

CURRENT DISTRIBUTION AND STATUS OF THE MAMMALS, BIRDS AND REPTILES IN RANN OF KUTCH WILDLIFE SANCTUARY, SINDH

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ABSTRACT

Wildlife Surveys were undertaken in the prime wildlife habitats of Rann of Kutch Wildlife Sanctuary from 2006 – 2012 and a total of 30 species of mammals, 112 species of birds, 20 species of reptiles and 22 important plant species were recorded from the area. The site is very important being a Wildlife Sanctuary, an important Bird Area (IBA), a Ramsar Site and a part of Global – 200 Eco regions. The key species include: Bluebull (*Boselaphus tragocamelus*), Chinkara (*Gazella bennetti*), Wild Ass (*Equus hemionus*), Pangolin (*Manis crassicaudata*), Caracal (*Felis caracal*), Wolf (*Canis lupus*), Hyaena (*Hyaena hyaena*), Honey Badger (*Mellivora capensis*), Sarus Crane (*Grus antigone*), Houbara Bustard (*Chlamydotis undulata*), Indian Peafowl (*Pavo cristatus*), Indian Whitebacked Vulture (*Gyps bengalensis*), Egyptian Vulture (*Neophron percnopterus*), Long billed Vulture (*Gyps indicus*) and Red-headed Vulture (*Sarcogyps calvus*). A total of 9 threatened species of mammals and birds have been recorded from the area. Based on present study, an action plan for the safeguard of the biodiversity of the Sanctuary has been suggested.

Keywords: Tharparkar, Ramsar sites of Sindh, Important Birds Areas of Sindh.

INTRODUCTION

The province of Sindh has been endowed with a wealth of wildlife. There are 50 protected areas in Sindh having a rich variety of very important wildlife species. In addition to that, there are 10 wetlands of international importance (Ramsar Sites) which support very large concentrations of migratory water birds during the winters. Moreover, there are 19 important Bird Areas (IBAs) in Sindh. These are region wide internationally important sites for the conservation of birds and biodiversity. Global 200 is a global ranking of the Earth's most outstanding terrestrial, freshwater and marine habitats, designed to serve as blueprint for biodiversity conservation at a global scale. Out of the 238 eco-regions, 5 are located in Pakistan, out of these, 2 are located in Sindh.

The Rann of Kutch Wildlife Sanctuary is one of the most important wildlife sanctuaries out of 33 wildlife sanctuaries of Sindh on account its unique wildlife species. It is also a Ramsar Site, an important Bird Area (IBA) and also a part of Global 200 Eco-region.

Salient Features of Rann of Kutch Wildlife Sanctuary

The Rann of Kutch Wildlife Sanctuary stretching over an area of 320,463ha was declared as such in 1980. It is located in southern Sindh and comprises of talkies Mithi, Nagarparkar, Diplo of district Tharparkar and Talukas Badin and Tando Bago of district Badin.

The area is mostly a desert area consisting of sand dunes interdunal valleys and with flat area in between. The south-eastern part, called Nagarparkar consists of hilly area (Karoonyher Hills). There are saline marshes, coastal brackish lagoons and tidal mudflats in the southern most part. There are also a number of wetlands scattered in the area fed by rain water. There are cultivated areas near towns and villages.

Importance of Rann of Kutch Wildlife Sanctuary as a Ramsar Site

It has been declared a Ramsar Site on the basis of Criteria 1,2,3,4 and 5.

There are three groups of Important wetlands area wise, are given below:

A. Wetlands of Nagar Parker area

The important wetlands are: Bodesar, Naryasar, Bhansar, Bartalao, Sangatalao, Ghantiyari, Gijoo Naddi, Ranpur Dam, Gadro Charan near Dhed Vera, Talai Sakar, Lakharh Khadio, Saangha near Veerawah, Nimla, Surchand and a Dam the by Banh Beli in Kasbo.

B. Wetlands of Tando Bago and Talhar area

The Tando Bago and Talhar lakes contain a group of shallow, freshwater/brackish lakes. Three of these are significant lakes due to their faunal value. These are Phoosna I and II, Charwo and Khanjo Lake.

- Phoosna Lakes

It is very important wintering area for waterbirds particularly for Dalmatian Pelican, White Pelican, Red-crested Pochard, Avocet, Eurasian Spoonbill, Glossy Ibis and ducks.

- Khanjo Lake

It is also important for supporting anatids particularly Ferruginous Pochard and Spotbilled Duck.

- Charwo Lake

It is also important for supporting anatids in large numbers.

C. Wetlands near Kadhan

The important wetlands near Kadhan include Shaikh Kerio Peer, Warharo., Sandhoo and Loonarh.

Importance of Rann of Kutch Wildlife Sanctuary as an Important Bird Area (IBA) Birdlife International's IBA Program is a worldwide initiative aimed at identifying, documenting and working towards the conservation and sustainable management of a network of critical sites for the world's birds, termed as IBAs (BirdLife International, 2004).

IBAs are

- Critical Sites for the conservation of birds and biodiversity
- Places of international importance
- Practical targets for conservation action
- Used to reinforce existing protected area networks

The Asian IBA Program aims to document and promote the conservation of a region wide network of internationally important sites for the conservation of birds and biodiversity of the world's bird. These sites are selected as IBAs under one or more of the following four global IBAs Criteria.

A 1: A site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern;

A 2: A site holds a significant component of a restricted range species whose breeding distributions define an Endemic Birds Area (EBA) or Secondary Area (SA);

A 3: A site holds a significant component of the group of species whose distributions are largely or wholly confined to one biome;

A 4: A site holds on a regular basis > 1% of the biogeographically population of a congregatory waterbird, seabird or terrestrial species, or more than 20,000 water birds or seabirds of one or more species.

The Rann of Kutch Wildlife Sanctuary has been selected as an IBA for supporting same threatened species of birds as well as large populations of congregatory birds, such as Sarus Crane, *Grus antigone* and Longbilled Vulture, *Gyps indicus*, along with Congregatory Water birds such as White Pelican, Lesser Flamingo, Ruddy Shelduck, Wigeon, Shoveller, Pintail, Common Teal, Common Crane, Little Stint, Kentish Plover, Ruff and Avocet (Birdlife International, 2004)

Importance of Rann of Kutch Wildlife Sanctuary as a Global 200 Eco-region (199)

Global 200 is a global ranking of the Earth's most outstanding terrestrial, freshwater and marine habitats designed to serve as blueprint for biodiversity conservation at a global scale. It classifies those eco-regions that are considered crucial, endangered, or vulnerable as a result of direct human impacts and those that are relatively stable or intact. Out of 238 eco - regions, 5 are located in Pakistan (Table 1).

The marshy area of Rann of Kutch Wildlife Sanctuary falls into eco-region No. 99 – Rann of Kutch Flooded Grassland. The biodiversity features of the site are the presence of Asiatic Wild Ass, Flamingos, Sarus Crane, Indian Courser and White Stork.

MATERIALS AND METHODS

Different direct and indirect methods were applied to record the occurrence and distribution of various animal species in the study area which included the following techniques.

Survey of Mammals

▪ Point Count Surveys

In this method, observation points were established along the roads, tracks, or at higher places or any other suitable location for locating or viewing the animals. At each vantage point, all sightings of the animals at the site were recorded and the index of the abundance of each species was calculated as number of animals seen per hour of observation.

▪ Roadside or Rough Track Count

This method was applied to locate the animals and to have their population estimates where it was difficult to enter into the habitat of the species which were shy or wary.

▪ Line Transect

Strip census method was also applied which involved recording the animals seen traversing a predetermined transect line.

▪ Track and Sign Counts

one effective way to record the presence of small mammals is to actively search their preferred habitats along sandy plain areas, bushy areas, agriculture fields and near human habitations etc.

Tracks and signs are indication of the presence of animals in an area. Signs such as footprints, burrows, holes and presence of fecal material were taken into the account to record the occurrence of the animals in the area.

Survey of Birds

For surveying birds, both transect count and point count methods were applied. Both are based on recording birds along a predefined survey unit. In case of transect count, bird recording occurs continually whereas in point counts, it occurs at regular intervals along the route and for a given duration at each point.

Survey of Reptiles

For surveys of reptiles, active searching method was applied. The study area was actively searched in the preferred habitats of the species such as crevices, under stones and on sandy plains.

RESULTS AND DISCUSSION

As per results of 5 year surveys from 2006 – 2011, 30 Species of mammals, 112 species of birds, 20 species of reptiles and 22 species of plants were recorded (Tables 2 - 5).

The key species of wildlife of the area include: Bluebull, Chinkara, Pangolin, Wolf, Caracal, Honey Badger, Hyaena, Desert Cat, Indian Wild Ass, Sarus Crane, Great Indian Bustard, Houbara Bustard, Indian Peafowl, Indian Longbilled Vulture, Whitebacked Vulture, Egyptian Vulture, Pale Crag Martin and Indian Chamaeleon.

Thus the site is ecologically and biologically very important but very little information is available on the biodiversity of the area. Some work on the bird fauna of the area has been done by the zoological Survey Department (Azam, 1997; Azam and Chaudary, 2005). The area has gained importance after having been declared as Ramsar Site. Waterbird Census has been regularly undertaken on the major wetlands of Tharparkar and Badin districts and significant observations have been made (Chaudhry *et al.*, 2012).

Some environmental studies have also been undertaken for EIA with respect to construction of Rural Roads in the area and development activities in Thar Coal Block, but data are unpublished.

Important Wildlife Habitats

The following habitats were identified in the study area which include: Hills (Karvnjhar Hills), sandy Desert Areas (Hero desert), Rann of Kutch (Flooded grassland), Forest area (as alrhi, Naysar, vikaryo and Chechrhasar Forest Blocks), Wetlands (a number of rain-fed water storage areas, some of which are being developed as dams), Border Areas (Fallow lands, Plain areas, forest blocks and villages near Bhoka, Vikasar, Undher, Sutlai, Sindi Jo Vandhia, Talai, Surachand and Kuwala), Agriculture Areas having seasonal crops of Gowar (*Cyamopsis tetragonoloba*), Millet (*Pennisetum typhoidem*) and Castor (*Ricinus communis*).

Table 1. Global 200 and Pakistan.

Global 200 Eco region (No)	Bio geographical sites	Countries in which Eco region lies	Geo graphical location	Habitat Type	Biodiversity Features	General Threats
Tibetan Plateau Steppe (110)	Palaearctic	Afghanistan, China, India, Pakistan, Tajikistan	High Plateau, north of the Himalayas in central Asia	Motane Grasslands and Shrublands	Snow Leopard, Wolf, Tibetan Sand Fox, Brown Bear	Hunting
Western Himalayan Temperate Forests (68)	Indo-Malayan	Afghanistan, India, Nepal, Pakistan	Mountains north of India and Pakistan	Temperate broad leaf and mixed forests	Include Palas valley floristically rich in Pakistan, Ungulates, Marmots	Forest Logging Hunting
Rann of Kutch Flooded Grasslands (99)	Indo-Malayan	India, Pakistan	Eastern Asia	Flooded grassland and savannas	Asiatic wild Ass, Flamingos, Sarus Cranes, Indian Couser, White Stork	Vulnerable to development pressure, water scarcity
Indus River Delta (156)	Indo-Malayan	India, Pakistan	Western portion of the Indian sub - continent	Large River Delta	Indus River Dolphin, riverine Forest, Mangroves, Hog Deer	Dams on the rivers, cutting of the forest, water scarcity
North Arabian Sea (232)	Western Indo - Pacific	Djibouti, Iran, Oman, Pakistan, Saudi Arabia, Somalia, UAE, Yemen	Waters of Arabian Peninsula and north of the Indian ocean	Tropical Coral	Corals, sea Grass beds, Mangroves, Dungong, Sea Turtles, whales, Endemic Algae kelp communities	World's busiest oil tanker route, over fishing, Eutrophication Marine pollution

Significant Wetland Sites

Recently, Sarus Crane has been reported from Abasar Talab and Bando Goth Talab near Nagarparkar and Saangha Talab near Nagar and Blackheaded Ibis from Veerawah Lake (Chaudary *et al.*, 2012). Previously, 1,15,000 waterbirds were recorded from Talai Sakar in 2011 and more than 40,000 waterbirds from Gadro Choaran near Dhed Vera, Raathi. Grimmett *et al.* (2008) have listed some species of birds peculiar to the Thar Desert. These are: Eurasian Eagle, Blackbellied Sandgrouse, Chestnut-bellied Sandgrouse, Sociable Lapwing, Bimaculated Lark, Indian Bush Lark and Greater Hoopoe Lark.

Some Key species and their record of occurrence

The Nagarparkar area is quite important for a variety of wildlife particularly for Blue Bull, Indian Chinkara, Indian Wild Ass (E), Indian Pangolin (NT), Hyaena (NT), Caracal, Ratel, Indian Wolf, Sarus Crane (V), Houbara Bustard (V), Indian Peafowl, Indian Vulture (CE), White backed Vulture (CE), Egyptian Vulture (E), Redheaded Vulture, Ferruginous Duck (NT), Dusky Crag Martin and Indian Chamaeleon.

- Chinkara is reported from Surachand, Kuwala, Bintala, Phitapur, Gadro, Eingarro, Vomrri, Deedri and Sami Ji Veri. The main area is Mehari, Godhiar, Rangcela, and Hariaar. It is distributed in the border belt to Chhad Bhet; and from Mithi to Chelahar. Near Mithi, it was recorded in Bhave Jo Tarh area near Rangeela on main road.
- Nilgai has been recorded from Naryasar Forest Block and Asalrhi Forest Block, Deenghano and Karhkhi all in Nagarparkar.
- Desert Cat was recorded from Oudhiyoon Hills area, and near village Sinyar Vikyo and from Bhave Jo Tarh.
- Indian Wild Ass was last reported from Surachand Village in 2011. It was not found or recorded afterwards from the area.

- Wolf migrating from India is reported from Chachro area, Sami Ji Veri and Dhedrai. Pangolin has been reported from Mithi- Badin Road area, Wild Boar is reported from Nagar and Diplo area. As regards Indian Pangolin, Caracal, Honey Badger, Striped Hyaena, these have become very rare and are seldom reported from the Nagarparkar area, which is their prime habitat.
- The wetlands of the area particularly the Abasar, Saanga and Bandegoth Talab Support Sarus Crane which is a quite rare and localized species. Ranpur Dam near Nagarparkar holds a large number of waterbirds during the migratory season. The very area Spotbill Duck was recorded in December 2012 from here. It has not been sighted on many other wetlands of Sindh since many years even on Haleji where it used to be regularly sighted during the winters in late nineties. Similarly, the Ferruginous Duck which is a Near- threatened species has been recorded from Ranpur Dam.
- Indian Peafowl is distributed in Nagarparkar Mithi and Diplo areas. The estimated population is about 80,000. It has been reported from a number of villages such as Sakarwero, Soomat, Momchero, Banbanbko, Mirri Pir, Gar-shabh, Undair, Maalsiryo samman (1500), Sakae Wayro(1000), Kharsar (1000), Saakir, Ghoti, Reharao, Pantiys,Pobarro, Bapooaha (near Mithi) and Kasbo.
- Egyptian Vulture recorded from Laddo Jo Tarh, Bjar Jo Tarh, Thaari Jo Tarh area.
- The Indian Vulture, Whitebacked Vulture and redheaded Vulture were recorded from Malji Jo Wandhiyoon.
- Indian Chamaeleon has been previously recorded from the Karoonjhar Hills, Nagarparkar. The population of the lizard has drastically fallen down due to large scale capture of the species for taxonomical studies by the foreign visitor in 2009.

Threats to Biodiversity

1. As there are huge coal reservoirs in the area, so the protected area is under the impact of environmental threats due to large scale developmental activities mainly on account of Thar Coal mining in the area.
2. As many as 11 Farm to Market roads have been constructed under the Sindh Road Sector Development Programme during 2006 – 2010; and these roads pass through the Protected Area. These may be a source of some disturbance to the wildlife of the area. Post Project Monitoring may be taken up to study the impacts.
3. Apart from these, drought is the main factor affecting the overall biodiversity of the area.
4. There is lack of coordination amongst the various Departments for environmental protection of the area.

Action Plan

1. The limits of the RoKWS and Ramsar site may be demarcated
2. Survey of the distribution and population of Peafowl and preventive measure for their safeguard against disease. As large scale mortality was recorded in Peafowl population in September, 2012. So, regular follow up curative/preventive measure are necessary to prevent the future outbreaks.
3. Monitoring of impacts of development activities particularly with reference to Thar coal excavation may be undertaken
4. AWC may be regularly undertaken on the major Wetlands of the area to compile data about waterbird species, their status and trends.
5. Detailed Studies on the birds of the area are required as there is serious lack of information about the current status and distribution of the Waterbirds, Birds of Prey, Sangrouses and Larks, as it has been a less known area but now it is getting importance due to its large coal deposits
6. The potential of the area for the establishment of a Desert National Park may be explored
7. The protected plant species of Tharparkar viz. *Salvadora oleoides* (Jaar), *Prosopis cineraria* (Kandi), *Tecoma undulata* (Roheerho), *Acacia senegal* (Konbhat) and *Commiphora mukul* (Gugraal) may be specially taken care of.
8. The environmental impacts of the proposal Sindh Coastal Highway (From Karachi – Bhambhor – Mirpur Sakro – Keti Bunder – Bhanderi – Shah Bunder – Ali Bunder – Naukot – Nagarparkar) need to be taken into account.

Species of Ecological Significance

• Critically Endangered

1. White-backed Vulture, *Gyps bengalensis*
2. Longbilled Vulture, *Gyps indicus*

• Endangered

1. Wild Ass, *Equus hemionus*
2. Great Indian Bustard, *Ardeotis nigriceps*
3. Egyptian Vulture, *Neophron perenopterus*

- **Vulnerable**

1. Greater Spotted Eagle, *Aquila clanga*
2. Houbara Bustard, *Chlamydotis undulata*
3. Sarus Crane, *Grus antigone*
4. Dalmatian Pelican, *Pelecanus crispus*

- **Near Threatened**

1. Striped Hyaena, *Hyaenahyaena*
2. Pangolin, *Manis crassicaudata*
3. Darter, *Anhinga melanogaster*
4. Ferruginous Duck, *Aythya nyroca*

Table 2. List of Mammals Recorded from Rann of Kutch Wildlife Sanctuary.

S. No.	Order	Family	Scientific Name	Common Name
01	Insectivora	Erinaceidae	<i>Hemiechinus collaris</i>	Long eared or Desert Hedge Hog
02	Insectivora	Soricidae	<i>Suncus stoliczkanus</i>	Anderson's Shrew
03	Chiroptera	Pteropidae	<i>Rousettus egyptiacus</i>	Egyptian Fruit Bat
04	Chiroptera	Pteropidae	<i>Taphozous nudiventris</i>	Naked-rumped Tomb Bat
05	Chiroptera	Verperitilionidae	<i>Scotophilus pallidus</i>	Yellow Desert Bat
06	Carnivora	Hyaenidae	<i>Hyaena hyaena</i>	Striped Hyaena
07	Carnivora	Canidae	<i>Canis lupus</i>	Wolf
08	Carnivora	Canidae	<i>Canis aureus</i>	Indian Jackal
09	Carnivora	Canidae	<i>Vulpes vulpes</i>	Desert Fox
10	Carnivora	Canidae	<i>Vulpes bengalensis</i>	Indian Fox
11	Carnivora	Mustellidae	<i>Mellivora capensis</i>	Ratel or Honey Badger
12	Carnivora	Viverridae	<i>Viverricula indica</i>	Small Indian Civet
13	Carnivora	Herpestidae	<i>Herpestes javanicus</i>	Small Indian Mongoose
14	Carnivora	Felidae	<i>Felis chaus</i>	Jungle Cat
15	Carnivora	Felidae	<i>Felis silvestris</i>	Desert Cat
16	Carnivora	Felidae	<i>Felis caracal</i>	Caracal
17	Pholidota	Manidae	<i>Manis crassicaudata</i>	Indian Pangolin
18	Perissodactyla	Equidae	<i>Equus hemionus</i>	Indian Wild Ass
19	Artiodactyla	Suidae	<i>Sus scrofa</i>	Indian Wild Boar
20	Artiodactyla	Bovidae	<i>Boselaphus tragocamelus</i>	Bluebull/Nilgai
21	Artiodactyla	Bovidae	<i>Gazella bennetti</i>	Chinkara
22	Lagomorpha	Leporidae	<i>Lepus nigricollis</i>	Indian Hare
23	Rodentia	Sciuridae	<i>Funambulus pennant</i>	Five - striped Palm Squirrel
24	Rodentia	Hystricidae	<i>Hystrix indica</i>	Indian Crested Porcupine
25	Rodentia	Muridae	<i>Rattus rattus</i>	Roof Rat / House Rat
26	Rodentia	Muridae	<i>Mus musculus</i>	House Mouse
27	Rodentia	Muridae	<i>Nesokia indica</i>	Short- tailed Mole Rat
28	Rodentia	Muridae	<i>Gerbillus nanus</i>	Balochistan Gerbil
29	Rodentia	Muridae	<i>Tatera indica</i>	Indian Gerbil
30	Rodentia	Muridae	<i>Meriones hurrianae</i>	Indian Desert Gerbil

Table 3. A Checklist of the Birds of Rann of Kutch Wildlife Sanctuary.

S. No.	ORDER	FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS
1	Podicipediformes	Podicipedidae	<i>Tachybaptus ruficollis</i>	Little Grebe	R
2	Pelecaniformes	Pelecanidae	<i>Pelecanus onocrotalus</i>	White Pelican	WV
3	Pelecaniformes	Pelecanidae	<i>Pelecanus crispus</i>	Dalmatian Pelican	WV
4	Pelecaniformes	Phalacrocoracidae	<i>Phalacrocorax niger</i>	Little Cormorant	R
5	Ciconiiformes	Ardeidae	<i>Ardeola grayii</i>	Pond Heron	R
6	Ciconiiformes	Ardeidae	<i>Bubulcus ibis</i>	Cattle Egret	R
7	Ciconiiformes	Ardeidae	<i>Egretta garzetta</i>	Little Egret	R
8	Ciconiiformes	Phoenicopteridae	<i>Phoenicopterus roseus</i>	Flamingo	NBR
9	Anseriformes	Anatidae	<i>Anas acuta</i>	Pintail	WV
10	Anseriformes	Anatidae	<i>Anas crecca</i>	Common Teal	WV
11	Anseriformes	Anatidae	<i>Anas poecilorhyncha</i>	Spotbill Duck	SV
12	Anseriformes	Anatidae	<i>Anas strepera</i>	Gadwall	WV
13	Anseriformes	Anatidae	<i>Anas Penelope</i>	Wigeon	WV
14	Anseriformes	Anatidae	<i>Anas clypeata</i>	Shoveller	WV
15	Anseriformes	Anatidae	<i>Aythya nyraza</i>	Ferruginous Pochard	WV
16	Falconiformes	Accipitridae	<i>Elanus caeruleus</i>	Black winged Kite	R
17	Falconiformes	Accipitridae	<i>Haliastur Indus</i>	Brahminy Kite	R
18	Falconiformes	Accipitridae	<i>Buteo rufinus</i>	Longlegged Buzzard	WV
19	Falconiformes	Accipitridae	<i>Butastur teesa</i>	White-eyed Buzzard	R
20	Falconiformes	Accipitridae	<i>Hieraetus fasciatus</i>	Bonelli's or Slender Hawk Eagle	R
21	Falconiformes	Accipitridae	<i>Aquila heliaca</i>	Imperial Eagle	WV
22	Falconiformes	Accipitridae	<i>Aquila rapax</i>	Tawny Eagle	R
23	Falconiformes	Accipitridae	<i>Aquila clanga</i>	Greater Spotted Eagle	WV
24	Falconiformes	Accipitridae	<i>Aegyptius monachus</i>	Cinereous Vulture	R
25	Falconiformes	Accipitridae	<i>Gyps fulvus</i>	Indian Griffon Vulture	R
26	Falconiformes	Accipitridae	<i>Gyps bengalensis</i>	Indian Whitebacked Vulture	R
27	Falconiformes	Accipitridae	<i>Neophron percnopterus</i>	Egyptian Vulture	R
28	Falconiformes	Accipitridae	<i>Sarcogyps calvus</i>	Red-headed Vulture	V
29	Falconiformes	Accipitridae	<i>Gyps indicus</i>	Long billed Vulture	R
30	Falconiformes	Accipitridae	<i>Circus macrourus</i>	Pale or Pallid Harrier	WV
31	Falconiformes	Accipitridae	<i>Circaetus gallicus</i>	Short-toed Eagle	R
32	Falconiformes	Falconidae	<i>Falco Jugger</i>	Lagger Falcon	R
33	Falconiformes	Falconidae	<i>Falco Tinnunculus</i>	Kestrel	R/WV
34	Galliformes	Phasianidae	<i>Pavo cristatus</i>	Indian Peafowl	R
35	Gruiformes	Gruidae	<i>Grus antigone</i>	Sarus Crane	V
36	Gruiformes	Gruidae	<i>Anthropoids virgo</i>	Demoiselle Crane	PM
37	Gruiformes	Rallidae	<i>Porzana porzana</i>	Spotted Crake	WV
38	Gruiformes	Rallidae	<i>Gallinula chloropus</i>	Indian Moorhen	R
39	Gruiformes	Rallidae	<i>Fulica atra</i>	Coot	WV
40	Gruiformes	Otididae	<i>Ardeotics nigricaps</i>	Great Indian Bustard	WV
41	Gruiformes	Otididae	<i>Chlamydotis undulata</i>	Houbara Bustard	WV
42	Charadriiformes	Charadriidae	<i>Vanellus indicus</i>	Red Wattled Lapwing	R

Table 3 (Cont'd)

S. No.	ORDER	FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS
43	Charadriiformes	Charadriidae	<i>Vanellus gregarius</i>	Sociable Lapwing	WV
44	Charadriiformes	Charadriidae	<i>Charadrius dubius</i>	Indian Little Ringed Plover	R
45	Charadriiformes	Scolopacidae	<i>Tringa totanus</i>	Common Redshank	WV
46	Charadriiformes	Scolopacidae	<i>Tringa nebularia</i>	Greenshank	WV
47	Charadriiformes	Scolopacidae	<i>Tringa ochropus</i>	Green Sandpiper	WV
48	Charadriiformes	Scolopacidae	<i>Tringa glareola</i>	Wood or Spotted Sandpiper	WV
49	Charadriiformes	Scolopacidae	<i>Calidris minutus</i>	Little Stint	WV
50	Charadriiformes	Recurvirostridae	<i>Himantopus himantopus</i>	Blackwinged Stilt	R
51	Columbiformes	Pteroclididae	<i>Pterocles exustus</i>	Chestnut-bellied or Common or Indian Sandgrouse	R
52	Columbiformes	Pteroclididae	<i>Pterocles orientalis</i>	Blackbellied Sandgrouse	WV
53	Columbiformes	Pteroclididae	<i>Pterocles senegallus</i>	Spotted Sandgrouse	WV
54	Columbiformes	Columbidae	<i>Columba livia</i>	Blue Rock Pigeon	R
55	Columbiformes	Columbidae	<i>Streptopelia decaocto</i>	Ring Dove	R
56	Columbiformes	Columbidae	<i>Streptopelia senegalensis</i>	Little Brown or Senegal Dove	R
57	Psittaciformes	Psittacidae	<i>Psittacula krameri</i>	Rose ringed Parakeet	R
58	Cuculiformes	Cuculidae	<i>Clamator jacobinus</i>	Pied Crested Cuckoo	SBV
59	Strigiformes	Strigidae	<i>Athene brama</i>	Spotted Owlet	R
60	Strigiformes	Strigidae	<i>Bubo bubo</i>	Eurasian Eagle Owl	R
61	Caprimulgiformes	Caprimulgidae	<i>Caprimulgus mahrattensis</i>	Syke's or Sind Nightjar	R
62	Caprimulgiformes	Caprimulgidae	<i>Caprimulgus asiaticus</i>	Indian Little Nightjar	R
63	Coraciiformes	Meropidae	<i>Merops orientalis</i>	Green Bee-eater	R
64	Coraciiformes	Upupidae	<i>Upupa epops</i>	Hoopoe	WV
65	Passeriformes	Alaudidae	<i>Alaemon alaudipes</i>	Hoopoe Lark or Bifasciated Lark	R
66	Passeriformes	Alaudidae	<i>Melanocorypha bimaculata</i>	Bimaculated Lark	WV
67	Passeriformes	Alaudidae	<i>Mirafra erythroptera</i>	Indian Bush Lark	R
68	Passeriformes	Alaudidae	<i>Galerida cristata</i>	Crested Lark	R
69	Passeriformes	Alaudidae	<i>Alauda gulgula</i>	Oriental Small Skylark	R
70	Passeriformes	Hirundinidae	<i>Riparia riparia</i>	Pale Sand Martin	WV
71	Passeriformes	Hirundinidae	<i>Riparia paludicola</i>	Plain or Grey throated Indian Sand Martin	R
72	Passeriformes	Hirundinidae	<i>Ptyonoprogne concolor</i>	Dusky Crag Martin	R
73	Passeriformes	Hirundinidae	<i>Hirundo rustica</i>	Common Swallow	WV
74	Passeriformes	Lanidae	<i>Lanius isabellinus</i>	Rufous-tailed or Isabelline Shrike	PM
75	Passeriformes	Lanidae	<i>Lanius excubitor</i>	Grey Shrike	R
76	Passeriformes	Lanidae	<i>Lanius collurio</i>	Redbacked Shrike	PM

Table 3 (Cont'd)

S. No.	ORDER	FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS
77	Passeriformes	Dicruridae	<i>Dicrurus adsimilis</i>	Black Drongo	R
78	Passeriformes	Sturnidae	<i>Sturnus roseus</i>	Rosy Pastor	DPM
79	Passeriformes	Sturnidae	<i>Acridotheres ginginianus</i>	Bank Myna	R
80	Passeriformes	Sturnidae	<i>Acridotheres tristis</i>	Indian Myna	R
81	Passeriformes	Sturnidae	<i>Sturnus pagodarum</i>	Black-headed Myna	R
82	Passeriformes	Corvidae	<i>Corvus splendens</i>	Sind House Crow	R
83	Passeriformes	Corvidae	<i>Corvus corax</i>	Raven	R/WV
84	Passeriformes	Campephagidae	<i>Tephrodornis pondicerianus</i>	Sind Wood Shrike	R
85	Passeriformes	Campephagidae	<i>Pericrocotus cinnamomeus</i>	Sind Small Minivet	R
86	Passeriformes	Pyconotidae	<i>Pycnonotus leucogenys</i>	White-cheeked Bulbul	R
87	Passeriformes	Pyconotidae	<i>Pycnonotus cafer</i>	Red-vented Bulbul	R
88	Passeriformes	Timaliidae	<i>Turdoides caudatus</i>	Common Babbler	R
89	Passeriformes	Sylviidae	<i>Prinia buchanani</i>	Rufousfronted Wren-Warbler	R
90	Passeriformes	Sylviidae	<i>Prinia flaviventris</i>	Sind Yellow-Prinia	R
91	Passeriformes	Sylviidae	<i>Prinia burnesii</i>	Long tailed Grass Warbler	R
92	Passeriformes	Sylviidae	<i>Sylvia hortensis</i>	Orphaen Warbler	PM
93	Passeriformes	Sylviidae	<i>Sylvia curruca</i>	Lesser Whitethroat	WV
94	Passeriformes	Sylviidae	<i>Sylvia nana</i>	Desert Warbler	WV
95	Passeriformes	Sylviidae	<i>Phylloscopus collybita</i>	Common Chiffchaff	WV
96	Passeriformes	Sylviidae	<i>Phylloscopus neglectus</i>	Plain Leaf Warbler	WV
97	Passeriformes	Turdidae	<i>Phoenicurus ochruros</i>	Black Redstart	WV
98	Passeriformes	Turdidae	<i>Saxicola torquata</i>	Collared Indian Bush Chatstone Chat	PM
99	Passeriformes	Turdidae	<i>Saxicola caprata</i>	Pied Bush Chat	R
100	Passeriformes	Turdidae	<i>Oenanthe isabellina</i>	Isabelline Wheatear	WV
101	Passeriformes	Turdidae	<i>Oenanthe xanthopyrna</i>	Rufous tailed Wheatear	WV
102	Passeriformes	Turdidae	<i>Oenanthe deserti</i>	Desert Chat or Desert Wheatear	WV
103	Passeriformes	Turdidae	<i>Oenanthe picata</i>	Variable Wheatear	WV
104	Passeriformes	Turdidae	<i>Saxicoloides fulicata</i>	Indian Robin	R
105	Passeriformes	Motacillidae	<i>Anthus campestris</i>	Tawny Pipit	WV
106	Passeriformes	Motacillidae	<i>Motacilla alba</i>	White or Pied Wagtail	WV
107	Passeriformes	Nectariniidae	<i>Nectarinia asiatica</i>	Purple Sunbird	R
108	Passeriformes	Passeridae	<i>Passer domesticus</i>	House Sparrow	R
109	Passeriformes	Passeridae	<i>Passer hispaniolensis</i>	Spanish Sparrow	WV
110	Passeriformes	Passeridae	<i>Petronia xanthocollis</i>	Sind Yellow headed Sparrow	R
111	Passeriformes	Estrildidae	<i>Lonchura malabarica</i>	White throated Munia	R
112	Passeriformes	Emberizidae	<i>Emberiza melanocephala</i>	Blackheaded Bunting	PM

Legend: R = Resident WV = Winter Visitor M = Migratory PM = Passage Migrant SV = Summer Visitor

Table 4. Checklist of Reptiles of Rann of Kutch Wildlife Sanctuary.

Order/ Family	Common Name	Scientific Name
Order Squamata		
Sub order Sauria		
Family Agamidae	Common Tree Lizard	<i>Calotes vericolor</i>
Family Chamaeleonidae	Casque Lizard / Indian Chamaeleon	<i>Chamaeleo zeylanicus</i>
Family Gekkonidae	Kachh Spotted Ground Gecko	<i>Cyrtopadion kachhensis</i>
	Yellow – belly Common House Gecko	<i>Hemidactylus flaviviridis</i>
Family Lacertidae	Tree Bark Gecko	<i>Teratolepis fasciata</i>
	Blue tail Sand Lizard	<i>Acanthodactylus cantoris</i>
Family Scincidae	Spotted/ longtailed Desert Lacerta	<i>Mesalina watsonana</i>
	Orange – tail Skink	<i>Navoeumeces blythianus</i>
	Three- fringed Sand –Fish	<i>Ophiomorus raithmai</i>
Family Uromastycidae	3-toed Sand Swimmer	<i>Ophiomorus tridactylus</i>
	Spiny tail ground Lizard	<i>Saara hardwickii</i>
Family Varanidae	Desert Monitor	<i>Varanus griseus</i>
Sub – order Serpentes		
Family Boidae	Chain Sand Boa	<i>Eryx conicus</i>
Family Colubridae	Indo Burmese Sand Snake	<i>Psammophis condanarus</i>
	Sind Ribbon Snake	<i>Psammophis leithii</i>
	Saharo Sindian Ribbon Snake	<i>Psammophis schokari</i>
	Plain Racer	<i>Platyceps ventromaculatus</i>
	Common Krait	<i>Bungarus caeruleus</i>
Family Elapidae	Sindh Krait	<i>Bungarus sindianus</i>
	Black Cobra	<i>Naja naja</i>
	Saw Scaled Viper	<i>Echis carinatus</i>

Table 5. List of Plants recorded from Rann of Kutch.

S. No.	Scientific Name	Common Name
1	<i>Acacia jacquemontii</i>	Bhabri
2	<i>Acacia nilotica</i>	Bhabar
3	<i>Acacia Senegal</i>	Khor
4	<i>Aerva javanica</i>	Booh
5	<i>Azadirachta indica</i>	Neem
6	<i>Calligonum polygonoides</i>	Phog
7	<i>Calotropis procera</i>	AK
8	<i>Capparis deciduas</i>	Karir
9	<i>Cassia italica</i>	Ghorawal/Dadhwal/Senna
10	<i>Commiphora mukul</i>	Gugur
11	<i>Cucumis prophetarum</i>	Kirmit
12	<i>Dalbergia sisso</i>	Talhi
13	<i>Euphorbia caducifolia</i>	Thuhar
14	<i>Leptadenia pyrotechnica</i>	Madhi Khip
15	<i>Phaseolus radiates</i>	Moong
16	<i>Prosopis cineraria</i>	Kandi
17	<i>Prosopis glandulosa</i>	Devi
18	<i>Prosopis juliflora</i>	Devi
19	<i>Salvadora oleoides</i>	Jhar
20	<i>Salvadora persica</i>	Jhar
21	<i>Tecomella undulate</i>	Lohiro
22	<i>Zizyphus nummularia</i>	Ber

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