Faunal range and Conservation views of the Aquatic atmosphere in Dhamoi Pond, Jhabua, Madhya Pradesh, India

Dr. Reena Ganava,
Department of zoology,
PM College of excellence Shaheed Chandrashekar Azad Govt. P. G. College Jhabua, M.P.

Abstract

The study on in Dhamoi Pond, conducted over the year (2020–2021), highlights the significance of biodiversity and its conservation in maintaining ecological balance. The present study documents the faunal diversity of Dhamoi Pond, Jhabua, with a focus on birds, fish, amphibians, and reptiles. A total of 68 bird species (64%), 26 fish species (24%), 3 amphibian species (3%), and 8 reptile species (8%) were recorded, highlighting the dominance of avian fauna in terms of abundance and density. Fish species were restricted to the interior lake habitats, while amphibians were found in emergent weeds and agricultural lands. Reptiles exhibited varied habitat preferences, with freshwater snakes (e.g., *Tropidonotus piscator*) confined to the lake and terrestrial species (e.g., *Naja naja*) occasionally observed in marginal areas. Among the 32 documented bird species from 11 families, 9 were resident, 9 were migrant and 7 were terrestrial, and 7 were non-passerine. This study provides insights into the species composition and habitat distribution of faunal groups in the lake ecosystem, contributing to biodiversity conservation efforts in the region.

Key words: Dhamoi Pond, Jhabua, Aquatic ecosystem, biodiversity.

Introduction

Water covers approximately 70% of the Earth's floor, with ninety seven% being saline and much less than 3% constituting freshwater. This restrained freshwater useful resource performs a critical role in maintaining life in each terrestrial and aquatic ecosystem. The word "The fire of existence burns in the water" highlights its essential importance within the foundation and upkeep of dwelling organisms .India holds a vast position in international fisheries, ranking as the second-biggest fish producer and aquaculture country after China. Zooplankton variety in aquatic ecosystems is essentially prompted by physicochemical water parameters and serves as an vital indicator of water pollutants. These treasured structures were now not only conduits for water and sediments but also human agreement, alternate, and transportation. Farm ponds are generally built to offer water for livestock or for aquatic habitats. Livestock ponds in some regions of the area are called dugouts and they're often constructed within the floodplain of flow channels or in the stream channels themselves (Knight & Boyer 2007). Fishes are suitable signs of tendencies in aquatic biodiversity due to the fact their giant variety displays an extensive variety of environmental conditions. Fish additionally have a primary effect on the distribution and abundance of other organisms in waters they inhabit. Exam of developments in freshwater fish faunas from different components of the arena imply that most faunas are in extreme decline and in need have on the spot safety (Moyle & Leidy 1992).

Aquatic environments cowl 72% of the Earth's surface and assist a huge percentage of global invertebrate biodiversity (Strayer and Dudgeon, 2010). This aquatic area is overwhelmingly marine, with the arena's oceans accounting for a few ninety seven% of the world's water reserves equivalent to a total volume of around 1.33 billion km3 (Charette and Smith, 2010). Several researchers have contributed to information faunal variety and Conservation across unique areas of India, emphasizing the need for further exploration in freshwater ecosystems. Research on Indian Faunal diversity dates lower back over a century, yet enormous local studies stay inadequate. Wetlands, whether natural or human-changed, play a essential role in offering staple ingredients like rice and fish for extra than half of of the global populace. But, over-exploitation via activities inclusive of harvesting, fishing, and searching has brought about a decline in lots of plant and animal species. Moreover, land use practices like agriculture, mining, water float law, and the release of home and industrial waste make contributions to the degradation of wetland habitats. In this context, the present examine specializes in evaluating

the cutting-edge reputation of fish, amphibians, reptiles, and hen variety in Dhamoi Pond, Jhabua, aiming to evaluate and guard its biological resources.

Methodology

To assess the biodiversity of Dhamoi Pond, Jhabua, systematic sampling was performed each weeks to research limnological characteristics. Fish specimens had been accumulated, packed in classified polythene bags, saved in an icebox, and transported to the laboratory inside 12 hours for identification. The taxonomic type of fish species changed into based totally on morphometric trends, which include body shape, colour, unique markings, and fin shape, following nearby identification keys (Mirza, 2003). Stay specimens had been euthanized using a formalin answer for similarly take a look at.

Amphibian Biodiversity

Frogs had been accumulated through visible encounter surveys and sampling at breeding web sites. Specimens have been preserved in an eight% formaldehyde answer for fixation. Discipline observations have been recorded following the pointers furnished by way of Chanda S.ok. (2002).

Reptile Biodiversity

Reptiles have been documented the use of visible encounter surveys. Snake species were recognized based totally on fashionable taxonomic references, following Whitaker & Captain (2004).

Fowl Biodiversity

Regular subject visits have been performed to look at bird range inside the look at location. each direct and indirect commentary techniques were employed to record population status, neighborhood threats, and distribution styles. Observations have been achieved using binoculars (7×50 and eight×40) for the duration of early morning (6–10 a.m.) and overdue afternoon (4–6 p.m.).

Survey strategies

The study evaluated the popularity of chicken species based totally on their habitat preferences, migration patterns, and distribution. Discipline surveys were carried out systematically, using each direct and indirect commentary strategies.

Direct Observations – Birds have been recorded in numerous habitats through area visits performed once or twice a month, from early morning till sundown. Well known chicken survey strategies were implemented for accurate information collection.

Oblique records series – local hunters, flora and fauna specialists, farmers, and citizens had been interviewed to acquire facts about the cutting-edge and past chook populations, threats, and the impact of human sports on avian diversity. Fowl species have been recognized following standard taxonomic references (Ali, 1996), and their feeding habits were documented to recognize their nutritional possibilities and ecological position.

Migratory fame of Birds

Birds were further classified primarily based on their seasonal presence in the take a look at vicinity:

R (Resident Species) – determined at some point of the year in the study region.

LM (Nearby Migrants) – Gift simplest all through unique seasons.

M (Migrants) – Species that visit the region exclusively for the duration of wintry weather for breeding.

by way of studying fowl abundance and migration styles, the take a look at gives insights into habitat alternatives, ecological significance, and conservation needs of avian species in Dhamoi Pond, Jhabua.

Results & Discussion

Our studies are recorded Birds 32, Fish 26, Amphibians 3& Reptiles 8 in the Dhamoi Pond, Jhabua. Among the faunal groups the bird's species were highest in number with 64% contribution in abundance, density rather than other groups such as Fish (24%), Amphibians (3%), and Reptiles (8%) respectively. In habitat wise distribution fishery fauna was always confined to interior lake habitats. The amphibians are distributed in the emergent weeds and agricultural lands of the lake ecosystem. 8N species of Reptiles belongs to 8 families were documented during the survey (**Table-1).** A total of 32 species of birds were documented during the survey

belongs to 11 Families were noted. Among these 32 species of birds, 9 species of birds are Resident habitats and 9 species of birds were Migrants & terrestrial. 7 species of birds were Terrestrial & 79 species of birds were Non -passerine species (**Table-2**)

Fishery fauna of 26 species is confined to interior lake, the amphibians of 3 species distributed in the Emergent weeds and agricultural lands of the lake ecosystem. Whereas Among the Reptile species, the fresh water snake *Tropidonotus piscater* are confined to lake waters. The Terrestrial Reptile species (*Naja naja*,) are occasionally found in the nearby marginal areas of the lake.

The open water lake ecosystem have been utilized by the birds like geese, coots and cormorants are seen on the middle of the lake wherein the water level is highest for the duration of the southwest monsoon. The shallow water zones presents very good habitat for the migratory water bird and nearby migrants and additionally it gives variety of food gadgets to the egrets, herons, storks and common coots. Combatively shallow water of Lake Mattress showed highest wide variety of birds and range of birds are much less in lake fringes.

The lake provides habitat for a diversity of existence consisting of great populace of fish, migratory birds, aquatic macrophytes, benthos, Invertebrates and Plankton which might be of use to man and animals. Fish assemblages had been used as a hallmark of environmental degradation. Fish diversity in streams and rivers is taken into consideration as a diagnostic tool to spotlight the effect of environmental changes (Das and Chakrabarty, 2007). Fish responds to changes in its environment whether or not it's far human triggered or natural (Han 2007).because of this agricultural fields and vegetation along the lake, the region is rich in avian fauna. Wetlands provide suitable habitats for birds. Those habitats, however, are declining everywhere in the world. Water resource development is a major cause for this decline. Such changes have affected estuarine and coastal ecology and decrease the quantity of water achieving flood undeniable wetlands, affecting their ecology (Kingsford 2000).

Protection and conservation of most important wetlands critically vital waterfowl on their traditional migratory flyways is the primary priority. Most of those wetlands have basically been herbal ecosystems stabilized over time and feature retained their natural traits. In a perfect scenario it'd be maximum appropriate to keep their herbal manner as a long way as feasible or at least restore or enhance if they're determined degraded due to numerous reasons. In latest sports which include drainage, pollutants, habitat alteration and industrialization, leaving in the back of most effective small fractions of once pristine habitats, specially large wetlands. Underneath those instances lively control of wetland is known as for and justified. Management of a wetland of global significance in particular for migratory birds calls for an intensive knowledge of now not most effective the ecology of that unique wetland but additionally of the migration, feeding ecology and preferred behavior of waterfowl.

Conclusion

To preserve biodiversity, restore endangered and endemic species, enhance fisheries, and support the diversity of birds, fish, amphibians, and reptiles, several conservation strategies are proposed for the restoration of Dhamoi Pond, Jhabua. By minimizing human interference and protecting the lake from ecological disturbances, its natural diversity can be maintained. Key conservation measures include: Engaging local communities as lake guardians to monitor and report activities related to poaching and encroachment.Creating a safe and sustainable environment to encourage the return of migratory bird species. Planting trees and vegetation around the lake to prevent soil erosion, enhance habitat quality, and support local wildlife. Implementing measures to restore degraded areas and improve the ecological balance of the lake. Regulating water flow and quality to maintain a healthy aquatic ecosystem. Conducting regular surveys to monitor biodiversity and establish clear boundaries to prevent encroachment. Educating local communities about conservation practices and sustainable management of lake resources.

By implementing these measures, Dhamoi Pond can be effectively conserved, ensuring long-term ecological stability and the continued survival of its diverse flora and fauna.

Acknowledgements

I sincerely express my gratitude to the Municipality for granting permission to conduct this research. I extend my heartfelt appreciation to the wildlife experts, farmers, local residents, and researchers whose knowledge and previous studies provided invaluable insights. I would also like to acknowledge the support and encouragement received from my colleagues, mentors, and all those who assisted in data collection, fieldwork, and analysis.

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Table-1: Fish, reptiles, and amphibians diversity in Dhamoi pond of Jhabua

SN	Families	Fishery fauna	Families	Fishery fauna
1.	Notopteridae	*Notopterus notopterus*	Siluridae	*Wallago attu*
2.	Anguillidae	*Anguilla bengalensis*		*Ompok bimaculatus*
3.	Cyprinidae	*Cyprinus carpio,*	Heteropneustidae	*Heteropneustus fossilis*
4.		*Catla catla*	Mugilidae	*Rhinomugilcorsula*
5.		*Labeo rohita*	Belonidae	*Xenetodon cancila*
6.		*Puntius ticto ticto*	Poeciliidae	*Gambusia affinis*
7.		*Puntius sophore*	Mastacembelidae	*Macrognathus Pancalus*
8.		*Osteobrama vigorsii*	Cichlidae	*Tilapia mossamica*
9.		*Ctenoptergo idella*		*etroplus suratensis*
10.		*Cyprinus mrigala*	Anabantidae	*Anabas testudineus*
11.	Bagridae	*Mystus gulio,*	Belonitidae	*Colisa fasciatus*
12.		*Mystus vittatus*	Channidae	*Channa striatus,*
13.		*Mystus cavasius*		
14.	**Families**	**Reptiles**	**Families**	**Amphibians**
15.	Elapidae	*Naja naja*	Ranidae	*Rana cyanophlyctis*

16.	Pythonidae	*Python molurus*	Hylidae	*Hyla annectans*
17.	Colubrid	*notuspiscator*	Bufonidae	*Bufo melanostictus*)
18.		*xenochrophis piscator*		
19.	Varanidae	*Varanus monitor*		
20.	Agamiidae	*Calotes versicolor*		
21.	Chamaeleonidae	*Chamaeleo zeylancicus*		
22.	Trionychidae	*Lissemys punctata*		

Table- 2: Non -passerine species & Category wise Birds population in Dhamoi pound

Sn	**Family**	**Bird**	**Category**
1.	Podicipedidae	*Trachybaptus ruficollis*	Resident
2.	Phalacrocoracidae,	*Phalacrocorax niger*	Resident
3.	Anhingidae,	*Anhinga melanogaster*	Resident
4.	Ardeidae-	*Ardea cinerea*	Resident
5.		*Ardea Purpurea*	Resident
6.		*Aredeola grayii*,	Resident
7.		*Babulcus ibis*	Resident
8.		*Egretta garzetta*	Resident
9.		*Ardea alba*.	Resident
10.	Ciconiidae	*Ibis Leococephalus*	Migrants
11.		*Anastomus oscitans*	Migrants
12.	Anatidae	*Tadona ferruginea*	Migrants
13.		*Anas acuta*	Migrants
14.		*Anas crecca*	Migrants
15.		*Dendrocygna javanicus*	Migrants
16.		*Anas clypeata*	Migrants
17.		*Aythya fuligula*	Migrants
18.		*Nettapus coromandelianus*	Migrants
19.	Caridae	*Streptopelia chinensis*	Terrestrial
20.		*Columba livia*	Terrestrial
21.		*Psittacula krameri*	Terrestrial
22.		*Clamator jacobinus*	Terrestrial
23.		*Acridotheres tristis*	Terrestrial
24.		*Acridotheres ginginianus*	Terrestrial
25.		*Dendrocitta leucogastra*	Terrestrial
Non -passerine species			
26.	Piscidae	*Dinopium benghalense*	
27.		*Dicrurus macrocercus*	
28.	Corvidae	*Corvus splendens*	
29.		*Corvus Macrorhynchos*	
30.	Tamaliinae	*Turdoides caudatus*	
31.	Passerinae	*Passer Domesticus*	
32.		*Athene brama*	

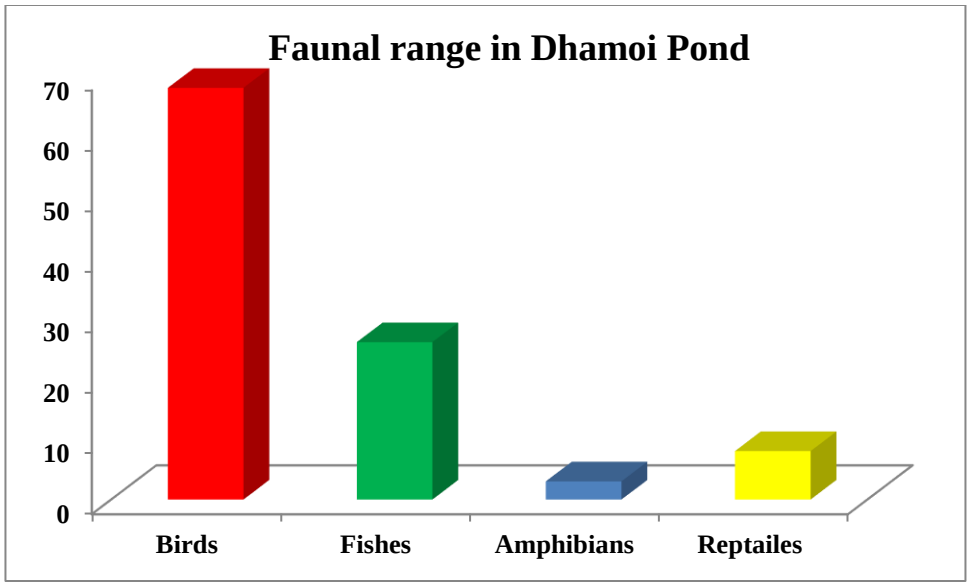

Fig.1: Faunal range in Dhamoi Pond