

Issue

Brief

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Managing Avian Conservation, Protection, and Diversity in Indian Cities

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Birds provide multiple benefits to the world's ecosystems. In recent years, experts have raised the alarm about deteriorating bird populations, with some species becoming extinct and others threatened to dangerous levels. This decline in avian populations is primarily attributed to urbanisation. Concerted efforts are required to conserve birds and their habitats in cities. The Government of India, state governments, urban local bodies, non-government organisations, bird welfare organisations, and the urban community will all play a vital role.

There are more than 11,000 species of birds globally,¹ populating every country across all regions, displaying behaviours shaped by their unique ecological challenges, and equipped with the ability to adapt.² For example, while some species have evolved to adapt to extreme climates, others can fly long distances to more suitable climates.³ Bird species contribute to the preservation of rural and urban ecosystems through pollination, seed dispersal, forest regeneration, scavenging, and weed and pest control. Around 5 percent of the plants used by humans for food and medicine are pollinated by birds.⁴ Bird droppings also contribute to nutrient distribution. In this context, the role of sea birds is especially crucial. These birds eat fish and other sea creatures on the high seas and nest in large colonies on land. The excrement of the birds provides concentrated nutrients to the soil at their coastal breeding grounds,⁵ enabling plant and grass growth.

Additionally, many birds consume pests in large quantities, thereby rescuing crops threatened by pests. Barn swallows consume up to 60 insects an hour, and western bluebirds are known to prevent damage to grapes in vineyards by feeding on invertebrate pests.⁶ Larger birds like the barn owl feed on rodents. Birds such as woodpeckers support the protection of other bird species—the cavities hollowed out by woodpeckers are often used by other cavity-nesting species for shelter and protection from predators.⁷ Scavenging birds, such as vultures, eagles, kites, ravens, and crows play an indispensable role in the food chain.⁸ The loss of bird species is likely to increase insect and rodent populations and vector-borne diseases.⁹ For example, the population decline of vultures in the mid-1990s in India¹⁰ led to a sudden increase in the population of stray dogs, especially in cities.^{11,12}

When avian species become extinct, their specific functions and benefits are also removed. Bird diversity is therefore critical, especially since introduced species often struggle to perform the critical roles of native species.¹³

Birds and Human Health

There is a growing body of evidence that points to the positive impact of birds on human mental health. A seminal study has found that birds provided psychological, physiological, aesthetic, cultural, recreational, socio-economic,

a Certain birds, like the ostrich, kiwi, weka, kakapo, and penguin, cannot fly. Those that are constrained in flight often compensate by running or swimming. See: <https://www.britannica.com/list/8-birds-that-cant-fly>

and spiritual benefits.¹⁴ The study covered more than 100 scientific articles to assess the relationship between birds and human health.¹⁵

Higher bird diversity is likely to have direct positive impacts on mental health and create a more relaxing environment that enables mental restoration.¹⁶ Studies have suggested that bird species diversity in a locality boosts the mental health of residents.¹⁷ The number of people hospitalised for mood and anxiety disorders is also found to be reduced in areas with higher bird diversity.¹⁸

The Social Value of Birds

In India, birds have been part of the art,¹⁹ culture,²⁰ and folklore of societies,²¹ with the swan and the owl, for instance, having symbolic value in traditions.²² The birds of India are widely documented in ancient Indian literature.²³ More recently, the Hindi film industry has explored the value of birds.²⁴

Certain birds have also been domesticated and are kept as pets. Popular species in India include non-Indian parakeets, cockatiels, canaries, macaws, and lovebirds.²⁵ However, the Wildlife Protection Act prevents the keeping of several species as pets.²⁶ The species that can be legally kept are cockatiels, parakeet, lovebirds, zebra finches, doves, and hyacinth macaws.²⁷ Nevertheless, all Indian species are protected under law.

The State of the World's Birds

The *State of the World's Birds* 2022 report recognises that birds are “an excellent barometer for planetary health” and are valuable biodiversity indicators whose health is indicative of the health of the global ecosystem.²⁸ However, according to the report, one out of every eight bird species is threatened with extinction, and the overall status of birds continues to deteriorate along with a decline in their overall number.²⁹ It is estimated that 2.9 billion birds have been lost in North America since 1970 and 600 million in the European Union since 1980.³⁰ Among the critical factors responsible for this decline are agricultural expansion and intensification, unsustainable logging, overexploitation, and climate change. Threats are also posed by bycatch^b from fisheries and poorly planned energy production.

To be sure, conservation action has saved several endangered species from extinction.³¹ Historically, conservation action and legislation have shown positive results. Additionally, bird population recoveries validate that depleted bird populations can recover following policy changes.³² For instance, in the United States, many raptor species experienced revival following the ban on the insecticide DDT (dichloro-diphenyl-trichloroethane),³³ and threatened species grew in numbers following protection under the Endangered Species Act.³⁴ *The State of the World's Birds* report urges governments to adopt the Global Biodiversity Framework^c and implement the suggested plan of action, stating that the “future of the world’s birds and ultimately our own species depends upon it.”³⁵

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- b Bycatch from fisheries refers to birds being caught on baited hooks and getting tangled in nets in the process of unsustainable harvest of fish. Such unfriendly and careless seabird practices lead to the death and mutilation of millions of sea birds.
 - c The Framework is designed to support the global response to the threat of climate change. It aims to catalyse action by governments and civil society stakeholders at every level to halt and reverse biodiversity loss.

The State of India's Birds

The *State of India's Birds* was compiled from the observations of 30,000 birdwatchers and 30 institutions across the country.³⁶ Overall, 1,350 bird species have been recorded in India. Of these, 942 bird species were studied. The report found that, of the species studied, 142 were on the decline, with the great Indian bustard, white-bellied heron, Bengal florican, and Finn's weaver being the most critically threatened species. On the other hand, 28 species populations were found to be thriving, including the Indian peafowl, rock pigeon, Asian koel, and house crow.³⁷ In general, the study concluded that generalist species^d of birds had adapted to urban spaces, whereas survival and adaptability among specialist species was more challenging, resulting in their decline.³⁸ Other research has indicated that omnivores³⁹ have a better chance of survival in cities, where food sources may not be diverse but are plentiful. Additionally, bird species in cities are highly adaptable and learn to live alongside human activity and urbanisation.⁴⁰

The report categorises birds according to conservation priority. The highest conservation priority category comprises 178 species on account of either their numerical decline or small range of distribution, or both.⁴¹ The moderate and low priority categories comprise 323 and 441 species, respectively. The report also highlights focus areas in species, habitats, and threats.⁴² Additionally, the report pointed out that there are wide knowledge gaps in regard to certain birds and bird species, and more systematic research is required on problem areas for a better understanding of the challenges in bird conservation.⁴³ However, regenerative action for diminishing bird species needs to be balanced with managing the multiplication of other species, such as pigeons and the Indian peafowl. Failing to manage the multiplication of these species may lead to a loss of any support for bird conservation.⁴⁴

^d Generalist species of birds are those that thrive in a wide variety of environmental conditions and that make use of a variety of different resources. They display great adaptability.

Urbanisation and the Impact on Birds

In India, urbanisation is named one of the primary factors for the decline of birds.⁴⁵ Increased construction activities have led to the destruction of the natural habitats of birds, adversely affecting their species variety and populations.⁴⁶ Reduced canopy cover, decline in the variety of plant species, and diminishing heterogeneity of vegetation^c have adversely impacted overall bird diversity.⁴⁷ Additionally, pets such as cats and dogs prey on birds and affect them by creating a landscape of fear.⁴⁸ Studies in countries outside India estimate bird loss in billions as a consequence of predatory pets. However, the extent of the problem in India is uninvestigated.⁴⁹ Urban noise is a further deterrent to birds, forcing them to abandon previously suitable habitats. Similarly, urban lights can disorient them, and glass facades of buildings are collision traps, killing large numbers of birds.⁵⁰

The report established that the most urbanised areas have the least number of bird species, including the rare ones and those that are insectivorous. Urbanisation leads to the homogenisation^f of bird communities due to the increased abundance of birds that are adept at exploiting ecological niches, including the rock pigeon, common myna, and house crow.^{g,51}

e Vegetation heterogeneity refers to variability in the structure and composition of plant communities over space and time.

f Homogenisation of bird species refers to a process by which urban characteristics, such as limited biodiversity and food variety, force many specialist bird species to lose out and many dominant bird species such as House Crows and feral Rock pigeons to thrive, thereby spawning uniformity among urban bird species. Specialist bird species are those that are highly adapted to specific eco-systems, that are very sensitive to temperature and environmental changes, may eat merely one or two types of food and require one specific species of tree for nesting. In their absence, they find it difficult to thrive.

g Despite the challenges, a number of bird species can still be spotted in Indian cities. These include the black kite, rose-ringed parakeet, kingfisher, red-vented bulbul, green bee-eater, black drongo, Asian koel, purple sunbird, greater coucal, Indian roller, and Indian robin. See: <https://jeevoka.com/commonly-found-birds-in-indian-cities/s>; <https://www.prosperingindia.com/wildlife/15-most-common-city-birds-found-in-india/>

Current Approach on Avian Conservation

In December 2019, the Ministry of Environment, Forest and Climate Change, Government of India proposed a draft 'Visionary Perspective Plan (2020-20230)' (VPP) for the conservation of avian diversity, their ecosystems, habitats and landscapes in the country.⁵²

The VPP highlights that India ranks among the top 10 countries in bird diversity globally, with 1,317 species of birds, and is a mega-biodiversity country, with many endemic species. India's territory also includes regions such as the Eastern Himalayas and the Western Ghats, which are categorised as 'global biodiversity hotspots' that are under severe threat and requiring urgent conservation measures.⁵³ India is also a signatory to several international conventions and treaties that mandate the conservation of natural resources and biodiversity for the protection of the planet.⁵⁴ These include the Convention on International Trade in Endangered Species of Wild Flora and Fauna, Convention on Conservation of Migratory Species of Wild Animals, and International Union for Conservation of Nature and Natural Resources.⁵⁵

The VPP also notes that the Indian Constitution stipulates that it is the duty of every Indian citizen to protect the country's natural environment, including forests, lakes, rivers, and wildlife, and to have compassion for living creatures.⁵⁶ The Constitution further exhorts the states to protect and improve the environment and safeguard the forests and wildlife in their territory.⁵⁷

Programme 10 of the VPP discusses the conservation of avian diversity in urban areas and notes that birds and bird species have either declined or entirely wiped out from the urban landscape. Mounting urbanisation and the intense pressure exerted on the natural resource capital of urban areas have led to the depletion of habitats that support avian diversity. Various bird species in the country have been adversely impacted by increasing urbanisation and are witnessing a decline in their populations. Against this backdrop, it is necessary to devise policies and master plans for urban development in the country that integrate habitats for nature and biodiversity conservation. However, insufficient data on urban avifauna and their ecology poses difficulties.⁵⁸

The VPP builds on existing databases such as Asian Waterbird Census and eBird to propose the generation and consolidation of baseline information on birds and their populations in cities and towns in the country. It recommends studying the impact of urbanisation on avian diversity, their habitats, and behaviour, including their foraging and nesting ecology. The

Current Approach on Avian Conservation

VPP further urges the development of Best Practice Guidelines for integrating environmental issues such as habitats for nature conservation into master plans and development plans in cities and towns. Another objective is coordination between Central and State government departments, urban development agencies, relevant institutions, and other stakeholders to incorporate the Best Practice Guidelines in urban policy and planning.⁵⁹

The VPP further proposes evaluating the implementation of the guidelines by various State governments. It also suggests measures for effective implementation, including monitoring bird-human interface in urban environs for emerging health and other issues. The VPP has also specified thrust areas and an implementation schedule for each, categorised into long-term, medium-term, and short-term applications. Conducting bird census in urban agglomerations and developing a bird atlas for select cities through citizen science initiatives are suggested strategies.⁶⁰

Imperatives in Cities for Avian Conservation

A conscious attempt needs to be made for the well-being of birds in urban settlements. Along with the implementation of the suggestions provided by the VPP, cities can follow a threefold approach for bird rejuvenation and protection: (i) threat reduction measures for birds; (ii) protection and creation of pro-bird habitats; and (iii) promotion of popular participation in the multiplication of bird-friendly neighbourhoods.

Urban local bodies (ULBs) play the most significant role in managing bird populations. The plantation of trees and shrubs and other methods of greening are necessary. Urban planners should safeguard natural habitats, including terrestrial and wetland habitats, and maximise connectivity by promoting the planting of native trees and shrubs in parks, gardens, and streets. Taller trees, which are removed from the din, noise, and pollution, seem to provide greater comfort to birds. Factors such as this should be considered by municipal tree departments.

The Role of Trees

Trees play a vital role in wildlife conservation.⁶¹ They provide birds with nesting sites and are a crucial source of food.⁶² Their branches and foliage also provide shelter from predators and inclement weather. Consequently, trees help diversify bird species and create corridors for bird migration.⁶³ Birds, in turn, support the health of trees by feasting on leaf-eating insects. Birds also eat and disperse fruits and seeds, thereby allowing trees to multiply. Community engagement programs can supplement municipal effort by mobilising volunteers to plant and care for trees in cities.

While promoting green infrastructure planning, ULBs should integrate trees and green spaces into urban development projects. As far as possible, ULBs should avoid monocultural or ornamental tree plantations. Native varieties and diverse tree species, especially fruit-bearing and flowering trees, ensure suitable habitats and food sources for local bird populations. Trees that provide good nesting sites,⁶⁴ such as banyan and peepal trees, should also be preferred. Additionally, botanical gardens, roof gardens, urban forests, and vegetation around water bodies can be critical habitats that support many urban birds.⁶⁵ ULBs should avoid developing lakes and parks where native vegetation is replaced with exotic plants and green lawns. In such spaces, vegetation should be native and selected with the objective of maintaining biodiversity. These steps

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can provide safe habitats for birds and strengthen the bond between humans and nature while supporting diverse bird species.

Preserving Green Spaces

A study conducted by the Singapore National Parks Board (NPB) found that urban green spaces with semi-natural vegetation are highly supportive of bird diversity.⁶⁶ The study also highlighted that regular-shaped urban green spaces and ones with fewer edges are more conducive for bird diversity.⁶⁷ For instance, large and more complex green spaces contain more birds with specific food and nesting requirements compared to small and manicured parks.⁶⁸ A water body within or around a green space also elevates bird diversity. Dead and decaying trees provide multiple sources of food for insect-eating birds as well and are ideal for cavity-nesting birds such as owls, parakeets, mynas, barbets, and woodpeckers because the wood is easy to carve. Deadwood areas are also preferred by birds for protection and nesting.

Mitigating the Dangers of Glass Facades

The use of glass and glass windows on the facades of buildings is proving to be destructive to bird populations. Windows that reflect trees and the sky result in birds flying into them, as birds cannot differentiate between reflections and real vegetation.^{69,70} In other instances, a bird views its own reflection as a rival and launches several attacks on a window pane.⁷¹ Therefore, a large number of birds, especially migrating birds that generally fly during night, become casualties as they collide with buildings. To address this challenge, cities can reduce the amount of glass on buildings, put markings on glass that are visible to birds, or stick non-reflective stickers on the glass surface to stop reflections. Shutters and shades, for instance, can be used to hide glass so that birds are not drawn to the light from windows.

While the use of glass facades in India is more common in the larger cities, the trend is catching up in other cities as well and could become a huge problem over time. Awareness with regard to the danger of glass facades to birds, as well as their role in the additional generation of urban heat, need to be raised. Rules should be framed to disincentivise the use of such facades.

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City Regulations for the Protection of Birds

To make birds an integral part of the development control regulations of cities, as the VPP suggests, cities should look towards the Best Practice Guidelines to be developed by the Ministry of Environment, Forest and Climate Change (MoEFCC) with a view to integrating them into master plans and development plans of cities and towns.⁷² For instance, many American and Canadian cities have bird-safe building regulations in place. Building design regulations mandate the glazing or treatment of glass on the first few storeys above ground level.⁷³ The regulations also dictate a minimum value of building facade or glass percentage that would pass the bird-safe test.⁷⁴ In New York City, for example, Local Law 15 was introduced in 2020 which specifically deals with bird-friendly building design, making it mandatory for new buildings to comply with bird-friendly design construction requirements.⁷⁵

Indian cities can look to these laws for lessons, and ensure that the implementation gaps in those foreign cities are not repeated.

Community-Level Interventions

At the community level, bird populations can be supported by taking steps to meet their requirements for water, food, and shelter. Birdscaping, or the creation of bird-friendly backyard gardens equipped with food, water, and shelter can attract birds. Similarly, hanging bird feeders filled with birdseed mix and natural food, as well as a clean water dish that allows them to drink and frolic, are factors that attract birds. Additionally, the installation of birdhouses and roosting houses on trees, walls, and windows can protect bird populations.⁷⁶

Internationally, the American Bird Conservancy and the Environment for the Americas are collaborating to deliver practical solutions for community interventions through the Bird City Network. The network enables a sharing platform and assists local communities in advancing bird-friendly initiatives.⁷⁷ Each programme takes shape under a city platform, such as Bird City Colorado, Bird City Texas, Ciudad de las Aves Mexico, and Ciudad de las Aves Colombia. The Bird City community aims to increase habitats, reduce threats, engage people, and promote sustainability to help birds.⁷⁸ To this end, the network focuses on promoting native plants, controlling invasive plants, providing nesting habitats, supporting focal species, and addressing water quality while simultaneously working towards widening community participation across age groups and increasing awareness and climate education.

Imperatives in Cities for Avian Conservation

In India, the Bombay Natural History Society, BirdLife International, Royal Society for Protection of Birds, Salim Ali Centre for Ornithology & History, Indian Institute of Public Administration, Wildlife Institute of India, and other non-government organisations have set up the Indian Bird Conservation Network (IBCN).⁷⁹ The IBCN aims to take steps for the conservation of birds based on research. The network has state-level coordinators who collect regional and local information and feed these data and observations to the wider network.⁸⁰ The Bombay Natural History Society runs nation-wide projects for data collection. The BirdLife International specifically deals with endangered species or habitat-specific bird species to shortlist a minimum set of sites for conservation. The IBCN also works in the areas of advocacy, education, and scientific research.⁸¹

In 2019, the Bombay Natural History Society was supported by the Government of India to conduct a study related to migratory birds. The study, which ran from 2018 to 2023, covered 77 locations across 17 states, and the findings will be part of India's 'National Action Plan for Conservation of Migratory Birds and their Habitats along the Central Asian Flyway'.⁸²

Birdwatching as an Urban Activity


Birdwatching can aid urban health, urban ecology, and community involvement in a positive urban activity. The use of technology has led to increased interest in birdwatching.⁸³ It is predicted that, aided by technology and tech diffusion, birding could become a social media movement by 2025.⁸⁴ Traditionally, birdwatching requires a pair of binoculars, a notebook, a spotting scope with a tripod, and a field guide. Technology is now providing new tools to make birding richer and simpler, allowing each birder to access a large amount of information and knowledge.⁸⁵ Available technologies include bird-identification apps, online resources, and social media platforms.⁸⁶

Artificial intelligence has enabled the development of apps such as Merlin, which can instantly identify bird species in a region through photos and sounds.⁸⁷ The eBird app collects submissions from birders and creates an online database that provides checklists of birds, real-time data about bird distribution and abundance, and sighting records. The BirdCast project provides information on localised bird migration by using machine learning, cloud computing, and big-data analytics. Digital cameras and video cameras have also made photography and videography in birdwatching more accessible⁸⁸ to a large numbers of birders.⁸⁹

The conservation of birds is imperative for the overall health of ecosystems. Urbanisation is a critical threat factor in bird populations, which makes it incumbent on city stakeholders to engage in the conservation of birds and their habitats. This attention needs to be especially focused on bird species that are threatened with extinction and ones with dwindling populations. Accordingly, there are three specific kinds of inputs required for bird conservation: more research about birds in cities, targeted ULB action and regulation for birds, and increased community participation for bird conservation.

Despite the high human and built density in Indian cities, it is possible to take conscious steps to help birds, such as through birding, greening of available open spaces, preserving water bodies, planting trees that bear flower and fruits, installing birdhouses, providing drinking troughs, crafting nesting spaces, and increasing roof gardens and plantations.

ULBs, while framing rules and regulations, could incentivise bird preservation measures and encourage local communities to assist in bird preservation. The task is intricate and cannot be accomplished without community support. It would also be beneficial to recognise the services of the community, which can incentivise them and encourage involvement.

There are gaps in the understanding of bird behaviour and the consequences of human activity on their lives. To bridge these gaps and address challenges in bird conservation, cities need to encourage related research projects and activities such as birdwatching and documentation. As the VPP suggests, bird censuses can be conducted to prepare a bird atlas, such as the Kerala Bird Atlas, through citizen science initiatives. The youth of cities also need to be involved. City-based bird organisations and bird experts can also create forums where they can share their knowledge and discuss future course of action on bird conservation in cities. 

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