

# Bird's Paradise Under Threats: Blurred Future of Wetlands of Charotar Region, Gujarat, India

**Raju Vyas:** 1-Shashwat Apartment, 23 Anandnagar Society, BPC Haveli Road, Alkapuri, Vadodara 390007. razoovyas@hotmail.com

**Kartik Upadhyay:** 1/101 Avni Residence, Near Bansal Super Market, Gotri Vasna Road, Vadodara. kartik\_upadhyay35@yahoo.com

**Vishal Mistry:** Coexistence Consortium, and Coexistence Studies, 101-Radha Darshan, Behind Union Bank, Vallabh Vidyanagar 388120.

## Introduction

Wetlands are among the most productive life-support systems in the world and are of immense socio-economic and ecological significance to mankind. They are of critical importance to the survival of natural biodiversity and are recognised as sources, sinks, and transformers of chemical and biological matter. As many as 45 major wetlands have been identified in the State of Gujarat (by the National Wetland Inventory), of which six are in the districts of Kheda and Anand. We are monitoring most of the wetlands of Kheda and Anand districts to check out the transformations in aquatic diversity, especially two key wetland-dependent species: Indian Sarus Crane (*Grus Antigone*) and Marsh Crocodiles (*Crocodylus palustris*).

Anand and Kheda districts are collectively known as the 'Charotar Region'. The region is situated in western India and is located between two major rivers: the Mahi on the eastern side and the Vatrak, a tributary of the River Sabarmati, on the western side. The southern side is attached to the Gulf of Khambhat. Most areas of both the districts comprise plain land, almost at sea level, except for a small area of Kapadvanj, which is hilly (Parasharya et al. 2000). Anand and Kheda Districts are known as the 'Heaven of Birds' in Gujarat State because both districts support large numbers of water bodies of various sizes in Gujarat (KBAP 2024). All these waterbodies are interconnected by irrigation canal systems, especially the Mahi Irrigation Canals. Anand and Kheda districts have a total of 713 and 858 wetlands, respectively, with the geographical support of 26.39 % of wetland areas (NWA 2010). The larger area of the region has canal irrigation facilities, so irrigated farming is practised. Farmers extensively cultivate paddy due to the availability of irrigation systems in the region. Mukherjee et al. (2002a) stated that paddy fields are temporary wetlands; they provide an alternative to the natural marshland habitat of the Sarus Crane, and various large waterbodies providing roosting areas for these birds, especially Daloli, Gobrajura, Narda, Pariej, and Machhial, were found to be important sites.

However, all these water bodies support many wildlife, especially non-migratory and migratory bird species (Parasharya & Jani 2006). Thus, both districts have been declared an Important Bird Area (IBA) in India (Rahmani et al.

2016). Therefore, some of the large waterbodies are in a Top-ranked wetland from a biodiversity perspective (Mukherjee et al. 2002b), as per the national wetland prioritisation (Fig. 1), by the Salim Ali Centre for Ornithology and Natural History, SACON (Vijayan et al. 2004). However, some components of these wetlands are studied by a few researchers: Aquatic Vegetation (Patel et al. 2021), Herpetofauna (Vyas et al. 2012; Vasava et al. 2015), Spiders (Parmar & Acharya 2015), Dragonflies (Rathod et al. 2016), birds (Khacher 1996; Mukherjee et al. 2002a, 2002b, 2002c; Joshi et al 2018; Lepage 2024).

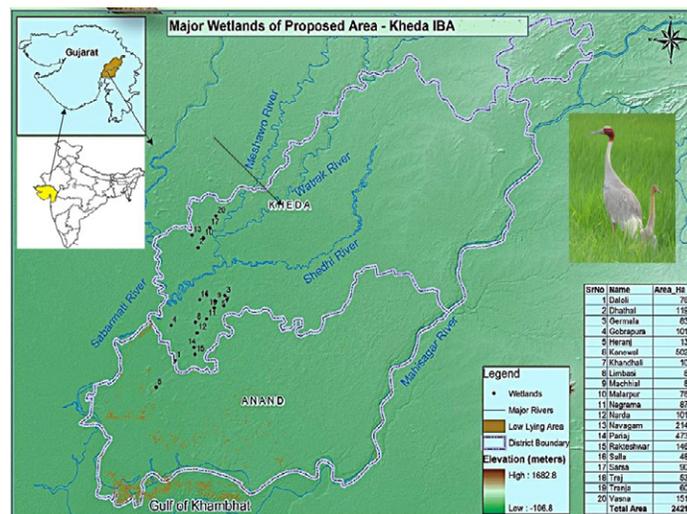


Figure 1: The map of the Charotar region shows the major wetlands of Anand and Kheda districts as proposed Important Bird Areas (IBAs) in India.

This region supports significant numbers of Indian Saras Cranes (Fig. 2a & 2b), Indian White-rumped Vultures *Gyps bengalensis* (Fig. 3), and several wetland bird species. Indian White-rumped Vultures declined in the Anand district, which is globally critically endangered under the criteria of the IUCN Redlist and Schedule I in the Indian Wildlife (Protection) Act, 1972. The data of the annual Indian Saras Crean Ninth Count (2023-24) mentioned that the Saras Crean is increasing compared to the last counts. According to the UPL project, a conservation initiative by a local organisation (UPL 2024), there was a 96 % increase in sightings of Saras and a 76% increase in renesting, but the ground-level fact is different in the areas. However, it is observed that both globally threatened bird species, including the Indian Sarus

## Bird's Paradise....

Crane and the Indian White-rump Vulture, have gradually declined in the area.



Figure 2a: A large flock of Indian Sarus Crane (*Grus Antigone*) foraging in *Typha* habitat at Goprapura water body, Kheda District, Gujarat, India (Photo Credit: Raju Vyas)



Figure 2b: A group of domestic dogs is chasing Indian Saras crane (*Grus Antigone*) at a water body in Kheda, Gujarat, India. (Photo Credit: Raju Vyas)

Most of the natural wetlands of Kheda districts have been converted into paddy fields, but at the same time, thanks to canal irrigation, paddy cultivation has increased in those areas where there was no paddy cultivation earlier (Parasharya et al. 2000). There was a great positive significance and correlation between the percentage of land under paddy crop and Sarus Crane density (Parasharya et al. 2000). Thus, Sarus Crane prefers to breed in non-cultivated agricultural marshland in the paddy crop agroecosystem (Borad et al. 2001), non-availability of marshlands compels them to breed in paddy crop fields, leading to conflict between cranes and farmers. To conserve the cranes in agricultural landscapes, the uniform

distribution of such non-cultivable marshland and their maintenance would provide a near-natural habitat for the cranes. This would ensure the successful breeding of the cranes and reduce conflict with farmers (Borad et al. 2001).



Figure 3: A group of Indian White-rumped Vultures *Gyps bengalensis* roosting on a tree, at the outskirts of Sokhada, Nr. Khabhat, Anand, Gujarat, India. (Photo Credit: Raju Vyas).

Here, we present scenarios of the wetlands of Anand and Kheda Districts, Gujarat State, India, based on experience with observations from the last decade (from 2014 to 24) and a review of published literature. However, ongoing development in regions and ignorance of environmental care by locals, farmers, and government agencies would exterminate wetland ecology. Finally, it could negatively impact wetland-dependent birds and other wildlife.

### Observation

Recently, we noted two unfortunate incidents in the region. The first was wetland development, which was not concerned with the subject or the ecology experts. Both incidents are related to *Typha* grass fires, burned accidents, and some offender farmers' extermination of reed habitat. Due to fires, we lost the best habitat for wetland birds and wetland-related wildlife. However, the incidence impacts are temporary or permanent, but such incidents are eye-openers.

First, the incidence occurs at Pariej Wetland (22°31'39.84"N to 22°33'47.07"N and 72°36'24.19"E to 72°37'31.73"E), which is one of the largest man-made water bodies in the Matar, Kheda district (Fig. 4). The Water and Irrigation Department of Gujarat started the development of the Pariej Wetland in the name of redevelopment, beautification, and rejuvenation in January 2024. Their work started without concern for other state forest and environmental agencies or any expert groups. The entire wetland is made of empty waters and

deeper by excavating the earth from the reservoirs (Ghai 2024). The wetland ecology and environment turn into extensive, empty (Fig. 5 & 6), dry grounds surrounding tall Typha (*Typha angustata*) vegetation made clear by excavators, machines, and bulldozers (Tatu 2024). Most living organisms disappear from the wetland due to the loss of life or migrate into nearby water bodies like wetland-dependent local birds. Also, the development contractor fired the dry, tall Typha grasses without any understanding that it was a threat to the inhabiting wildlife and ecology. The entire story was disclosed, and tragedy was revealed after a severely burned massive mugger crocodile or marsh crocodile came out from the fires (Fig. 7) on 17th June 2024, and unfortunately, it was a day for World Crocodile Day. The news was spread among wildlife enthusiasts, and volunteers from two local NGOs rushed to the site to rescue wildlife due to such pathetic news. This rescue operation is a testament to the power of community involvement in conservation at the local level. They were carried out for a four-day operation, and continued efforts were made by dozens of volunteers with the support of local foresters and forest guards level staff of the forest department. They worked tirelessly to retrieve 15 various sizes of muggers from the fires. The rescue account shows that 11 muggers were saved after treatment and released in a nearby water body at a distance of 2.5 km North, in Narda (22°35'13.72"N; 72°37'24.52"E). The remaining four sub-adults and a small number of Indian Flap-shell Turtle (*Lissemys punctata*) were lost in the fires (Vyas et al. 2024). We do not know what happened with other smaller mammals and birds, who inhabit and are a part of the home of the tall Typha grasses. There were 155 Saras counted in the last annual Indian Saras Count (2023-24). However, fire does not directly affect any of the birds; they can fly in any danger, but such fires impact the area's ecology, and it takes a long time to rebuild the ecology.

The second incident occurs in Deva village. However, this shocking tragedy is not over, and the smell of fire ashes remains in the air, unsettled. A similar incident occurred in the area within the next week, on 25th June 2024. Shocking news came that a similar Typha Reed habitat at Deva, next to Mahi irrigation canals (22°37'41.71"N; 72°44'45.48"E) had caught fire, but this time, there were no casualties except the loss of the well-known bittern habitat. This small swamp habitat is home to over two dozen mugger crocodiles and the most famous site for breeding and sightings ground for three bitterns: Cinnamon Bittern *Botaurus cinnamomeus*, Yellow Bittern *Ixobrychus sinensis* (Fig. 8), and Black Bittern *Dupetor flavicollis*. This time, farmers of nearby agricultural fields were also fired at the swamp habitat. The purpose of destroying

the swam habitat is to avoid damage in agricultural fields by birds, especially the eradicated habitat of Purple Swampphen (*Porphyrio porphyrio*), and to save the paddy (*Oryza sativa*) crops from damage by the birds.



Figure 4: The map shows the Typha grasses burning incidence site of Pariej Wetland is one of the largest man-made water bodies in the Matar, Kheda district, Gujarat, India.



Figure 5: The bulldozers and machines are making empty dry grounds at Pariej Wetland, Matar, Kheda district, Gujarat, India. (Photo Credit: Raju Vyas).



Figure 6: The bulldozers in eroding elimination of tall *Typha angustata* vegetation made clear at Pariej Wetland, Matar, Kheda district, Gujarat, India. (Photo Credit: Raju Vyas).



Figure 8: Yellow Bittern: *Ixobrychus sinensis* in *Typha* habitat at Deva, Gujarat, India. (Photo Credit: Raju Vyas).



Figure 7: A large burned Muger (*Crocodylus palustris*) emerged from the fires of tall *Typha angustata* at Pariej Wetland, Matar, Kheda district, Gujarat, India. (Photo Credit: VNC).

### Discussion

Earlier, we experienced that many farmers destroyed the nests of the Indian Saras crane intensely to save the Paddy crops (Parasharya et al. 1986), and the wise authority started a compensation scheme for farmers to save the nests of the Saras. If local farmers practiced such tall grasses, *Typha* burning, or elimination from water bodies, it would be a big problem because *Typha* vegetation is an integrated part of wetland and wetland ecology. The good-sized *Typha* vegetation is present in most of the region's water bodies. Thus, we believe both incidents of eliminating *Typha* habitat from the swamps were a foul game by irresponsible humans and negligence of the local forest authority.

Several studies from abroad show that *Typha* species benefit many bird species and provide the best habitat, cover, and favourable breeding sites for certain wetland species of birds (See: Mori 2019). Beyond providing food such as seeds, leaves, tubers, and rhizomes for herbivorous waterbirds (Anderson & Smith 2000; Froneman et al. 2001). A dense *Typha* colony also provides habitat and food requirements for invertebrates and improves the viability of eggs or diapausing invertebrates, which increases invertebrate density, biomass, and diversity (Wiggins et al. 1980; Rehfish 1994). This increases food for waterbirds (Anderson & Smith 2000). Many studies have indicated that the species diversity of waterbirds increases with increasing *Typha* grass cover in wetlands. However, some studies mentioned the adverse effects of the high, dense *Typha* colony, which can limit the accessibility of wetlands and adversely affect foraging (Fujioka et al. 2001; Bancroft et al. 2002) and prey detection (White & Main 2004) by waterbirds, thus too much emergent vegetation can lead to decreased

numbers of nesting waterbirds. Hence, these plants not only can be bioindicator candidates helping to understand the ecosystem integrity of wetlands, but their physiological mechanisms of phytoremediation can help to construct a future blueprint for constructing bioindicators for wetlands.

Wetlands are one of the chief global water resources, working as nature's kidneys (Mitsch & Gosselink, 2015). They can absorb or reduce pollutants (such as metals, nutrients, urban runoffs, wastewater, or water quality parameters indicative of pollution), known as their self-purification property (Tixier et al. 2011). Thus, maintaining the integrity of wetlands is crucial to maintaining the quality of aquatic ecosystems. Still, we fail to do so here, especially after the incidence of eliminating *Typha* habitat from wetlands, even though it is listed as of national importance. The Pariej Wetland supports more than 20,000 waterbirds annually and has been identified as a potential Ramsar site (Vijayan et al.2004).



Figure 9: A flock of Common Eastern Cranes foraging in wheat crops on the outskirts of Khabhat, Anand, Gujarat, India.  
(Photo Credit: Raju Vyas).

We have experienced and observed the following threats in the regions over the last decade, such as changing the attitude of farmers towards nature, especially bird fauna. Also, now they have changed farming practices (Figs. 9 & 10), especially using excess pesticides and weedicides (Vasava et al. 2021). Recent news shows that large numbers of fauna died at the holy Gomati Talaw, Dakor, Kheda, due to water contamination and being highly polluted (Anon 2024). Earlier, turtle fauna had already declined in the Gomati Talaw (Vyas 2015), and a similar case occurred at the village pond of Bakrol and Vadgam villages due to water pollution (Vasava et al. 2021). New economic development, especially expanding road and railway networks (DFC Railway corridor and Bullet Train) in the regions. As a result of infrastructure like a linear intrusion,

wildlife collisions (Fig. 11) are now increasing (See: Mistry & Parasharya 2016; Vyas et al. 2023). However, all the minor to major threats will directly or indirectly negatively impact the wetlands and their related lives. We were not denied that these statements are underestimations, but they are the tip of the iceberg. We do not know what the impacts of invasive species available at all these water bodies (examples: Red-eared Slider *Trachemys scripta elegans*; Suker-mouth Catfish *Hypostomus plecostomus*, and Water Hyacinth *Pontederia crassipes*) and their effects on native freshwater fauna. There were reports that such invasive plant species infest many waterbodies of Charotar (Fig. 12). Detailed studies are warranted on the subject, and then we can comment on its effects on our native flora and fauna.

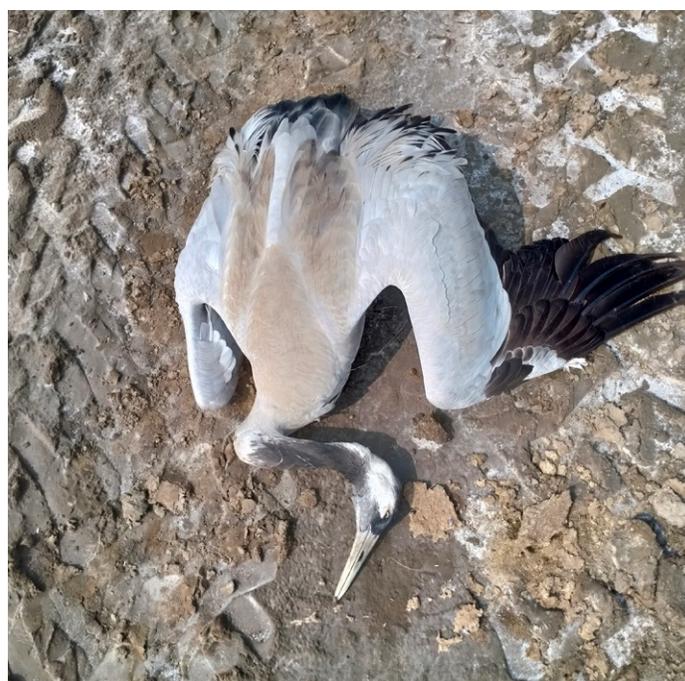


Figure 10: A dead Common Eastern Crane after eating poisonous seeds, Akhol village, Anand, Gujarat, India.  
(Photo Credit: Vishal Mistry).

Unfortunately, there were no forest areas, especially in the Anand District. As per GFS (2019-20), Anand District has zero forest area, and Kheda District holds 0.61% (21.05 sq. km) of reserved forest area. Recently, it has been observed that large agricultural and revenue lands were converted into small industrial areas that have expanded. Several new industries have risen in the area due to recent government policy and the rapidly expanding railway and road networks. Thus, significant threats in the area are agricultural practices, industrialisation, urbanisation, alteration of habitat, and disturbance to the birds by farming activities. The present status of the freshwater ecosystems in the Charotar region and recent scenarios of various anthropogenic activities in areas,

## Bird's Paradise....

which have forced the fauna, have gradually depleted it. These changes will negatively impact wetland habitats, and we will lose the haven for birds in the future.



Figure 11 (A)

Figure 11: (A) Road traffic with killed Yellow Bittern: *Ixobrychus sinensis*; (B) a railway killed Mugger *Crocodylus palustris* on DFC Railway corridor, Nr Deva, Charotar region, Gujarat, India. (Photo Credit: Vishal Mistry).



Figure 11 (B)

## Acknowledgments

We thank Rahul Solanki (President) and the Volunteers of Nature Help Foundation, Anand, Gujarat. Special thanks and support to Dhaval Patel, Anirudh Vasava, Mehul Patel, Lakhvindar Singh Saini, and Piyush Parmar, Voluntary Nature Conservancy, VNC, Vallabh Vidyanagar, Anand, Gujarat, India, for sharing the information and accompanying us during the field trips.



Figure 12: A water body partially covered with invasive plants, Water Hyacinth *Pontederia crassipes* provides a habitat to birds and mugger crocodiles. (Photo Credit: Raju Vyas).

**Note:** It is very surprising that when we were finalizing the research article at the time, we received another shocking piece of news from the area; this year, 2025-26, the state authority is planning to develop the Kanewal Water Reservoir (the larger notable water body in the area) for tourism development and rejuvenation on a similar path to Pariej Wetland without concern for ecology and wildlife habitat.

## References

- Anon. 2024. Many fishes died in gomati lake (etvbharat.com). [www.etvbharat.com/gu!/state/gomti-lake-in-dakor-shock-over-death-of-many-fishes-gujarat-news-gjs24092806528](http://www.etvbharat.com/gu!/state/gomti-lake-in-dakor-shock-over-death-of-many-fishes-gujarat-news-gjs24092806528)
- Anderson, J. T. & Smith, L. M. 2000. Invertebrate response to moist-soil management of playa wetlands. *Ecological Applications* 10: 550–558.
- Bancroft, G. T., Gawlik, D. E., & Rutchey, K. 2002. Distribution of wading birds relative to vegetation and water depths in the Northern Everglades of Florida, USA. *Waterbirds* 25: 265–277.
- Borad, C. K, Mukherjee, A. & Parasharya, B. M. 2001. Nest site selection by the Indian Sarus Crane in the paddy crop agroecosystem. *Biological Conservation* 98: 89-86.
- Froneman, A., M. Mangnall, R. Little & Crowe, T. 2001. Waterbird assemblages and associated habitat characteristics of farm ponds in the Western Cape, South Africa. *Biodiversity and Conservation* 10: 251-270.
- Fujioka, M., Armacost, J. W., Yoshida, H. & Maeda, T. 2001. Value of fallow farmlands as summer habitats for waterbirds in a Japanese rural area. *Ecological Research* 16: 555–567.
- Ghai, R. 2024. Pariej: Mugger crocodile and several turtles, both Schedule I animals, burnt to death in Kheda lake. [Down to Earth, 22 Jun 2024. www.downtoearth.org.in/wildlife-biodiversity/pariej-mugger-crocodile-and-several-turtles-both-schedule-i-animals-burnt-to-death-in-kheda-lake](http://Down.to.Earth,22.Jun.2024.www.downtoearth.org.in/wildlife-biodiversity/pariej-mugger-crocodile-and-several-turtles-both-schedule-i-animals-burnt-to-death-in-kheda-lake)

- GFS (Gujarat Forest Statistics). 2019-20. Monitoring and evaluation wing office of the Principal Chief Conservator of Forests & Head of the Forest Force, Gujarat State, Gandhinagar, Gujarat, India. Processed & Printed by Government Central Press, Gandhinagar. 116 pp.
- Joshi, K., Tatu, K. & Kamboj, R.D. 2018. Comparison of aquatic avifauna of two important wetlands of central Gujarat – Pariej (Kheda District) and Kanewal (Anand District), India. *International Research Journal of Biological Science* 7 (7): 1–5.
- Khacher, L., 1996. The birds of Gujarat - a Salim Ali centenary year overview. *Journal of Bombay Natural History Society* 93 (3): 331–373.
- KBAP (Key Biodiversity Areas Partnership). 2024. *Key Biodiversity Areas factsheet: Wetlands of Kheda*. Extracted from the World Database of Key Biodiversity Areas. Developed by the Key Biodiversity Areas Partnership: BirdLife International, IUCN, American Bird Conservancy, Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership Fund, Global Environment Facility, Re: wild, NatureServe, Rainforest Trust, Royal Society for the Protection of Birds, World Wildlife Fund and Wildlife Conservation Society. Downloaded from <https://keybiodiversityareas.org/> on Oct 6, 2024.
- Lepage, D. 2024. Checklist of the birds of Pariej Bird Sanctuary. Avibase, the world bird database. Retrieved from [https://avibase.bsceoc.org/checklist.jsp?lang=EN&region=inwgj27&list=howardmoore&ref=1\\_asi\\_in](https://avibase.bsceoc.org/checklist.jsp?lang=EN&region=inwgj27&list=howardmoore&ref=1_asi_in) [Assessed on 1 August 2024].
- Mistry, V. & Parasharya, B.M. 2016. Road Kill of Black Bittern near Pariej Tank, Kheda District. *Flamingo* 14 (4): 8–10.
- Mitsch, W.J. & Gosselink, J.G. 2015. *Wetlands*. New York: John Wiley & Sons. 752 pp.
- Mori, D. 2019. Notes on the breeding of Black Bittern *Dupetor flavicollis* near Nal Sarovar Bird Sanctuary. *Flamingo Gujarat* 2(3): 10–16.
- Mukherjee, A., Borad, C.K. & Parasharya, B.M. 2002a. The factors affecting distribution of the Indian Sarus Crane *Grus antigone antigone* (Linne) in Kheda district, Gujarat. *Journal of the Bombay Natural History Society* 99(1): 237–241.
- Mukherjee, M., Borad, C.K. & Parasharya, B.M. 2002b. A study of the ecological requirements of waterfowl at man-made reservoirs in Kheda district, Gujarat, India, with a view towards conservation, management and planning. *Zoos' Print Journal* 17(5): 775–785.
- Mukherjee, A., Borad, C. K., & Parasharya, B. M. 2002c. Comparative account of population and breeding pair density of the Indian Sarus Crane (*Grus antigone*) in Kheda District, Gujarat. *Zoos Print* 17 (8): 839–843.
- NWA (National Wetland Atlas). 2010. Gujarat, SAC/RESA/AFEG/NWIA/ATLAS/21/2010 Space Applications Centre (ISRO), Ahmedabad, India, 198p.
- Parmar, B.M. & Acharya, A.V. 2015. Spider fauna of Pariej Wetland, Gujarat, India. *International Journal of Science and Research* 4(10): 1028–1033.
- Parasharya, B.M., Dodia, J.F., Yadav, D.N. & Patel, R.C. 1986. Sarus crane damage to paddy crop. *Pavo* 24(1&2): 87–90.
- Parasharya, B.M. & Jani, J.J. 2006. Study of Wetland Habitat in North and Central Gujarat Region and Suggesting Management Strategies for it. Technical Report submitted to the Chief Conservator of Forests (Research), Gujarat State Forest Department, Govt. of Gujarat. 45 pp.
- Parasharya, B. M., Mathew, K. L. & Yadav, D. N. 2000. Population estimation and general ecology of the Indian Sarus Crane, *Grus antigone antigone*, in Kheda district, Gujarat. *Pavo* 38 (1 &2): 25–34.
- Patel, J., Dr. Rupesh Maurya, Dr. Hitesh Solanki, Dr. Bharat Maitreya. 2021. Vegetation Assessment of Inland Wetland of Central Gujarat (Pariej Irrigation Reservoirs). *International Journal of Scientific Research in Science and Technology* 8 (2): 316–325.
- Rahmani, A.R., Islam, M.Z. & Kasambe, R.M. 2016. *Important Bird and Biodiversity Areas in India: Priority Sites for Conservation* (Revised and updated). Bombay Natural History Society, Indian Bird Conservation Network, Royal Society for the Protection of Birds and BirdLife International (U.K.). Pp. 1992 + xii.
- Rathod, D.M., Dolu, S.G., Parasharya, B.M. and Mistry, V. 2016. Odonate Diversity of a Wetland of National Importance-Pariej. *Jalaplavit* 6(3): 6–15.
- Rehfishch, M. M. 1994. Man-made lagoons and how their attractiveness to waders might be increased by manipulating the biomass of an insect benthos. *Journal of Applied Ecology* 31: 383–401.
- Rupera, P. 2024. Water hyacinth edges crocodiles out of Charotar, February 7, 2024. Times of India, Vadodara Edition. [Water hyacinth edges crocodiles out of Charotar | Vadodara News - Times of India \(indiatimes.com\)](https://www.indiatimes.com/Vadodara-News-Water-hyacinth-edges-crocodiles-out-of-Charotar)
- Tatu, K. 2024. Developing Pariej Waterbody, Jeopardizing a Biodiversity-rich Wetland Ecosystem. *Jalaplavit* 14 (1&2): 6–13. <http://doi.org/10.5281/zenodo.13368834>
- Tixier, G., Lafont, M., Grapentine, L., Rochfort, Q. & Marsalek, J. 2011. Ecological risk assessment of urban stormwater ponds: Literature review and proposal of a new conceptual approach providing ecological quality goals and the associated bioassessment tools. *Ecological Indicators* 11: 1497–1506.
- UPL. 2024. [UPL continues its commitment to biodiversity conservation with its Ninth Annual Sarus Crane count – Bilkul Online](https://www.bilkulonline.com/news/upl-continues-its-commitment-to-biodiversity-conservation-with-its-ninth-annual-sarus-crane-count)
- Vasava, A., Patel, D., Vyas, R., Mistry, V. & Patel, M. 2015. Crocs of Charotar: Status, distribution and conservation of Mugger crocodiles in Charotar region, Gujarat, India. Voluntary Nature Conservancy, Vallabh Vidyanagar, India. 55 pp.
- Vasava, A., Vyas, R., Mistry, V. & Sindha, P. 2021. Mysterious deaths of aquatic reptiles, with special emphasis on the Indian Flap-shelled

## Bird's Paradise....

turtle *Lissemys punctata* (Bonnaterre, 1789) from Gujarat State, India. *Journal of Animal Diversity* 3(4): 20–27. doi.org/10.52547/JAD.2021.3.4.3

Vijayan, V. S., Prasad, S. N., Vijayan, L. & Muralidharan, S. 2004. *Inland Wetlands of India; Conservation Priorities*. Salim Ali Centre for Ornithology and Natural History, Coimbatore. i'xxiv + 532 p.

Vyas, R. 2015. Status of Ganges Soft-shell Turtle *Nilssonina gangetica* amidst Deplorable Scenarios in Urban Wetlands of Central Gujarat State, India. *Reptile Rap* 17: 3–12.

Vyas, R., Mistry, V., Vaghasiya, P. & Chauhan, D. 2023. Review of mugger *Crocodylus palustris* (Lesson, 1831) mortality by vehicle collisions in Gujarat state, India. *Journal of Animal Diversity* 5 (1): 80–91. <http://dx.doi.org/10.52547/JAD.2023.5.1.5>

Vyas, R., Vasava, A. & Mistry, V. 2024. Several mugger crocodiles burn and die in wetland fire. *CSG Newsletter* 43(3):17–19.

Vyas, R., Parasharya, B.M. & Jani, J.J. 2012. Herpetofaunal diversity in and around the selected Man-made wetlands of central and north Gujarat, India. *Reptile Rap* 14: 21–26.

Wiggins, G. B., Mackay, R.J., & Smith, I. M. 1980. Evolutionary and ecological strategies of animals in annual temporary pools. *Archives of Hydrobiology Supplement* 58:97–206

White, C.L. & Main, M. B. 2004. Habitat value of golf course wetlands to waterbirds. *USGA Turfgrass and Environmental Research Online* 3(16):1–10. □

## Does falconry persist in India? Evidence from photographs of an Indian Shaheen *Falco peregrinus peregrinator* on eBird India

**Devvratsinh Mori:** Ecology, Evolution, and Climate Change Research Cluster, Ahmedabad University, Ahmedabad 380009. devvratsinh.mori@ahduni.edu.in

While going through photographs posted on 'eBird India' to study the Peregrine Falcon (*Falco peregrinus*), I came across some photographs that immediately caught my attention. It showed an Indian Shaheen (*F. p. peregrinator*), a powerful and fast-flying bird with leather straps tied to both legs (called jesses and usually used in falconry). These photos were taken at Girnar Hills in Junagadh, Gujarat (Vachhani, 2018; Bagda, 2019), and this points to a serious issue: the illegal practice of falconry may still be happening in India [Figs 1]. Jesses are thin leather straps used in falconry to control and secure the bird to a perch.



Figure 1: Indian Shaheen in flight with jesses visible on both legs. (Photo Credit: Anand Vachhani).

The Indian Shaheen, a subspecies of the Peregrine Falcon, is known for its strength, speed, and exceptional hunting skills (White, 2013). In Gujarat, it is considered an uncommon to rare resident, typically found in some of the state's hilly regions.

A resident pair have been regularly observed at Girnar Hill for years (Mori & Joshi, 2017; Ganpule, 2022). Historically, during the Mughal and Rajput periods, falconry, training raptors to hunt, was common among royalty. Falconry is the art of using raptors like falcons or hawks for hunting (Gadhvi, 2023). These birds symbolised power and prestige (Dixon, 1937). However, today, keeping or training wild birds like the Indian Shaheen is illegal under the Wildlife Protection Act of 1972.

This subspecies is listed under Schedule I of the Act, which accords the highest level of legal protection. According to Section 9 of the Act, hunting, which includes capturing, trapping, or keeping such birds in captivity, is strictly prohibited unless specifically authorised for scientific or other legitimate purposes. Consequently, falconry involving wild raptors like the Indian Shaheen is not permitted. Violations of these provisions attract penalties under Section 51, including imprisonment and fines.

The jesses seen on the photographed bird suggest that it had been kept in captivity, possibly trained or held in a private collection [Figs 2]. Even though falconry has cultural importance, practising it harms wild raptor populations (Horgan, 2021).

Raptors like the Indian Shaheen are protected under Schedule I of the Wildlife Protection Act, which gives them the highest level of protection in India (MoEFCC, 2019). Still, such illegal activities continue, mainly because of a lack of awareness and poor monitoring. Capturing and keeping wild raptors can damage their populations, reduce genetic variety, and make