



## REVIEW OF THE STATUS OF VERTEBRATE FAUNA OF NARA GAME RESERVE AREA, DISTRICT KHAIRPUR, SINDH

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### ABSTRACT

The checklist covers vertebrate classes including Amphibia (Amphibians), Reptilia (Reptiles), Aves (Birds) and Mammalia (Mammals) recorded from the Nara Game Reserve area. Based on field surveys and review of literature, as many as two species of amphibian, 20 reptilian species, 129 species of birds and 21 mammalian species were recorded. A total of 75 floral species have also been recorded from the study area. We determined the present status of the vertebrate fauna of Nara Game Reserve area. Threats to the wildlife were also identified.

**Keywords:** Nara game reserve, amphibia, reptilia, aves, mammalia.

### INTRODUCTION

The province of Sindh has a variety of ecosystems which include deserts, arid lands, wetlands, riverine, mangrove forests, agricultural and coastal areas. There are 349 Protected Areas in Pakistan including 26 National Parks, 91 Wildlife Sanctuaries, 116 Game Reserves and 116 Community Conservation Areas (CCAs). Sindh has 50 Protected Areas comprising of one National Park, 33 Wildlife Sanctuaries and 16 Game Reserves (Ghalib *et al.*, 2018). Nara Game Reserve was declared as such in 1981 under the Sindh Wildlife Protection Ordinance, 1972 (Ghalib *et al.*, 2006). It is located at 80 km E of Khairpur, 110 km from Sukkur and 515 km from Karachi. It is important due to its wildlife species, and a number of wetlands which support large population of water birds during the season (Bhaagat, 2005; Khan *et al.*, 2015). The aim of present study was to update the status and list of vertebrate fauna of Nara Game Reserve area.

### MATERIALS AND METHODS

For updating of scientific information and preparation of status and list of vertebrate fauna of Nara Game Reserve area, field surveys were conducted during summer and winter seasons spanning a period of last four years. The following techniques were used for the purpose.

#### Survey of Mammals

To record the data about the mammals, the following field techniques were used:

1. Pellet Counts
2. Count of tracks, footprints, burrows etc
3. Roadside Counts
4. Point Count Surveys
5. Line Transects

We recorded all sightings at each observation point. An index of abundance of each species is expressed as the number of animals seen per hour of observations (Brower *et al.*, 1990; Khan *et al.*, 2013).

#### Survey of Birds

The most commonly used field method in bird surveying is the "Line Transects" method and it involves recording birds continually while moving over the trail. Binoculars and telescopes were used for birds from different sites (Khan *et al.*, 2015).

#### Survey of Amphibians and Reptiles

Following techniques were used to record their occurrence and distribution in the study area:

1. Study of Basking Behavior
2. Plot Searching
3. Spot Lighting or Night Observations
4. Turning of Stones, Rocks and Rotten Trees
5. Indirect Counting

### RESULTS AND DISCUSSION

The province of Sindh has 82 species of mammals, 420 species of birds, 103 species of reptiles and 7 species of

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amphibians (Ghalib *et al.*, 2018). 200 different large, medium and small size wetlands have been listed from the Nara Wetland Complex, from which most of them are permanent while some are seasonal (Ghalib and Khan, 2015).

Based on field surveys, review of literature and continuation of our studies since 2010, as many as two species of amphibians (Table 1), 20 reptilian species (Table 2), 129 species of birds (Table 3) and 21 mammalian species (Table 5) were recorded. A total of 75 floral species (Table 7) have also been recorded from the study area.

According to earlier study, Ghalib *et al.* (2006) Marsh Crocodile is the important species of the study area and during the present study it was found that more than 16 wetlands support Marsh Crocodile. We compared present study data with our earlier reported study Khan *et al.* (2013) and noted that there are no significant changes recorded in the overall number and occurrence of species of the vertebrate fauna, however, we determined the present status of vertebrate fauna of Nara Game Reserve area.

#### Seasonal Status of Birds

Out of 129 species of birds recorded, 66 species are Resident and 63 species are migratory (Table 4).

#### Threatened/Near-Threatened Species

As many as 15 Threatened/ Near-threatened species of wildlife have been recorded from the study area. Out of these, 2 species are Endangered, 8 species are Vulnerable and 5 species are Near-Threatened, as per IUCN Redlist 2018 (Table 6).

Degradation of many wetlands occur in Nara area including Jaari, Kinni, Nagiopeer and Gunjo. While some wetlands became dry including Baboo Dhand and

Dangewari. These were the breeding habitat sites for Marbled Teal which are now diminished. The population of mammals are declined including Hog Deer and Smooth Indian Otter. We also noted that Marsh Crocodiles are declining in these wetlands, while Grey partridges are common in status. Environmental problems included Human population increases in that area. Developmental activities are also increasing while pollution rate is also increasing.

#### Threats

Anthropogenic activities like VIP hunting of Houbara Bustard, livestock grazing, land reclamation for agriculture, developmental projects, disturbance, habitat degradation and human settlements are important threats to the wildlife of Nara Game Reserve.

#### Action Plan

Ecological studies may be undertaken on the newly explored wetlands of Nara Game Reserve to identify the priority sites for future monitoring in view of their potential importance for supporting breeding Marbled Teal, Marsh Crocodile and other threatened waterbird species.

Studies may also be undertaken to assess the impacts of hunting of Houbara Bustard on the sensitive receptors of the area.

The wetlands of the area may be properly managed for view of their ecological significance and supporting to threatened/ rare species such as Hog Deer, Fishing Cat, Smooth-coated Otter, Marbled Teal, Houbara Bustard, Ferruginous Duck, Indian Darter, Long-tailed Grass Warbler and Marsh Crocodile.

Due to its unique wetland ecosystem, Nara Game Reserve is a good place to manage as ecotourism point.

Table 1. Amphibians of Nara Game Reserve. (Khan *et al.*, 2013; Khan and Khan, 2015).

S. No.	Order	Family	Scientific name	Common name	Status
1.	Anura	Ranidae	<i>Euphlyctis cyanophlyctis</i>	Skittering Frog	Common
2	Anura	Bufoidea	<i>Duttaphrynus stomaticus</i>	Indus Toad	Less Common

Table 2. Reptiles of Nara Game Reserve. (Khan *et al.*, 2013; Khan and Khan, 2015).

S. No.	Order	Family	Scientific name	Common name	Status
1.	Chelonia	Trionychidae	<i>Lissemys punctata</i>	Indian Flap-shell Turtle	C
2.	Chelonia	Trionychidae	<i>Nilssonina gangeticus</i>	Indian Softshell Turtle	LC
3.	Chelonia	Emydidae	<i>Geoclemys hamiltonii</i>	Spotted Pond Turtle	C
4.	Squamata	Elapidae	<i>Naja naja</i>	Indian Cobra	LC
5.	Squamata	Colubridae	<i>Lytorhynchus paradoxus</i>	Sindh Awl-headed Snake	LC
6.	Squamata	Colubridae	<i>Platyceps ventromaculatus</i>	Glossy-bellied Racer	C
7.	Squamata	Colubridae	<i>Psammophis leithii</i>	Ribbon Snake	LC
8.	Squamata	Viperidae	<i>Echis carinatus</i>	Saw-scaled Viper	LC
9.	Squamata	Colubridae	<i>Xenochrophis piscator</i>	Checkered-keel Back	LC
10.	Squamata	Scincidae	<i>Ophiomorus tridactylus</i>	Three-toed Sand Swimmer	LC
11.	Squamata	Varanidae	<i>Varanus griseus</i>	Desert Monitor Lizard	LC
12.	Squamata	Agamidae	<i>Trapelus agilis</i>	Brilliant Agama	LC
13.	Squamata	Geckonidae	<i>Cyrtopodian scaber</i>	Keeled Rock Gecko	LC
14.	Squamata	Lacertidae	<i>Acanthodactylus cantoris</i>	Bluetail Lizard	C
15.	Squamata	Agamidae	<i>Calotes versicolor</i>	Garden Lizard	C
16.	Squamata	Varanidae	<i>Varanus bengalensis</i>	Indian Monitor	LC
17.	Squamata	Uromastycidae	<i>Saara hardwickii</i>	Spiny-tailed Lizard	LC
18.	Squamata	Boidae	<i>Exyx johnii</i>	Sand Boa	LC
19.	Squamata	Colubridae	<i>Ptyas mucosus</i>	Dhaman	C
20.	Crocodylia	Crocodylidae	<i>Crocodylus palustris</i>	Marsh Crocodile	LC

Legends: C=Common; LC=Less Common.

Table 3. Avifauna of Nara Game Reserve. (Khan *et al.*, 2013; Khan and Khan, 2015).

S. No.	Order	Family	Scientific name	Common name	Status
1.	Podicipediformes	Podicipedidae	<i>Tachybaptus ruficollis</i>	Little Grebe/Dabchick	R
2.	Pelecaniformes	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	Large Cormorant	WV
3.	Pelecaniformes	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	Little Cormorant	R
4.	Pelecaniformes	Anhingidae	<i>Anhinga rufa</i>	Indian Darter	WV
5.	Ciconiiformes	Ardeidae	<i>Ardea cinerea</i>	Grey Heron	WV
6.	Ciconiiformes	Ardeidae	<i>Ardea purpurea</i>	Purple Heron	R
7.	Ciconiiformes	Ardeidae	<i>Ardeola grayii</i>	Indian Pond Heron	R
8.	Ciconiiformes	Ardeidae	<i>Bubulcus ibis</i>	Cattle Egret	R
9.	Ciconiiformes	Ardeidae	<i>Egretta alba</i>	Large Egret/Great Egret	R
10.	Ciconiiformes	Ardeidae	<i>Egretta intermedia</i>	Smaller/Median Egret	R
11.	Ciconiiformes	Ardeidae	<i>Egretta garzetta</i>	Little Egret	R
12.	Ciconiiformes	Ciconiidae	<i>Ciconia nigra</i>	Black Stork	WV
13.	Ciconiiformes	Threskiornithidae	<i>Threskiornis melanocephala</i>	White Ibis	R
14.	Ciconiiformes	Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy Ibis	WV
15.	Anseriformes	Anatidae	<i>Tadorna ferruginea</i>	Ruddy Shelduck	WV
16.	Anseriformes	Anatidae	<i>Anas angustirostris</i>	Marbled Teal	WV
17.	Anseriformes	Anatidae	<i>Anas acuta</i>	Pintail	WV
18.	Anseriformes	Anatidae	<i>Anas crecca</i>	Common Teal	WV
19.	Anseriformes	Anatidae	<i>Anas platyrhynchos</i>	Mallard	WV
20.	Anseriformes	Anatidae	<i>Anas strepera</i>	Gadwall	WV
21.	Anseriformes	Anatidae	<i>Anas Penelope</i>	Wigeon	WV

22.	Anseriformes	Anatidae	<i>Anas querquedula</i>	Garganey	PM
23.	Anseriformes	Anatidae	<i>Anas clypeata</i>	Shoveller	WV
24.	Anseriformes	Anatidae	<i>Aythya ferina</i>	Common Pochard	WV
25.	Anseriformes	Anatidae	<i>Aythya fuligula</i>	Tufted Duck	WV
26.	Anseriformes	Anatidae	<i>Aythya nyroca</i>	White-eyed Pochard/ Ferrugineous Duck	WV
27.	Falconiformes	Accipitridae	<i>Elanus caeruleus</i>	Black-winged Kite	R
28.	Falconiformes	Accipitridae	<i>Pernis ptilorhynchus</i>	Oriental Honey Buzzard	WV
29.	Falconiformes	Accipitridae	<i>Buteo buteo</i>	Common Buzzard	WV
30.	Falconiformes	Accipitridae	<i>Buteo rufinus</i>	Long-legged Buzzard	WV
31.	Falconiformes	Accipitridae	<i>Aquila rapax</i>	Tawny Eagle	R
32.	Falconiformes	Accipitridae	<i>Circus aeruginosus</i>	Eurasian Marsh Harrier	WV
33.	Falconiformes	Falconidae	<i>Falco subbuteo</i>	Hobby	WV
34.	Falconiformes	Falconidae	<i>Falco tinnunculus</i>	Kestrel	WV
35.	Galliformes	Phasianidae	<i>Francolinus francolinus</i>	Black Partridge	R
36.	Galliformes	Phasianidae	<i>Francolinus pondicerianus</i>	Grey Partridge	R
37.	Gruiformes	Rallidae	<i>Porzana porzana</i>	Spotted Crake	WV
38.	Gruiformes	Rallidae	<i>Amaurornis phoenicurus</i>	White-breasted Waterhen	R
39.	Gruiformes	Rallidae	<i>Gallinule chloropus</i>	Indian Moorhen	R
40.	Gruiformes	Rallidae	<i>Porphyrio porphyrio</i>	Indian Purple Moorhen	R
41.	Gruiformes	Rallidae	<i>Fulica atra</i>	Common Coot	WV
42.	Gruiformes	Otididae	<i>Chlamydotis undulata</i>	Houbara Bustard	WV
43.	Charadriiformes	Charadriidae	<i>Vanellus indicus</i>	Red-wattled Lapwing	R
44.	Charadriiformes	Charadriidae	<i>Vanellus leucurus</i>	White-tailed Lapwing	WV
45.	Charadriiformes	Charadriidae	<i>Vanellus malabaricus</i>	Yellow-wattled Lapwing	SBV
46.	Charadriiformes	Charadriidae	<i>Charadrius alexandrinus</i>	Kentish Plover	WV
47.	Charadriiformes	Scolopacidae	<i>Numenius arquata</i>	Curlew	WV
48.	Charadriiformes	Scolopacidae	<i>Limosa limosa</i>	Black-tailed Godwit	WV
49.	Charadriiformes	Scolopacidae	<i>Tringa hypoleucos</i>	Common Sandpiper	WV
50.	Charadriiformes	Scolopacidae	<i>Tringa nebularia</i>	Greenshank	WV
51.	Charadriiformes	Scolopacidae	<i>Tringa ochropus</i>	Green Sandpiper	WV
52.	Charadriiformes	Scolopacidae	<i>Tringa stagnatilis</i>	Marsh Sandpiper	WV
53.	Charadriiformes	Scolopacidae	<i>Tringa tetanus</i>	Common Redshank	WV
54.	Charadriiformes	Scolopacidae	<i>Capella gallinago</i>	Common/Fantail Snipe	WV
55.	Charadriiformes	Scolopacidae	<i>Calidris alpinus</i>	Dunlin	WV
56.	Charadriiformes	Scolopacidae	<i>Calidris minutus</i>	Little Stint	WV
57.	Charadriiformes	Scolopacidae	<i>Philomachus pugnax</i>	Ruff	WV
58.	Charadriiformes	Recurvirostridae	<i>Himantopus himantopus</i>	Black-winged Stilt	R
59.	Charadriiformes	Glariolidae	<i>Cursorius cursor</i>	Cream-coloured/Desert Courser	R
60.	Charadriiformes	Sternidae	<i>Chlidonias hybrida</i>	Indian Whiskered Tern	PM
61.	Charadriiformes	Sternidae	<i>Sterna albifrons</i>	Little Tern	R
62.	Charadriiformes	Sternidae	<i>Sterna aurantia</i>	River Tern	R
63.	Columbiformes	Pteroclididae	<i>Pterocles orientalis</i>	Imperial/Black-bellied Sandgrouse	WV
64.	Columbiformes	Columbidae	<i>Columba livia</i>	Blue Rock Pigeon	R
65.	Columbiformes	Columbidae	<i>Streptopelia decaocto</i>	Ring Dove	R
66.	Columbiformes	Columbidae	<i>Streptopelia senegalensis</i>	Little Brown Dove	R
67.	Columbiformes	Columbidae	<i>Streptopelia tranquebarica</i>	Red Turtle Dove	R
68.	Psittaciformes	Psittacidae	<i>Psittacula krameri</i>	Rose-ringed Parakeet	R
69.	Cuculiformes	Cuculidae	<i>Centropus sinensis</i>	Common Crow-pheasant/ or Coucal	R

70.	Strigiformes	Strigidae	<i>Athene brama</i>	Northern Spotted Owlet	R
71.	Caprimulgiformes	Caprimulgidae	<i>Caprimulgus europaeus</i>	Eurasian Nightjar	WV
72.	Caprimulgiformes	Caprimulgidae	<i>Caprimulgus mahrattensis</i>	Syke's/Sind Nightjar	R
73.	Coraciiformes	Alcedinidae	<i>Ceryle rudis</i>	Pied Kingfisher	R
74.	Coraciiformes	Alcedinidae	<i>Alcedo atthis</i>	Common Kingfisher	R
75.	Coraciiformes	Alcedinidae	<i>Halcyon smyrnensis</i>	Whitebreasted Kingfisher	R
76.	Coraciiformes	Meropidae	<i>Merops orientalis</i>	Green Bee-eater	R
77.	Coraciiformes	Meropidae	<i>Merops superciliosus</i>	Blue-cheeked Bee-eater	SBV
78.	Coraciiformes	Coraciidae	<i>Coracias benghalensis</i>	Indian Roller	R
79.	Coraciiformes	Upupidae	<i>Upupa epops</i>	Common Hoppoe	WV
80.	Piciformes	Picidae	<i>Dinopium benghalensis</i>	Sind Golden-backed Woodpecker	R
81.	Piciformes	Picidae	<i>Picoides asimilis</i>	Sind Pied Woodpecker	R
82.	Passeriformes	Alaudidae	<i>Calendrella brachydactyla</i>	Great Short-toed Lark	WV
83.	Passeriformes	Alaudidae	<i>Galerida cristata</i>	Crested Lark	R
84.	Passeriformes	Alaudidae	<i>Alauda gulgula</i>	Oriental Small Skylark	R
85.	Passeriformes	Hirundinidae	<i>Riparia diluta</i>	Pale Sand Martin	WV
86.	Passeriformes	Hirundinidae	<i>Riparia paludicola</i>	Plain/Grey-throated Sand Martin	R
87.	Passeriformes	Hirundinidae	<i>Hirundo rustica</i>	Barn/Common Swallow	WV
88.	Passeriformes	Laniidae	<i>Lanius meridionalis</i>	Southern Grey Shrike	R
89.	Passeriformes	Laniidae	<i>Lanius schach</i>	Rufous-backed Shrike	R
90.	Passeriformes	Laniidae	<i>Lanius vittatus</i>	Bay-backed Shrike	R
91.	Passeriformes	Dicruridae	<i>Dicrurus adsimilis</i>	Black Drongo	R
92.	Passeriformes	Sturnidae	<i>Acridotheres ginginianus</i>	Bank Myna	R
93.	Passeriformes	Sturnidae	<i>Acridotheres tristis</i>	Indian Myna	R
94.	Passeriformes	Sturnidae	<i>Sturnus vulgaris</i>	Common Starling	R
95.	Passeriformes	Corvidae	<i>Dendrocitta vagabunda</i>	Indian Treepie	R
96.	Passeriformes	Corvidae	<i>Corvus splendens</i>	Sind House Crow	R
97.	Passeriformes	Pycnonotidae	<i>Pycnonotus cafer</i>	Red-vented Bulbul	R
98.	Passeriformes	Pycnonotidae	<i>Pycnonotus leucogenys</i>	White-cheeked Bulbul	R
99.	Passeriformes	Timaliidae	<i>Turdoides caudatus</i>	Common Babbler	R
100.	Passeriformes	Timaliidae	<i>Turdoides earlei</i>	Striated Babbler	R
101.	Passeriformes	Timaliidae	<i>Turdoides striatus</i>	Sind Jungle Babbler	R
102.	Passeriformes	Rhipiduridae	<i>Rhipidura aureola</i>	White-browed Fantail	R
103.	Passeriformes	Sylviidae	<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler	WV
104.	Passeriformes	Sylviidae	<i>Cisticola juncidis</i>	Streaked Fantail Warbler	R
105.	Passeriformes	Sylviidae	<i>Prinia buchanani</i>	Rufous-fronted Wren-warbler	R
106.	Passeriformes	Sylviidae	<i>Prinia burnesii</i>	Long-tailed Grass Warbler/ Rufous-vented Prinia	R
107.	Passeriformes	Sylviidae	<i>Prinia glacilis</i>	Indian Streaked Wren-warbler	R
108.	Passeriformes	Sylviidae	<i>Orthotomus sutorius</i>	Tailor Bird	R
109.	Passeriformes	Sylviidae	<i>Hippolais caligata</i>	Booted Tree Warbler	WV
110.	Passeriformes	Sylviidae	<i>Sylvia curruca</i>	Lesser Whitethroat	WV
111.	Passeriformes	Sylviidae	<i>Phylloscopus collybita</i>	Common Chiffchaff	WV
112.	Passeriformes	Turdidae	<i>Erythropygia galacototes</i>	Rufous Chat/Grey-backed Warbler	PM
113.	Passeriformes	Turdidae	<i>Luscinia svecicus</i>	Bluethroat	WV
114.	Passeriformes	Turdidae	<i>Phoenicurus ochruros</i>	Black Redstart	WV
115.	Passeriformes	Turdidae	<i>Saxicola caprata</i>	Pied Bush Chat	R
116.	Passeriformes	Turdidae	<i>Saxicola torquata</i>	Collared Indian Bush Chat/ stone Chat	PM

117.	Passeriformes	Turdidae	<i>Oenanthe deserti</i>	Desert Wheatear	WV
118.	Passeriformes	Turdidae	<i>Oenanthe picata</i>	Variable Whaetear	WV
119.	Passeriformes	Turdidae	<i>Oenanthe xanthopyrmyna</i>	Red-tailed Wheatear	WV
120.	Passeriformes	Turdidae	<i>Saxicoloides fulicata</i>	Indian Robin	R
121.	Passeriformes	Turdidae	<i>Anthus campestris</i>	Tawny Pipit	WV
122.	Passeriformes	Motacillidae	<i>Motacilla alba</i>	White/ Pied Wagtail	WV
123.	Passeriformes	Motacillidae	<i>Motacilla citreola</i>	Yellow-headed Wagtail	WV
124.	Passeriformes	Motacillidae	<i>Motacilla flava</i>	Yellow Wagtail	PM
125.	Passeriformes	Nectariniidae	<i>Nectarinia asiatica</i>	Purple Sunbird	R
126.	Passeriformes	Passeridae	<i>Passer domesticus</i>	House Sparrow	R
127.	Passeriformes	Passeridae	<i>Passer pyrrhonotus</i>	Sind Jungle Sparrow	R
128.	Passeriformes	Ploceidae	<i>Ploceus philippinus</i>	Indian Baya	R
129.	Passeriformes	Estrildidae	<i>Lonchura malabarica</i>	Common Silverbill/ white-throated Munia	R

**Legends:** R= Resident; PM = Passage Migrant; WV = Winter visitor; SV = Summer Visitor; SBV = Summer Breeding Visitor.

Table 4. Seasonal Status of Birds.

S. No.	Status	Number of Species
1	Resident	66
2	Winter Visitor	56
3	Passage Migrant	05
4	Summer Breeding Visitor	02

Table 5. Mammals of Nara Game Reserve. (Khan *et al.*, 2013; Khan and Khan, 2015).

S. No.	Order	Family	Scientific name	Common name	Status
1.	Insectivora	Erinaceidae	<i>Hemiechinus collaris</i>	Long-eared Desert Hedgehog	LC
2.	Insectivora	Soricidae	<i>Suncus stoliczkanus</i>	Anderson's Shrew	LC
3.	Carnivora	Canidae	<i>Canis aureus</i>	Jackal	LC
4.	Carnivora	Canidae	<i>Vulpes vulpes</i>	Desert Fox	LC
5.	Carnivora	Mustellidae	<i>Lutrogale perspicillata</i>	Smooth-coated Otter	Sc
6.	Carnivora	Herpestidae	<i>Herpestes edwardsi</i>	Grey Mongoose	LC
7.	Carnivora	Herpestidae	<i>Herpestes javanicus</i>	Small Mongoose	LC
8.	Carnivora	Felidae	<i>Felis chaus</i>	Jungle Cat	LC
9.	Carnivora	Felidae	<i>Felis silvestris</i>	Indian Desert Cat	LC
10.	Carnivora	Felidae	<i>Prionailurus viverrina</i>	Fishing Cat	Rr
11.	Artiodactyla	Suidae	<i>Sus scrofa</i>	Indian Wild Boar	LC
12.	Artiodactyla	Cervidae	<i>Axis porcinus</i>	Hog Deer	Rr
13.	Lagomorpha	Leporidae	<i>Lepus nigricollis</i>	Indian Hare	Rr
14.	Rodentia	Sciuridae	<i>Funanbulus pennant</i>	Five-striped Palm Squirrel	C
15.	Rodentia	Hystricidae	<i>Hystrix indica</i>	Indian Crested Porcupine	LC
16.	Rodentia	Muridae	<i>Rattus rattus</i>	Roof Rat	C
17.	Rodentia	Muridae	<i>Mus musculus</i>	House Mouse	C
18.	Rodentia	Muridae	<i>Nesokia indica</i>	Short-tailed Mole Rat	C
19.	Rodentia	Muridae	<i>Gerbillus nanus</i>	Balochistan Gerbil	C
20.	Rodentia	Muridae	<i>Tatera indica</i>	Indian Gerbil	C
21.	Rodentia	Muridae	<i>Meriones hurrianae</i>	Indian Desert gerbil	C

**Legends:** C = Common; LC = Less Common; Sc = Scarce; Rr = Rare.

Table 6. Threatened / Near-Threatened Species of Nara Game Reserve.

Animal Group	S. No.	Order	Family	Scientific name	Common name	Status
Reptiles	1	Chelonia	Trionychidae	<i>Nilssonina gangeticus</i>	Indian Softshell Turtle	VU
	2	Chelonia	Emydidae	<i>Geoclemys hamiltonii</i>	Spotted Pond Turtle	VU
	3	Crocodylia	Crocodylidae	<i>Crocodylus palustris</i>	Marsh Crocodile	VU
Birds	1	Anseriformes	Anatidae	<i>Anas angustirostris</i>	Marbled Teal	VU
	2	Anseriformes	Anatidae	<i>Aythya ferina</i>	Common Pochard	VU
	3	Gruiformes	Otididae	<i>Chlamydotis undulata</i>	Houbara Bustard	VU
	4	Passeriformes	Laniidae	<i>Lanius meridionalis</i>	Southern Grey Shrike	VU
	5	Pelecaniformes	Anhingidae	<i>Anhinga rufa</i>	Indian Darter	NT
	6	Anseriformes	Anatidae	<i>Aythya nyroca</i>	White-eyed Pochard/ Ferrugineus Duck	NT
	7	Charadriiformes	Scolopacidae	<i>Numenius arquata</i>	Curlew	NT
	8	Charadriiformes	Scolopacidae	<i>Limosa limosa</i>	Black-tailed Godwit	NT
	9	Charadriiformes	Sternidae	<i>Sterna aurantia</i>	River Tern	NT
Mammals	1	Carnivora	Mustellidae	<i>Lutrogale perspicillata</i>	Smooth-coated Otter	E
	2	Artiodactyla	Cervidae	<i>Axis porcinus</i>	Hog Deer	E
	3	Carnivora	Felidae	<i>Prionailurus viverrina</i>	Fishing Cat	VU

Table 7. Plants of Nara Game Reserve. (Khan *et al.*, 2013; Khan and Khan, 2015).

Family	<b>Aizoaceae</b>
1.	<i>Lineum indicum</i>
2.	<i>Sesukium sesuvioides</i>
3.	<i>Trianthema triquetra</i>
4.	<i>Zakya pentandra</i>
Family	<b>Amaranthaceae</b>
5.	<i>Aerva javanica</i>
6.	<i>Alternanthera sessilis</i>
7.	<i>Amaranthus graecizans</i>
8.	<i>Amaranthus viridus</i>
9.	<i>Digeria muricata</i>
Family	<b>Asclapiadaceae</b>
10.	<i>Calotropis procera</i>
11.	<i>Leptadenia pyrotechnica</i>
12.	<i>Oxystelma exculentum</i>
Family	<b>Asteraceae</b>
13.	<i>Conyza Canadensis</i>
14.	<i>Eclipta prostrata</i>
15.	<i>Lucaenia procumbens</i>
16.	<i>Pluchea lanceolata</i>
17.	<i>Xanthium indicum</i>

Family	<b>Boraginaceae</b>
18.	<i>Cordia ghraf</i>
19.	<i>Heliotropium crispum</i>
Family	<b>Brassicaceae</b>
20.	<i>Dipterygium glaucum</i>
21.	<i>Farsetia hamiltoni</i>
Family	<b>Caesalpiniaceae</b>
22.	<i>Cassia italic</i>
Family	<b>Capparidaceae</b>
23.	<i>Capparis deciduas</i>
24.	<i>Cleome brachycarpa</i>
Family	<b>Chenopodiaceae</b>
25.	<i>Salsola imbricata</i>
26.	<i>Salsola fruticosa</i>
27.	<i>Sueda nudiflora</i>
Family	<b>Convolvulaceae</b>
28.	<i>Convolvulus arvensis</i>
29.	<i>Convolvulus prostata</i>
30.	<i>Cressa cretica</i>
31.	<i>Ipomoea aquatica</i>
Family	<b>Cucurbitaceae</b>
32.	<i>Citrulus colocynthis</i>
Family	<b>Cuscutaceae</b>
33.	<i>Cuscuta chinensis</i>

Family	<b>Cyperaceae</b>
34.	<i>Cyperus rotandus</i>
35.	<i>Fimbristylis acuminata</i>
Family	<b>Euphorbiaceae</b>
36.	<i>Euphorbia prostate</i>
37.	<i>Ricinis communis</i>
Family	<b>Fabaceae</b>
38.	<i>Alhaji maurorum</i>
39.	<i>Crotolaria burhia</i>
40.	<i>Dalbergia sisso</i>
41.	<i>Tephrotia uniflora</i>
Family	<b>Hydrocharitaceae</b>
42.	<i>Hydrilla certicillata</i>
Family	<b>Malvaceae</b>
43.	<i>Abutilon indicum</i>
Family	<b>Meliaceae</b>
44.	<i>Azadirachta indica</i>
Family	<b>Mimosaceae</b>
45.	<i>Acacia jacquemontii</i>
46.	<i>Acacia nilotica</i>
47.	<i>Acacia senegal</i>
48.	<i>Albizzia lebbek</i>
49.	<i>Propopis cineraria</i>
Family	<b>Moraceae</b>
50.	<i>Ficus religiosa</i>
Family	<b>Moringaceae</b>
51.	<i>Moringa oleifera</i>
Family	<b>Myrtaceae</b>
52.	<i>Eucalyptis sp.</i>
Family	<b>Poaceae</b>
53.	<i>Aeluropus lagopoides</i>
54.	<i>Aristida adscensionis</i>
55.	<i>Cymbopogon jawarancusa</i>
56.	<i>Cynodon dactylon</i>
57.	<i>Eleusine indica</i>
58.	<i>Panicum turgidum</i>
59.	<i>Phragmites karka</i>
60.	<i>Saccharum bengalensis</i>
61.	<i>Saccharum spontaneum</i>
Family	<b>Polygonaceae</b>
62.	<i>Calligonum polygonoides</i>
Family	<b>Rhamnaceae</b>
63.	<i>Zizyphus mauritiana</i>
64.	<i>Zizyphus nummularia</i>
Family	<b>Salicaceae</b>
65.	<i>Populus euphratica</i>
Family	<b>Salvadoraceae</b>
66.	<i>Salvadora oleoides</i>
Family	<b>Solanaceae</b>
67.	<i>Solanum nigrum</i>
68.	<i>Solanum surattense</i>
Family	<b>Tamaricaceae</b>
69.	<i>Tamarix aphylla</i>
70.	<i>Tamarix dioca</i>

71.	<i>Tamarix indica</i>
Family	<b>Typhaceae</b>
72.	<i>Typha domigensis</i>
73.	<i>Typha elephantine</i>
Family	<b>Zygophyllaceae</b>
74.	<i>Tribulus longipetalus</i>
75.	<i>Zygophyllum simplex</i>

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