



A Survey For Observation and Identification of Wetlands Dependent Bird's Species in Dhanauri Wetland, Dhanauri, Gautam Budhh Nagar

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Abstract

In this survey we are going to discuss about the conservation of aquatic and semi aquatic birds and their habitats. Mostly these birds are found near water bodies like river bank, lakes, ponds and wetlands in which wetlands are sub-merged watery lands, filled with riverine water or rain water. Wetlands are good places or habitats for the semi-aquatic birds like Storks, Herons and some species of *Gulliformes* etc. as these water bodies provide them good shelter and foraging area and an adapted ecosystem according to wetland dependent birds. But now days the size of wetlands is shrinking day by day due to most part of land uses for agricultural purposes and for establishing industries etc. The population of these concern bird species is decreasing due to loss of their habitat and also due to contamination of wetlands due to pollution. The survival of any individual depends upon its habitat and the environmental circumstances of habitat. If the habitat is in good and healthy condition, the leading species and migratory species will survive in better ways. We chose the Dhanauri Wetland as a survey area where we found some migratory and resident birds like Sarus, Black necked stork, Woolly necked stork, Common Purple moorhen and Indian Pond heron. These all birds are aquatic, inhabit wetland or we can say that have wetland dependent life. So conservation of wetland site for survival of these elegant birds is very important and necessary step. Due to the decrease in their population (Storks, herons and moorhens), IUCN listed those birds in Red List as their conservation status-vulnerable, endangered and near threatened. Dhanauri wetland serves as a good foraging and nestling place for wetland dependent birds, now should be listed as a Ramsar site.

Keywords: strokes, sub – merged watery land, vulnerable, endangered and near threatened.

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Introduction

The Dhanauri wetlands, an area showing birds diversity is located in Dhanauri village near Dankaur (U.P.), India. Dhanauri Wetland spans an area 98 hectares as recorded in the National Inventory of Wetlands. Dhanauri is about 15 km north of Noida Airport in G.B. Nagar. It is special for studying avifauna like some crucial species of migratory birds and local native birds under threat; even than there is found near about 120 Sarus cranes (The State Bird of Uttar Pradesh).



Plate No. 1: A visit with students to survey birds at Dhanauri wetland in winter.

We chose this area as our work place because of it shows diversity in avifauna and due to nearest place to our college Shanti Devi Government College, Jewar easy to routine work and collecting data.

As a waterlogged wetland and marshy area, Dhanauri wetland offers better feeding and breeding ground for migratory birds and a good habitat for resident avifauna. Every year at the onset of winter a large number of migratory birds came here (Dhanauri wetland, India), seeking for suitable habitat. The migratory birds are those birds which move from one place to other place, travelled a long distance and short distance for gaining benefits of favorable conditions; in the form of food and shelter during their migratory period at migratory place. Sometimes short distance is covered by native or local birds to fulfill their food requirements; such type of migration is known as vagrant or irregular migration.

Now days, these migratory birds and local native birds are facing problems arise during their journey as well as at migratory land serve as their habitat due to natural disasters like unfavorable atmospheric conditions, facing radiation etc. and human unsustainable activities such as wetlands area used for agriculture and for disposal of wastes, eradication of those plants and vegetation useful for their survival during migratory period, use Of wetland water for irrigation of croplands.

During our routine observation, we found some migratory/resident birds such as Black necked storks, Woolly necked storks, Purple moorhens and Pond herons or paddy birds with many Sarus cranes, the state bird of Uttar Pradesh. All these aqua fauna are of wading type birds. They have long legs with spread out toes that help them wade through marshy land easily.

Black necked storks and woolly necked storks are Asiatic migratory wading species; population in India undertake seasonal migrations, although some individuals may remain year-round in certain other area. Purple moorhen is also considered as a migratory resident bird in India. While some species of moorhens remain in India year round, some others migrate a long distances, from Siberia to north Eastern India especially during winter. Moorhens, called marsh hens, are medium sized water birds that are member of railidae family. They are close relatives of coots. Other than these migratory species, Indian Pond heron or paddy bird and Sarus cranes are local or native birds of India.

These all above mentioned species are important for our study as they come under vulnerable & endangered criteria; although Indian purple moorhen is least concern by IUCN as threatened, but locally it may come under threatened due to many reasons such as pollution and habitat loss. Pond heron is also considered as least threatened by IUCN.

All these birds' species are wetland dependent species and facing population decline due to habitat loss and increasing level of different kinds of pollution interrupting their migration and other vital activities. For conserving those birds species which has water dependent life, need to conserve water bodies such as rivers, lakes, ponds and wetlands. Keep in mind the need of wetlands for conserving the birds species and some other animal species, we found that Dhanauri wetlands require more attention of people and government to conserve it as Ramsar site.

Dhanauri wetland serves as a good habitat for avifauna and flora needs attention to keep up it in healthy condition to save several elegant species of birds which really want protection. We should have to raise hands to protect it and conserved by government as well as by local communities. This wetland site needs a proper management and protection for its habitats, conserving the population of migratory birds and native birds of this region.

Materials and Methods

1. Survey Area -The survey was conducted in the Dhanauri Wetlands, near village Dankaur, fed by Yamuna River and by seasonal rain fall. It is a riverine bog type wetland recognized for diversity of avifauna and for watching migratory birds during winter. This area is surrounded by croplands, very little number of large trees and villages. The whole surface area of wetland is filled with water; some area shows huge amount of water with depth, some area has only shallow water with marshy land. The dry and shallow watery area is covered by doob grass, moss, peat grass and heaths;

but most of surface area is covered by *Ecchorhia*. This area rich in animal biodiversity as presence of both vertebrates and invertebrates like fish, amphibians, snails, zooplankton, phytoplankton and many types of worms also. All these characteristics make it an ideal habitat for birds; fulfill their foraging and breeding requirements.



Plate No. 2 : A view Dhanauri Wetland, Dankaur, Gautama Buddha Nagar, showing surroundings



Plate No. 3 : A view Dhanauri Wetland, Dankaur, Gautama Buddha Nagar, Showing Sarus Crane, Moorhen & storks. Vegetation views dry leaves with green leaves of *Ecchorhia* (Jal kumbhi)

During our visit we had to carry some important equipment's and tools to perform our work with efficiency. These tools make our work easier as the birds are simply too fast, too far or too unpredictable to watch effectively the tools and instruments which are used by us as follows:

A. Tools for watching and capturing photos of Birds :

1. Binocular

Binoculars are frequently used in bird watching. Its magnification power makes it useful to watch those birds who are small, farthest, quick and do not like to be near humans.

2. Camera

If you want to capture clear and obvious images of birds or even wild life animals, you will have to choose best camera for photography. Here we choose Canon EOS R-10 for capturing the views of wetlands and images of birds and ordinary mobile phone of students or especially i-phone are used during photography.

3. Identification key for recognition of Birds during survey

We used two Birds field guide books for identification of captured photographs of birds as below:

- A Pictorial Guide to the birds of the Indian Subcontinent by Salim Ali & S. Dillon Ripley
- Helm field guides- Birds of the Indian Subcontinent; by Richard Grimmett. Carol Inskipp. Tun Inskipp.

B. Equipments and instruments used during measuring pH of soil and water of wetland

1. Paper stripes are used to measuring pH of soil and water sample, collected from wetland site.

4. GPS (Global Positioning System) / and other Google tools

It is used for measuring humidity in air and temperature also via Google weather information (via GPS).

5. **Equipment's like beaker-** used for collecting water, petridishes for collecting soil sample and caliber tubes for storing samples. Other than it glass rods, gloves, forceps, vials and spatula etc.

Observation

A survey was determined to visit Dhanauri Wetlands for watching migratory birds in winter months from January to March. In India, more than 12,000 species of birds and perhaps 2,000 subspecies are found in which some species belong migratory birds. Mostly migratory species are found in country only during the season of winter.

Bird's surveys were carried out in the morning (GMT). Per day covering areas were visited and bird survey repeated in every month from January to March.

During watching birds at Dhanauri wetlands, we observed some birds come under endangered / vulnerable/ near threatened criteria in which partially migratory / resident birds and some local avifauna was recorded.

The list of recognized avifauna is as shown in table –

S.N.	Species	Binomial	Family
1.	Sarus crane	<i>Gruee antigone antigone</i>	Gruidae
2.	Black necked stork	<i>Ephippiorhynchus asiaticus</i>	Ciconiidae
3.	Woolly necked stork	<i>Ciconia apiscopos</i>	Ciconiidae
4.	Common moorhen	<i>Gallinula</i>	Rallidae
5.	Indian pond heron	<i>Ardeola grayii</i>	Ardeidae

1. The Sarus crane

It is wading type wetland dependent state bird of Uttar Pradesh India. There are near about 150 to 200 members of this species found in Dhanauri wetlands by random counting.

Characteristic features:

- The main characteristic feature of this bird that it is tallest flying bird near about on standing 152 to 156 cm. tall and weigh from 5 to 12 kg.
- The body coloration grey plumage with red patch spread from upper neck region to head with pale red legs.
- They are mostly found in pairs, always seen in small groups of three or four individuals.
- They are monogamous birds, nests constructed on water in natural wetlands or in flooded paddy fields.
- Life span of a Sarus crane estimated as it can live near about 30 to 40 years, though some species of cranes have been recorded to live up to 80 years.

Conservation Status

- IUCN Red list : Vulnerable
- Wild life (Protection) Act 1972; Schedule I & Schedule IV (Sunder and Choudhary 2003)



Fig. 1 A: Flying Sarus Habitat



Fig. 1 B: Foraging Sarus

Habitat

They mainly found in shallow water areas as paddy fields, marshy places or wetlands and small pond and ditches near villages.

Distribution

As we know it is an Asian bird showing distribution in south East Asia, northern India and northern Australia. In India they show their distribution in Gangatic plains, the northern states in India. Population density decreases gradually towards South. It has been also shown by Sunder & Choudhury 2003.

2. The black necked stork

It was observed by us in Dhanauri wetlands during winter as a migratory resident Asiatic bird, also wetland dependent.

Characteristic features:

- The elegant tall bird on standing attains length 120 -135 cm.
- The adult bird weighs 4.1 kg .
- This large bird has long black beak, black head with long black neck.
- The body feathers white, mostly on belly while wings with black centrally placed feathers.
- Legs wading type long, well adapted to walk in muddy land.
- Legs color is red in both sexes.
- Dimorphism is shown as female has yellow colored eyes while male with black colored red eyes.
- It shows nestling solitary also found in single pairs or groups.

Habitat

It large wading type bird inhabits marshy lands, mostly wetlands, shallow water areas near water bodies as river and lakes also.

Conservation status:

- IUCN Red List : it is considered as near threatened by IUCN
- Wild life protection act 1972 : Schedule II

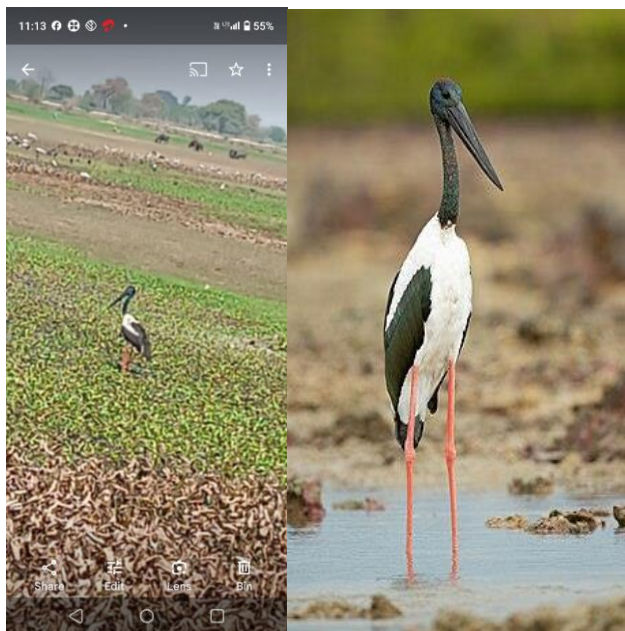


Fig 2 A : Black necked stork (original) Fig 2 B: Black necked stork

Distribution :

The necked stork has cosmopolitan distribution, species belong different regions of the globe. In India, it shows widespread distribution as in northern Gangetic plains, west central highlands and in east Assam valley.

3.The woolly necked stork

It is another species of stork which has been seen in Dhanauri wetland. The subsequent population of this species is observed here as resident.

Characteristic features:

- 1.It is large sized bird on standing near about 75–92cm. (Grimmett & Inskips).
- 2.Coloration large blackish stork with woolly white neck, black 'skull cap ' ; white vent and under tail coverts.
- 3.In flight upper wing and under wing entirely dark.
- 4.Long stout bill is black colored.
5. Legs and toes are dull red.
- 6.They usually live single or in pairs as seen in picture, occasionally found in small group.
- 7.The nestling on the long and branched trees like Neem, Jamun etc. they can make nests on other trees in absence of above mentioned genera.

Conservation status

•IUCN Red List : near threatened

Wild life protection act 1972; schedule II

Habitat

It inhabits in marshy land like wetland, ponds and shallow water near large rivers, lakes and streams. Feeds on water animals like snails, larvae of many flies, fishes and frogs, even than can take plants and vegetation

Distribution

It is Asiatic large bird found all over India. It is also found in Sri Lanka, Bhutan, Nepal, Myanmar and Pakistan; even than has seen in European countries.



Fig. 3 A: Woolly necked stork (original) Fig. 3 B: Woolly necked stork

4. The common purple moorhen

It is migratory / somewhere resident bird found in winter in Dhanauri wetland. It also belong subcontinent Sri Lanka and another countries Nepal, Bhutan, It is about 43 cm in length, mostly found in marshy reed- beds, flooded rice

Characteristic features:

- 1.It is bluish purple colored bird found in Dhanauri wetland.
- 2.It is on standing 43 cm .
- 3.Body color bluish purple, red yellow beak .
4. Legs are wading type pale yellow in color.
- 5.Nestling occurs near bank of water bodies, nest building with the use of water vegetation's.
6. Incubation perform by both sexes.



Fig. 4 A: Purple Moorhen (original)

fig. 4 B: Purple Moorhen

Conservation status

IUCN Red List : IUCN considered it least threatened bird species.

Wild life protection act-1972 : schedule II

Habitat: totally wetland dependent species , mostly found near bank of water bodies, feeds upon animal food like amphibians, reptiles, fish, eggs insects, molluscs also hunts kill rats as well as vegetation like leaves, tubers etc.. Sometimes , it may be seen in paddy fields near wetlands.

Distribution:

This Gullinule shows wide range of distribution. In Asia , it is recognized in India, Nepal, Sri Lanka etc.

5.The Indian heron

These are small sized wading type bird also watched by us in Dhanauri wetland at the dry leaves of *Ecchorhia* in search of food.

Characteristic features :

- 1.The body measurement of this small sized bird is 46 cm. on standing.
- 2.It is buff brown in color with darker back.
- 3.Beak is small but stout.
4. Legs are long, wading type and have yellowish appearance.
- 5.They are usually solitary foragers.
- 6.They are semi – colonial breeders.
- 7.They breed with the commencement of monsoon.
- 8.Nest building usually on trees or water shrubs with sticks and dry leaves.

Conservation status :

IUCN Red List : it is classified as ' least concern' by IUCN

Wild life protection act : it is listed under schedule II



Fig. 5 A: Indian pond heron (original) Fig. 5 B: Indian pond heron

Habitat

They are small herons inhabit waterlogged grounds like paddy fields, ponds and wetlands. They uuasally feed near water bank mostly upon floating vegetation such as water hyacinth and also upon small animals like amphibians, small fishes and their larvae etc.

Distribution

It shows vast distribution in Asian countries such as India, Bhutan, Bangladesh, Mayanmar, Nepal and Pakistan.

The images of above mentioned birds are captured by photography finally recognized by using appropriate birds guide book as mentioned below -

- i. Helm field guides– Birds of the Indian Subcontinent; by Richard Grimmett. Carol Inskipp. Tun Inskipp.
- ii.A Pictorial Guide to the birds of the Indian Subcontinent by Salim Ali & S. Dillon Ripley

iii. And by searching with different sites on Google and collect same images.

Topographical observations:

Dhanauri Wetland is a riverine bog type wetlands flooded with Yamuna river water and gets water from seasonal rain. It is surrounded by croplands, roads, construction sites and villages. As we know that bog wetlands characterised by acidic, nutrient-poor soil type marshy land, but here in Dhanauri wetland the soil texture vary from acidic to alkaline as shown in pictures plate No. 1 and plate No. 2. We took water sample and soil sample from Dhanauri wetland for identify the Ph, using paper stripes ph meter. First plate No. 1 shows soil ph and plate no. 2 shows ph of water ; both results alkaline.



Plate no. 4 A: p H of soil Plate no. 4 B: p H of water , from Dhanauri Wetland during survey.

Vegetation type :

As the Dhanauri wetland recognized for sarus cranes, different kinds of storks, herons and moorhen like other birds, provide an ideal habitat to them contains a variety of water floating plants as *Ecchornia* (water hyacinth), *Pistia* (water lettuce), some submerged plant and moss grass, heath grass covering most of surrounding wet soil area. Most of surrounding boundaries are covered by Doob grass near crop fields.

In picture plate no. 3 shows water hyacinth with moss grass and heath a stout grass. Plate No. 4



Plate No. 5: *Ecchornia* (water hyacinth), or Jalkumbhi



Plate No. 6. Picture shows moss grass, doob grass, and heath

Discussion and Result

The survey area is Dhanauri wetlands, a vital bog type wetland, near about 15 km. of Yamuna River. Here we found bird species such as the Sarus crane, the woolly necked stork, the black necked stork, the purple moorhen and the Indian pond heron. These birds are well recognized by using Birds guide books of Ali and Ripley, Richard Grimmett as well as by using images obtained from Google contents. We choose Dhanauri wetland as our study area because it faces problem of existence to save several birds lives

which come under endangered threads. This area is rich in bird's biodiversity of both type local and winter migrants.

All these birds are wetland dependent in which Sarus Crane, Indian pond heron are resident while both stork's migrant/ resident, same status found in common moorhen. The storks are considered as threatened birds, but have wide range of distribution. It is also discussed by Greg P. Clancy (2009) in his species review that nineteen species of storks (ciconiidae) belonging to three tribes, occur throughout the world mostly in tropical areas. He also mentioned that some are migratory, some are colonial nesters and most are dependent on wetlands. All type of storks are elegant wetland dependent birds, make their nest on tall trees like Neem (*Azadirachta indica*) and Sheesam (*Delbergia sisso*) etc.. Bhatt Kamal March – April 2006 had found Black necked stork, *Ephippiorhynchus asiaticus* nest with four chicks in marine National Park, Gujrat, India.

Eradication of plants interrupt the nestling of storks, also a cause of decline their population in India and in other countries; consider them as a threatened bird in IUCN list. Other reasons of storks population decline are hunting and habitat loss, in India somewhere, they are captured for ritual practices. E.g. the Mir Shikars, traditional hunters of Bihar had a ritual practice in which a young man required to hold a alive black necked stork ‘‘ Loha Sarang ‘‘ before marriage. Young birds have been known to be taken from nest for meat in Assam and some other eastern states.

Like these birds purple moorhens are also facing same problems, instances of its illegal capture and keeping purple moorhens as pet have been reported. According to WRRC (Wild life Rescue and Rehabilitation Center), some purple moorhens had been rescued as illegally captured by people. Rana Sarita in 2018 impacted on the habitat selection and behavior of purple moorhen.

The state bird Sarus crane, a tallest bird also has wetland dependent life. So we find here that a wetland play an important in survival of such type of birds. Sharma and Katuwal 20024 impacts on population and conservation threats to the vulnerable Sarus crane *Grus Antigone* in Nepal. It is state bird of U. P. totally wetland dependent, so we find Dhanauri Wetland an ideal habitat for it as it is surrounded by croplands, make it more beneficial to Sarus crane. However the total area of this wetland is gradually diminishing due to urbanization. This fact is also certified by Gulati and Rana that wetland are more crucial economic resources when maintained in a natural or semi-natural state as they has a wide range of flora and fauna. Wetlands and croplands areas play a crucial role as foraging and breeding grounds for the Sarus crane (Gosal *et.al.*, 2016; Katuwal. 2016; Sunder. 2011).

The Indian pond heron is also Indian small sized wetland dependent bird frequently found in paddy fields, so named paddy bird. Herons also formed nest on trees like Tamarind tree, Mango tree, Acacia species and it can vary according to surroundings trees. *Seedikkoya* and Azeez and Abdul demonstrated that herons nests were placed at varying heights (2008).

The above mentioned birds are observed by us want more attention. Problems faced by these birds during migration as well as at their migratory place due to atmospheric and topographical diverse conditions. It is also revealed by Krieg *et. al.*, 2008 as birds face a number of threats during migration as natural disasters (thunder storms, sand storms, diseases and predation) to anthropogenic activities (such as wind forms, pollution, oil spills, radiation, electric lights, degradation of habitats and unsustainable hunting). Due all these factors many species of birds both migratory and native are on decline.

In India, some of the major problems faced by migratory birds and those birds whose habitats is on decline as harvesting of fishes force people to convert wetlands in to a fish pond , no proper attention from local and government organizations, agricultural encroachment . We observe here that most of wetlands area is often encroached to fulfill society needs. Urbanization occupying wetlands area for industrialization, construction and other works. As wetlands are the most complex and fragile ecosystems and do not have a self-cleaning ability and thus easily accumulate pollution; also a main cause of its decline. This problem is also faced by Danbury wetland as local communities dump waste and garbage. We found frequent grazing of cattle as shown in some photo plates, although it is not bad but it should be restricted because gradually most part of wetland is occupied for this purpose. On other hand , we found that most of area of wetland is using as agricultural practices and for dumping waste and garbage, which make it polluted and not suitable for birds survival. Decrease of surrounding trees such as imali (*Tamarindus indica*) and keekar (*Acacia nilotica*) which are frequently used for nestling by herons and great bird Sarus cranes, due to road construction and other industrial constructions.

Conclusion

I would like to conclude that the wetlands play an important role for survival of many aquatic species and maintaining the ecological balance. As we find in our survey the all birds, storks, herons and moorhens etc. are wetland dependent. They seek that place for foraging and breeding. The present study was an attempt to consider the facts that wetlands are the crucial and ideal habitats for all these wetland dependent birds as we found in Dhanauri wetland. Here Government and public NGO,s can play an

important role for protecting habitats, wetland restoration, pollution control and by performing many public awareness campaigns. Finally, we want to explain that wetlands should be saved to save these elegant species of birds.

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