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CURRENT DISTRIBUTION AND STATUS OF THE WILDLIFE OF DEH AKRO -2 WILDLIFE SANCTUARY, DISTRICT SHAHEED BENAZIRABAD, SINDH, PAKISTAN.

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ABSTRACT

Deh Akro -2 Wildlife Sanctuary is a very important Ramsar Site and an Important Bird Area in Sindh. It has a complex of four major habitats viz. desert, wetlands, agriculture fields and villages. It has 40 lakes which are mostly brackish. During the study period 2012 - 13, a total of 12 species of mammals, 50 species of birds, 09 species of reptiles and 34 species of plants were recorded from the area. Marsh Crocodile and Marbled Teal are the key species of the Sanctuary. The area is under threat due to developmental activities, disturbance and drought.

Key words: Ramsar Site, Wildlife Sanctuary, Deh Akro-2, Sindh, Marsh Crocodile, Marbled Teal

INTRODUCTION

Deh Akro -2 wildlife Sanctuary was designated as such in 1988 for the protection of fauna and flora of the area particularly the Marsh Crocodile, Marbled Teal and the water birds. It extends over 20, 500 ha and has a complex of four major habitats viz. Desert, Wetlands, Agricultural Fields and Villages.

It is situated 350km NE of Karachi in Shaheed Benazirabad district of Sindh. It represents a complex of natural wetland ecosystem comprising of 40 lakes and associated marshes (fed by seepage from Nara and Jamrao Canal and rain water) in a unique desert habitat supporting a wide variety of important wildlife species.

- Deh Akro – 2 as a Wildlife Sanctuary

A wildlife Sanctuary is an area of land and/ or sea subject to active intervention for management purpose so as to ensure the maintenance of habitats and/ or to meet the requirements of specific species.

It was notified as Wildlife Sanctuary in May, 1988 to give protection to the key species of the area such as Desert Fox, Marbled Teal, Grey Partridge, Black Partridge, Indian Darter and Marsh Crocodile.

- Deh Akro – 2 as a Ramsar Site

It has been designated as a Wetland of International Importance based on Ramsar Criteria No. 1,2,3,4,5,6, and 8. The most significant criterion being Criterion 1 i.e. the site is considered internationally important as it presents the example of a natural inland wetland ecosystem. The site is a wetland ecosystem, comprising of 40 lakes and a unique desert habitat.

Moreover, the wetland ecosystem supports, some globally threatened/ species such as: Marbled Teal (V), and Marsh Crocodile (V).

- Deh Akro -2 as an Important Bird Area (IBA)

Some places are particularly important for threatened species, or because large concentration of birds occur there, or unique species of birds are found there, or these are the representative of distinct habitats. These are the IBAs.

IBAs are

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

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 birds. These sites are selected as IBAs under one or more of the following four global IBAs Criteria:

A1: A site regularly holds significant numbers of globally threatened species, or other species of global conservation concern;

A2: A site regularly holds significant components of a restricted range species whose breeding distributions define an Endemic Birds Area (EBA) or Secondary Area (SA);

A3: A site regularly holds significant components of the group of species whose distributions are largely or wholly confined to one biome;

A4: A site regularly holds on a regular basis > 1% of the biogeographically population of a congregatory water bird, seabird or terrestrial species, or more than 20,000 water birds or sea birds of one or more species.

Deh Akro – 2 has been selected as an IBA on the basis of Criteria A1 for holding significant number of globally threatened Marbled Teal (V).

MATERIAL AND METHODS

Primary field data were collected during 2012 – 2013. Standard field survey methodologies were used which included line transect, point counts, plot searches, and incidental sightings in the study area. The sampling locations were randomly selected, ensuring that sufficient locations are sampled for each habitat and sufficient data about each habitat are collected.

The vegetation survey was carried out by laying 20' X 20' quadrates within the study area.

Secondary data were also collected based on previous studies made in the area and in consultation with the local communities, and staff of the Sindh Wildlife Department.

Review of previous work done

The study site lies in a less known area and as its faunal or ecological value could not be highlighted as a Ramsar Site even under the Pakistan Wetlands Programme nor it could be recognized by the Sindh Wildlife Department as a priority site for wildlife studies, hence very few data on the wildlife of the area are available.

However, a management project was undertaken by Sangat Development Foundation under the IFAP of the WWF- Pakistan, entitled "Community Based Wetlands Management for the Rehabilitation of Biodiversity of Wetlands focusing on Chhachh and Yaraywari".

The notable publications /reports about the wildlife/ environment of the area include: Bhaagat (2006), Chang *et al.* (2012), Ghalib *et al.* (2014), Halcrow Pakistan (2005), Javed and Rahman (2004), Khan *et al.* (2012), and Masroor (2009).

RESULTS

- Habitats

There are four distinct habitats for wild animals in the study area viz. desert, wetlands/dhands/Jamrao Canal and associated marshes, agricultural lands and villages.

1. The desert area comprises of sand dunes, interdunal valleys, and scrub land. The sand dunes lie in the NS direction with interdunal valleys, rising to an elevation of 10 – 15m.
2. There are more than 36 dhands in the study area (Table 5) adjacent to Jamrao Canal which supplies water to the adjacent lands. These wetlands are very significant as they provide refuge to the large concentrations of migratory waterbirds during the season and some of them also support Marbled Teal and Marsh Crocodile.
3. There are more than 10 villages in the study area. These support a number of wildlife species accustomed to the nearabouts of human habitations due to the availability of food and water in the area.
4. The agriculture fields are located in the south and SW of the study area. Crops of wheat and mustard are generally grown in the season. There are orchards having Mango, Date Palm, and Citrus trees. This habitat is important for such species as Grey Partridge, Black Partridge, Common and Jungle Babblers, Indian Myna, Indian Roller and Doves.

- Wildlife of the Area

A total of 12 species of mammals (Table 1), 50 species of birds (Table 2), 09 species of reptiles (Table 3), and 34 species of plants (Table 4), have been recorded during the present studies.

It was noted that being a complex of more than 34 lakes and associated marshes, the area is significant particularly for waterbirds and Marsh Crocodile. Mammals and other reptiles available in the area are quite few in numbers. Marbled Teal is the prime migratory / breeding waterbird of the area.

Table 1. Checklist of Mammals recorded.

S. No.	Order	Family	Scientific Name	Common Name
1.	Insectovora	Erinaceidae	*Hemiechinus auritus*	Long-eared Hedgehog
2.	Carnivora	Canidae	*Canis aureus*	Asiatic Jackal
3.	Carnivora	Canidae	*Vulpes vulpes*	Desert Fox
4.	Carnivore	Herpestidae	*Herpestes auropunctata*	Small Indian Mongoose
5.	Carnivora	Felidae	*Felis silvestris*	Desert Cat
6.	Lagomorpha	Leporidae	*Lepus nigricollis*	Indian Hare/ Desert Hare
7.	Rodentia	Sciuridae	*Funambulus pennant*	Five-striped Palm Squirrel
8.	Rodentia	Hystricidae	*Hystrix indica*	Indian Crested Porcupine
9.	Rodentia	Muridae	*Mus musculus*	House Mouse
10.	Rodentia	Muridae	*Meriones hurrianae*	Indian Desert Gerbil
11.	Rodentia	Muridae	*Tatera indica*	Indian Gerbil
12.	Rodentia	Muridae	*Nesokia indica*	Short-tailed Mole Rat

Key Species of the area

The following are the two key species of the site, which are briefly described below.

1. Marbled Duck (*Marmaronetta augustirostris*)

   It is uniformly colored pale brown duck, with shaggy head, dark mask and spotted plumage. It occurs in small numbers during winter mostly on shallow freshwater lakes with extensive vegetation in Sindh particularly in Khairpur and Shaheed Benazirabad districts where regular breeding has been recorded. Usually found in pairs or small parties.

   It is omnivorous feeds mainly on vegetables matter including aquatic invertebrates.

   It nests in reeds and in aquatic vegetation. The clutch size is 9 – 12 eggs. The incubation period is 25 days. Chicks are seen in May and June in Sindh.

   It is globally Threatened (V).

   During present study, it was recorded from Murkhi, Sanrhi 1 and 2, Wasoowari, Kharo,Laila, Loon Khan, Akhanwari, Chhach, Bolai, Khararho, Mureedwaro and Allahdinaywari. It has been recorded from the nearby Nara Game Reserve from Berwari, Dangri, Dangewari, and Baboo (Breeding Site) dhands.

2. Marsh Crocodile (*Crocodylus palustris*)

   It is found in Sindh, mainly in the Nara Canal Wetland Complex in Khairpur district and Chotiari Reservoir in Sanghar district and in Deh Akro – 2 Wetland Complex, Shaheed Benazirabad district (Javed and Rahman, 2004)

   It feeds on fishes, frogs, turtles, varanids, snakes, birds and small mammals.

   The breeding season is December – March, up to 35 eggs are laid and the incubation period is 4 – 6 weeks.

   It is a threatened species (V) and protected under the Sindh Wildlife Protection Act, 1972.

   It has been recorded from Saledi, Waeil,Bolahi,Khararo, Murkhi, Waso,Waddo, Chambh, Baro, Khenwari, Sanahri-1, Mureedwaro, Morakhi, Chach, Drigh, Taka, Hora and Ganjo (Chang *et al.*2012). Recently, it was recorded from Allahdinaywari, Chugri,Wasoowari, Khararho, Bolai, Waddo Chhimbh, Manki and Khewari wetlands.

Threats

The following over all threats have been identified to the species and their habitats:

1. Poaching
2. Disturbance
3. Wood cutting
4. Pollution due to the use of fertilizers
5. Developmental activities
6. Blasting for fishes
7. Increasing agriculture
8. Increasing human habitations

Table 2. List of Birds recorded.

S.No	Order	Family	Scientific Name	Common Name	Status
01	Podicipediformes	Podicipedidae	*Tachybaptes ruflcollis*	Little Grebe or Dabchick	R
02	Pelecaniformes	Phalacrocoracidae	*Phalacrocorax carbo*	Large Cormorant	WV
03	Pelecaniformes	Phalacrocoracidae	*Phalacrocorax niger*	Little Cormorant	R
04	Ciconiiformes	Ardeidae	*Ardea cinerea*	Grey Heron	WV
05	Ciconiiformes	Ardeidae	*Ardea purpurea*	Purple Heron	R
06	Ciconiiformes	Ardeidae	*Ardeola grayii*	Indian Pond Heron	R
07	Ciconiiformes	Ardeidae	*Egretta intermedia*	Intermediate Egret	R
08	Ciconiiformes	Ardeidae	*Egretta garzetta*	Little Egret	R
09	Ciconiiformes	Threskiornithidae	*Pseudibis papillosa*	Black Ibis	WV
10	Ciconiiformes	Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	R/WV
11	Anseriformes	Anatidae	*Tadorna ferruginea*	Ruddy Shelduck	WV
12	Anseriformes	Anatidae	*Tadorna tadorna*	Common Shelduck	WV
13	Anseriformes	Anatidae	*Marmaronetta angustirostris*	Marbled Teal	R/WV
14	Falconiformes	Accipitridae	*Accipiter badius*	Central Asian Shikra	R
15	Falconiformes	Accipitridae	*Circus aeruginosus*	Marsh Harrier	WV
16	Galliformes	Phasianidae	*Francolinus francolinus*	Black Patridge	R
17	Galliformes	Phasianidae	*Francolinus pondicerianus*	Grey Patridge	R
18	Gruiformes	Rallidae	*Gallinula chloropus*	Indian Moorhen	R
19	Charadriiformes	Charadriidae	*Vanellus leucurus*	White-tailed Lapwing	WV
20	Charadriiformes	Charadriidae	*Vanellus indicus*	Red Wattled Lapwing	R
21	Charadriiformes Charadriiformes	Charadriidae Charadriidae	*Charadrius dubius curonicus* *Charadrius dubius jerdoni*	European Little Ringed Plover Indian Little Ringed Plover	WV R
22	Charadriiformes	Scolopacidae	*Tringa erythropus*	Spotted or Dusky Redshank	WV
23	Charadriiformes	Scolopacidae	*Tringa totanus*	Common Redshank	WV
24	Charadriiformes	Scolopacidae	*Tringa hypoleucos*	Common Sandpiper	WV
25	Charadriiformes	Scolopacidae	*Calidris minutus*	Little Stint	WV
26	Charadriiformes	Scolopacidae	*Calidris temminckii*	Temminck's Stint	WV
27	Charadriiformes	Recurvirostridae	*Himantopus himantopus*	Blackwinged Stilt	R
28	Charadriiformes	Sternidae	*Sterna albifrons*	Little Tern	R
20	Columbiformes	Columbidae	*Streptopelia decaocto*	Ring Dove	R
30	Columbiformes	Columbidae	*Streptopelia tranquebarica*	Red Turtle Dove	R
31	Columbiformes	Columbidae	*Streptopelia senegalensis*	Little Brown Dove	R
32	Coraciiformes	Meropidae	*Merops orientalis*	Green Bee-eater	R
33	Coraciiformes	Coraciidae	*Coracias benghalensis*	Indian Roller	R
34	Coraciiformes	Upupidae	*Upupa epops*	Hoopoe	WV
35	Passeriformes	Alaudidae	*Galerida cristata*	Crested Lark	R
36	Passeriformes	Hirundinidae	*Riparia riparia*	Collared Sand Martin	WV
37	Passeriformes	Hirundinidae	*Ptyonoprogne fuligula*	Pale Crag Martin	R
38	Passeriformes	Dicruridae	*Dicrurus adsimilis*	Black Drongo	R
39	Passeriformes	Sturnidae	*Sturnus roseus*	Rosy Starling	PM
40	Passeriformes	Sturnidae	*Acridotheres tristis*	Indian Myna	R
41	Passeriformes	Pyconotidae	*Pycnonotus leucogenys*	White-eared Bulbul	R
42	Passeriformes	Pyconotidae	*Pycnonotus cafer*	Red-vented Bulbul	R
43	Passeriformes	Timaliidae	*Turdoides caudatus*	Common Babbler	R
44	Passeriformes	Timaliidae	*Turdoides striatus*	Sind Jungle Babbler	R
45	Passeriformes	Sylviidae	*Prinia burnesii*	Long tailed Grass Warbler	R
46	Passeriformes	Turdidae	*Saxicola caprata*	Pied Bush Chat	R
47	Passeriformes	Nectariniidae	*Nectarinia asiatica*	Purple Sunbird	R
48	Passeriformes	Passeridae	*Passer pyrrhonotus*	Sind Jungle Sparrow	R
49	Passeriformes	Passeridae	*Passer domesticus*	House Sparrow	R
50	Passeriformes	Passeridae	*Corvus splendens*	House Crow	R

Legend: R = Resident WV = Winter Visitor PM = Passage Migrant

Table 3. List of Reptiles recorded.

SNo.	Order	Family	Scientific Name	Common Name
1.	Chelonia	Emydidae	*Geoclemys hamiltonii*	Spotted Pond Turtle
2.	Crocodilia	Crocodylidae	*Crocodylus palustris*	Marsh Crocodile (Mugger)
3.	Squamata	Agamidae	*Agama agilis*	Brilliant Agama
4.	Squamata	Gekkonidae	*Crossobamon orientalis*	Sindh Sand Gecko
5.	Squamata	Lacertidae	*Acanthodactylus cantoris*	Indian fringe-toed Sand Lizard
6.	Squamata	Scincidae	*Ophiomorus tridactylus*	Indian Sand Swimmer
7.	Squamata	Varanidae	*Varanus bengalensis*	Indian Monitor
8.	Squamata	Boidae	*Eryx johnii*	Indian Sand Boa
9.	Squamata	Viperidae	*Echis carinatus*	Saw-scaled Viper

Table 4. List of Plants recorded.

SNo.	Family	Plant Species	Local Name
1.	Mimosaceae	*Acacia jacquemontii*	Banwar
2.	Mimosaceae	*Acacia nilotica*	Sindhi Babur
3.	Amaranthaccae	*Aerva javanica*	Booh
4.	Mimosaceae	*Albizzia lebbek*	Sirris
5.	Papilionaceae	*Alhagi maurarum*	Kandero
6.	Maliaceae	*Azadirachta indica*	neem
7.	Polygonaceae	*Calligonum polygonoides*	Phog
8.	Asclepiadaceae	*Calotropis procera*	Aak
9.	Capparidaceae	*Capparis decidua*	Kirar
10.	Caesalpiniaceae	*Cassia italic*	Ghorawal
11.	Poaceae	*Cynodon dactylon*	Chhabbar Gaah
12.	Poaceae	*Dactyloctenium aegyptium*	Gandheer
13.	Poaceae	*Desmostachya bipinnata*	Drabh
14.	Fabaceae	*Dalbergia sissoo*	Talhi
15.	Brassicaceae	*Dipterygium glaucum*	Phair
16.	Moraceae	*Ficus religiosa*	People
17.	Cyperaceae	*Fimbristylis dichotoma*	Kaluro
18.	Cyperaceae	*Fimbristylis acuminnata*	Kaluro
19.	Asclepiadaceae	*Leptadenia pyrotechnica*	Khip
20.	Poaceae	*Phragmites karka*	Naro
21.	Verbenaceae	*Phyla nodiflora*	Bukkan
22.	Compositae	*Pluchea lanceolata*	Phar Buti
23.	Mimosaceae	*Prosopis cineraria*	Kandi
24.	Poaceae	*Saccharum bengalensis*	Kanh, Booro
25.	Poaceae	*Saccharum spontaneum*	Booro
26.	Chenopodiaceae	*Salsola imbricata*	Lano
27.	Salvadoraceae	*Salvadora oleoides*	Khabbar
28.	Chenopodiaceae	*Saueda frusticosa*	Lani
29.	Tamaricaceae	*Tamarix aphylla*	Lao
30.	Tamaricaceae	*Tamarix dioica*	Lai
31.	Tamaricaceae	*Tamarix indica*	Leo
32.	Zygophyllaceae	*Tribulus longipetalus*	Bakhro
33.	Zygophyllaceae	*Tribulus terrestirs*	Bakhro
34.	Poaceae	*Typha elephantiania*	Lamb Gaah

Table 5. List of Important Wetlands.

1.	Allahdinaywari	21.	Kondo/kundah
2.	Akanwaro	22.	Kuranda
3.	Bayranwaro	23.	Khewaari
4.	Barhowari	24.	Loon Khan
5.	Bolaahi	25.	Leelaan
6.	Chhachh	26.	Mureedwaro
7.	Chugri	27.	Morakho
8.	Drigh	28.	Manrahakwari
9.	Danoho	29.	Nanoho Chhimbh
10.	Ganjo	30.	Nandhi Sanhrhi
11.	Gaarheewari	31.	Naramwaro
12.	Ghundanwari	32.	Okarwari
13.	Hadwaro	33.	Paaniwaro
14.	Huss Dhand	34.	Salhedi
15.	Jaansar	35.	Taakar
16.	Jambar	36.	Waddi Sanhrhi
17.	Khanwaro	37.	Waddo Chhimbh
18.	Kandiyaro	38.	Waasoowari
19.	Kinrho	39.	Wayal
20.	Kharorho	40.	Yaaraywari

Management Prescriptions

The following prescriptions are necessary to manage the wildlife of the area;

1. Maintenance of sound populations of key wildlife species through involvement of local communities;
2. Sustainable utilization of resources for ecotourism development and meeting community needs.
3. Limitation of human population growth, livestock increase, and land use expansion;
4. Development of monitoring and evaluation system to provide adequate feed back for management interventions.

Priority Actions/ Action Plan

The following priority actions have been suggested for the proper management of the area.

1. Regular monitoring of the status of the wildlife of the area.
2. Formulation and implementation of the Conservation Plan for the site.

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