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ENVIS

ENVIS (Environmental Information System) is a network of subject specific centres located in various institutions throughout India. The focal point of the present 78 ENVIS centres in India is at the Ministry of Environment and Forests, New Delhi, which further serves as the Regional Service Centre (RSC) for INFOTERRA, the global information network of the United Nations Environment Programme (UNEP) to cater to environment information needs in the South Asian sub-region. The primary objective of all ENVIS centres is to collect, collate, store and disseminate environment related information to various user groups, including researchers, policy planners and decision makers.

The ENVIS Centre at the Bombay Natural History Society was set up in June 1996 to serve as a source of information on Avian Ecology and Inland Wetlands.

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Introduction to the book

BirdLife International, a UK-based bird conservation organization, is the official agency of the IUCN entrusted with the task of listing the threatened birds of the world. Earlier, bird status analysis was done infrequently but now BirdLife International (BLI) does it almost every year. About three years ago, during a discussion on threatened species in a meeting of the Ministry of Environment and Forests, Government of India, the Secretary said that there is no book in India which gives ready information on different threatened taxa in India, and even for birds that are comparatively better-known, i.e. there is no ready reckoner of the threatened taxa in India for decision makers. BNHS suggested that *Threatened Birds of Asia* gives detailed descriptions of all globally threatened birds of India, but unfortunately, most decision makers do not access it despite the fact that it is easily available on the internet. The MoEF suggested that BNHS should bring out a book on rare birds of India. The book, *Threatened Birds of India and Their Conservation Requirements* is the result of that suggestion.

The book covers nearly 153 species of India that are globally threatened, according to BLI and IUCN list of 2011. This includes 15 Critically Endangered, 15 Endangered, 52 Vulnerable, 66 Near Threatened, 2 Data Deficient, and 3 Taxonomic upgrades, along with articles on various aspects of bird conservation. The IUCN status, Field Characters, Distribution, Ecology, Taxonomy and Recommendations are mentioned for each species. The book is profusely illustrated with colour pictures of each species, their habitat, disturbances, and distribution map. Important references are given in each chapter so readers can refer to the original sources.

Our main purpose here is to publish existing and new information on the threatened birds of India in a book form that is easily accessible to Indian decision makers, policy makers, field conservationists, ornithologists, birdwatchers, media, and civil society in general. Soon the content of this book will be uploaded on the BNHS and ENVIS websites for easy access to all.

We have also listed the species for which India is an important country from their conservation point of view. This list obviously includes all the endemic threatened species that occur only in India and semi-endemic species such as Sarus Crane, Lesser Florican, Great Indian Bustard, Long-billed Vulture; bulk of the world's population of the semi-endemics is found in India. This list also includes species such as Spot-billed Pelican, Indian Skimmer, Greater Adjutant, Painted Stork, Black-necked Stork, etc. Although found in many other countries, the major conservation action of these birds is taking place in India; if they disappear from India, their global population will be in great trouble. Out of 153 globally threatened bird species found in India, for 110 species India is extremely important for their survival. We consider that India is a 'guardian' country for them.

Besides giving specific recommendations for each threatened species, we have also given 18 major recommendations for the protection of bird life in India. These recommendations were discussed with leading Indian conservationists. If these recommendations are implemented, alongwith species specific recommendations, we hope the status of Indian birds will improve, and India can also proudly achieve the Aiche 2020 targets of the Convention on Biological Diversity.

Asad R. Rahmani

List of species for which India is the 'Guardian Country'

Sr. No.	Common Name / Scientific Name	Threat 2011	Important recommendations in brief
1	Himalayan Quail <i>Ophrysia superciliosa</i>	CR	100% population found in India. Last reported in 1878. Sustained scientific searches are required to locate it.
2	Pink-headed Duck <i>Rhodonessa caryophyllacea</i>	CR	Possibly extinct in India as no probable wetland habitat remains, but maybe it survives in Myanmar. No population estimate available.
3	White-bellied Heron <i>Ardea insignis</i>	CR	Almost 50% of global population found in India. Top priority for research. Protection of rivers against disturbance and overfishing.
4	White-rumped Vulture <i>Gyps bengalensis</i>	CR	80-90% of global population found in India. Conservation breeding and complete ban on veterinary use of diclofenac. Extremely high chances of extinction.
5	Indian Vulture <i>Gyps indicus</i>	CR	95-99% of global breeding population found in India. Conservation breeding and complete ban on veterinary use of diclofenac. Extremely high chances of extinction.
6	Slender-billed Vulture <i>Gyps tenuirostris</i>	CR	Almost 80% of global population found in India. Conservation breeding and total ban on veterinary use of diclofenac required. Extremely high chances of extinction.
7	Red-headed Vulture <i>Sarcogyps calvus</i>	CR	50-70% of global population may be found in India. Extensive surveys needed.
8	Bengal Florican <i>Houbaropsis bengalensis</i>	CR	Almost 50% population found in India. Protection of <i>terai</i> grasslands. Research on its movements required urgently. Project Bustards required.
9	Great Indian Bustard <i>Ardeotis nigriceps</i>	CR	Upto 90% population in India. Extreme chances of extinction in 10-15 years. Project Bustards, and maybe conservation breeding required urgently.
10	Jerdon's Courser <i>Rhinoptilus bitorquatus</i>	CR	Single known population (100%) in India. Ecological research and habitat protection are top priorities.
11	Forest Owlet <i>Heteroglaux blewitti</i>	CR	Single known population (100%) in India. Habitat protection urgently required, particularly in Yawal, Shahada, Toranmal.
12	White-winged Duck <i>Cairina scutulata</i>	EN	Population estimate not available. India has a major role in protecting its wetland habitats. Research on ecology and habitat requirement needed.
13	Greater Adjutant <i>Leptoptilos dubius</i>	EN	Over 50% population found in India. Special conservation initiatives needed to protect its breeding and feeding areas.
14	Egyptian Vulture <i>Neophron percnopterus</i>	EN	Impact of diclofenac and other factors to be assessed to study its decline.
15	Lesser Florican <i>Sypheotides indicus</i>	EN	Almost 100% breeding population found in India. Grassland protection and control on hunting top priorities. Study movement through ringing and satellite tracking.
16	Masked Finfoot <i>Heliopais personatus</i>	EN	Survey Sundarbans to locate its population. After that, detailed study on its biology. Strict control on poaching.
17	Narcondam Hornbill <i>Aceros narcondami</i>	EN	100% population in India. Total protection of its small island habitat required. No more infrastructure development or increase in human population in Narcondam Island.
18	Black-chinned Laughingthrush <i>Strophocincla cachinnans</i>	EN	100% population in India. Small habitat remains in Nilgiris. Total protection of habitat required. Research on impact of pesticides on its breeding.
19	White-bellied Blue Robin <i>Mylomela albiventris</i>	EN	100% population in India. Total protection to its 'sky islands' in Western Ghats. Genetic studies required.
20	Nilgiri Blue Robin <i>Mylomela major</i>	EN	100% population in India. Total protection to its 'sky islands' in Western Ghats. Genetic studies required.
21	Nicobar Megapode <i>Megapodius nicobariensis</i>	VU	100% population in India. Protection to its habitat and control on hunting.
22	Swamp Francolin <i>Francolinus gularis</i>	VU	Almost 80% of world population in India. Total protection to its grassland habitat; strict ban on hunting/trapping.

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Sr. No.	Common Name / Scientific Name	Threat 2011	Important recommendations in brief
23	Manipur Bush-quail <i>Perdica manipurensis</i>	VU	100% population in India. Very few recent records. Surveys urgently required.
24	Chestnut-breasted Partridge <i>Arborophila mandellii</i>	VU	Almost 80% of world population found in India. Total protection to its forest/grassland habitat, and strict control on hunting/trapping.
25	Western Tragopan <i>Tragopan melanocephalus</i>	VU	Maybe 50% of world population found in India. Total protection to its grassland/ forest habitat, and strict ban on hunting/ trapping.
26	Blyth's Tragopan <i>Tragopan blythii</i>	VU	India has a major role to play to protect its forest habitat.
27	Slater's Monal <i>Lophophorus sclateri</i>	VU	India has a major role to play to protect its forest habitat.
28	Cheer Pheasant <i>Catreus wallichi</i>	VU	India has a major role to play to protect its forest habitat.
29	Lesser Adjutant <i>Leptoptilos javanicus</i>	VU	Major part of world population found in India. Research and protection of nesting sites required.
30	Pallas's Fish-eagle <i>Haliaeetus leucoryphus</i>	VU	Major part of global population found in India. Research and protection of nesting sites required.
31	Nicobar Sparrowhawk <i>Accipiter butleri</i>	VU	100% population in India. Full-fledged research programme, including genetic studies, required.
32	Indian Spotted Eagle <i>Aquila hastata</i>	VU	Almost 50% of world population in India. Surveys, monitoring and research on ecology required.
33	Sarus Crane <i>Grus antigone</i>	VU	Almost 95% of breeding population in India of <i>G. a. antigone</i> . India's iconic wetland bird. Long-term research and monitoring programme.
34	Black-necked Crane <i>Grus nigricollis</i>	VU	Iconic bird of high altitude wetlands of Ladakh, though only 1% of world population in India. Culturally important. Strict control of tourism and army near breeding sites. Eradication of feral dogs.
35	Indian Skimmer <i>Rynchops albicollis</i>	VU	Indian rivers very important as breeding sites. Monitoring and long-term study on ecology. Protection of river islands urgently required.
36	Pale-backed Pigeon <i>Columba eversmanni</i>	VU	India is a very important wintering habitat. Ban on hunting and trapping.
37	Nilgiri Wood-pigeon <i>Columba elphinstonii</i>	VU	100% population in India. Totally dependent on intact forests in Western Ghats. Study on movement and ecology.
38	Pale-capped Pigeon <i>Columba punicea</i>	VU	India may have significant global population. Surveys in northeast India and Orissa-Chhatisgarh-Jharkhand required.
39	Dark-rumped Swift <i>Apus acuticauda</i>	VU	India may have significant global population. Surveys in northeast India and Orissa-Chhatisgarh-Jharkhand required.
40	Rufous-necked Hornbill <i>Aceros nipalensis</i>	VU	Strict control on poaching through involvement of local people. Surveys, monitoring and studies on its ecology and behaviour.
41	Great Slaty Woodpecker <i>Mulleripicus pulverulentus</i>	VU	Important indicator species of intact forests. Revival of natural forests, e.g., in Dudhwa, by removal of Teak plantation, required.
42	White-naped Tit <i>Parus nuchalis</i>	VU	100% population in India. Protection of old-growth thorn forest in Gujarat, Rajasthan, Karnataka, Tamil Nadu. Provision of nest boxes. Urgently requires studies on breeding biology.
43	Grey-crowned Prinia <i>Prinia cinereocapilla</i>	VU	Detailed survey and based on survey results, special protection to its grassland habitat.
44	Yellow-throated Bulbul <i>Pycnonotus xantholaemus</i>	VU	100% population in India. Protection of forest/scrub. Detailed surveys all over its range, particularly to find whether it exists in Orissa or not.
45	Bristled Grassbird <i>Chaetornis striata</i>	VU	Detailed surveys to determine its numbers and protection of grassland habitat. Prevent conversion of grasslands to forest plantation.
46	Broad-tailed Grassbird <i>Schoenicola platyurus</i>	VU	100% population in India. Detailed surveys to determine its numbers and protection of grassland habitat. Prevent conversion of grasslands to forest plantation.

List of species for which India is the 'Guardian Country'

Sr. No.	Common Name / Scientific Name	Threat 2011	Important recommendations in brief
47	Marsh Babbler <i>Pellorneum palustre</i>	VU	Upto 80% of world population may be in India. Surveys to determine its numbers and protection to its <i>terai</i> grassland habitat. Strict control on livestock grazing and conversion of grasslands to forest plantation.
48	Rusty-throated Wren-babbler <i>Spelaornis badeigularis</i>	VU	100% population in India. Surveys and detailed studies on its ecology, habitat requirements and behaviour required.
49	Tawny-breasted Wren-babbler <i>Spelaornis longicaudatus</i>	VU	100% population in India. Surveys and detailed studies on its ecology, habitat requirements and behaviour required.
50	Snowy-throated Babbler <i>Stachyris oglei</i>	VU	Almost 90% of world population in India. Surveys and detailed studies on its ecology, habitat requirements and behaviour required.
51	Jerdon's Babbler <i>Chrysomma altirostre</i>	VU	May be 50% of population in India. Protection of its grassland habitat. Surveys, detailed studies on its ecology, habitat requirements and behaviour required.
52	Slender-billed Babbler <i>Turdoides longirostris</i>	VU	Upto 80% population in India. Protection of its grassland habitat. Surveys and detailed studies on its ecology, habitat requirements and behaviour required.
53	Bugun Liocichla <i>Liocichla bugunorum</i>	VU	100% population in India. Detailed surveys to find its total range of occupancy, detailed studies on its ecology and behaviour required.
54	Black-breasted Parrotbill <i>Paradoxornis flavirostris</i>	VU	Upto 90% of population in India. May be extreme habitat specialist. Detailed ecological studies on marked birds. Strict protection of its grassland habitat and surveys to find new areas in the Brahmaputra floodplains. Creation of suitable grasslands in new extension of Kaziranga. Inclusion of Amarpur grasslands in Dibru-Saikhowa NP.
55	Beautiful Nuthatch <i>Sitta formosa</i>	VU	Studies on its habitat requirement and ecology. Impact of dams in the Northeast on its habitat.
56	White-browed Bushchat <i>Saxicola macrorhynchus</i>	VU	Has major populations in India. Detailed studies on its distribution, ecology and behaviour, with marked birds required.
57	Brown-chested Jungle-flycatcher <i>Rhinomyias brunneatus</i>	VU	Genetic studies of the birds found in Andaman and Nicobar to settle taxonomic dispute. If Nicobar Jungle-flycatcher is a valid species, detailed ecological research.
58	Kashmir Flycatcher <i>Ficedula subrubra</i>	VU	Upto 95% of population in India. Protection of its wintering habitat in Western Ghats. Studies on breeding ecology in Kashmir. Extensive banding with numbered and colour-coded rings to trace its movements.
59	Yellow Weaver <i>Ploceus megarhynchus</i>	VU	Upto 80% population in India. Major rehabilitation programme required to revive/restore its <i>terai</i> habitat, conservation breeding and release, and strict ban on trapping. Control of crow population near its major breeding areas.
60	Green Munia <i>Amandava formosa</i>	VU	100% population in India. Strict control on trapping. Surveys to determine its exact distributional range.
61	Nilgiri Pipit <i>Anthus nilghiriensis</i>	VU	100% population in India. Total ban on conversion of high altitude grasslands of Western Ghats to forest plantation and complete ban on overgrazing. Practical method for control of invasive Scotch Broom.
62	Satyr Tragopan <i>Tragopan satyra</i>	NT	Upto 50% of population in India. Control of poaching and trapping.
63	Lesser Flamingo <i>Phoeniconaias minor</i>	NT	Control of poaching and trapping. Protection of nesting sites in Kutch, and wintering sites in rest of India, particularly Sewri mudflats near Mumbai.
64	Painted Stork <i>Mycteria leucocephala</i>	NT	India has major population. Continue protection of nesting sites through involvement of people. Studies on movement through marked birds and satellite tracking. Protection and revival of wetlands to benefit people and birds. Total prohibition of zero-net fishing.

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65	Black-necked Stork <i>Ephippiorhynchus asiaticus</i>	NT	Almost 50% of world population in India. Protection and revival of wetlands to benefit people and birds. Total prohibition of zero-net fishing. Studies on movement through marked birds and satellite tracking.
66	Black-headed Ibis <i>Threskiornis melanocephalus</i>	NT	Over 50% population in India. Continue protection of nesting sites through involvement of people. Protection and revival of wetlands to benefit people and birds. Total prohibition of zero-net fishing.
67	Spot-billed Pelican <i>Pelecanus philippensis</i>	NT	May be upto 60-70% global population in India. Continue protection of nesting sites through involvement of people. Studies on movement through marked birds and satellite tracking. Protection and revival of wetlands to benefit people and birds. Total prohibition of zero-net fishing.
68	Oriental Darter <i>Anhinga melanogaster</i>	NT	Upto 50% of population in India. Continue protection of nesting sites with involvement of people. Protection and revival of wetlands to benefit people and birds. Total prohibition of zero-net fishing.
69	Laggar Falcon <i>Falco jugger</i>	NT	Upto 50% of population in India. Strict control on trapping. Surveys and regular population monitoring, and studies on its ecology and impact of pesticides.
70	Lesser Fish-eagle <i>Ichthyophaga humilis</i>	NT	Detailed surveys to determine its exact distribution range. Studies on impact of pesticides on its food chain.
71	Grey-headed Fish-eagle <i>Ichthyophaga ichhyaetus</i>	NT	Detailed surveys to determine its exact distribution range. Studies on impact of pesticides on its food chain.
72	South Nicobar Serpent-eagle <i>Spilornis klossi</i>	NT	100% population in India. Detailed genetic studies of all serpent-eagles of Andaman and Nicobar to settle taxonomic dispute.
73	Andaman Serpent-eagle <i>Spilornis elgini</i>	NT	100% population in India. Detailed genetic studies of all serpent-eagles of Andaman and Nicobar to settle taxonomic dispute.
74	Andaman Crake <i>Rallina canningi</i>	NT	100% population in India. Strict control on hunting with involvement of people wherever possible, and protection to its wetland habitat.
75	Black-bellied Tern <i>Sterna acuticauda</i>	NT	Upto 50% population in India. India has a major role in protection of its nesting sites in main rivers. Detailed all-India survey and then regular population monitoring.
76	Andaman Wood-pigeon <i>Columba palumboides</i>	NT	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people.
77	Andaman Cuckoo-dove <i>Macropygia rufipennis</i>	NT	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people.
78	Nicobar Pigeon <i>Caloenas nicobarica</i>	NT	Control on hunting with guns, wherever possible, with involvement of local people.
79	Nicobar Parakeet <i>Psittacula caniceps</i>	NT	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people.
80	Long-tailed Parakeet <i>Psittacula longicauda</i>	NT	Control on hunting with guns, wherever possible, with involvement of local people.
81	Yellow-rumped Honeyguide <i>Indicator xanthonotus</i>	NT	Detailed surveys in Himalaya to find extant populations; encourage sustainable exploitation of honey by local people. Study colony collapse syndrome of honeybee.
82	Andaman Scops-owl <i>Otus balli</i>	NT	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people.
83	Andaman Hawk-owl <i>Ninox affinis</i>	NT	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people.
85	Ward's Trogon <i>Harpactes wardi</i>	NT	India may have major population. Strict protection to its forest habitat. Ecological studies and impact of dams and development projects on its status.
85	Blyth's Kingfisher <i>Alcedo hercules</i>	NT	India may have major population. Strict protection of forest streams against excessive fishing and disturbances. Ecological studies, impact of dams and development projects on its status.
86	Austen's Brown Hornbill <i>Anorrhinus austeni</i>	NT	India may have major population. Strict protection of its forest habitat. Ecological studies, impact of dams and development projects on its status.

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87	Malabar Pied Hornbill <i>Anthracoceros coronatus</i>	NT	100% population in India. Restricted to Western Ghats. Prevention of hunting and destruction of old Ficus trees.
88	Andaman Woodpecker <i>Dryocopus hodgei</i>	NT	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people.
89	Andaman Treepie <i>Dendrocitta bayleyi</i>	NT	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people.
90	Andaman Drongo <i>Dicrurus andamanensis</i>	NT	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people.
91	Rufous-vented Prinia <i>Prinia burnesii</i>	NT	Maybe 50% of population in India. Protection of floodplain grasslands in northwest (Punjab) and northeast India (Assam, Arunachal etc.). Genetic studies of two disparate populations to know the variance, and whether they are full species.
92	Nicobar Bulbul <i>Hypsipetes nicobariensis</i>	NT	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people.
93	Grey-headed Bulbul <i>Pycnonotus priocephalus</i>	NT	100% population in India. Restricted to Western Ghats. Surveys and regular monitoring of its populations.
94	Rufous-rumped Grassbird <i>Graminicola bengalensis</i>	NT	Strict protection to its <i>terai</i> grasslands. Ecological studies to find out the best time to burn/harvest grass.
95	Long-billed Bush-warbler <i>Bradypterus major</i>	NT	Surveys to find out its main breeding areas in the Himalaya.
96	Tytler's Leaf-warbler <i>Phylloscopus tytleri</i>	NT	Upto 80% population in India. Protection of forest, particularly in northern Western Ghats.
97	Rufous-throated Wren-babbler <i>Spelaornis caudatus</i>	NT	Maybe 50% population in India. Strict protection of its forest habitat. Ecological studies, impact of dams and development projects on its status.
98	Long-tailed Wren-babbler or Naga Wren-babbler <i>Spelaornis chocolatinus</i>	NT	100% population in India. Strict protection to its forest/rassland habitats. Ecological studies, impact of dams and development projects on its status.
99	Blackish-breasted Babbler or Sikkim Wedge billed Babbler <i>Sphenocichla humei</i>	NT	Maybe 90% of world population in India. Strict protection to its forest habitat. Ecological studies, impact of dams and development projects on its status.
100	Chevron-breasted Babbler or Cachar Wedge-billed Babbler <i>Sphenocichla roberti</i>	NT	Maybe 50% world population in India. Strict protection to its forest habitat. Ecological studies, impact of dams and development projects on its status.
101	Chestnut-backed Laughingthrush <i>Garrulax nuchalis</i>	NT	Upto 50% of world population in India. Ecological studies, impact of dams and development projects on its status.
102	Kerala Laughingthrush <i>Garrulax fairbanki</i>	NT	100% population in India. Restricted to southern Western Ghats. Genetic studies to determine its taxonomic status.
103	Rusty-bellied Shortwing <i>Brachypteryx hyperythra</i>	NT	India may have major population. Strict protection to its forest habitat. Ecological studies, impact of dams and development projects on its status.
104	Black-and-orange Flycatcher <i>Ficedula nigrorufa</i>	NT	100% population in India. Restricted to Western Ghats. Surveys and monitoring of its populations, and study of connectivity between populations.
105	Nilgiri Flycatcher <i>Eumyias albicaudatus</i>	NT	100% population in India. Restricted to Western Ghats. Surveys and monitoring of its populations, and study of connectivity between populations.
106	Nicobar Scops-owl <i>Otus alius</i>	DD	100% population in India. Genetic and ecological studies required.
107	Large-billed Reed-warbler <i>Acrocephalus orinus</i>	DD	Collaboration with international teams in Afghanistan and Thailand. Detailed survey of breeding (?) and wintering populations in India.
108	Andaman Teal <i>Anas albogularis</i>	New	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people. Protection of wetlands. Genetic studies to determine its taxonomic status.
109	Andaman Barn Owl <i>Tyto deroepstorffi</i>	New	Control on hunting with guns, wherever possible, through involvement of local people. Genetic studies to determine its taxonomic status.
110	Andaman Cuckoo-shrike <i>Coracina dobsoni</i>	New	100% population in India. Control on hunting with guns, wherever possible, with involvement of local people. Genetic studies to determine taxonomic status.

Major Recommendations

India is one of the most important countries as far as bird conservation is concerned. In all, 1,224 bird species have been recorded within our territorial limits, of which 158 or 13% are globally Threatened. This number is likely to increase if conservation measures are not taken fast. Numerous examples show that this trend can be reversed with the help of in situ and ex situ conservation methods. It is necessary to think outside the current tiger-centric and forest-centric conservation concepts, and pay attention to habitats and species, including all biodiversity. Although this book is about threatened birds only, we are concerned about all taxa, as no part of nature lives in isolation. Given below are general recommendations that would help in reversing the trend of population decline of threatened as well as non-threatened Indian bird species in India:

Policy

Indian Wildlife (Protection) Act, 1972: There is an urgent need to amend this Act, to include bird species/groups that are not listed, and to list globally Threatened species in Schedule I by their present scientific names. This will also help to curb trade in threatened birds as recommended by TRAFFIC India. The Act needs provisions against habitat destruction of threatened species outside protected areas, by mining, industries, and unplanned development.

Grasslands: Grasslands in India are often perceived as wasteland, and are under-represented in the PA network. Natural grasslands, particularly of the north Indian Terai, Brahmaputra river system, Thar Desert, the Deccan Plateau and the Western Ghats, should be surveyed, mapped and protected to benefit biodiversity and also the people who depend on them for their livelihood. These local communities should be involved in protecting and rehabilitating grasslands. A new set of rules may need to be framed to protect community-conserved grasslands. With India supporting the largest number of cattle in the world, we must develop national grassland management policies.

Protected Areas

Community Conservation Areas (CCAs): Huge areas in rural India are conserved by the local communities for reasons both spiritual and mundane, best exemplified by community protected bird breeding colonies in villages. Unfortunately, CCAs have not been given due importance by conservationists, perhaps because they do not harbour mega-vertebrates or by the Government. The NGO Kalpavriksh has done commendable work in documenting many CCAs, but we still need to develop an all-India database, recognise the importance of CCAs, and provide them with appropriate support.



The increase in the numbers of Spot-billed Pelican *Pelecanus philippensis* could be the result of good community conservation efforts (Photocredit: Asad R. Rahmani)

Important Bird Areas: India has 446 Important Bird Areas (IBAs). Most of them are also Key Biodiversity Areas, as they are important for other taxa too. Nearly 200 IBAs in India are not officially protected, though many are protected by communities. There is a need to include many non-officially protected IBAs in the Protected Area (PA) network, using appropriate provisions from not only WLPA but also Biodiversity Act, Environment Protection Act, and Forest Rights Act. Even among officially protected IBAs, many are degraded. As IBAs are vital for globally Threatened bird species, the Government of India should give special attention to protecting them.

Adequate coverage of coastal habitats in PAs: Like grasslands, many coastal ecosystems and habitats are inadequately represented in the PA network in India. These include mangroves, lagoons, intertidal zones, sandy and rocky beaches, mudflats and

Major Recommendations

other marine ecosystems, which must be documented, mapped and protected.

Riverine ecosystems: These ecosystems are inadequately represented in our PA network. Even those that are protected (e.g., Chambal Gharial Sanctuary, Son Gharial Sanctuary) are under tremendous stress from anthropogenic factors. Many threatened species nest on river islands (e.g., Indian Skimmer, Black-bellied Tern). It is important to identify major nesting areas and give adequate protection to these species, at least during the breeding season.

Conservation Action

Project Bustards: India has the unfortunate distinction of having four globally Threatened bustard species. Two are Critically Endangered (Great Indian Bustard, Bengal Florican), one is Endangered (Lesser Florican) and one Vulnerable (Houbara). There is an urgent need to start Project Bustards to restore their populations and habitats.

Species Recovery Plans: The Government of India has identified many species, including birds, for special schemes. Species recovery plans have been developed for three resident bustards, Gyps species of vultures, Jerdon's Courser, Forest Owlet, Black-necked Crane and Sarus Crane. There is a need to implement these plans quickly for the recovery of these species and their habitats. Adequate funding should be provided during the 12th Five-Year Plan and in future. There is also a need to develop recovery plans for other Critically Endangered, Endangered and Vulnerable species for which India is the 'guardian' country (see table).

Research

Pesticides: The impact of agrochemicals on birds is poorly studied in India. An All-India Coordinated Programme on Impact of Pesticides on Birds should be initiated with SACON as the lead agency and their recommendations taken into consideration by the Government while introducing new chemicals and also framing rules and regulations on the use of pesticides.

Northeast: Special programmes should be started to conduct research on birds, particularly globally Threatened species in this biodiversity hotspot. Local universities, communities and NGOs can be encouraged to take up research on lesser-known species.

Andaman & Nicobar Islands: Like the Northeast, the birds of Andaman & Nicobar are poorly known. Of the 41 endemic Threatened species of India, 20 are found on these islands. As SACON has been conducting research on birds in these islands for the last 20 years, this institute is best equipped to lead research on Andaman & Nicobar birds, along with ZSI, Pondicherry University, Wildlife Institute of India, ANET, FERAL, and others.

Bird ringing and bird movement studies: Ringing, banding, marking, satellite tracking and using stable isotopes studies are the tools to study bird movement. With habitat destruction and climate change, the movement patterns of birds are changing, both



Indian Skimmer *Rynchops albicollis*
(Photocredit: Sanjay Karkare)



Great Indian Bustard *Ardeotis nigriceps*
(Photocredit: Asad R. Rahmani)



Sarus Crane *Grus antigone*
(Photocredit: Asad R. Rahmani)

Major Recommendations

spatially and temporally. Therefore, we must start long-term bird ringing/banding programmes across the country. BNHS can be a nodal agency in India, coordinating this long-term programme, maintaining a database and sharing information. The BNHS Bird Migration Study Centre at Point Calimere, Tamil Nadu is well equipped to train people in bird ringing and data gathering.

Avian influenza surveillance: Regular surveillance of avian influenza and other emerging avian diseases is urgently needed. Such studies can be dovetailed with bird ringing/banding programmes. These programmes should not be episodic and reactive, but a part of India's monitoring programme, with the cooperation of state forest officials, veterinarians, High Security Animal Disease Laboratory, and university departments.

Surveys and Assessment: It is necessary to start an annual survey of all bird species in India, on the pattern of annual bird counts in other countries. This will give an indication of the status of Indian birds, help in identifying emerging threats and enable development of mitigation measures. These surveys would involve civil society members, and would help to spread the message of conservation. The Government of India should start an All-India Coordinated Annual Survey of Birds with adequate, regular funding. The IBCN, with state coordinators and members all over India, can coordinate, and the ENVIS Centre at BNHS can maintain the database. Modern and traditional knowledge should be synergistically used in these studies.

Permission to study threatened bird species: Getting permission to study birds and other wildlife inside PAs is still a problem, and may at times depend on the whims of a PA manager. We do not have enough information on the status and ecology of many Threatened birds. The central and state governments should encourage research on Threatened species.

Education and Awareness

Rehabilitation of traditional trappers: Trapping of birds, particularly on the east coast, Bihar, Rajasthan, Madhya Pradesh and the Northeast is undertaken on a massive but hidden scale. TRAFFIC-India (a programme of WWF-India) has conducted excellent studies on bird trade. The Government of India should start conservation education programmes for trappers as well as their clients. Using the traditional skills of the trappers constructively would wean them away from their presently illegal trade.

Captive-breeding: We still have Threatened species in Indian zoos, and on rare occasions, seizure of Threatened birds takes place. Seized birds should ideally be released in their natural habitat, but if this is not possible, they should be used to establish captive populations. Species, such as Yellow Weaver and Green Munia, with decimating numbers, should be assigned to conservation breeding, not mere display.

Conservation education (Northeast): Though conservation education is needed in the whole country, the northeastern states of Arunachal, Nagaland, Manipur, Mizoram and Tripura should be given special attention, as bird hunting is common. With a high percentage of literacy and a growing young population, education that helps to reduce hunting pressure would enable protection of birds. This can be achieved with the involvement of religious and social leaders, young people, village elders, and government funds.

Surveys and Assessment: Annual surveys of all bird species on the pattern of Annual Bird Count in many countries is a must, to reveal the status of Indian birds, and to help identify emerging threats and their mitigation. This would involve civil society, and help in spreading the message of conservation. The Government of India should start an All-India Coordinated Annual Survey of birds with proper and regular funding. The Indian Bird Conservation Network, with state coordinators and members all over India, can play the coordinator's role and ENVIS Centre of BNHS can maintain the database.



Green Munia *Amandava formosa*
(Photocredit: Rajat Bhargav)

BOMBAY NATURAL HISTORY SOCIETY

Founded in 1883 for the study of natural history, the Bombay Natural History Society (BNHS) is now one of the premier research and conservation organisations in the country. The Society publishes a journal, the *Journal of the Bombay Natural History Society*, devoted to natural history and also has a popular publication, *Hornbill*, for the layman. It has also published a number of books on wildlife and nature. Its library has a large collection of books and scientific journals on wildlife and the environment. The Society's invaluable collection of bird, mammal, reptile, amphibian and insect specimens has been recognised as a National Heritage Collection.

Membership of the Society is open to individuals and institutions within India and abroad. For more details, please write to:

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