International Research Journal of Biological Sciences _____ ISSN 2278-3202
Vol. **9(1),** 27-32, February **(2020)** *Int. Res. J. Biological Sci.*

Short Communication

Distribution status of Greater Flamingo (*Phoenicopterus roseus*) in Haryana, India

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Available online at: www.isca.in, www.isca.me
Received 14th September 2019, revised 7th December 2019, accepted 10th January 2020

Abstract

Greater Flamingo is a remarkable species among the member of Phoenicopteridae family and it is a very common visitor to India. Flamingos are tallest water wading birds, have pink plumage with a long neck and legs compare to their body size. They are colonial birds. From October 2018 to August 2019 simultaneously a monthly census was conducted at 7 different locations. The purpose of our study is to define the distribution status of Greater Flamingo in Haryana. Point count method was adopted for determine their population size. We used the Garmin etrexGPS to map the location of their flocks throughout study period. A total of 1374±343 Greater Flamingo was recorded. Najafgarh Jheel Bird sanctuary is the site where Greater Flamingo were found to be concentrated in highest number. Occurrence of Greater Flamingo in Najafgarh Jheel Bird sanctuary and Ottu lakes throughout the year shows that these sites are ideal areas which are preferred by Greater Flamingo thus protecting their habitat is important for their existence.

Keywords: Greater flamingo, Phoenicopterus roseus, distribution, point count, Najafgarh jheel, Ottu lake Haryana, India.

Introduction

Flamingos are tallest among the water wading birds, having a long neck and legs[1]. Presently six species of Flamingos are known[2-4]. Earlier Greater Flamingo was considered as congenerous with American Flamingo, but presently it is generally recognized as a separate species[4]. Greater Flamingo is a notable species among the member of Phoenicopteridae family and it is a very common visitor to India[5]. They are sociable birds that are generally seen in groups, from few to thousand or lakhs termed 'Pat'[6]. Flamingos are perceived by various names like, "Hanj" "Dev-hanse" and "Bala" in different part of India[6]. Presence of pink plumage, long neck and legs make them a unique bird. Greater Flamingo is categorised as least concern[7]. Greater Flamingos are most widespread among the member of family Phoenicopteridae; they are known to be native to Africa, Asia, and the Middle East and their breeding migration ranges toward Kazakhstan, and Europe[7]. Long-distance movement are occasionally observed directly in Flamingos likely because they take place primarily at night[8]. They usually feed in salty lagoons and salt pans[4]. All Flamingo species demonstrate some long distance motion[9], much of which are adaptations to modification in their habitat rather than real seasonal migrations.

They are most generally found in wide-ranging, shallow salty lagoons, lots of which are only temporary[10]. Availability of food is a key factor which influenced their distribution[11]. Spatial-temporal dispersal of flamingo appears to be dependent on density of food and climatic variation[12,13].

Water level is also be seems an important factor which influence the abundance of water birds predominantly in flamingos[14-16]. Coastal wetland preferred by Greater Flamingo, but readily search for all types of wetlands[6]. The Greater Flamingos are partly migrant and extremely dispersive[4]. The dropping of water levels in lagoons can result into hyper-salinity which turns affecting food resources[17]. In spring Flamingos exploited freshwater agricultural habitat for feeding primarily in Spain and France[18].

They are known to be breed in Rann of Kutch in India[6,19,20], which is well-known and largest breeding colony of Greater Flamingo in the world and is only the site where Flamingo breed regularly in entire Asia[21]. Greater Flamingo mainly found in Gujarat, Andhra Pradesh, Orissa, Maharashtra, Karnataka, Kerala, Rajasthan, Uttar Pradesh and Tamil Nadu[5,6,22]. Few studies has been done in India on Greater Flamingo[6,22-25] yet in Haryana there have been no studies till date, our aim to reveal distribution pattern of Greater Flamingo in Haryana, which helpful for their conservation in various Inhabiting area in Haryana.

Methodology

Study was carried out in Haryana which is situated at 30.30 N latitude and 74.60 E longitudes. On the basis of prior experience survey were carried out intensively in following district of Haryana namely Gurugram, Sirsa, Jhajjar, Rohtak, and Rewari.

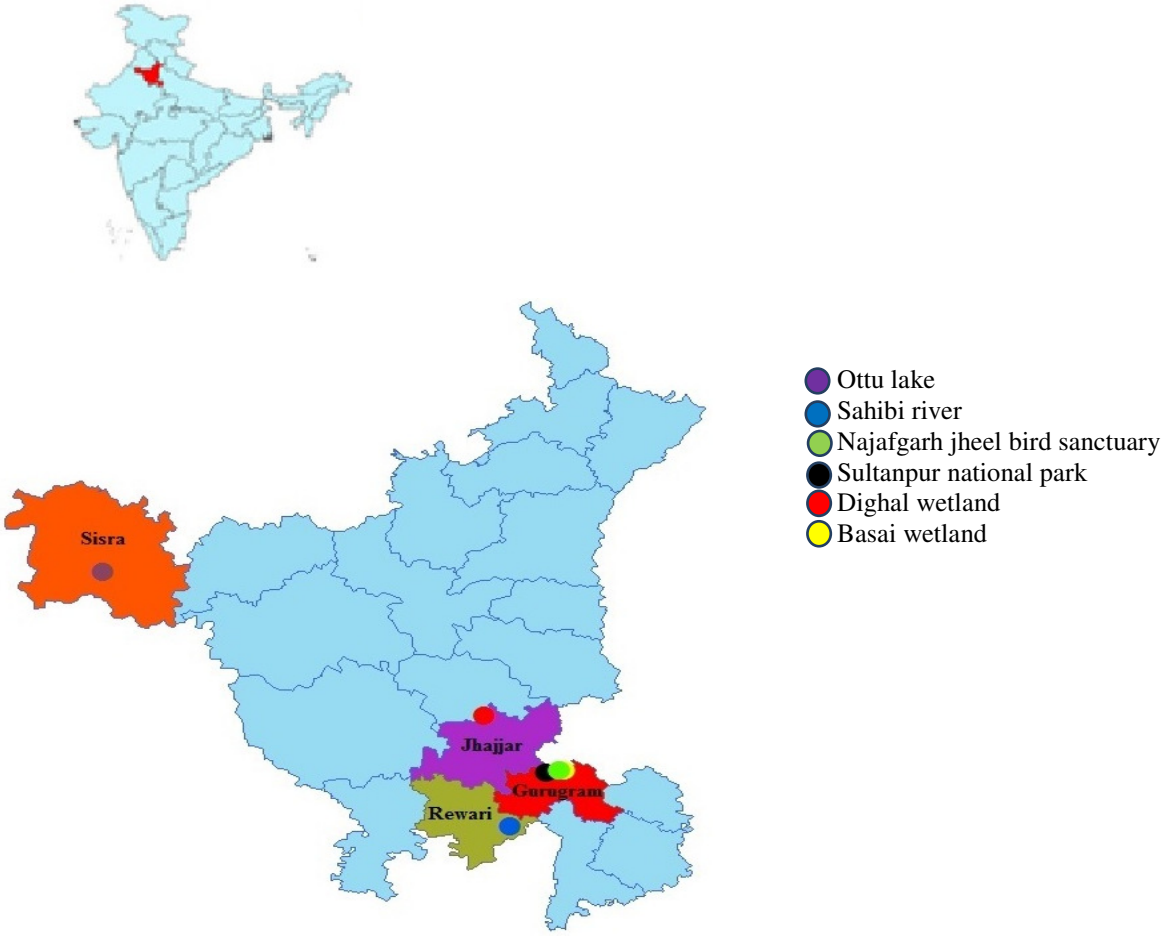

Figure-1: Map of Haryana showing the location of Greater Flamingo Location.

In Haryana the major sites included Najafgarh Jheel bird sanctuary, Ottu lake, Basai Wetland, Sahibi river Dam, Dighal Wetland, Sultanpur National Park and Sultanpur Flats (Figure-1). Among these Najafgarh Jheel bird sanctuary and Ottulake are strong hold site for Greater Flamingo in Haryana.

To know about the potential habitat of Greater Flamingo a preliminary survey was carried out and the information regarding the presence of Greater Flamingo was collected telephonically from other birders. Population size of Greater Flamingo was determined using "Point count method"[26,27]. Observations were made using a Nikon 8X40 binocular and spotting scopes. Counts were made monthly from October 2018 to August 2019. Morning and evening were peak observation time. Nikon camera was also used for record and take the picture of Flamingo. During study period multiple visits was made for each site in such a way that each site receives more or less equal number of visits. For larger flocks a manual tally counter was used for accurate count[28]. Total population will be estimated by dividing the cumulative count for each site by total number of visits to that site, and add the average count for each site.

A Garmin etrex GPS was used for locating observation point throughout the study period. Geographical information system software Arc-View was used derived the structure of inhabiting site of Greater Flamingo in Haryana.

Results and discussion

We found precise information on 7 Greater Flamingo inhabiting habitats used by Greater Flamingo in selected districts of Haryana from October 2018 through August 2019. A total of 1374 average number of Greater Flamingos were recorded at different sites. Highest average count of Greater Flamingos was observed at Najafagarh jheel bird sanctuary (926±165) and lowest average count was recorded at Sultanpur flats (6±11). Najafgarh jheel bird sanctuary and Ottu lake are the two major sites of Greater Flamingo in Haryana where Greater Flamingo reported throughout the study period. At each site it was found that number of adults were greater compare to immature. The distribution status and population of Greater Flamingo in different habitat of Haryana is shown in Table-1. Different types of habitat which are mostly prefer by these birds that mainly include marshland, wetland, paddy field etc. as shown in Table-1.

Due to large area of Najafgarh jheel bird sanctuary it holds maximum number of Greater Flamingo as compared to other observed sites while Ottu lake in Sirsa hold second largest population after Najafgarh jheel bird sanctuary i.e.344±83 that has been shown in Table-1.

The presence and distribution of Greater Flamingo was directly influenced by water level at each site which is turn influenced by rainfall pattern. It was noticed that in the rainy season the flamingos were found to be distributed at Dighal wetland, Sultanpur flats, Shaibi river dam and found to be concentrated at these sites as much long as water level is adequate for them. As rainy season end of some habitats (Dighal wetland and Sahibi river dam) start to dry. Hence at the end of March or April Flamingo start leaves these sites.

Table–1: Number of Greater Flamingo recorded at various District of Haryana in 2018 and 2019.

Site	District	Location (Decimal Degree)	Habitat Type	Area (Ha.)	Mean ± SD
Najafgarh Jheel Bird Sanctuary	Gurugram	28.77473889" N 76.62228889" E	Marshland	120.8	926 ± 165
Sahibi River Dam	Rewari	28.19587778" N 76.73743889" E	Wetland	210	14 ± 13
Ottu Lake	Sirsa	29.51622222" N 74.91388889" E	Wetland	-	344 ± 83
Basai Wetland	Gurugram	28.478375" N 76.98225" E	Wetland	250	36 ± 33
Dighal Wetland	Jhajjar	28.76906111" N 76.62260278" E	Paddy field	-	26 ± 45
Sultanpur Flats	Gurugram	28.46832222" N 76.892075" E	Cultivated land	-	6 ± 11
Sultanpur National Park	Gurugram	28.46770556" E 76.89317222" E	Wetland	142.52	22 ± 26

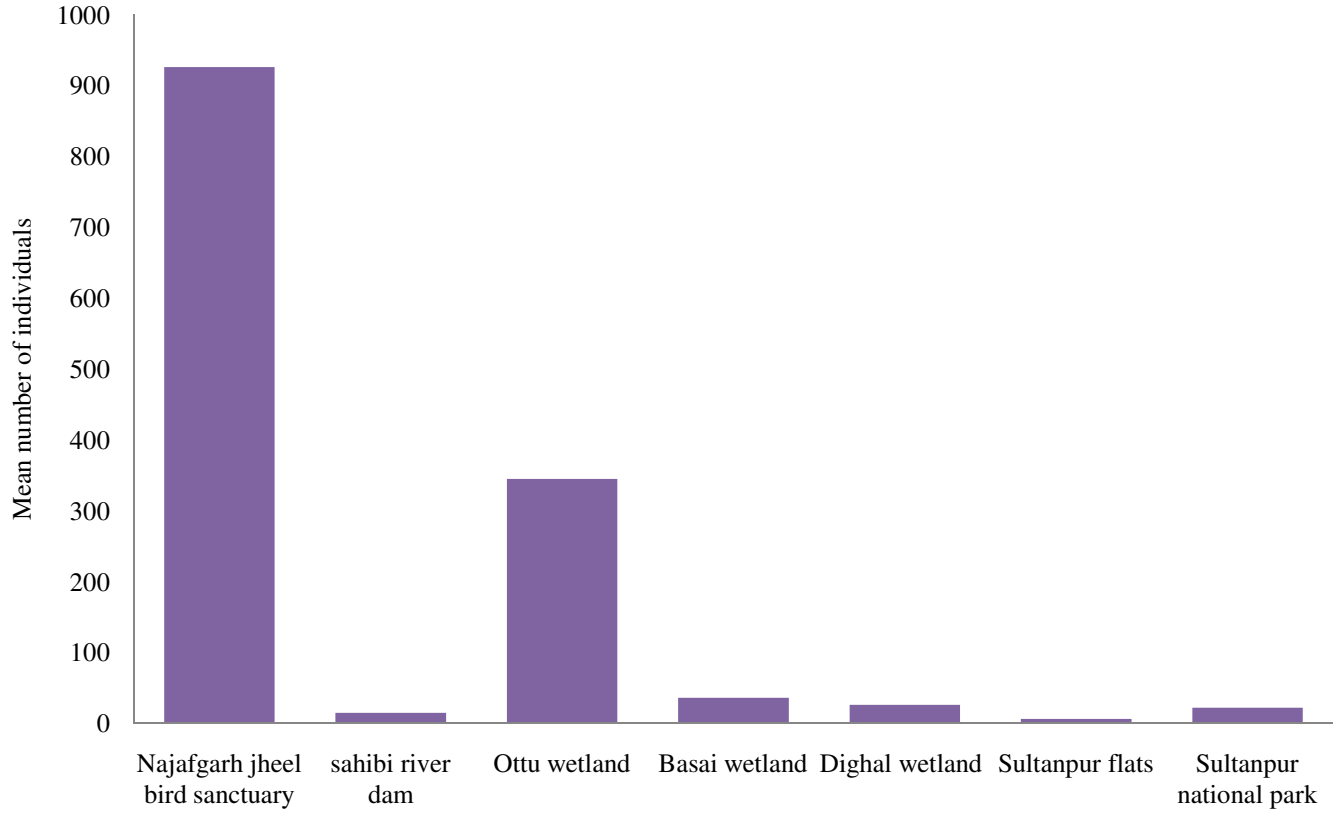

Figure-2: Mean number of Greater Flamingos at different site (Oct - 2018 to Aug – 2019).

About 92% total of Greater Flamingo was found to be distributed at primarily in two sites namely Najafgarh Jheel and Ottu Lake which comprised nearly 67% and 25% respectively as shown in Figure-2. The site namely Sahibi River Dam, Dighal Wetland, Sulatanpur Flats, Sultanpur National Park and Basai Wetland comprised less than 10% of total Greater Flamingo recorded throughout study period.

Figure-3: Flamingos at Ottu lake Shaibi river dam.

Figure-4: Flock of Greater Flamingoin.

Figure-5: Flock of Greater Flamingo in Sultanpur Flats

Figure-6: Flock of Greater Flamingo in Najafgarh Jheel Bird Sanctuary.

Discussion: The Greater Flamingos are the tallest among all species of Flamingos[1]. Greater Flamingo are widely dispersed in the old world, found in suitable wetlands in southern Europe, south-west Asia and much of Africa[10,29]. Earlier researcher[6] suggested that coastal wetland preferred by them but they intending look for every type of wetlands. Our study was carried out in various Greater Flamingo inhibiting sites of Haryana that mainly covers northern Haryana i.e. four inhabiting sites in Gurugram district. According to study[30] salinity is one of the main factors which affecting availability of food for greater flamingos. It has been observed that out of these four sites maximum number of Greater Flamingos has been observed in Najafgarh jheel throughout the year while Sultanpur flats holds minimum number of these birds in Gurugram district. From our observations it has been revealed that Ottulake in Sirsa district holds 2ndlargest population of Greater Flamingo after Najafgarh jheel bird sanctuary. According to our study these two Flamingo inhabiting sites i.e. Najafgarh jheel as well as Ottu in Sirsa are perennial so these sites support these birds throughout the year. Lesser number of Greater Flamingo were observed in all study sites except Najafgarh jheel and Ottu in sirsa which hold large population of these birds. Greater Flamingo require merely specialized habitat due to this their dispersal is discrete[1]. Our present findings suggest that the major gathering sites of Greater Flamingos are Najafgarh Jheel bird Sanctuary and Ottu Lake which hold about 92% of their total population. The Chilean Flamingo were generally not found in lakes with fish, but they were seen in large number in the lakes where fish were absent. Our study also shows similarobservation[31].

As stated[32] temporary fluctuation in abundance of flamingo were strongly related with rainfall and water level. It has studied[33] that as wetland dried up or food available scarcely, they forced to move to a new area such as nearby perennial water bodies or to area in longer distance. At the end of rainy seasons when water level start to decline and these sites start dried out, as a result the Greater Flamingo left these sites. Variation in prey accessibility may result in fluctuations in the spatial distribution of Flamingo[34]. In our study it was observed that in different site namely Dighal wetland, Sultanpur Flat, Sahibi river dam

Greater Flamingo were found to occur only in few months, no data obtained regarding the presence of Greater Flamingo in the months from April to August.

Conclusion

Present study state that most preferred habitats of Greater Flamingo in Haryana are Najafgarh jheel bird sanctuary and Ottu lake as compare to other study sites. In these two sites Greater flamingo found to be all over the year while at other sites they occur only few months. Distribution of Greater Flamingo directly influenced by rainfall and water level. Minimum number of Greater Flamingo observed on these sites which hold very less amount of water over the year.

Acknowledgement

The authors wish to thank for providing financial support provided by CSIR, New Delhi. Our sincere thanks to Head of Zoology Department, Institute of Integrated and Honours Studies for giving us necessary facilities to carry out studies.

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