D. and Kamdi R.R. (2023) have studied the fish fauna of different reservoirs in Maharashtra and various other parts of India. Data on the species richness and diversity of fishes in the Navegaon Reservoir are not publically accessible. In order to help with future fish culture planning, the goal of this study was to make some first observations about the variety of fish species present in the Navegaon Reservoir.

MaterialsandMethods

Studyarea

The study area was Navegaon Reservoir located at Eastern region of Maharashtra in India. Reservoir is a Large inland Reservoir situated in Arjuni-Morgaon Taluka and approximately 78 km South-EastofGondia.The Geographical coordinates of Reservoir areLatitute20°54'56.62"N; Longitude 80°7'11.85"E. Total catchment area of this reservoir is 19.590 km2. andthe volume gross storage capacity is 45,945.00 km3. The Reservoir water is mostly used by wild life drinking, commercial fishing, aquaculture, irrigation and domestic purpose. (Figure 1 & 2).

Figure1:SatelliteimageofNavegaon Reservoir.

Figure2:OverallviewoftheNavegaon Reservoir.

Sample Collection

With the assistance of fishermen, fish nets and gillnets were used to collect fish samples from reservoir water. Between November 2023 and October 2024, fish were gathered and preserved in 9–10% formalin. Following fixation, the fish were submerged in 70% alcohol and washed with water. The classic literature by Day (1878) and Jayaram (2010) was used to identify fish. We went to Froese and Pauly's Fish Base website (2023) to learn more about a variety of fish fauna topics. Each fish's conservation status was determined using the IUCN (2020) Red List of Threatened Species report.

Results and Discussion

The present study was carried out to establish the current state of freshwater fish biodiversity in the Navegaon Reservoir. According to Abell et al. (2008), fish are the most well-known species of aquatic creatures and the only food source collected from wild populations. During the faunal evaluation of Navegaon Reservoir, 23 fish species (Table 1) from 08 different families (Table 2) and 06 different orders were identified. Figure 3 illustrates that the order Cypriniformesac counts for up to 35% of all fish with 08 species, whereas Siluriformes accounts for 35% with 08fishspecies,Perciformes accounts for 18% with 04 fish species while the orders Osteoglossiformes, Cyprinodontiformes, and Cichliformes contained a single species According to IUCN red data (IUCN, 2020), 16fish have the least concern (LC) status, 04 fish Species are in the Vulnerable (VU) category and 03fishSpecies are in the near threat (NT) category. The 08 species of the order Cypriniformes include Labeobata, Labeorohita, Catlacatla, Cirrhinusmrigala, Puntiussarana, Labeogonius, Labeobaggut and Cyprinuscarpio and the 08 species of the order Siluriformes includes Mystusbleekeri, Sperataseenghala, Ompok bimaculatus, Wallago attu, Clarias batachus, Mystus cavasius, Mystustengara and Mystus leucophasis while the 04 species, i.e., Chandanama, Pseudambas sisbaculis, Parambassisranga, and Parambassislala belong to the order Perciformes. The remaining 3 orders, however, were represented by only a single species, such as Notopterus notopeterus (Osteoglos siformes), Poecilia reticulata (Cyprinodontiformes), & Tilapia mossambicus (Cichliformes).Similar findings were noted by Dange et al. (2017), who recorded 11 species of fish from the Benetura Reservoir in Murum, Maharashtra. Eight of these fish species were numerous, one moderately abundant, and two had low prevalence. Kadam and Gayakwad (2006) found twenty-three fish species from six orders at the Masooli Reservoir in the Maharashtra district of Parabhani. Wani and Gupta (2015) discovered 21 freshwater fish species from six orders, eleven families, and seventeen genera in Sagar Lake, Madhya Pradesh, India. Uchchariya and Sharma (2020) identified 21 species from the Pagara Dam in Madhya Pradesh's Morena District, divided into 6 orders, 9 families, and 17 genera. According to Sivakumar et al. (2018), Cypriniformes were the most prevalent order, accounting for roughly 63.3% of the total fish population in the Lower Anicut Reservoir, Tamil Nadu.

Table 1:Checklist of Ichthyofaunal diversity of Navegaon Reservoir.

SN	CommonName	Scientificname	Family	Order	Status
1	Bata	Labeo bata	Cyprinidae	Cypriniformes	LC
2	RohoLabeo	Labeo rohita	Cyprinidae	Cypriniformes	LC
3	Catla	Catla catla	Cyprinidae	Cypriniformes	LC
4	Mrigala	Cirrhinus mrigala	Cyprinidae	Cypriniformes	LC
5	Olive Barb	Punctius sarana	Cyprinidae	Cypriniformes	VU
6	Gonya	Labeo gonius	Cyprinidae	Cypriniformes	LC
7	BoggutLabeo	Labeo *boggut*	Cyprinidae	Cypriniformes	NT
8	Comman Carp	Cyprinus *carpio*	Cyprinidae	Cypriniformes	VU
9	Katirna	Mystus bleekeri	Bagridae	Siluriformes	LC
10	Shingali	Sperataseenghala	Bagridae	Siluriformes	LC
11	Indian butter-catfish	Ompokbimaculatus	Siluridae	Siluriformes	NT
12	Boal	Wallago attu	Siluridae	Siluriformes	VU
13	Magur	Clarias batrachus	Clariidae	Siluriformes	LC
14	Singarah	Mystus cavasius	Bagridae	Siluriformes	LC
15	Tengara	Mystus *tengara*	Bagridae	Siluriformes	LC
16	Mystus	Mystus *leucophasis*	Bagridae	Siluriformes	LC
17	Chanda	Chandanama	Ambassidae	Perciformes	LC
18	BaculisPerchlet	Pseudambas sisbaculis	Ambassidae	Perciformes	LC
19	Kachki	Parambassisranga	Ambassidae	Perciformes	LC
20	ChandaLala	Parambas sis*lala*	Ambassidae	Perciformes	NT
21	Chappali	Notopterus notopterus	Notopteridae	Osteoglossiformes	LC
22	Rainbow Fish	Poecilia *reticulata*	Poecilidae	Cyprinodontiformes	LC
23	JelebiMeen	Tilapiamoss ambicus	Cichlidae	Cichliformes	VU

Table 2: Reported families of Species number and Percentile composition inNavegaon Reservoir

SN	Family	Number of Species	Percentile
1.	Cyprinidae	8	35
2.	Bagridae	5	22
3.	Ambassidae	4	18
4.	Siluridae	2	9
5.	Notopteridae	1	4
6.	Poecilidae	1	4
7.	Cichlidae	1	4
8.	Clariidae	1	4

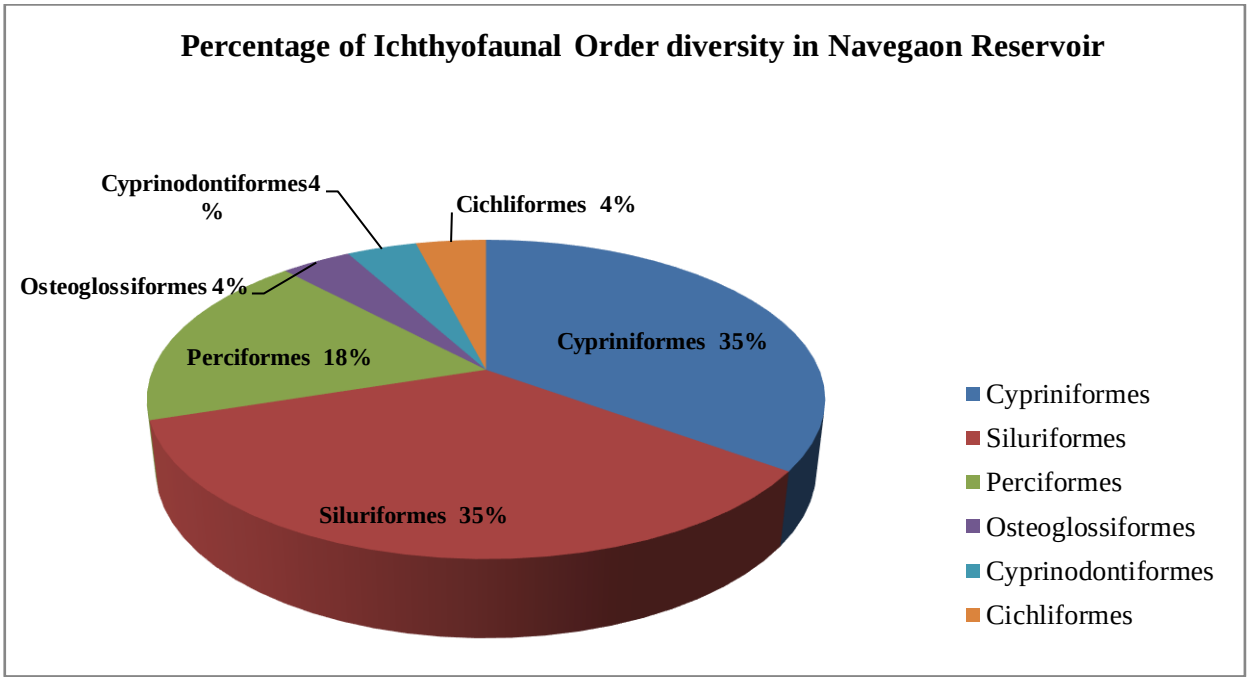

Figure 3: Graphical Representation of different orders of Ichthyofauna observed in Navegaon Reservoir.

Fish of the Cyprinidae family are resilient, fast-growing, and pollution-resistant Patra et al. (2011). When the fish fauna in the current study was compared to other studies, the results were similar to those of Shinde et al. (2009), Pawar (2017), and Salve et al. (2006). Accordingly, the current study found that a large number of species in the Navegaon Reservoir belonged to the orders Cypriniformes (35%), and Siluriformes (35%). The fish species composition of the order Perciformes was also moderate, or 18%, while the fish composition of the other orders, Osteoglossiformes, Cyprinodontiformes, and Cichliformes, was the lowest.The reservoir substrate, which would offer appropriate habitat for seamless development, may be responsible for this broad dispersion.

CONCLUSION

The results of the present study findings, the Navegaon Reservoir's fish fauna is extremely diversified in terms of species composition, which could be attributed to the impact of numerous environmental conditions. To start the sustainable use of fisheries resources, special augmentation operations should be started in response to the effects on inland fisheries indicated above. One typical enhancement strategy is to stock natural water supplies with fish seeds raised in hatcheries. Therefore, for the fish species in question, in situ conservation and protection must be put into place.onservation and protection must be implemented for the fish species under consideration.

REFERENCES

Abell, R., Thieme M.L., Revenga, C., Bryer, M., Kottelat, M.,&Petry, P. (2008). Freshwater ecoregions of the World: anewmapofbiogeographicunitsforfreshwaterbiodiversityconservation.*Bioscience*,*58*,403–414.

Bhalerao,S.N.(2012).Study of Fish DiversityandWaterQuality at KasarSai dam, Hinjewadi, Pune, MS, India.*InternationalResearchJournalofBiologicalSciences*,*Vol.1(4)*,51-55

Bhadange M.G. and Joshi P.P.(2023). Seasonal Ichthyological Diversity intheBembla Reservoir of Yavatmal District, Maharashtra. Internatoinal Journal forMultidisciplinaryResearch.

Dange,S.S.,Rajput,K.H.,&Babare,M.G.(2017).Fishdiversityinrelationtofisheconomicsofbeneturareservoirfrom Murum district, Osmanabad (M.S.) India. *Flora andFauna23(1)*,215-219.

Day,F.(1878):*TheFishesofIndia;BeingaNaturalHistoryofthe fishes known to inhabit the seas and freshwaters of India,Burma and Ceylon.* Texts Atlas (Fourth Indian Reprint1994)Jagmanderbookagency.NewDelhiText778,Atlas,204

Froese, R., &Pauly, D. (2023). Fish Base. Worldwide Webelectronicpublication.www.fishbase.org,version(06/2023).
IUCN (2020) The IUCN Red List of Threatened Species,.http://www.iucnredlist.org

JambhulkarP.D.andKamdiR.R.(2023).AStudyonIchthyofaunalDiversityofNaleshwar in SindewahiTehasil, District Chandrapur State Maharashtra, IJRBAT,Issue(XI)Vol (I), 199-205.

Jayaram, K.C. (2010). *The freshwater fishes of India Region,* 2nd edition.NarendraPublicationHouse,Delhi.616p.

Kadam,U.S.,&Gayakwad,J.M.(2006).IchthyofaunaofMasooli Reservoir, District Parbhani, Maharashtra, A studyof Inland Reservoir Fishery in India, *J. Aqua. Biol., 21 (2)*,59-61.

Kar DA, Kumar, C Bohra, LK Sigh, (Eds). FishesofBarakdrainage,mizoramandTripura; In: Environment, pollution and management, APH publishing corporation, New Delhi, 2003:604: 203-211.

Lodhi, R.K., Singh, Y., Gurjwar, R.K., &Rao, R.J. (2020). Fishdiversity of AtalSagar dam in Shivpuridistrit, MadhyaPradesh,India.*InternationalJournalofFisheriesandAquaticResearch.Vol.5(4)*,46-49

Mahor, R.K., Kanhere, R.R., &Upadhyay, R.C. (2014). StudiesonfishandfisheriesresourcesofTighrareservoir,Gwalior(M.P.)*IndianJ.Sci.Res.*1-4.

Mishra, N., &Pandey, D.N. (2016): Fish-diversity of AtaritaldamatMauganj,RewaMadhyaPradesh,India.*International Journal of Applied and Universal Research,VolumeIII,(V)*,21-24.

Napit,M.K.(2013).StudyoffishfaunaofBundelkhandregionwithspecialreferencetodiversityinKaralaRiver,atributaryofTeestaRiveratJalpaiguridistrictofWestBengal,India.*IJABPT,2(3)*,47-58.

Patra, A.K., Sengupta, S., &Datta, T. (2011). Physico-chemicalpropertiesandIchthyofaunaanddiversitystatusofMullameri River, a minor tributary of Bheema River ofGulbargaDistrict,Karnataka.*Int.J.SystemsBiol.,2*,1-9.

Pawar,S.K.(2017).ThestudyonfishdiversityintheVishnupuridam, Nanded(M.S.)India.*Int.J.ofLifeSciences,Vol.5(1)*,137-139.

Salve, B.S., Pawar, R.T., &Hiware, C.J. (2006). IchthyofaunaofWanaprakalpa, Nagapur near ParliVaijanath in Beeddistrict of Marathwada region. *India, AQUACULT Vol. 7(2)*,322-326

Sarkar,U.K.,Sharma,J.,&Mahapatra,B.K.(2015).Areviewon the fish communities in Damoh district. *Internationaljournalofadvanceresearch,(4)*,24-30..

Shinde, S.E., Pathan, T.S., Bhandare, R.Y., &Sonawane, D.L.(2009). Ichthyofaunal diversity of HarsoolSavangidam,District Aurangabad, (M.S) India. *World Journal of fish andMarinesciences,1(3)*,141-143.

Singh J.K. and Kushwaha S.P. (2008): Forest Biodiversity and its Conservation in India, International Forestry Review, Vol. 10, No. 2.

Sivakumar,R.,Mathialagan,R.,Chandrasekar,S.,&Rajasekaran,N.(2018).Ichthyofaunaldiversityandspeciesrichnessof lower Anicut reservoir, TamilNadu,India:Recommendations and Conservation Action. *Int. J. Zoo.AnimalBiol.,2(1)*,1-17.

Uchchariya,R.,&Sharma,D.K.(2020).Astudyoffishdiversity of Pagara dam of MorenaDistrict, MadhyaPradesh.*Int.J.ofLifeSciences,8(2)*,465-473.

Vijayalaxmi, C., Rajshekar, M., &Vijaykumar, K. (2010). Freshwaterfishesdistributionthelndianreservoirsandenhancementoffisheriesandaquaticenvironment.*J.Aquac.Res.Dev.,6(1)*,297.

Vijayasree, T.S., &Radhakrishnan, M.V. (2014). Fish DiversityofKuttanad River, Kerala State, India. *Int. J. Fisheries.Aqua.Studies(IJFAS),1(6)*,55-

Wani, A.O., & Gupta, S. (2015). A study on Ichthyofaunaldiversity of Sagar Lake, Madhya Pradesh. *India. Int. J.Biodiver.Conser,7(3)*,126