

Birds and their Status in Khijadia Bird Sanctuary, Gujarat, an Asian Fly Way Stopover Place in India

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Gulf of Kachchh in Gujarat (India) inhabits many water birds. Variety of winter migrants visit the area regularly. Mundkur (1991) recorded 115 species in freshwater, of which about half were migratory. Naik et al. (1991) reported nesting of 12 tree-nesting and six ground-nesting water bird species in the Marine National Park. Parasharya (1984) studied ecology of Western Reef-Egret; Bhuvra (1999) studied feeding ecology of four migratory waders; Gadhvi (2001) studied breeding ecology of Asian White Ibis in Bhavnagar city; and Dave (2002) studied ecology of piscivorous birds in inland wetlands of semiarid parts of Saurashtra.

Study Area

Khijadia Bird Sanctuary (KBS) is located at 22°28' N 70°01' E and is spread over an area of 6.055 sq. km (Fig. I). Khijadia Bird Sanctuary is one of the Important Bird Area (IBA) from Gujarat state, India (Islam & Rahmani, 2004). It joins with Marine National Park on one side and on the other Dhunvav river empties freshwater in it. Both habitats are separated by mud wall.

Terrestrial plants include *Zizyphus* sp. and *Acacia nilotica*. Mangroves like *Avicenia* sp. is found in marine water. In freshwater *Phragmites karaka*, *Oxystelma* sp. *Ipomea aquatica*, *Amaranthus veredi* are seen.

Two triple tire watchtowers are built to observe the birds from a height. The freshwater area of the sanctuary is divided in various blocks by road.

Maximum temperature stands at 40°C during summer (March-June) and minimum temperature is 8°C during winter (Nov.-Feb.). The rainy season extends from July to October and rainfall averages 550mm. The height from mean sea level ranges from 3 to 19m.

Methodology

The fieldwork was carried out for eight months from first week of July 1997 to the last week of February 1998. English name and scientific name follow Manakadan & Pittie (2001). Total bird species have been categorized in waterbirds, wetland dependent birds as per Kumar (2003) and terrestrial birds.

Abbreviations used: BRS-Biome Restricted Species; NT-Near Threatened; Vu-Vulnerable; and CD-Conservation

Dependent.

Results and Discussion

152 bird species belonging to 45 families were noted. Among 152 birds, 40 were resident migratory, 54 were migratory and 58 were resident bird species. 106 species are water birds or wetland dependent. Among these two crane species utilized the area for roosting purpose in large number whereas other birds utilized the area mainly for feeding. 46 terrestrial bird species are also observed. Table III depicts 13 Globally Threatened species observed in the KBS. Among these Black-necked Stork, Painted Stork, Asian Openbill Stork, Indian Skimmer and Darter have been recorded breeding in the KBS (personal observation). Dalmatian Pelican, Comb Duck and Eastern Imperial Eagle are listed in Appendix I of CITES whereas Eurasia Spoonbill is listed in Appendix II of CITES.

KBS provides ideal habitat for 152 bird species, migratory (54), resident migratory (40) and local (58) species. The bird sanctuary provides feeding habitat to many bird species. Notably large number of two migratory crane species, Common Crane (*Grus grus*) and Demoiselle Crane (*Grus vigro*) uses the sanctuary for roosting. 13 Globally Threatened species are also reported in the KBS.

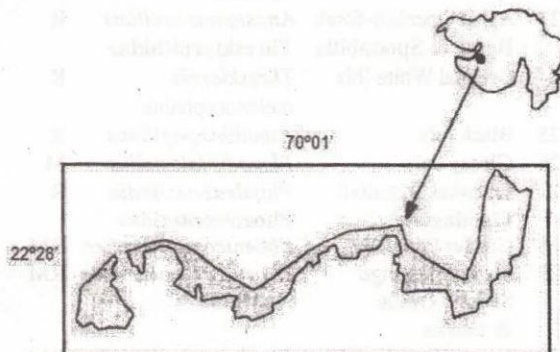


Fig. 1. Site location of Khijadia Bird Sanctuary, Gujarat.

Table 1. Check list of wetland bird species seen in the Khijadia Bird Sanctuary, Gujarat.

Common Name	Scientific Name	Status
Grebes		
1 Little Grebe	<i>Tachybaptus ruficollis</i>	R
2 Black-necked Grebe	<i>Podiceps nigricollis</i>	M
3 Great Crested Grebe	<i>Podiceps cristatus</i>	M
Pelicans		
4 Great White Pelican	<i>Pelecanus onocrotalus</i>	RM
5 Spot-billed Pelican	<i>Pelecanus philippensis</i>	RM
6 Dalmatian Pelican	<i>Pelecanus crispus</i>	M
Cormorants/Shags		
7 Great Cormorant	<i>Phalacrocorax carbo</i>	RM
8 Little Cormorant	<i>Phalacrocorax niger</i>	RM
Darters		
9 Darter	<i>Anhinga melanogaster</i>	RM
Hérons, Egrets & Bitterns		
10 Grey Heron	<i>Ardea cinerea</i>	R
11 Purple Heron	<i>Ardea purpurea</i>	R
12 Little Green Heron	<i>Butorides striatus</i>	R
13 Indian Pond-Heron	<i>Ardeola greyii</i>	R
14 Cattle Egret	<i>Bubulcus ibis</i>	R
15 Large Egret	<i>Casmerodius albus</i>	R
16 Median Egret	<i>Mesophoyx intermedia</i>	R
17 Little Egret	<i>Egretta garzetta</i>	R
18 Western Reef-Egret	<i>Egretta gularis</i>	R
19 Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	R
20 Great Bittern	<i>Botaurus stellaris</i>	M
Storks		
21 Painted Stork	<i>Mycteria leucocephala</i>	R
22 Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	RM
23 Asian Openbill-Stork	<i>Anastomus oscitans</i>	R
Ibises & Spoonbills		
24 Oriental White Ibis	<i>Threskiornis melanocephalus</i>	R
25 Black Ibis	<i>Pseudibis papillosa</i>	R
26 Glossy Ibis	<i>Plegadis falcinellus</i>	M
27 Eurasian Spoonbill	<i>Platalea leucorodia</i>	R
Flamingos		
28 Greater Flamingo	<i>Phoenicopterus ruber</i>	RM
29 Lesser Flamingo	<i>Phoenicopterus minor</i>	RM
Swans, Geese & Ducks		
30 Lesser Whistling-Duck	<i>Dendrocygna javanica</i>	RM
31 Brahminy Shelduck	<i>Tadorna ferruginea</i>	M
32 Northern Pintail	<i>Anas acuta</i>	M
33 Common Teal	<i>Anas crecca</i>	M
34 Spot-billed Duck	<i>Anas poecilorhyncha</i>	R
35 Gadwall	<i>Anas strepera</i>	M
36 Garganey	<i>Anas querquedula</i>	M
37 Eurasian Wigeon	<i>Anas penelope</i>	M
38 Northern Shoveller	<i>Anas clypeata</i>	M
39 Common Pochard	<i>Aythya ferina</i>	M
40 Comb Duck	<i>Sarkidiornis melanotos</i>	RM
Cranes		
41 Sarus Crane	<i>Grus antigone</i>	R
42 Demoiselle Crane	<i>Grus virgo</i>	M
43 Common Crane	<i>Grus grus</i>	M
Rails, Crakes, Moorhens, Coots		
44 White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	R
45 Common Moorhen	<i>Gallinula chloropus</i>	R
46 Purple Moorhen	<i>Porphyrio porphyrio</i>	R
47 Common Coot	<i>Fulica atra</i>	R
Jacanas		
48 Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	RM
Oystercatcher		
49 Eurasian Oystercatcher	<i>Haematopus ostralegus</i>	M
Plovers, Dotterels, Lapwings		
50 Yellow-wattled Lapwing	<i>Vanellus melabaricus</i>	R
51 Red-wattled Lapwing	<i>Vanellus indicus</i>	M
52 Common Ringed Plover	<i>Charadrius hiaticula</i>	M
53 Little Ringed Plover	<i>Charadrius dubius</i>	R
54 Kentish Plover	<i>Charadrius alexandrinus</i>	R
55 Lesser Sand Plover	<i>Charadrius mongolus</i>	M
Sandpipers, Stints, Snipes, Godwits & Curlews		
56 Whimbrel	<i>Numenius phaeopus</i>	M
57 Eurasian Curlew	<i>Numenius arquata</i>	M
58 Black-tailed Godwit	<i>Limosa limosa</i>	M
59 Bar-tailed Godwit	<i>Limosa lapponica</i>	M
60 Common Redshank	<i>Tringa totanus</i>	M
61 Marsh Sandpiper	<i>Tringa stagnatilis</i>	M
62 Common Greenshank	<i>Tringa nebularia</i>	M
63 Wood Sandpiper	<i>Tringa glareola</i>	M
64 Terek Sandpiper	<i>Xenus cinereus</i>	M
65 Common Sandpiper	<i>Actitis hypoleucos</i>	M

66	Ruddy Turnstone	<i>Arenaria interpres</i>	M	97	Brown Fish Owl	<i>Ketupa zeylonensis</i>	R
67	Pintail Snipe	<i>Gallinago stenura</i>	M		Bee-eaters	Meropidae	
68	Jack Snipe	<i>Lymnocyptes minimus</i>	M	98	Chestnut-headed	<i>Merops leschenaulti</i>	
69	Little Stint	<i>Calidris minuta</i>	M		Bee-eater		
70	Temminck's Stint	<i>Calidris temminckii</i>	M	99	Blue-cheeked	<i>Merops persicus</i>	RM
71	Dunlin	<i>Calidris alpina</i>	M		Bee-eater		
72	Curlew Sandpiper	<i>Calidris ferruginea</i>	M		Swallows & Martins	Hirundinidae	
73	Ruff	<i>Philomachus pugnax</i>	M	100	Common Swallow	<i>Hirundo rustica</i>	M
	Ibisbill, Avocets	Recurvirostidae		101	Wire-tailed Swallow	<i>Hirundo smithii</i>	R
	& Stilts				Wagtails & Pipits	Motacillidae	
74	Black-winged Stilt	<i>Himantopus</i>	R	102	Citrine Wagtail	<i>Motacilla citreola</i>	RM
		<i>himantopus</i>		103	Yellow Wagtail	<i>Motacilla flava</i>	M
75	Pied Avocet	<i>Recurvirostra avosetta</i>	RM	104	Black-headed	<i>Motacilla flava</i>	M
	Stone-Curlew &	Burhinidae			Yellow Wagtail	<i>malenogrisea</i>	
	Stone-Plovers			105	Grey Wagtail	<i>Motacilla cinerea</i>	M
	/Thick-knees			106	White Wagtail	<i>Motacilla alba</i>	M
76	Stone-Curlew	<i>Burhinus oedicnemus</i>	R	<hr/>			
77	Great Stone-Plover	<i>Esacus recurvirostris</i>	R	Table 2. Check list of terrestrial bird species seen in the			
	Gulls, Terns	Laridae		Khijadia Bird Sanctuary, Gujrat.			
	& Noddies			<hr/>			
78	Yellow-legged Gull*	<i>Larus cachinnans</i>	M		Comman Name	Scientific Name	Status
79	Pallas's Gull	<i>Larus ichthyaetus</i>	M		Hawks, Eagles,	Accipitridae	
80	Brown-headed Gull	<i>Larus brunnicephalus</i>	M		Buzzards, Old World		
81	Black-headed Gull	<i>Larus ridibundus</i>	M		Vultures, Kites,		
82	Slender-billed Gull	<i>Larus genei</i>	M		Harriers		
83	Whiskered Tern	<i>Chlidonias hybridus</i>	M	1	Black Kite	<i>Milvus migrans</i>	R
84	Gull-billed Tern	<i>Gelochelidon nilotica</i>	M	2	Black-shouldered	<i>Elanus caeruleus</i>	R
85	Caspian Tern	<i>Sterna caspia</i>	RM		Kite		
86	Common Tern	<i>Sterna hirundo</i>	RM	3	Eurasian Griffon	<i>Gyps fulvus</i>	RM
87	River Tern	<i>Sterna aurantia</i>	R		Falcons	Falconidae	
88	Little Tern	<i>Sterna albifrons</i>	R	4	Red Headed Falcon	<i>Falco chicquera</i>	R
	Skimmers	Rynchopidae			Pheasants,	Phasianidae	
89	Indian Skimmer	<i>Rhynchops albicollis</i>	RM		Partridges, Quails		
	Wetland dependent birds			5	Grey Francolin	<i>Francolinus</i>	RM
	Kingfishers	Alcedinidae			<i>pondicerianus</i>		
90	Small Blue Kingfisher	<i>Alcedo atthis</i>	R		Pigeons & Doves	Columbidae	
91	White-breasted	<i>Halcyon smyrnensis</i>	R	6	Blue Rock Pigeon	<i>Columba livea</i>	R
	Kingfisher			7	Eurasian Collared-	<i>Streptopelia decaocto</i>	R
92	Black-capped	<i>Halcyon pileata</i>	M		Dove		
	Kingfisher			8	Red Collared-Dove	<i>Streptopelia</i>	R
93	Lesser Pied Kingfisher	<i>Ceryle rudis</i>	R		<i>tranquebarica</i>		
	Hawks, Eagles,	Accipitridae		9	Little Brown Dove	<i>Streptopelia</i>	R
	Buzzards, Old World				<i>senegalensis</i>		
	Vultures, Kites,				Parakeets &	Psittacidae	
	Harriers				Hanging-Parrots		
94	Brahmini Kite	<i>Haliastur indus</i>	RM				
95	Western Marsh-Harrier	<i>Circus aeruginosus</i>	M	10	Rose-ringed Parakeet	<i>Psittacula krameri</i>	R
96	Eastern Imperial Eagle	<i>Aquila heliaca</i>	RM		Cuckoos, Malkohas	Cuculidae	
	Owls	Strigidae			& Coucals		

11	Pied Crested Cuckoo	<i>Clamator jacobinus</i>	RM	43	Common Tailor Bird	<i>Orthotomus sutorius</i>	RM
12	Indian Cuckoo	<i>Cuculus micropterus</i>	RM	Sunbirds & Nectariniidae			
13	Drongo Cuckoo	<i>Surniculus lugubris</i>	R	Spiderhunters			
14	Asian Koel	<i>Eudynamys scolopacea</i>	R	44	Purple Sunbird	<i>Nectarinia asiatica</i>	R
15	Greater Coucal	<i>Centropus sinensis</i>	R	Passeridae			
Barn Owls				Passerinae			
16	Barn Owl	<i>Tyto alba</i>	R	Sparrows & Snowfinches			
Swifts				45	House Sparrow	<i>Passer domesticus</i>	R
17	Common Swift	<i>Apus apus</i>		Weavers			
18	House Swift	<i>Apus affinis</i>	R	46	Baya Weaver	<i>Ploceus philippinus</i>	R
Bee-eaters				Starlings & Mynas			
19	Small Bee-eater	<i>Merops orientalis</i>	R	29	Common Myna	<i>Acridotheres tristis</i>	R
Rollers				30	Bank Myna	<i>Acridotheres ginginianus</i>	RM
20	Indian Roller	<i>Coracias benghalensis</i>	RM	Sturnidae			
Hoopoes				31	Rosy Starling	<i>Sturnus roseus</i>	M
21	Common Hoopoe	<i>Upupa epops</i>	M	Orioles			
Larks				32	Eurasian Golden Oriole	<i>Oriolus oriolus</i>	RM
22	Ashy-crowned Sparrow-Lark	<i>Eremopterix grisea</i>	RM	Dicruridae			
23	Common Crested Lark	<i>Galerida cristata</i>	RM	33	Black Drongo	<i>Dicrurus macrocercus</i>	RM
Wagtails & Pipits				Corvidae			
24	Eurasian Tree Pipit	<i>Anthus trivialis</i>	RM	34	House Crow	<i>Corvus splendens</i>	R
Bulbuls & Finchbills				35	Jungle Crow	<i>Corvus macrorhynchos</i>	R
25	Red-vented Bulbul	<i>Pycnonotus cafer</i>	R	<hr/>			
26	Himalayan Bulbul	<i>Pycnonotus leucogenys</i>	R	Table 3. Some Globally Threatened species observed in the Khijadia Bird Sanctuary, Gujrat.			
Shrikes				<hr/>			
27	Great Grey Shrike	<i>Lanius excubitor</i>	RM	Common Name	Scientific Name	Global Status	
28	Brown Shrike	<i>Lanius cristatus</i>	M	1	Spot-billed Pelican	<i>Pelecanus philippensis</i>	Vu
Muscicapidae				2	Indian Skimmer	<i>Rhynchops albigollis</i>	Vu
Turdinae				3	Eastern Imperial Eagle	<i>Aquila heliaca</i>	Vu
Thrushes, Shortwings, Robins, Forktails, Wheaters				4	Sarus Crane	<i>Grus antigone</i>	Vu
36	Common Stonechat	<i>Saxicola torquata</i>	RM	5	Dalmatian Pelican	<i>Pelecanus crispus</i>	CD
37	Rufous-tailed Wheater	<i>Oenanthe xanthopyrmyna</i>	RM	6	Darter	<i>Anhinga melanogaster</i>	NT
38	Desert Wheater	<i>Oenanthe deserti</i>	M	7	Painted Stork	<i>Mycteria leucocephala</i>	NT
39	Indian Robin	<i>Saxicoloides fulvicata</i>	RM	8	Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	NT
40	Variable Wheater	<i>Oenanthe picata</i>	M	9	Asian Openbill Stork	<i>Anastomus oscitans</i>	NT
Babblers, Timaliinae				10	Oriental White Ibis	<i>Threskiornis melanocephalus</i>	NT
Laughingthrushes, Babaxes, Barwings, Yuhinas				11	Lesser Flamingo	<i>Phoenicopterus minor</i>	NT
41	Common Babbler	<i>Turdiodes caudatus</i>	RM	12	Black Ibis	<i>Pseudibis papillosa</i>	BRS/NT
42	Jungle Babbler	<i>Turdiodes striatus</i>	R	13	Yellow-wattled Lapwing	<i>Vanellus melabaricus</i>	BRS
Goldcrest, Prinias, Tesias, Warblers				<hr/>			

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Insect Vending Machine

The Houston Museum of Natural Science's Brown Hall of Entomology is raking in quite a lot of money with an admittedly "unusual" vending machine that dispenses only **snacks made from insects**.

Dinosaurs in India

- 189 years ago** : Captain W.H. Sleeman of the Bengal Army visits a hill near his house in Jabalpur, Madhya Pradesh and finds some unusual bones. They turn out to be from a large plant-eating reptile, the first to be found in Asia. No one knows what to call it. The term 'dinosaur' (Greek for terrible lizard) is finally coined in 1842.
 - Barapasaurus tagorei** (15 m) : India's long-legged vegetarian. Named for its build (bara = big, pa = leg) and for Rabindranath Tagore. Long-necked, weighing 14 tonnes, it's one of India's most complete skeletons. We even know it had spoon-shaped teeth.
 - Alwalkeria maleriensis** (1.5 m) : One of the earliest known dinosaurs, its bones were discovered in Adilabad (now in Telangana). It was built for speed and agility, and weighed only 3kg—even its bones were hollow. But teeth were sharp.
 - Kotasaurus yamanpalliensis** : 13.4 metres high, the *Kotasaurus* would have stood tall in Yamanapalli, Telangana, where its bones were found. The dinosaur seemed to have been a plant-eater.
 - Jainosaurus** : Discovered near Jabalpur in M.P. and named for palaeontologist Sohan Lal Jain, it walked on all fours, was 18 metres long with a 6-metre neck.
 - Rajasaurus narmadensis** (9 m) : The top dog of the Cretaceous period. It walked on two legs, had a horn near its crown, and would have been agile, and possessing a strong bite. Fossils found near Ahmedabad.
 - Campylognathus indicus** : It's the only Indian avian species. But only a fragment was unearthed, so its existence is in doubt. It was named for its curved jaw and probably fished in the seas from Rajasthan to Meghalaya.
 - Indosaurus** (7 m) : Fossils found near Jabalpur in M.P. indicate that this carnivore weighed 700 kilos, had stocky legs, a complex skull and bony crests between its eyes.
 - Jubbulpuria** : Named after Jabalpur in M.P., where fossils were excavated, it was barely half a metre tall and 1.2 metres long. But it was known to be a sharp predator.
 - The Indian Subcontinent** : Drifts northward, taking her dinosaurs with her. Local dinos now include the *Indosuchus*, *Isisaurus*, *Rajasaurus*, *Laevisuchus*, *Jainosaurus* and *Campylognathus*.
- India's dinosaurs tend to be smaller and have more in common with those from Australia, Madagascar and South America. Only 20-odd Indian species have been recognised so far.