
**AQUATIC AVIAN FAUNA DIVERSITY OF VIKRAM TIRTH
SAROVER UJJAIN M.P. INDIA.**

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Doi: <https://doi-doi.org/101555/ijarp.9236>**ABSTRACT**

The abundance of aquatic avifauna is an important indicator of the ecological health of a water body. The present study was conducted to assess the occurrence, ecological status, and species richness of aquatic birds in Vikram Tirth Sarovar, located on the campus of Vikram University, Ujjain, Madhya Pradesh, India. Field surveys were carried out from January 2025 to December 2025. A total of 25 bird species, representing 11 families and 6 orders, were recorded during the study period. Information on the occurrence, residential status, ecological status, and feeding habits of the aquatic bird species was documented. Among the recorded species, 19 were resident, 4 were migratory, and 2 were resident-migratory. Species such as Black-winged Stilt, Common Sandpiper, Grey Wagtail, Marsh Sandpiper, White-breasted Water hen, Red-wattled Lapwing, and White-throated Kingfisher were frequently observed throughout the study period. Migratory species, including the Marsh Sandpiper, Common Sandpiper, and Grey Wagtail, were also recorded in considerable numbers during their seasonal visits. The family Ardeidae showed the highest species diversity, with five species, followed by Rallidae (4 species), Scolopacidae (4 species), Alcedinidae (3 species), Phalacrocoracidae (2 species), Motacillidae (2 species), Podicipedidae (1 species), Jacanidae (1 species), Recurvirostridae (1 species), Charadriidae (1 species), and Laridae (1 species). Piscivorous birds, including the Little Cormorant, egrets, and herons, were commonly found inhabiting the reservoir. Roosting behavior of herons and egrets was also regularly observed around the sarovar. The findings indicate that Vikram Tirth Sarovar continues to serve as an important habitat for both resident and migratory water birds. Although the sarovar is situated within an urban environment and is subjected to continuous anthropogenic disturbances, it

remains a preferred site for aquatic avifauna, highlighting its ecological significance and the need for its conservation.

KEYWORDS: Abundance, Richness, Species, Migratory, Ecological status.

INTRODUCTION

Birds are among the most admired groups of animals due to their attractive colours, graceful forms, lively movements, effortless flight, and melodious songs. They are widely distributed across different ecosystems and are often regarded as important indicator species for assessing the ecological condition of both natural and human-inhabited environments (Blair, 1999). Because bird populations respond quickly to environmental changes, they serve as sensitive indicators of pollution in both terrestrial and aquatic ecosystems (Gaston, 1975; Hardy et al., 1987).

Wetlands are among the world's most productive and biologically diverse ecosystems, despite being highly fragile and vulnerable to environmental disturbances (Gibbs, 1993). These ecosystems provide essential habitats for a wide variety of waterbirds, making wetlands and waterbirds closely interconnected components of biodiversity (Grimmett and Inskipp, 2007). Waterbirds play a crucial role in wetland ecosystems by occupying multiple trophic levels within aquatic food webs and contributing to nutrient cycling. Their diversity, abundance, and behaviour are widely recognized as reliable indicators of wetland health and ecological quality. Since waterbirds occupy the upper levels of many aquatic food chains, they reflect changes occurring across different components of the ecosystem, making them valuable bioindicators for monitoring wetland conditions (Custer and Osborne, 1977).

Ujjain is one of the oldest and most culturally significant cities in the Indian state of Madhya Pradesh. Situated on the banks of the sacred Shipra River, it is renowned for the Mahakaleshwar Jyotirlinga, one of the twelve revered Jyotirlingas dedicated to Lord Shiva. Ujjain is also famous for hosting the Simhastha Kumbh Mela, a major Hindu pilgrimage held every twelve years, attracting millions of devotees from across the country. Recognized as one of the Sapta Puri (seven sacred cities) in Hinduism, Ujjain holds immense religious, historical, and cultural importance. In the Ujjain city many water bodies are present they serve rich aquatic avian fauna and rich biodiversity.

As no work has been done on the aquatic avifauna of 'Vikram Tirth Sarovar' of Ujjain hence I documented the aquatic avifauna on their occurrence, abundance and richness.

MATERIALS AND METHODS

The Vikram Tirth Sarovar is a prominent water body located inside the campus of Vikram University (recently renamed Samrat Vikramaditya University) in Ujjain, Madhya Pradesh (India). It is a serene water body of university campus. The Sarovar is roughly 3.5 km from the famous Mahakaleshwar Temple. 'Vikram Tirth Sarovar' lies between latitudinal parallels 23°9'52"N and longitudinal parallels 75°48'19"E . at average elevation of approximately 491 to 494 meters (1,610 to 1,620 feet) above sea level, While an exact survey area isn't publicly published, the Sarovar and its immediate scenic surroundings span an estimated land area of about 5 to 8 acres within the 30-acre university campus. Study area shown in fig-1. Sarovar Serves as a local landmark and venue for cultural and regional community festivals, such as Chhath Puja.

Bird sampling was carried out following a standard field survey protocol described by Turner (2003). Aquatic birds were surveyed by walking slowly (approximately 1–1.5 km h⁻¹) along the shoreline of the lake, as waterbirds are generally found in or around aquatic habitats. This line-transect approach was adopted following the methods of Gaston (1975) and Bibby et al. (2000). Whenever necessary, point count observations were also conducted by stopping at selected locations for 2–3 minutes within the visible observation radius to record birds that might otherwise be overlooked. This method was followed in accordance with Froneman et al. (2001), Kaul and Howman (1992), and Urfi et al. (2005). Birds were identified and observed using Olympus 10×50 binoculars, and photographic documentation was carried out using a mobile phone camera to aid species identification and maintain field records. Identification, counting of the birds was made in the morning between 06:30 and 09:30 hr or in the evening between 4:00 and 6:00 hr, depending on the light conditions (Namgail *et al.*, 2009).

Surveys were conducted during January-2025 to December-2025 . We observed and maintain the record of the birds of the area from study site. The check list of species was prepared following Ali, (2002), Manakadan and Pittie (2001) and Grimmett and Inskipp (2007).

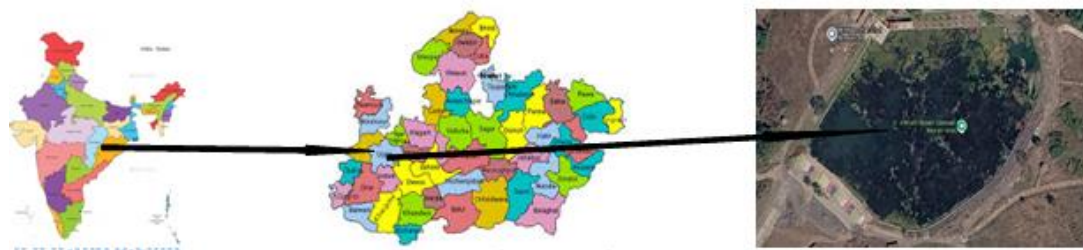


Fig: -1 Study area Vikram Tirth Sarovar Ujjain.

RESULTS AND DISCUSSION

Even though the ‘Vikram tirth Sarovar’ doesn’t have a large area, the diversity of different ecosystem and climatic condition accommodates a total 25 species of birds belonging to 11 families (Table 1). The ecological status, food habit and scientific name of different species of aquatic birds was recorded (Table 1). Of these 19 are resident, 04 are migrants and 02 are resident migrants. Similarly, of these species 09 piscivorous /insectivorous, 08 carnivorous, 06 omnivorous, 02 insectivorous. Feeding habit and residing status of individual bird species are as reported by Ali (2002). (Table 1). The family-wise percentage distribution of birds species is illustrated in Figure 2.

Black-winged Stilt, little cormorant, little egret, White Breasted Waterhen, Red-wattled Lapwing, White Breasted Kingfisher, small kingfisher, purple moorhen, were generally present in the study area. Migratory water birds such as, Marsh Sandpiper, Common Sandpiper, wood sandpiper, Grey Wagtail were also observed in a good population. The piscivorous species like Little Cormorant, Egrets, Herons inhabit the Reservoir water area. The roosting birds like herons and egrets were also noted. The nearly same pattern of aquatic birds was also observed by Muhamed (2006) and Joshi (2011).

From the above results it could be concluded that the abundance of aquatic avifauna indicates the healthy status of sarovar owing to the availability of water, safe habitat and food sources for both adults and nestlings and essential nesting/roosting sites in and around the sarovar is important for the occurrence and abundance of aquatic bird populations. As water depth, quality and trophic structure are the important habitat characteristics that influence the abundance and diversity of aquatic birds in sarovar, the proper and regular maintenance of ‘vikram tirth sarovar’ would further increase the aquatic bird populations. The results of this study will help to conserve waterbird populations in Vikram tirth sarovar Ujjain Madhya

Pradesh (India). Vikram sarovar is heavily disturbed by various anthropogenic activities, rather than aquatic avian fauna good in numbers.

Table 1: Systematic list and status of aquatic Birds in Vikram Tirth Sarovar Ujjain (M.P.), India.

S. No.	Common Name	Scientific name	Family	Order	Status	Food habit
1	Little grebe	<i>Tachybaptus ruficollis</i>	Podicipitidae	Podicipediformes	R	O
2	Little Cormorant	<i>Phalacrocorax niger</i>	Phalacrocoracidae	Suliformes	R	P
3	Indian cormorant	<i>Phalacrocorax fuscicollis</i>			R	P
4	Grey Heron	<i>Ardea cinerea</i>	Ardeidae	Pelecaniformes	RM	P
5	Pond heron	<i>Ardeola grayii</i>			R	P
6	Cattle Egret	<i>Bubulcus ibis</i>			R	P
7	Median Egret	<i>Mesophoyx intermedia</i>			R	P
8	Little Egret	<i>Egretta garzetta</i>			R	p
9	White Breasted Waterhen	<i>Amauorornis phoenicurus</i>	Rallidae	Gruiformes	R	O
10	Common Moorhen	<i>Gallinula chloropus</i>			R	O
11	Purple moorhen	<i>Porphyrio porphyrio</i>			R	O
12	Common coot	<i>Fulica atra</i>			R	O
13	Bronze-Winged Jacana	<i>Metapidius Indicus</i>	Jacaniidae	Charadriiformes	R	O
14	Blak-winged Stilt	<i>Haemantopus himantopus</i>	Recurvirostridae		R	P
15	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charidriidae		R	C
16	Common Greenshank	<i>Tringa nebularia</i>	Scolopacidae		R	C
17	Marsh Sandpiper	<i>Tringa stagnatilis</i>			M	C
18	Wood Sandpiper	<i>Trigna glareola</i>			M	C
19	Common	<i>Actitis</i>		M	C	

	Sandpiper	<i>hypoleucos</i>				
20	River Tern	<i>Sterna aurantia</i>	Laridae		RM	P
21	White breasted kingfisher	<i>Halcyon smyrensis</i>	Alcedinidae		R	C
22	Small blue kingfisher	<i>Alcedo atthis</i>			R	C
23	Pied Kingfisher	<i>Ceryle rudis</i>			R	C
24	Grey Wagtail	<i>Motacilla cinerea</i>	Motacillidae	Passeriformes	M	I
25	Large Pied Wagtail	<i>Motacilla maderaspatensis</i>			R	I

Status- R- Resident; M- Migrant; RM- Resident Migrant;

Food Habit- C- Carnivorous; I- Insectivorous; O- Omnivorous; P- Piscivorous

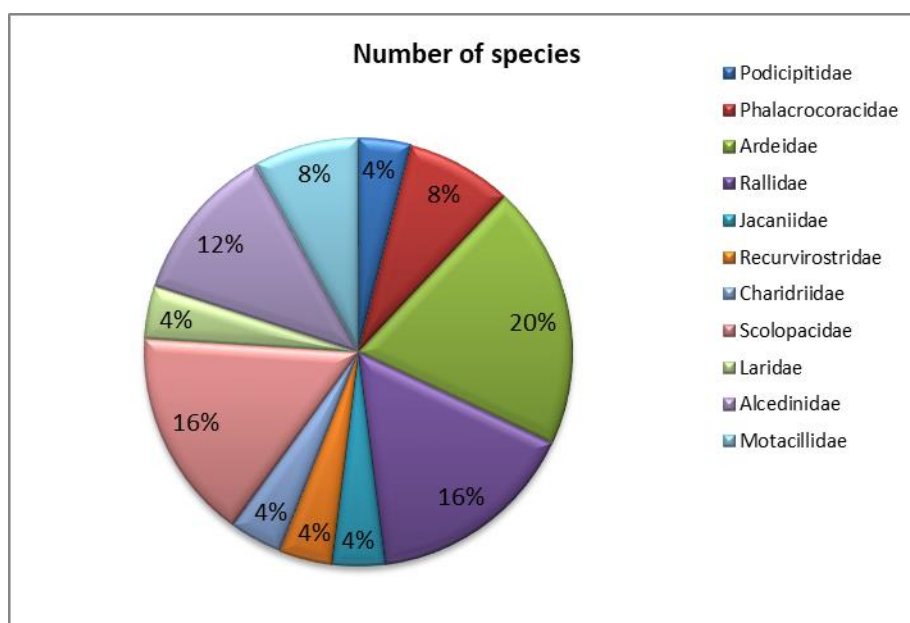


Fig 2: Family wise % distribution of Aquatic birds.

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CONCLUSION AND FUTURE SCOPE

The present study highlights the identification, geological status and feeding habit of aquatic avian fauna and also a thorough review of prior available related literature. During the study period, the vikram sarovar was found to support twenty five species of birds. The

study site which serve as a feeding and roosting ground for birds, reflects its good ecological health, which is a strong bio-indicator for any environment. The varying diversity of identified bird species reflects excellent bird adaptability to the urban green spaces and importance of these in bird conservation. Mature trees with dense foliage and natural cavities in the surrounding of vikram tirth sarovar, attracts several species of birds. Negative impact on aquatic bird existence was seen in the form of unwanted human interference and menace of stray animals, which is an existing threat to bird survival and sustenance and needs immediate attention. Based on the current study, it can be concluded that the sarovar is in good ecological health. Although, proper maintenance of sarovar and surrounding is required to conserve its inhabitants.

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