Canadian Journal of Pure and Applied Sciences
Vol. 15, No. 2, pp. 5277-5282, June 2021
Online ISSN: 1920-3853; Print ISSN: 1715-9997
Available online at www.cjpas.net

Canadian Journal of pure&applied sciences

Short Communication

URBAN WETLAND OF KARACHI: A REVIEW OF VERTEBRATE BIODIVERSITY OF SAFARI PARK WETLAND

*Shaista Aslam, Ghazala Yasmeen, Ubaid Ullah, Sehrish Khan, Uzma Manzoor, Tahira Lateef, Ponum Nasir, Laraiba Noor and Syed Ali Ghalib
Wildlife Section, Department of Zoology, University of Karachi, Karachi-75270, Pakistan

ABSTRACT

Wetlands are most productive ecosystems in the world. While the urban wetlands ecosystem has significantly suffered as a result of the impact of urbanization. Urban wetlands are important for minimizing the adverse effects of heat wave and maintaining the biological ecosystem. In Karachi city Gulshan-e-Iqbal Town, Safari Park wetland and wetland near Sindbad Park provide good aquatic habitat for migratory birds and breeding ground for resident birds. Present study was conducted during November 2017 to April 2018 and inventory of vertebrate fauna in Safari park wetland is presented. As many as 4 species of fishes, 2 species of amphibians, 5 species of reptiles, 36 species of birds, and 2 species of mammals were recorded. While migratory birds including Great cormorant, Great white pelican and Dalmatian pelican were also recorded in which Dalmatian pelican (*Pelecanus crispus*) is Near threatened globally. In January 2018 we recorded 136 migratory water birds, which is the highest population during the migratory season at Safari Park wetland. No adverse effects of water pollution were found on the aquatic biodiversity of wetland of Safari Park.

Keywords: Dalmatian pelican, manmade, urban wetland, migratory birds, gulshan-e-iqbal town.

INTRODUCTION

Worldwide urbanization and the correspondingly lower groundwater levels influence wetlands. Urban wetlands play an important role in improving and enhancing the quality of surface water and purifying precipitation running off from towns and cities. Urban and peri- urban wetlands provide vital and unique benefits to communities (Ehrenfeld, 2000).

There are two urban wetlands in Gulshan-e-Iqbal Town, in the city of Karachi, Pakistan. One is near Sindbad Park and other is in the Safari Park. The Safari Park is situated at University Road Karachi (Fig. 1), 24.92614 N, 067.108838 E at elevation of 46m (Khan *et al.*, 2017). It was established in 1970 and was designed as a 'Family Park'. Safari Park is also used as a Captive Breeding Center under the management of Karachi Metropolitan Corporation (Khan *et al*., 2017).

Safari Park covers an area 207 acre, of which 131 acre is covered with Safari area, while 76 acre is covered with Safari Zoo area. Safari Park Karachi has an important urban wetland which supports the aquatic biodiversity (Fig. 2).

*Corresponding author e-mail: shaista.aslam1997@gmail.com

In the summer months, the average temperature of Safari Park and near Sindbad Park wetland is 27.8°C to 32°C and during winter months it is 14°C to 20°C. Average humidity is 60 to 80% in summer and 40 to 50% in winter. Average rainfall during summer is 22 to 66mm and during winter 1 to 6mm (Khan *et al.*, 2014).

Safari Park wetland was formed in the 1970's, when Dalmia Cement Factory (also called National Cement Factory) used to take out raw material from this area by using heavy machineries. This factory has now been replaced by Main Millennium Mall, They dug that land which later on was filled with freshwater. The depth of this artificial wetland has been recorded recently to be about 25 feet maximum. Figure 3 shows entrance of water in the wetland. From here water is supplied to the plants and other sources inside the park via pipelines. Wetland comprises of about 3 acre area of the total 207 acres of Safari Park (Hussain, K, personal communication, Safari Park Karachi, 2018).

Safari Park wetland and Sindbad Park wetland are urban wetlands that make the surrounding area more beautiful and livable. Urban wetland areas are more important for human related values than in non-urban areas (Ehrenfeld, 2000).

Migratory birds like Dalmatian pelican, Ruddy shelduck and Northern pintail visit here, while other migratory birds including Great cormorant, Mallard, Common teal, Common shelduck, Gadwall and White pelican were also recorded in Safari park/Sindbad park (Khan *et al.*, 2017).

The objective of the present study was to review and update vertebrate fauna of Wetland of Safari Park Karachi.

Fig. 1. Satellite image of Safari Park, Karachi (Courtesy: Google map).

Fig. 2. A view of Wetland area of Safari Park.

Fig. 3. Entrance source of water in the wetland of Safari Park.

MATERIALS AND METHODS

The Safari Park, Karachi's wetland, was selected as study area during the period of November 2017 to April 2018. Data were collected through direct and indirect methods. Information was also collected from the Additional Director, Safari Park. For the study, animals were observed from outside the wetland boundary. The quantities of diet given to the animals were noted. Visits were made to the site at least once a month. Early morning visits were made to observe the birds during feeding, also the area was visited at evening before sunset. Observations were carried out through the binocular, Verix 07 X 50. Point count, line transect, random sitting and voice identification methods were used. Birds of Pakistan by Richard Grimmett (2008) and Field Guide to the Ducks, Goose and Swans of Pakistan by Ghalib (1986) was used to identify the birds in the wetland.

RESULTS AND DISCUSSION

Bio-ecological Studies

During the study, mammals, birds, reptiles, amphibians and fishes were recorded. Total 36 species of birds, 4 species of fishes, 2 species of amphibians, 2 species of mammals and 5 species of reptiles were recorded. Figure 4 shows number of species of animals present in the wetland and adjoining area of Safari Park.

The Safari wetland has 65 wild ducks, 26 Pelicans and 45 Geese. Highest number of migratory birds (Total 136) were recorded in the month of January 2018. Another study by Khan *et al.* (2017) had also recorded same number of bird species in winter months.

Fishes

There were 4 species of fishes recorded in the wetland. Table 1 represents 2 species of Family Channidae, 1 species of Family Cichlidae and 1 species of Family Cyprinidae.

Table 1. List of fishes recorded in Safari Park's wetland.

S. No.	Common Name	Scientific Name
Order Perciformes		
Family Channidae		
1.	Great snakehead	*Chana micropeltes*
2.	Striped snakehead	*Chana striatus*
Family Cichlidae		
3.	Mozambique tilapia	*Oreochromis mossambicus*
Order Cypriniformes		
Family Cyprinidae		
4.	Mrigal carp	*Cirrhinus mirgala*

Amphibians

Only 2 species of amphibians were recorded (Table 2).

Table 2. List of amphibians recorded in Safari Park.

S. No.	Common Name	Scientific Name
Order Anura		
Family Ranidae		
1.	Skittering frog	*Euphlyctis cynophylctis*
Family Bufonidae		
2.	Marbled toad	*Bufo stomaticus*

Reptiles

During the present study 5 species of reptiles were recorded from Safari Park wetland surroundings (Table 3). Indian flap shell turtle, Yellow bellied gecko, Indian monitor lizard, Oriental garden lizard were observed and Indian cobra was recorded from secondary sources.

Table 3. List of reptiles present in Safari Park's wetland.

S. No.	Common Name	Scientific Name
Order Chelonia		
Family Trionychidae		
1.	Indian flap shell turtle	*Lissemys punctata*
Order Squamata		
Family Gekkonidae		
2.	Yellow bellied gecko	*Hemidactylus flaviviridis*
Family Elapidae		
3.	Indian cobra	*Naja naja*
Family Varanidae		
4.	Indian monitor lizard.	*Varanus bengalensis*
Family Agamidae		
5.	Oriental garden lizard	*Calotes versicolor*

Birds

About 36 bird species belonging to 09 Orders and 22 Families were recorded (Table 4). Every day 50kg fishes are given to the birds as a source of food (Fig. 5). These birds include 15 aquatic species *viz*. Great white pelican, Dalmatian pelican, Little egret, Cattle egret, Pond heron, Great cormorant, Pintail, Mallard, Common teal, Gadwall, Ruddy shelduck, Common goose, Common shelduck, Red wattled lapwing, White-throated kingfisher, (Figs. 6, 7, 8, 9 and 10) and 21 other species Blue rock pigeon, Little brown dove, Green bee-eater, Indian roller, Common hoopoe, Asian koel, Common babbler, House sparrow, Jungle babbler, Purple sunbird, Black drongo, Indian white-eye, Red-vented bulbul, White-cheeked bulbul, House crow, Common myna, Bank myna, Common buzzard, Black kite, Indian barn owl and Spotted owlet. Near threatened bird Dalmatian pelican (*Pelicanus crispus*) was also recorded (IUCN, 2020).

Table 4. List of birds recorded at Safari Park's wetland.

S. No	Common Name	Scientific Name
	Order Pelecaniformes	
	Family Pelecanidae	
1.	Great white pelican	*Pelecanus onocrotalus*
2.	Dalmatian pelican	*Pelecanus crispus*
	Family Ardeidae	
3.	Little egret	*Egretta garzetta*
4.	Cattle egret	*Bubulcus ibis*
5.	Pond heron	*Ardeola grayii*
	Family Phalacrocoracidae	
6.	Great cormorant	*Phalacrocorax carbo*
	Order Anseriformes	
	Family Anatidae	
7.	Northern pintail	*Anas acuta*
8.	Mallard	*Anas platyrhynchos*
9.	Common teal	*Anas crecca*
10.	Gadwall	*Anas strepera*
11.	Ruddy shelduck	*Tadorna ferruginea*
12.	Common goose	*Anser anser*
13.	Common shelduck	*Tadorna tadorna*
	Order Charadriiformes	
	Family Charadriidae	
14.	Red wattled lapwing	*Vanellus indicus*
	Order Columbiformes	
	Family Columbidae	
15.	Blue rock pigeon	*Columbia livia*
16.	Little brown dove	*Streptopelia senegalensis*
	Order Coraciiformes	
	Family Alcedinidae	
17.	White-throated kingfisher	*Halcyon symrnensis*
	Family Meropidae	
18.	Green bee-eater	*Merops orientalis*
	Family Coraciidae	
19.	Indian roller	*Coracias benghalensis*
	Family Upupidae	
20.	Common hoopoe	*Upupa epops*
	Order Cuculiformes	
	Family Cuculidae	
21.	Asian koel	*Eudynamys scolopacea*
	Order Passeriformes	
	Family Timaliidae	
22.	Common babbler	*Turdoides caudatus*
	Family Passeridae	
23.	House sparrow	*Passer domesticus*
	Family Leiothrichidae	
24.	Jungle babbler	*Turdoides striatus*
	Family Nectrainiidae	
25.	Purple sunbird	*Nectarinia asiatica*
	Family Dicruridae	
26.	Black drongo	*Dicrurus macrocercus*
	Family Zosteropidae	
27.	Indian white-eye	*Zosterops palpebrosus*
	Family Pycnonotidae	
28.	Red-vented bulbul	*Pycnonotus cafer*
29.	White-cheeked bulbul	*Pycnonotus leucotis*
	Family Corvidae	
30.	House crow	*Corvus splendens*
	Family Sturnidae	
31.	Common myna	*Acridotheres tristis*
32.	Bank myna	*Acridotheres ginginianus*
	Order Accipitriformes	
	Family Accipitridae	
33.	Common buzzard	*Buteo buteo*
34.	Black kite	*Milvus migrans*
	Order Strigiformes	
	Family Tytonidae	
35.	Indian barn owl	*Tyto alba*
	Family Strigidae	
36.	Spotted owlet	*Athene brama*

Mammals

Only 2 species of wild mammals, Five striped palm squirrel and Indian grey mongoose were observed foraging near the edges of the wetland (Table. 5).

Table 5. List of mammals recorded.

S. No.	Common Name	Scientific Name
	Order Rodentia	
	Family Sciuridae	
1.	Five-striped palm squirrel	*Funambulus pennanti*
	Order Carnivora	
	Family Herpestidae	
2.	Indian grey mongoose	*Herpestes edwardsi*

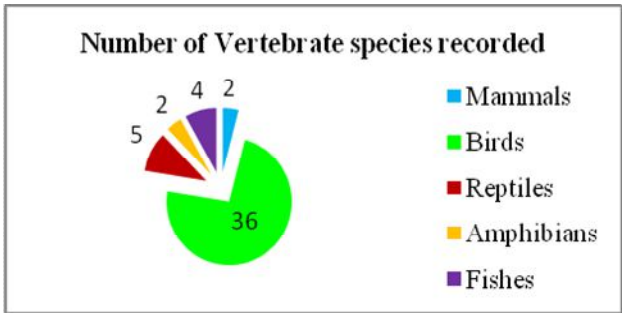

Fig. 4. Number of vertebrate species recorded from wetland area of Safari Park.

Fig. 5. Fishes given to birds as source of food.

Fig. 6. A view of waterbirds in the wetland of Safari Park.

Fig. 7. Indian pond heron.

Fig. 8. Pelicans in the wetland of Safari Park.

Fig. 9. Little egret sitting in the wetland of Safari Park.

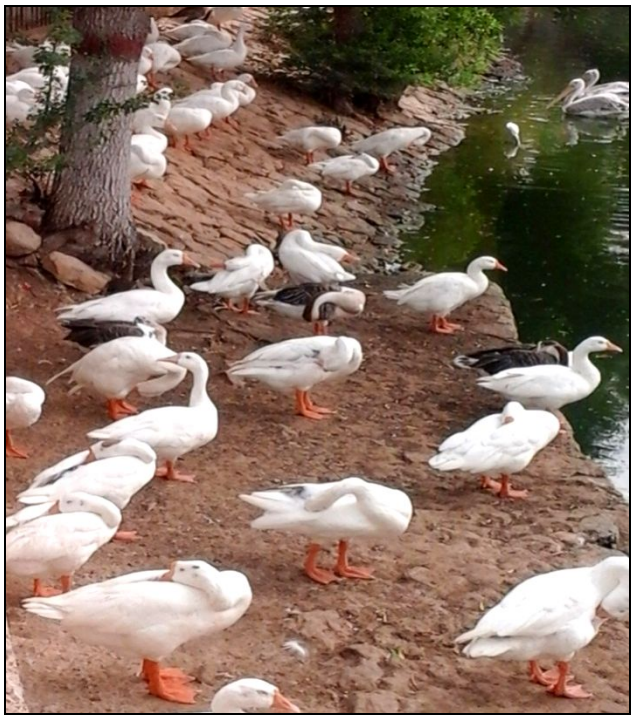

Fig. 10. Common goose in the wetland of Safari Park.

CONCLUSION

The study concludes that the wetland of Safari Park is an urban, man-made wetland that provides platform for migratory birds, breeding ground for resident birds while making the surrounding beautiful. Urban wetlands are also important for minimizing the effects of heat wave and maintaining the ecosystem. Total 49 species of wild vertebrate fauna were recorded. It is an important site for nesting of resident and ground for some migratory bird species. Birds which can't be seen in urban areas usually could be seen at this wetland in large numbers. This manmade wetland provides a natural habitat in urban area for aquatic birds and opportunities for local community for bird watching, photography and interaction with wild avifauna which leads to good physiological and psychological health in the dense populated cities.

ACKNOWLEDGMENT

The present study could not have been done without the academic assistance of the Safari Park Administration. We also want to thank Dr. Kazim Hussain, Additional Director, Safari Park, Karachi.

REFERENCES

Ahmed, MF. and Ghalib, SA. 1986. Field Guide to the Ducks, Goose and Swans of Pakistan. Zoological Survey Department, Government of Pakistan.

Ehrenfeld, JG. 2000. Evaluating wetlands within an urban context. Ecological Engineering. 15:253-265.

Ghalib, SA., Hussain, SE., Khan, MZ., Damhoureyeh, SA., Yasmeen, R., Zehra, A., Fatima, F., Hussain, B., Siddique, S., Abbas, D., Tabbassum, F., Samreen, N., Khan, AR., Jabeen, T., Hashmi, MUA. and Hasnain, SA. 2013. An overview of occurrence, distribution and status of the Birds of Kirthar Protected Area Complex (KPAC). Canadian Journal of Pure and Applied Sciences. 7(3):2515-2532.

Grimmett, R., Roberts, T. and Inskipp, T. 2008. Birds of Pakistan. Christopher Helm, London.

IUCN 2020.The IUCN Red List of Threatened Species. Version2020-2. www.iucnredlis.org

Khan, MZ., Samreen, N., Ghalib, SA., Zehra, A., Hussain, B., Tabbasum, F., Begum, A. and Latif, TA. 2014. Biology and Behavior study of Chinkara, Cheetal, Nilgai, Black buck, and Hog deer in Captivity in Karachi Zoo and Safari Park. International Journal of Biology and Biotechnology. 11(2-3):341-349.

Khan, MZ., Imdad, U., Ghalib, SA., Hussain, K., Zubair, S., Fraz, TR., Hashmi, MUA., Safi, I., Iqbal, N. and Lateef, T. 2017. Status of Captive Wild Animals in Safari Park, Karachi. Canadian Journal of Pure and Applied Sciences. 11(2):4189-4204.

www.google.com/maps/dir/24.9268217,67.1109699/safari+park+karachi+satellite+image/@24.9234187,67.1100975,377m/data=!3m1!1e3!4m8!4m7!1m0!1m5!1m1!1s0x3eb338c41059ace9:0x59f6e847f82104b2!2m2!1d67.1103421!2d24.9252993.

Received: Feb 15, 2021; Revised: April 19, 2021;
Accepted: April 26, 2021