

DEMOGRAPHY AND AVIAN DIVERSITY AROUND PILANA POND ASOP – A NATURAL WETLAND IN BHOPALGARH (JODHPUR)

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Abstract:

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for some months or some periods. In other words, A wetland is a distinct ecosystem, which is flooded by rainy water either seasonally or permanent for months or years. So, migratory birds attracted toward wetlands after rainy season because it fulfilled with water and provide suitable habitat. A freshwater wetland is Pilana pond (Asop) in Bhopalgarh, Jodhpur, which having good sources of food for herbivore or carnivore or omnivore types of Avifauna or migratory birds, resultant good Avian diversity found at Pilana pond in the year from 2019-20 to 2021-2022. This pond is located at the Latitude coordinates 26°79'N and 73°53'E. There were seventeen migratory bird species observed at this pond during above period, which are belonging to various families like Anatidae, Recurvirostridae, Podicipedidae, Phalacrocoracidae, Rallidae, Threskiornithidae, Scolopacidae, Ardeidae, Alcedinidae along with the resident birds. Among these the dominant family is Anatidae or ducks.

Key words:, *Diversity of migratory birds, Demography, Bird migration, Pilana pond (Asop).*

Introduction:

Bird migration is a unique and greatest thing of the nature, in which thousands of migratory birds and their species make the hazardous or risky journey from one part of the world to another part of the world with the changes of seasons. Bird migration occur when their native place conditions are not suitable or favourable for living because of total vegetative area there is completely frozen with snow. In this conditions resources for survival are decreasing that's why they migrate from decreasing resources toward the area of increasing resources for food, survival, shelter, water, stopover and nesting. In the monsoon season of every year, waterbodies of Rajasthan like lakes, ponds, ditches, canals etc. become filled with rainy water and in these water bodies many types food or prey sources for migratory birds like invertebrates and vertebrates for ex. Aquatic insects, worms, larvae, molluscs, fish, frogs, planktons and vegetations in pond water etc. After the passing of rainy season, migratory birds start coming here during the winter season.

In Rajasthan there is Pilana pond area in Bhopalgarh (Jodhpur), there are many migratory bird species comes in the months September to February of the year 2019-20 to 2021-2022 like; Black winged stilt (*Himantopus himantopus*), Bar headed goose (*Anser indicus*), Demoiselle crane (*Grus*

virgo), Little grebe (*Tachybaptus ruficollis*), Indian cormorant (*Phalacrocorax fuscicollis*), great cormorant (*Phalacrocorax carbo*), Common coot (*Fulica atra*), Common moorhen (*Gallinula chloropus*, Eurasian Spoonbill (*Platalea leucorodia*), Knob billed duck or comb duck (*Sarkidiornis melanotos*), Indian spot billed duck (*Anas poecilorhyncha*), Gadwall bird (*Mareca strepera*), Northern Pintail (*Anas acuta*), Northern shoveler (*Spatula clypeata*), Marsh sandpiper (*Tringa stagnatilis*), painted Stork (*Mycteria leucocephala*), Great blue heron (*Ardeaherodias*), Common pochard (*Aythya ferina*), Ruff (*Philomachus pugnax*), mallard duck (*Anas platyrhynchos*), Red-naped ibis (*Pseudibis papillosa*) Black headed ibis (*Threskiornis melanocephalus*) etc. at this pond.

Method and Materials:

The study was done at the Pilana pond in Asop, Bhopalgarh (Jodhpur) and in this Bhopalgarh area there is a Jajiwal pond, where a study was already done on the migratory birds as “Avian Diversity Around Jajiwal pond-A natural wetland” (D Mohan, A Gaur,2004-2005). This pond is located in at the Latitude coordinates 26°79’N and 73°53’E. Many of the migratory bird species arrived at this pond in the winter season of 2019-20-2021-22 and they stay here in whole winter. I have recorded 17 migratory bird species at this pond during above period and for this study I have used direct observation method from mid-September to February month of all three years. The data were recorded in the field book at the Pilana pond Bhopalgarh (Jodhpur). I have also collected some information about migratory birds via questionnaire survey from Pilana villagers who are living near the pond in Asop, Bhopalgarh area. At this pond the migratory bird species were identified with the help of “The birds of Indian subcontinents” (Salim Ali) and “The book of Indian birds” (Salim Ali) and google lens. Each species observed also manually with the help of Nikon binocular (10*50), Canon camera 700 D with lens 50-400 mm and noted down in field note book.

Observations:

Observations of diversity of migratory bird species at Casti pond in Bhopalgarh area from mid-September 2019-20 to February 2021-22. I have observed 17 migratory bird species at Pilana pond during this period and these are following;

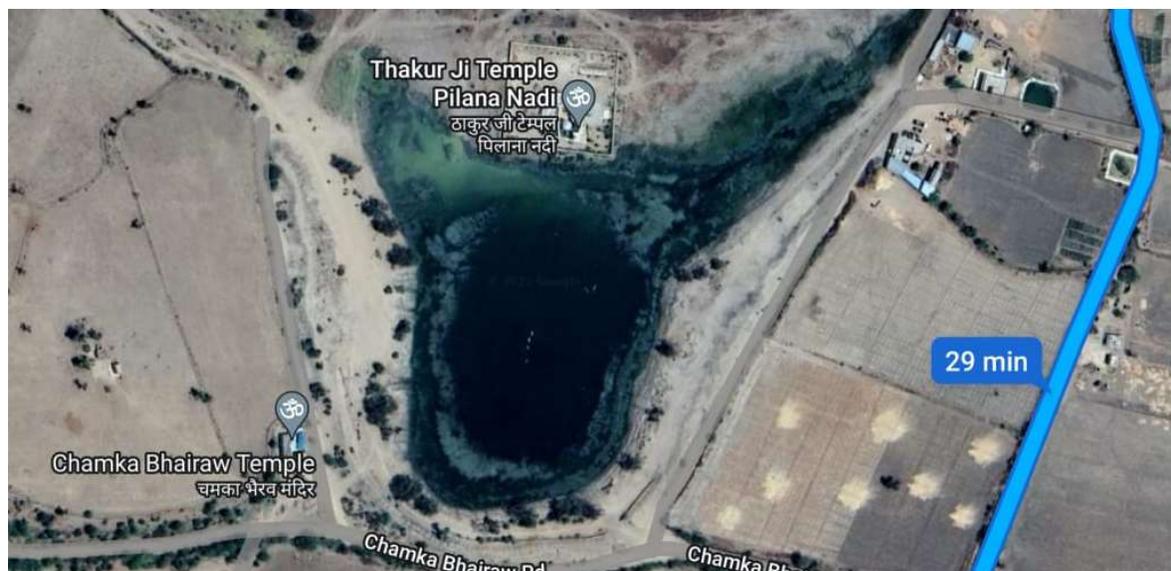


Fig.1. A Satellite image of Pilana Pond with GPS-location is $26^{\circ}79'N$ & $73^{\circ}53'E$ in Bhopalgarh area.

Pilana pond: - Pilana pond or nada present 3 km away and in west direction from the Asop town. This pond is located at the latitude and longitude geographical coordinates $26^{\circ}79'N$ and $73^{\circ}53'E$. The pond is totally depending on rainy water or monsoon season. Water of this pond is very clear and also used by local villagers for drinking purpose. Cattles or the domestic animals of the villagers' drink water there and also take bath. There are many other wild animal species like Antelopes, Black bucks, Deer, nilgai etc also comes in the evening or night time for drinking pond water. A temple is also present at the one side of the pond and the pond is surrounded by sand dunes with man-made wall. Scrubby vegetational, gravelled, muddy and grassland area spread surroundings of the pond. There are many types of vegetations present on sand dunes and around the pond area in scattered form i.e.; *Acacia arabica* (Desi babul), *Ficus benghalensis* (Pipal), *Prosopis juliflora* (Velayati babul), *Prosopis cineraria* (Khejari), *Azadirachta indica* (Neem), *Calotropis procera* (Calotrope), *Ziziphus mauritiana* (Indian plum), *Capparis decidua* (Kari), Grasses etc. The pond is abundant with many invertebrates like aquatic insects, crustaceans, molluscans, worms and vertebrates like fish, frogs, larvae etc. Depth of this pond water about 10-12 ft at the mid part and it having more area of the shallow water which is suitable for wader birds. I have noticed that the shape of this pond like a flying bird which is spread around 300-350 sq. metres. Many villagers come to the temple with grains or chugga for the local and migratory birds in the morning time. At the end of the left side of the pond area nearby the temple, there is highted grassy land which is favourite place for cattle heron and coot like birds. The pond area is spreading and managing toward back side with the help of local villagers and under the state government schemes. So, this pond is shelter for several local birds, wetland birds and many migratory bird species use to appear in winter

season at this pond. The pond is filled with rainy water in monsoon season and diminished much of water in summer season due to high heated desert temperature.

Demographic result of migratory birds at Pilana pond

Many migratory birds come to the Pilana nada or pond, during the time of my research work, the number of birds of different species were different in three years of 2019-20, 2020-21 and 2021-22. I have collected the data of these all three years.

In the year of 2019-20

The number of each species of migratory birds are as following; like Black winged stilts 28, Common coots 65, Northern shovelers 23, Northern pintails 13, Little grebes 55, Common moorhens 16, Great egrets 7, Common pochards 34, Indian cormorants 4, Gadwalls 27, Indian spot bill ducks 23, Common teals 9, Marsh sandpiper 49, Ruffs 40, Black headed ibis 2, Tufted ducks 15, Cattle egret 33. So, in the year of 2019-20 total number of migratory birds were total 443 migratory birds reached at Pilana pond (Bhopalgarh).

In the year of 2020-21

The number of each species of migratory birds are as following; like Black winged stilts 39, Common coots 71, Northern shovelers 25, Northern pintails 15, Little grebes 59, Common moorhens 17, Great egrets 5, Common pochards 45, Indian cormorants 3, Gadwalls 31, Indian spot bill ducks 33, Common teals 13, Marsh sandpiper 47, Ruffs 43, Black headed ibis 3, Tufted ducks 13, Cattle egrets 39. So, in the year of 2020-21 there were total 501 migratory birds reached at Pilana pond.

In the year of 2021-22

The number of each species of migratory birds are as following; like Black winged stilts 15, Common coots 18, Northern shovelers 7, Northern pintails 0, Little grebes 17, Common moorhens 4, Great egrets 2, Common pochards 7, Indian cormorants 3, Gadwalls 17, Indian spot bill ducks 8, Common teals 4, Marsh sandpipers 7, Ruffs 15, Black headed ibis 0, Tufted ducks 0, Cattle egrets 28. So, in the year of 2021-22 there were around 152 migratory birds reached at Pilana pond.

Graph .1. Three years comparative demography of migratory birds at Pilana pond.

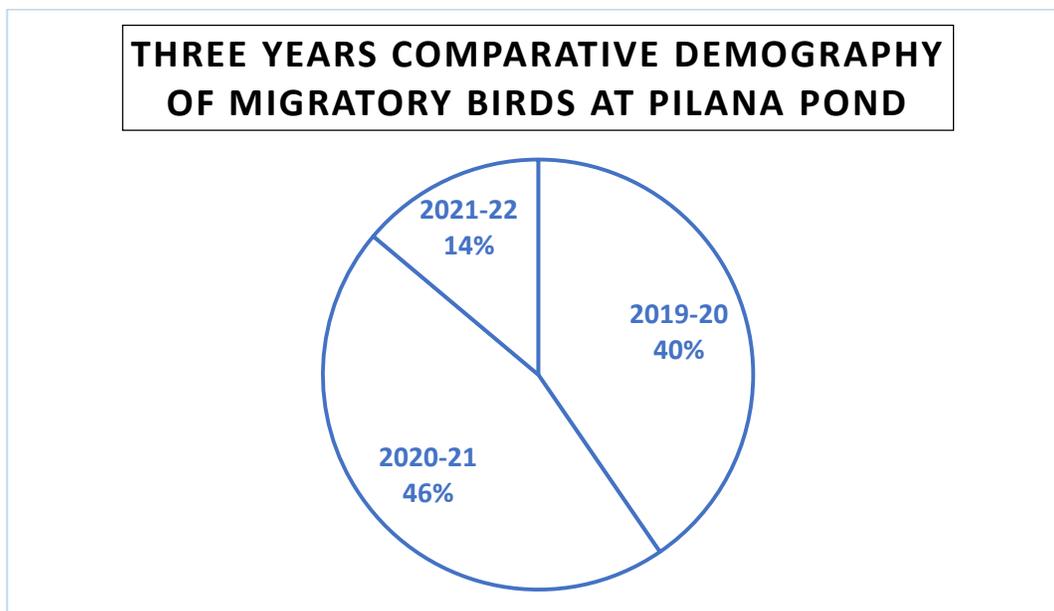
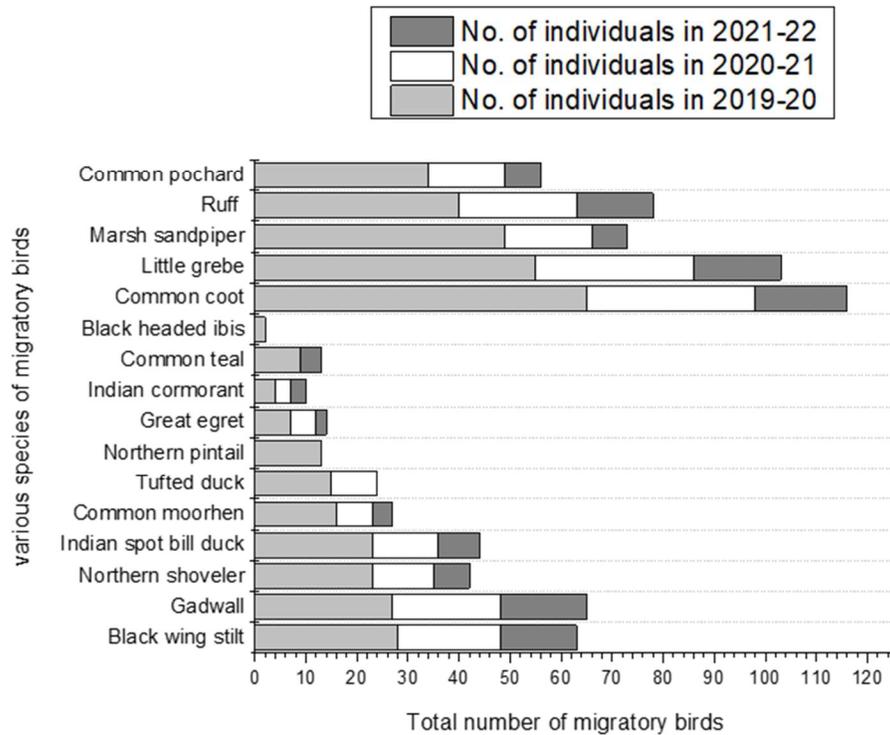


Table no. 4c.6. Species and numbers of Migratory birds at **Pilana nada or pond** Bhopalgarh.

S.no.	Name of Species	No. of individuals in 2019-20	No. of individuals in 2020-21	No. of individuals in 202-22
1.	Black wing stilt	28	39	15
2.	Common coot	65	71	18
3.	Northern shoveler	23	25	7
4.	Northern pintail	13	15	0
5.	Little grebe	55	59	17
6.	Common moorhen	16	17	4
7.	Great egret	7	5	2
8.	Common pochard	34	45	7
9.	Indian cormorant	4	3	3

10.	Gadwall	27	31	17
11.	Indian spot bill duck	23	33	8
12.	Common teal	9	13	4
13.	Marsh sandpiper	49	47	7
14.	Ruff	40	43	15
15.	Black headed ibis	2	3	0
16.	Tufted duck	15	13	0
17.	Cattle egret	33	39	28



The graph (ANOVA) shows the total number of visitors of migratory birds and their species at Pilana pond during 2019 to 2021.

Result and Discussion

Bird migration is an instinct type of behaviour of the migratory birds, resultant thousands of migratory birds also come toward Rajasthan. At the Pilana pond (Asop) in Bhopalgarh area (Jodhpur), a total 17 migratory bird species were found in 2019-20 to 2021-22. It was observed that much more numbers of migratory bird species are arrived in this year at this pond. Although average rainfall observed lesser in the rainy season of 2021. It was observed that migratory birds are facing threaten at this pond every year due to decreasing water level very fast because of extremely harvesting of pond water by water tank suppliers. Migratory birds play several essential and indispensable roles to maintained the ecosystem. Accelerated habitat destruction and lost during the last decade, including decreased area under water bodies, ponds, wetlands, forest, natural grasslands etc. Overexploitation of water resources, unsustainable use of natural resources, Pollutions, population explosion along with increased weather variability and climate changes has

results in loss of biodiversity in surrounding ecosystem. These factors have also badly impacted in entire life and survival of migratory birds. So, there should be strictly stop or prohibited these types of activities, through which ecosystem imbalanced. water tank supplier activities should be limited at block level administrative government bodies and should be conserve these types of waterbodies by the environmental ruler department of government and NGOs. At sub-district level or village level should be organize environmental awareness camp like activities related to pond water area or wetland conservation and environment protection.

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