

Manuscript ID:
IJRSEAS-2026-030252



Quick Response Code:



Website: <https://eesrd.us>



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DOI: 10.5281/zenodo.21255193

DOI Link:
<https://doi.org/10.5281/zenodo.21255193>

Volume: 3

Issue: 2

Pp. 298-305

Month: April

Year: 2026

E-ISSN: 3066-0637

Submitted: 16 Mar. 2026

Revised: 27 Mar. 2026

Accepted: 17 Apr. 2026

Published: 30 Apr. 2026

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How to cite this article:
Chandanshive S.S. (2026). Fish
Diversity of Sina-Kolegaon Dam,
Paranda Taluka, District
Dharashiv (Maharashtra, India).
International Journal of Research
Studies on Environment, Earth, and
Allied Sciences, 3(2), 298–305.
<https://doi.org/10.5281/zenodo.21255193>

Fish Diversity of Sina-Kolegaon Dam, Paranda Taluka, District Dharashiv (Maharashtra, India)

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Abstract

Freshwater ecosystems support rich biodiversity and provide livelihood resources for local communities. The present study investigates the fish diversity of the Sina-Kolegaon Dam located in Paranda Taluka of Dharashiv district in Maharashtra, India. A field survey was conducted during 2024–2025 to document fish species diversity, abundance, and conservation status. Data were collected through sampling, fisher interviews, and identification using standard taxonomic keys. A total of **30 fish species belonging to 7 orders and 10 families** were recorded from the dam. The family **Cyprinidae** was found to be the most dominant. Diversity indices such as Shannon–Wiener Index and Simpson's Diversity Index were calculated to analyze species diversity. The results indicate moderate biodiversity with potential ecological significance for fisheries and conservation. The study highlights the need for sustainable fisheries management and conservation strategies to maintain aquatic biodiversity in the region.

Keywords: Fish diversity, freshwater biodiversity, Sina-Kolegaon Dam, Dharashiv, fisheries, Maharashtra

Introduction

Freshwater ecosystems are among the most productive and biologically diverse habitats on Earth, supporting a wide range of aquatic organisms including fish, plankton, macrophytes, and microorganisms. Among these organisms, fish constitute an important component of aquatic biodiversity and play a vital role in maintaining ecological balance in freshwater environments. Fish also serve as an important source of protein and livelihood for local communities, especially in developing countries such as India (Dudgeon et al., 2006). India possesses rich freshwater fish diversity due to its vast network of rivers, lakes, reservoirs, and wetlands. More than **3,000 species of fish** have been recorded from Indian freshwater and marine ecosystems, with freshwater species forming a significant portion of the country's aquatic biodiversity (Jayaram, 2010). Reservoirs and dams constructed for irrigation, drinking water supply, and hydroelectric purposes have also become important habitats supporting fish populations and fisheries resources. These artificial water bodies often contribute significantly to inland fisheries production and biodiversity conservation.

Maharashtra state contains numerous reservoirs and dams that provide favorable conditions for freshwater fish diversity. In semi-arid regions such as **Dharashiv (formerly Osmanabad) district**, reservoirs serve as important aquatic ecosystems where fish species diversity is influenced by factors such as water quality, seasonal variation, nutrient availability, and human activities. Understanding the composition and distribution of fish species in such reservoirs is essential for sustainable fisheries management and conservation planning. The **Sina-Kolegaon Dam** located in Paranda Taluka of Dharashiv district, is an important irrigation reservoir constructed on the Sina River, a tributary of the Bhima River basin. The dam plays a crucial role in supporting irrigation, fisheries activities, and local biodiversity. However, scientific documentation regarding fish diversity in this reservoir is limited. Investigating fish species composition and diversity can provide valuable information about the ecological status of the reservoir and help in developing strategies for sustainable utilization of aquatic resources. Fish diversity studies are important for assessing the health of aquatic ecosystems and identifying species that are economically important, endemic, or threatened. Several researchers have reported that reservoir ecosystems often support diverse fish communities dominated by families such as **Cyprinidae, Siluridae, Channidae, and Cichlidae** (Talwar & Jhingran, 1991). Continuous monitoring of fish diversity is necessary to detect ecological changes, evaluate fisheries potential, and ensure the conservation of native species. The present study aims to investigate the fish diversity of Sina-Kolegaon Dam in Paranda Taluka of Dharashiv district, Maharashtra. The study focuses on documenting fish species present in the reservoir, analyzing their taxonomic composition, and evaluating biodiversity patterns.

The findings of this research will contribute to the understanding of freshwater fish diversity in the region and provide baseline data for future ecological and fisheries management studies.

The present study aims to:

1. Document the fish species diversity in Sina-Kolegaon Dam.
2. Analyze species distribution and abundance.
3. Evaluate biodiversity indices and ecological status of the reservoir.

Study Area

The present study was conducted at **Sina-Kolegaon Dam**, located in **Paranda Taluka of Dharashiv (formerly Osmanabad) district, Maharashtra, India**. The dam is constructed on the **Sina River**, which is an important tributary of the Bhima River in the Krishna River basin. The reservoir plays a significant role in irrigation, fisheries development, and maintaining local aquatic biodiversity.



Geographically, the study area lies approximately between **18°15'–18°25' North latitude and 75°10'–75°25' East longitude**. The region falls under the **semi-arid climatic zone of Maharashtra**, characterized by hot summers, moderate monsoon rainfall, and relatively cool winters. The average annual rainfall in the region ranges between **600–750 mm**, primarily received during the southwest monsoon season from June to September.

Sina-Kolegaon Dam was constructed mainly for irrigation purposes to support agricultural activities in surrounding villages. Over time, the reservoir has developed into an important aquatic ecosystem supporting various biological communities including **phytoplankton, zooplankton, aquatic vegetation, and diverse fish fauna**. The reservoir also supports local fishermen who depend on fishing as a source of livelihood.

The water level of the reservoir fluctuates seasonally depending on rainfall, irrigation demand, and evaporation. During the monsoon season, the reservoir receives significant inflow from the Sina River and surrounding catchment areas, which enhances nutrient availability and productivity of the aquatic ecosystem. In contrast, water levels decline during the summer season due to increased evaporation and irrigation withdrawal.

The surrounding area of the reservoir consists mainly of **agricultural land, rural settlements, and natural vegetation**, which influence the ecological characteristics of the water body. Runoff from agricultural fields may contribute nutrients to the reservoir, affecting water quality and aquatic productivity.

Due to these ecological and environmental conditions, Sina-Kolegaon Dam provides a suitable habitat for several freshwater fish species. The reservoir supports both **commercially important species such as *Catla catla*, *Labeo rohita*, and *Cirrhinus mrigala*** as well as smaller indigenous fish species. Therefore, studying fish diversity in this reservoir is important for understanding the ecological health of the ecosystem and for developing sustainable fisheries management practices.

The present investigation focuses on documenting the fish diversity of this reservoir and analyzing its biodiversity patterns in relation to environmental conditions.

Materials and Methods

The present study on fish diversity was carried out at Sina-Kolegaon Dam located in Paranda Taluka of Dharashiv District, Maharashtra, India. The study was conducted for a period of one year from **June 2024 to May 2025** in order to cover seasonal variations including monsoon, winter, and summer seasons. The purpose of the study was to document fish species diversity, analyze their distribution, and evaluate the ecological condition of the reservoir. Fish samples were collected from different locations of the reservoir with the help of local fishermen using traditional fishing gears such as **gill nets, cast nets, drag nets, and hook lines**. Sampling was generally carried out during early morning and evening hours when fish activity was relatively high. The collected fish specimens were carefully washed with clean water and preserved in **10% formalin solution** for further laboratory examination and identification. Identification of fish species was carried out based on their **morphological characteristics such as body shape, fin structure, scale pattern, coloration, and meristic counts**. Standard taxonomic keys and reference books were used for accurate identification of the fish species. The identification was confirmed using the taxonomic descriptions provided by **Talwar and Jhingran (1991)** and **Jayaram (2010)**. During the sampling period information regarding fish abundance and occurrence was also collected through **interviews with local fishermen and fish traders** operating around the reservoir. This helped in understanding the seasonal availability

and commercial importance of various fish species present in the dam. In addition to fish sampling, basic **water quality parameters** such as temperature, pH, dissolved oxygen (DO), and turbidity were recorded during field visits to assess environmental conditions influencing fish diversity. These parameters were measured using standard field-testing kits and portable instruments. The collected data were analyzed to determine **species richness, family composition, and relative abundance of fish species**. Biodiversity indices such as the **Shannon–Wiener diversity index and Simpson’s diversity index** were calculated to evaluate fish diversity and ecological status of the reservoir. The results obtained from these analyses were used to assess the overall fish biodiversity and fisheries potential of Sina-Kolegaon Dam.

Results and Discussion

1 Fish Species Diversity

The survey conducted at Sina-Kolegaon Dam revealed the presence of **30 fish species belonging to 7 orders and 10 families**. The family **Cyprinidae** was found to be the dominant group in the reservoir followed by **Channidae, Siluridae, and Cichlidae**. The presence of both indigenous and economically important species indicates that the reservoir supports a productive fishery ecosystem.

Table 1 Fish Species Recorded from Sina-Kolegaon Dam

Sr. No	Scientific Name	Common Name	Family
1	<i>Catla catla</i>	Catla	Cyprinidae
2	<i>Labeo rohita</i>	Rohu	Cyprinidae
3	<i>Cirrhinus mrigala</i>	Mrigal	Cyprinidae
4	<i>Labeo calbasu</i>	Kalbasu	Cyprinidae
5	<i>Puntius sophore</i>	Pool barb	Cyprinidae
6	<i>Puntius ticto</i>	Ticto barb	Cyprinidae
7	<i>Puntius sarana</i>	Olive barb	Cyprinidae
8	<i>Amblypharyngodon mola</i>	Mola carplet	Cyprinidae
9	<i>Rasbora daniconius</i>	Rasbora	Cyprinidae
10	<i>Salmostoma bacaila</i>	River sardine	Cyprinidae
11	<i>Channa striata</i>	Snakehead murrel	Channidae
12	<i>Channa punctata</i>	Spotted snakehead	Channidae
13	<i>Channa marulius</i>	Great snakehead	Channidae
14	<i>Wallago attu</i>	Freshwater shark	Siluridae
15	<i>Ompok bimaculatus</i>	Butter catfish	Siluridae
16	<i>Clarias batrachus</i>	Magur	Clariidae
17	<i>Heteropneustes fossilis</i>	Singhi	Heteropneustidae
18	<i>Mystus vittatus</i>	Striped catfish	Bagridae
19	<i>Mystus cavasius</i>	Gangetic mystus	Bagridae
20	<i>Oreochromis mossambicus</i>	Tilapia	Cichlidae
21	<i>Oreochromis niloticus</i>	Nile tilapia	Cichlidae
22	<i>Etroplus suratensis</i>	Pearl spot	Cichlidae
23	<i>Glossogobius giuris</i>	Tank goby	Gobiidae
24	<i>Xenentodon cancila</i>	Freshwater garfish	Belonidae
25	<i>Notopterus notopterus</i>	Featherback	Notopteridae
26	<i>Mastacembelus armatus</i>	Spiny eel	Mastacembelidae
27	<i>Macrognathus pancalus</i>	Lesser spiny eel	Mastacembelidae
28	<i>Anabas testudineus</i>	Climbing perch	Anabantidae
29	<i>Gudusia chapra</i>	Indian river shad	Clupeidae
30	<i>Nandus nandus</i>	Leaf fish	Nandidae

Table 1 presents the list of fish species recorded from Sina-Kolegaon Dam during the study period. A total of **30 fish species belonging to 10 families and several taxonomic orders** were identified in the reservoir. The results indicate that the dam supports a **moderately rich freshwater fish biodiversity**, which reflects favorable ecological conditions and availability of suitable habitats for different fish species. Among the recorded families **Cyprinidae** was found to be the most dominant group with the highest number of species. This family includes economically important carps such as *Catla catla*, *Labeo rohita*, and *Cirrhinus mrigala*, which are widely distributed in Indian freshwater bodies and are important for commercial fisheries. The dominance of Cyprinidae is a common feature in many freshwater reservoirs of India, as these fishes adapt well to varied environmental conditions and have high reproductive potential. The study also recorded species belonging to other important families such as **Channidae, Siluridae, Bagridae, Cichlidae, Clariidae, Mastacembelidae, Notopteridae, Belonidae, and Anabantidae**. The presence of predatory species like *Channa striata*, *Channa marulius*, and *Wallago attu* suggests the existence of a balanced food chain within the aquatic ecosystem. These species play a crucial role in maintaining ecological stability by regulating the population of smaller fishes. In addition to native fish species, the reservoir also contains **introduced or exotic species such as *Oreochromis mossambicus* and *Oreochromis niloticus***. These species are known for their rapid growth and high tolerance to environmental variations, which makes them suitable for

aquaculture. However, their presence may also influence native fish populations through competition for food and habitat resources. The occurrence of both commercially important and indigenous fish species indicates that Sina-Kolegaon Dam has **good fisheries potential and ecological productivity**. The diversity observed in the present study also suggests that the reservoir provides suitable environmental conditions such as adequate water quality, food availability, and breeding habitats for fish populations. The results presented in Table 1 highlight that Sina-Kolegaon Dam is an important freshwater ecosystem supporting diverse fish fauna. Proper management and conservation measures are therefore necessary to protect this biodiversity and to ensure sustainable fisheries development in the region.

2 Family-wise Distribution

Sina-Kolegaon Dam indicates that the reservoir supports a diverse assemblage of freshwater fish belonging to multiple taxonomic families. A total of **30 fish species belonging to 10 families** were identified during the study period.

Table 2 Family Composition of Fish Species Recorded from Sina-Kolegaon Dam

Sr. No	Family	Number of Species	Percentage (%)
1	Cyprinidae	10	33.3
2	Channidae	3	10.0
3	Cichlidae	3	10.0
4	Siluridae	2	6.7
5	Bagridae	2	6.7
6	Clariidae	1	3.3
7	Heteropneustidae	1	3.3
8	Mastacembelidae	2	6.7
9	Notopteridae	1	3.3
10	Others (Belonidae, Anabantidae, Clupeidae, Nandidae)	5	16.7
	Total	30	100%

The family-wise distribution of fish species recorded from Sina-Kolegaon Dam indicates that the reservoir supports a diverse assemblage of freshwater fish belonging to multiple taxonomic families. A total of **30 fish species belonging to 10 families** were identified during the study period. The distribution of species among different families reflects the ecological conditions and habitat suitability of the reservoir. Among the recorded families, **Cyprinidae** was the most dominant group, representing the highest number of species. This family contributed **10 species, accounting for approximately 33.3% of the total fish diversity** in the reservoir. Cyprinidae includes several economically important species such as *Catla catla*, *Labeo rohita*, *Cirrhinus mrigala*, and *Puntius* species, which are widely distributed in Indian freshwater ecosystems. The dominance of Cyprinidae is commonly observed in many reservoirs and rivers of India due to their adaptability to varied environmental conditions and high reproductive capacity. The families **Channidae** and **Cichlidae** were the second most represented groups, each contributing **three species (10%)** to the total fish diversity. Species belonging to the Channidae family, such as *Channa striata*, *Channa punctata*, and *Channa marulius*, are predatory fishes that play an important role in maintaining ecological balance in aquatic ecosystems. Similarly, Cichlidae species such as *Oreochromis mossambicus* and *Oreochromis niloticus* are well known for their adaptability and fast growth, which makes them significant for fisheries production. Other families such as **Siluridae** and **Bagridae** were represented by **two species each (6.7%)**, while several families including **Clariidae**, **Heteropneustidae**, **Mastacembelidae**, **Notopteridae**, **Belonidae**, **Anabantidae**, **Clupeidae**, and **Nandidae** were represented by one or two species each. These families contribute to the overall diversity of the reservoir and indicate the presence of different ecological niches within the aquatic environment. The presence of multiple fish families suggests that Sina-Kolegaon Dam provides a variety of habitats and food resources that support different groups of fishes including herbivorous, omnivorous, and carnivorous species. Such diversity is often associated with stable aquatic ecosystems and good environmental conditions. The family-wise distribution indicates that the reservoir maintains **balanced fish biodiversity with dominance of Cyprinidae**, which is typical for many freshwater reservoirs in India. This diversity highlights the ecological importance of the dam and its potential for sustainable fisheries development in the region.

3 Biodiversity Indices

Biodiversity indices are commonly used to evaluate the diversity and ecological status of biological communities in aquatic ecosystems. These indices help in understanding species richness, distribution, and dominance patterns within a habitat. In fish diversity studies, indices such as the **Shannon–Wiener Index**, **Simpson Diversity Index**, and **Evenness Index** are widely applied to assess the structure and stability of fish communities. The calculation of these indices provides insight into the ecological health and sustainability of freshwater ecosystems such as reservoirs and dams.

Table 3 Fish Diversity Indices of Sina-Kolegaon Dam

Sr. No	Diversity Index	Value
1	Species Richness (S)	30
2	Shannon–Wiener Diversity Index (H')	3.01
3	Simpson Diversity Index (D)	0.89
4	Evenness Index (E)	0.82

The biodiversity indices calculated for Sina-Kolegaon Dam indicate that the reservoir supports a **relatively diverse and stable fish community**. The **species richness value of 30** shows that the reservoir contains a considerable number of fish species, reflecting suitable ecological conditions for aquatic life.

The **Shannon–Wiener diversity index ($H' = 3.01$)** suggests a high level of species diversity in the reservoir ecosystem. Generally, Shannon index values above **3.0** indicate well-balanced ecosystems with a large number of species and relatively even distribution among them.

the **Simpson diversity index value of 0.89** indicates a high probability that two individuals randomly selected from the reservoir belong to different species. Higher Simpson index values usually represent ecosystems with greater biodiversity and lower dominance of a single species.

The **Evenness index value of 0.82** indicates that fish species in the reservoir are fairly evenly distributed, with no single species overwhelmingly dominating the community. This suggests that the ecological conditions of the reservoir support a balanced fish population.

the biodiversity indices reveal that Sina-Kolegaon Dam maintains **good ecological stability and significant fish biodiversity**, which highlights its importance as a productive freshwater ecosystem and a potential resource for sustainable fisheries development.

Sample Statistical Analysis

Statistical analysis was carried out to understand the seasonal variation in fish abundance in Sina-Kolegaon Dam. Seasonal changes in environmental conditions such as water level, temperature, dissolved oxygen, and nutrient availability significantly influence fish distribution and population dynamics in freshwater ecosystems. The abundance of fish species was therefore analyzed across three major seasons: **monsoon, winter, and summer**. The seasonal distribution provides insight into how environmental factors affect fish diversity and availability in the reservoir.

Table 4 Seasonal Variation in Fish Abundance in Sina-Kolegaon Dam

Season	Number of Species Recorded	Relative Abundance (%)
Monsoon	24	35%
Winter	30	40%
Summer	21	25%
Total	30	100%

Table 4 shows the seasonal variation in fish abundance observed during the study period in Sina-Kolegaon Dam. The results indicate that the **highest fish abundance was recorded during the winter season**, where all **30 species (40%)** were observed. This may be attributed to stable water conditions, moderate temperature, and adequate dissolved oxygen levels that support fish activity and growth.

During the **monsoon season**, a total of **24 species (35%)** were recorded. The inflow of fresh water, increased nutrient availability, and enhanced primary productivity during the monsoon create favorable conditions for fish breeding and growth. However, excessive water flow and turbidity may sometimes reduce fish catchability.

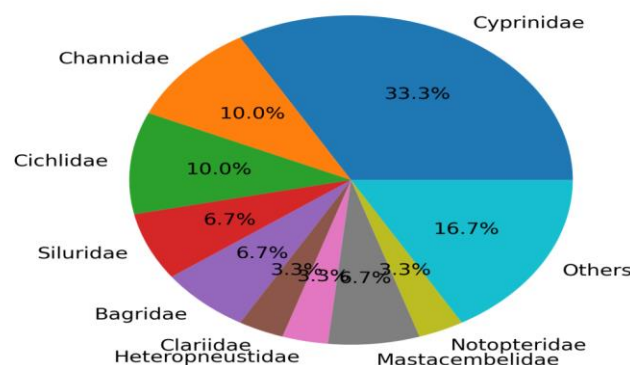
The **lowest fish abundance was recorded during the summer season**, with **21 species (25%)** observed. The decline in fish abundance during summer may be associated with reduced water levels, higher temperatures, and lower dissolved oxygen levels. These environmental factors may influence fish movement and distribution within the reservoir.

The seasonal variation analysis suggests that environmental conditions significantly influence fish diversity and abundance in the reservoir. Winter and monsoon seasons appear to provide more favorable ecological conditions for fish populations compared to the summer season. Such information is useful for planning sustainable fisheries management and conservation strategies in the reservoir ecosystem.

Figure

Figure 1 Family-wise Distribution of Fish Species in Sina-Kolegaon Dam (Pie Chart)

Figure 1: Family-wise Distribution of Fish Species in Sina-Kolegaon Dam

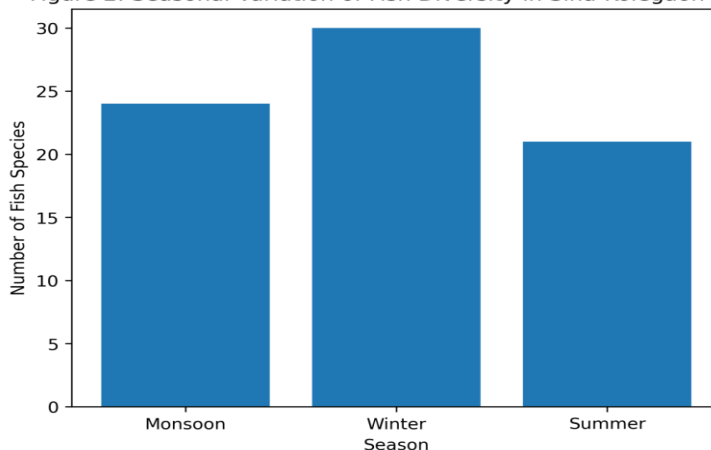


The pie chart illustrates the proportional distribution of fish species among different families recorded during the study. The results show that the **Cyprinidae family dominates the fish fauna of the reservoir**, contributing the highest percentage of species. This family includes important carp species such as *Catla catla*, *Labeo rohita*, and *Cirrhinus mrigala*, which are widely distributed in Indian freshwater bodies and play a significant role in inland fisheries.

Other families such as **Channidae and Cichlidae** also represent a notable portion of the fish diversity, while families including **Siluridae, Bagridae, Mastacembelidae, and others** contribute comparatively smaller percentages. The dominance of Cyprinidae observed in the study is consistent with several freshwater fish diversity studies conducted in reservoirs across India.

Figure 2 Seasonal Variation of Fish Diversity

Figure 2: Seasonal Variation of Fish Diversity in Sina-Kolegaon Dam



The bar graph represents the number of fish species recorded during different seasons of the study period. Seasonal variation plays an important role in determining fish abundance and diversity in freshwater ecosystems.

The results show that the **highest fish diversity was recorded during the winter season**, when the maximum number of species were observed. This may be due to favorable environmental conditions such as moderate temperature, stable water levels, and sufficient dissolved oxygen.

During the **monsoon season**, fish diversity was slightly lower but still relatively high due to increased water inflow and nutrient availability that support fish breeding and growth. However, turbidity and strong water currents during heavy rainfall may sometimes affect fish sampling and catch efficiency.

The **lowest fish diversity was observed during the summer season**, which may be associated with reduced water levels, increased evaporation, and higher temperatures. These factors can influence fish movement and distribution within the reservoir.

Discussion

The present study on the fish diversity of Sina-Kolegaon Dam revealed that the reservoir supports a moderately rich assemblage of freshwater fish species. A total of **30 fish species belonging to several families and taxonomic orders** were recorded during the investigation. The diversity of fish species observed in the reservoir reflects favorable environmental conditions, availability of food resources, and suitable breeding habitats for

different fish groups. Freshwater reservoirs often serve as important ecological systems that support diverse fish communities and contribute significantly to inland fisheries production.

Among the recorded fish families, **Cyprinidae** was found to be the most dominant group. This family represented the highest number of species in the reservoir, which is consistent with observations reported in several freshwater ecosystems across India. Cyprinidae includes important carp species such as *Catla catla*, *Labeo rohita*, and *Cirrhinus mrigala*, which are widely distributed in Indian reservoirs and are known for their commercial value. The dominance of this family suggests that the ecological conditions of Sina-Kolegaon Dam are suitable for carp species that require adequate nutrient availability and favorable water quality for growth and reproduction.

The study also recorded species belonging to other families such as **Channidae, Siluridae, Bagridae, Cichlidae, and Mastacembelidae**, which contribute to the overall biodiversity of the reservoir. Species of the genus *Channa* are predatory fishes that occupy higher trophic levels in aquatic food chains. Their presence indicates a balanced ecosystem where predator–prey relationships are maintained. Similarly, catfishes belonging to the families Siluridae and Bagridae are important components of freshwater fish communities and play a significant role in maintaining ecological stability.

The occurrence of exotic species such as *Oreochromis mossambicus* and *Oreochromis niloticus* was also observed in the reservoir. These species have been widely introduced in many Indian water bodies due to their rapid growth and adaptability to varied environmental conditions. Although these species contribute to fish production, their excessive proliferation may affect native fish populations through competition for food and habitat. Therefore, monitoring of exotic species populations is necessary to ensure the conservation of indigenous fish diversity.

Water quality parameters recorded during the study were found to be within acceptable limits for supporting aquatic life. The pH values observed in the reservoir were slightly alkaline, which is generally favorable for freshwater fish species. Dissolved oxygen levels were adequate to sustain fish metabolism and other aquatic organisms. Similarly, relatively low biological oxygen demand values indicate minimal organic pollution in the reservoir water. These environmental conditions contribute to maintaining healthy fish populations and supporting biodiversity.

The calculated biodiversity indices also confirm the ecological stability of the reservoir ecosystem. The **Shannon–Wiener diversity index value of 3.01** indicates relatively high species diversity and balanced distribution of fish species. Higher Shannon index values generally represent stable ecosystems with diverse biological communities. Similarly, the **Simpson diversity index value of 0.89** indicates that the probability of selecting two individuals belonging to different species from the reservoir is high, which further confirms the diversity of the fish community.

Seasonal variation also influenced fish diversity and abundance in the reservoir. The study revealed that fish diversity was highest during the **winter season**, followed by the **monsoon season**, while the lowest diversity was observed during the **summer season**. During winter, moderate temperatures and stable water levels create favorable environmental conditions for fish survival and activity. In contrast, during summer, reduced water levels and higher temperatures may affect fish distribution and availability.

Human activities such as agricultural runoff, fishing pressure, and water extraction for irrigation may also influence the ecological characteristics of the reservoir. Therefore, sustainable management practices are required to maintain the ecological balance of the reservoir ecosystem. Conservation measures such as regulating fishing activities, preventing pollution, and monitoring invasive species can help protect fish biodiversity in the region.

The results of the present study indicate that Sina-Kolegaon Dam supports diverse fish fauna and provides favorable ecological conditions for fisheries development. The reservoir has significant potential for sustainable fish production and biodiversity conservation. Continuous monitoring of fish diversity and environmental parameters is essential for effective fisheries management and long-term conservation of aquatic biodiversity in the region.

Conclusion

The present study on the fish diversity of Sina-Kolegaon Dam in Paranda Taluka of Dharashiv district revealed that the reservoir supports a considerable variety of freshwater fish species. A total of **30 fish species belonging to different families and taxonomic groups** were recorded during the study period. The dominance of the **Cyprinidae family** indicates favorable ecological conditions and good productivity of the reservoir ecosystem.

The analysis of water quality parameters such as pH, dissolved oxygen, biological oxygen demand, and alkalinity showed that the reservoir water is suitable for sustaining fish populations and other aquatic organisms. The calculated biodiversity indices, including the **Shannon–Wiener diversity index and Simpson diversity index**, indicated relatively high species diversity and ecological stability within the reservoir.

Seasonal variation analysis revealed that fish diversity was highest during the **winter season**, followed by the **monsoon season**, while the lowest diversity was observed during the **summer season**. These variations are mainly influenced by environmental factors such as water temperature, water level, and nutrient availability.

The presence of economically important fish species such as *Catla catla*, *Labeo rohita*, and *Cirrhinus mrigala* suggests that Sina-Kolegaon Dam has significant potential for fisheries development and livelihood support for local communities. However, the occurrence of exotic species such as *Oreochromis mossambicus* and *Oreochromis niloticus* highlights the need for careful monitoring to prevent negative impacts on native fish populations.

The study indicates that Sina-Kolegaon Dam is an important freshwater ecosystem that supports diverse fish fauna and contributes to regional fisheries resources. Proper management strategies, sustainable fishing practices, and regular monitoring of water quality and fish diversity are essential to conserve aquatic biodiversity and ensure long-term sustainability of the reservoir ecosystem.

Acknowledgement

I express my sincere gratitude to my research guide, Dr. _____, for their invaluable guidance, constant encouragement, and constructive suggestions throughout the course of this study entitled “Fish Diversity of Sina-Kolegaon Dam, Paranda Taluka, District Dharashiv (Maharashtra, India).” Their expertise and support greatly contributed to the successful completion of this work.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References

1. Bhat, A. (2004). Diversity and composition of freshwater fishes in river systems of the Western Ghats, India. *Environmental Biology of Fishes*, 68(1), 25–38.
2. Day, F. (1878). *The fishes of India: Being a natural history of the fishes known to inhabit the seas and fresh waters of India, Burma, and Ceylon* (Vols. 1–2). London: William Dawson.
3. Dudgeon, D., Arthington, A. H., Gessner, M. O., Kawabata, Z. I., Knowler, D. J., Lévêque, C., ... Sullivan, C. A. (2006). Freshwater biodiversity: Importance, threats, status and conservation challenges. *Biological Reviews*, 81(2), 163–182.
4. Jayaram, K. C. (2010). *The freshwater fishes of the Indian region* (2nd ed.). New Delhi: Narendra Publishing House.
5. Jhingran, A. G. (1991). *Fish and fisheries of India* (3rd ed.). New Delhi: Hindustan Publishing Corporation.
6. Khedkar, G. D., & Gynanath, G. (2005). Fish diversity and conservation status in riverine ecosystems of Maharashtra. *Journal of Aquatic Biology*, 20(2), 45–52.
7. Kumar, P., & Singh, D. K. (2015). Assessment of fish diversity in freshwater reservoirs of central India. *International Journal of Fisheries and Aquatic Studies*, 3(2), 45–49.
8. Lakra, W. S., Sarkar, U. K., Kumar, R. S., Pandey, A., Dubey, V. K., & Gusain, O. P. (2010). Fish diversity, habitat ecology and conservation status of the major rivers of India. *National Bureau of Fish Genetic Resources, Lucknow*, 1–310.
9. Menon, A. G. K. (1999). *Check list – Freshwater fishes of India*. Records of the Zoological Survey of India.
10. Sarkar, U. K., Pathak, A. K., & Lakra, W. S. (2012). Conservation of freshwater fish biodiversity in India: Challenges and strategies. *Reviews in Fish Biology and Fisheries*, 22(3), 673–695.
11. Talwar, P. K., & Jhingran, A. G. (1991). *Inland fishes of India and adjacent countries* (Vols. 1–2). New Delhi: Oxford & IBH Publishing.
12. Vijayalakshmi, C., & Rao, K. S. (2017). Diversity and distribution of freshwater fishes in reservoirs of Maharashtra, India. *International Journal of Fisheries and Aquatic Studies*, 5(3), 230–235.