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Research paper

Conservation status of amniotes found in and around Balapur Pond of District Prayagraj (Uttar Pradesh), India

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Abstract

Perennial Balapur Pond was surveyed and studied to assess the conservation status of reptiles, birds and mammals naturally occurring in and around it. The survey was conducted from January 2018 to June 2019. During entire survey, a total of 7 species of reptiles, 11 species of birds and 8 species of mammals were identified. Among reptilian species reported, 1 species comes under NT (near threatened), 1 species LC (least concern) while 5 species have no special status (NSS). One avian species was CR (critically endangered), one NT (near threatened) and 9 bird species were LC (least concern). Out of 8 mammalian species recorded, one was EN (endangered), one VU (vulnerable) and remaining 6 LC (least concern).Most of the avian and mammalian species are lacking conducive ambience and hunted for food.

Keywords: *Balapur Pond; Conservation status; Reptiles; Birds; Mammals; Red List.*

1. Introduction

Chordata is the highly evolved phylum among all animal phyla. These are characterized by the presence of dorsal tubular nerve cord, notochord and pharyngeal gill slits. The chordata is divided into lower chordata and higher chordata. The higher chordata is represented by a single subphylum Vertebrata in which notochord is replaced by vertebral column. The Vertebrates have ventral muscular cardiac system bearing 2-4 chambers. A vertebrate has notochord during its embryonic development which is replaced by a cartilaginous or bony vertebral column called as backbone in adults. Taxonomically higher chordates belong to a subphylum Vertebrata that includes seven classes of living animals viz. Cyclostomata, Chondrichthyes, Osteichthyes, Amphibia, Reptilia, Aves and Mammalia. Last three are popularly known as higher vertebrates or so called amniotes.
Reptiles are also poikilothermic animals with monocondylic skull. These were the first exclusively terrestrial vertebrates with crawling or creeping mode of locomotion. In general the class Reptilia comprises four orders viz. Chelonia (turtle and tortoise), Rhynchocephalia (tuatara), Squamata (lizarda and snakes) and Crocodilia (crocodiles). They are the first amniotes of the earth.
Birds (Aves) also referred to as masters of air, are homoiothermic or warm-blooded egg-laying vertebrates characterized by feathers and forelimbs modified as wings for flight. Jaw bones are prolonged into a toothless beak to serves like hands and mouth concurrently. Mammals are warm-blooded i.e. homoiothermic vertebrates having the skin more or less covered with hair; young are born alive (viviparous) except for the small subclass of monotremes (most primitive mammals comprising the only extant members of the subclass Prototheria) and nourished with milk, having dicondylic skull and a muscular diaphragm. Presence of mammary glands is the most unique feature of this group. The class Mammalia includes egg laying mammals (Prototheria), pouched mammals (Metatheria) and higher viviparous mammals (Eutheria).
Pond is an example of aquatic ecosystem. Wetland is in fact a land transitional between terrestrial and aquatic ecosystem, where the water level is usually at or near the surface or the land is covered by shallow water. Wetlands are very productive ecosystems, which help in the regulation of biological cycles, maintenance of water quality, nutrient movement and support for food chains. Now wetlands are shrinking rapidly because of urbanization and industrialization. Due to urbanization and anthropogenic pressure most of the wetlands are succumbed to greater degree of biologically active nutrient accumulation (Verma and Prakash, 2018a).

2. Historical Preview

India is a developing and agriculture dominating nation. Its most of population depend upon agriculture. In India, a number of ponds, lakes and reservoirs are naturally found but they are not being utilized properly due to lack of insufficient study of their hydrobiology. The study of different water parameters is very important for understanding of the metabolic events in the aquatic ecosystem. One of the most important features of ponds is the presence of standing water, which provides habitat for wetland plants and animals.
Wetlands constitute one of the most productive ecosystems and play a significant role in the regional ecological sustainability. They have been an essential part of human civilization meeting many crucial needs for life such as drinking water, food, fodder, energy supply,

flood storage, transport, recreation, biodiversity, and climate stabilization. The cross cultural, economic and ecological values of wetlands provide a fine blend of past, present and future of human descend, existence, and future perspectives of sustainability.
Pond water is useful both for sustainable and unsustainable agriculture during ancient times. The unsustainable agriculture has multiple effects (Verma 2017a) and disturbs the ecological balance (Verma 2018a).Aquatic ecosystem maintains the ecological, social and economic functions that interconnect the organisms including humans. It is helpful in maintaining the biodiversity. The biodiversity has values (Verma 2016a) and explored at three levels namely: ecosystem diversity, species diversity and genetic diversity. The genetic diversity acts as a buffer for biodiversity (Verma, 2017b). The biodiversity helps to maintain the ecological balance. There is a necessity of ecological balance for widespread biodiversity (Verma 2017c) and the biodiversity loss has ecological impact (Kumar Ajay et al., 2017). The ecological balance is an indispensable need for human survival (Verma 2018b). The climate change has a huge impact on biodiversity (Prakash et al., 2019) and farmers' practices (Mandal et al., 2020).
Prakash et al., (2015a, 2015b, 2015c and 2016a) and Verma et al., (2016a, 2016b and 2020) performed the limnological and ichthyological studies of Alwara Lake of Kaushambi (U.P.) while Verma et al., (2017a, 2017b and 2018a) and Prakash et al., (2017, 2019a and 2019b) studied the fresh water bodies for distribution and conservation of fishes, other chordates and other properties. Verma (2016b, 2016c, 2016d, 2016e, 2017d, 2017e, 2018c, 2019a, 2019b, 2019c and 2020), Ranjan and Prakash (2019) and Prakash (2020a and 2020b) and Prakash et al., (2020) studied the limnological parameters as well as biodiversity and conservation status of fishes in the various lentic and lotic fresh water bodies of Uttar Pradesh. Verma (2018d), Verma et al., (2015, 2016c, 2016d, 2018ba, 2018c and 2019) and Prakash et al., (2016b, 2016c, 2016d, 2019c) studied the Indian sarus crane from various point of views and narrated an increase in its population in Kaushambi district of Uttar Pradesh, India while Wahied et al., (2020) studied the house sparrow and common myna in Doda region of India.Singh et al., (2019) and Yasmeen et al., (2020) studied the arthropod diversity in Indian prospective.
The present survey is undertaken to assess the conservation status of amniotes found in and around Balapur Pond of District Prayagraj (Uttar Pradesh), India.This survey was conducted from January 2018 to June 2019.

3. Study Area

Balapur pond is a natural pond, located on south side of the village. It is located in Koraon block and tahsil of Prayagraj district of Uttar Pradesh (fig. 1), India. The pond studied is approximately 62 KM away from District head quarter Prayagraj and 272 KM from State capital Lucknow. This village is surrounded by Janakpur in east, Paitiha in south west, Banshipur in north east and Murlipur in south. The month of March marks the beginning of summer and it lasts till June. Monsoon generally starts in the month of July and lasts till September. December to February is the winter season in and around this village. This pond (fig. 2) is extended in more than two hectaresand is surrounded by agricultural fields from three sides.

Fig. 1: Location of Study Area of Balapur Pond in Prayagraj District, India.

4. Materials and Methods

The perennial Balapur Pond and surrounding area was surveyed and studied in detail to assess the conservation status of different species of amniotes as per IUCN Red List. This study was done once for a month along the period from January 2018 to June 2019. For field work, standard survey method of Burbridge (1994) was followed. The reptiles were identified with the help of Aengals (2012) while birds were identified with the help of Ali (1988). Author did not need to collect the reptiles, birds and mammals as they were easily recognisable even from a long distance. People of local communities of adjoining areas also helped the author in several ways including hospitality; collection and identification of animals.

Fig. 2: A View of Balapur Pond in Prayagraj District, India.

5. Results and Discussion

The author recorded (1) 7 species of reptiles, (2) 11 species of birds and (3) 8 species of mammals in and around the Balapur pond. The identified species of different amniotes including their common names, zoological names, families, orders and conservation status are shown in Table 1, 2and 3 respectively.

Table 1: List of Reptiles Reported from Balapur duringthe Year 2018-2019

S. No.	Common Name	Zoological name	Family	Order	Conservation status
1	Indian Garden lizard	Calotes versicolor	Agamidae	Squamata	NSS
2	The spiny tailed lizard	Uromastixhardwickii	Agamidae	Squamata	NSS
3	House gecko	Hemidactylus flaviviridis	Gekkonide	Squamata	NSS
4	The Indian Cobra	Najanaja	Elapidae	Squamata	NSS
5	Krait	Bungarus caeruleus	Elapidae	Squamata	NSS
6	Red Sand Boa	Eryxjohnii	Boidae	Squamata	NT
7	Indian Monitor lizard	Varanus bengalensis	Varanidae	Squamata	LC

Table 2: List of Birds Reported from Balapur duringthe Year 2018-2019

S. No.	Common Name	Zoological name	Family	Order	Conservation status
1	Peacock	Pavocristatus	Phasianidae	Galliformes	LC
2	Koel	Eudynamisscolopaceus	Cuculidae	Cuculiformes	LC
3	Common myna	Acriodotherestristis	Sturnidae	Passeriformes	LC
4	House Sparrow	Passer domesticus	Passeridae	Passeriformes	LC
5	House Crow	Corvussplendens	Corvidae	Passeriformes	LC
6	Red-vented Bulbul	Pycnonotuscafer	Pycnonidae	Passeriformes	LC
7	Parrot	Psittaculaeupatria	Psittaculidae	Psittaciformes	NT
8	Common Rock Pigeon	Columba livia	Columbidae	Columbiformes	LC
9	Owl	Bubo bubo	Strigidae	Strigiformes	LC
10	Indian Vulture	Gyps indicus	Accipitridae	Accipitriformes	CR
11	Indian Egret	Egrettagarzetta	Ardeidae	Pelecaniformes	LC

Table 3: List of Mammals Reported from Balapur during the Year 2018-2019

S.No.	Common Name	Zoological name	Family	Order	Conservation status
1	The Rabbit	Oryctolagus cuniculus	Leporidae	Lagomorpha	EN
2	Shrew	Sorexaraneus	Soricidae	Eulipotyphla	LC
3	Rat	Rattus rattus	Muridae	Rodentia	LC
4	House mouse	Mus musculus	Muridae	Rodentia	LC
5	Squirrel	Funambulus palmarum	Sciuridae	Rodentia	LC
6	Pig	Sus scrofa	Suidae	Artiodactyla	LC
7	Nilgai	Boselaphustragocamelus	Bovidae	Artiodactyla	LC
8	Smooth-coated Otter	Lutrogaleperspicillata	Mustelidae	Carnivora	VU

[NSS= no special status, NE= not evaluated, LC= least concern, NT=near threatened, VU=vulnerable, EN= endangered and CR=critically endangered].

On the basis of rate of decline, population size, area of geographic distribution and degree of population, distribution fragmentation etc., IUCN (International Union for Conservation of Nature) Red List (2020) classified the species into nine groups.These are EX (extinct), EW (extinct in wild), CR (critically endangered), EN (endangered), VU (vulnerable), NT (near threatened), LC (least concern), DD (data deficient) and NE (not evaluated). When discussing the IUCN Red List, the official terms “threatened" is a grouping of 3 categories: Critically Endangered, Endangered and Vulnerable. Among reptilian species reported, 1 species was under NT, 1 species LC while 5 species had no special status (NSS). One avian species was CR, one NT and 9 bird species were LC. Out of 8 mammalian species recorded, one was EN, one VU and remaining 6 LC.

6. Conclusion

The author thus, recorded 7 species of reptiles, 11 species of birds and 8 species of mammals in and around the Balapur pond of Prayagraj district, Uttar Pradesh, India. Out of 26 species recorded, one species was CR, one EN, one VU, two NT and 16 LC while 5

had no special status. Most of the avian and mammalian species are lacking a suitable habitat and appropriate places for reproduction. They are often hunted for food. The author recommends a complete survey of entire village from biodiversity and conservation point of view.

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