

# Effect of Anthropogenic Encroachment on Existence of Greater Flamingos (*Phoenicopterus roseus*) in Plains of Southern Punjab (India); A Field Study

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**Abstract:-** Present study is a field observation for the presence of rarely occurring avifauna species *Phoenicopterus roseus* (Greater Flamingo) in three selected study areas for five consecutive years viz. 2015-16, 2016-17, 2017-18, 2018-19 and 2019-20, In Sri Muktsar Sahib, a southern district of Punjab (India). Observations suggest that in this area small wetlands are being converted into agricultural land on a very rapid rate, which is creating threat not only to dependent winter visitor, local migrant & resident avifauna but to whole local eco system. In present study *Phoenicopterus roseus* played role as indicator species.

## I. INTRODUCTION

Indian state of Punjab lies between latitudes of 29° 32' to 32° 32' North and longitudes of 73° 55' to 76° 50' East ; and geographic area acquired is 50362 sq. km. (NWIA, 2010). The western Himalayas lie in its North and the deserts of Thar in Southwest . West part of Punjab Shares international border with Pakistan , in North it is bounded with state of Jammu and Kashmir , Himachal Pradesh in Northeast , Haryana in South and Rajasthan in Southwest .

Present Field study is based on observations made on selected micro-habitats located in Sri Muktsar Sahib ; a southern district of Punjab covering an area of 2596 sq. km. which is 5.23 percent area of Punjab state .

Sri Muktsar Sahib is bounded by Haryana state in south, North by Faridkot district , in West by Ferozpur district and east by Bathinda district . This district lies between latitudes of 29° 53' 31" to 30° 40' 43" North and longitudes of 74° 15' 05" to 74° 49' 32" East.

Total wetland area in Sri Muktsar Sahib is 1812 ha. out of which 1174 ha. area is of open water spread of wetland which is only 35 ha. in pre monsoon (NWIA, 2010) , which serves as breeding and feeding field for a number of winter visitor, local migrants and resident avifauna species in post monsoon and winter season ; as well as permanent wet fields , ponds and other water bodies support lives of resident avifauna on year-long basis.

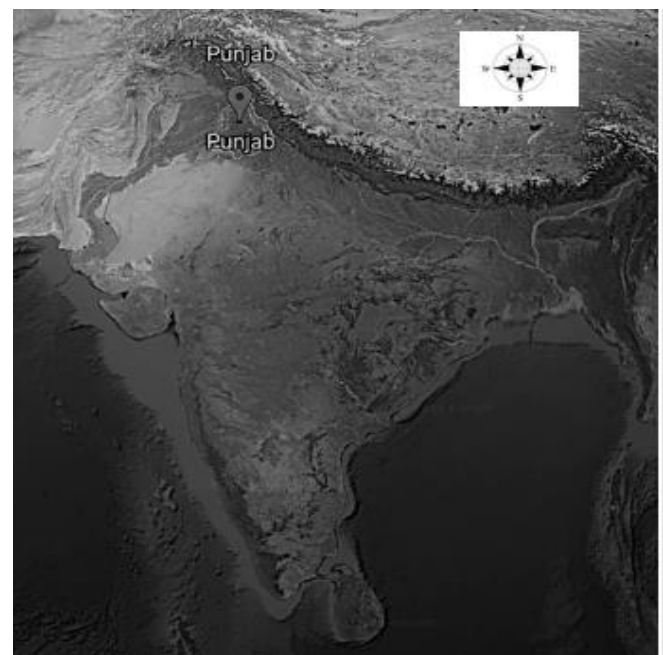


Image01 Geographical location of Punjab in Indian subcontinent



Image02 Geographical location of District Sri Muktsar Sahib in Punjab

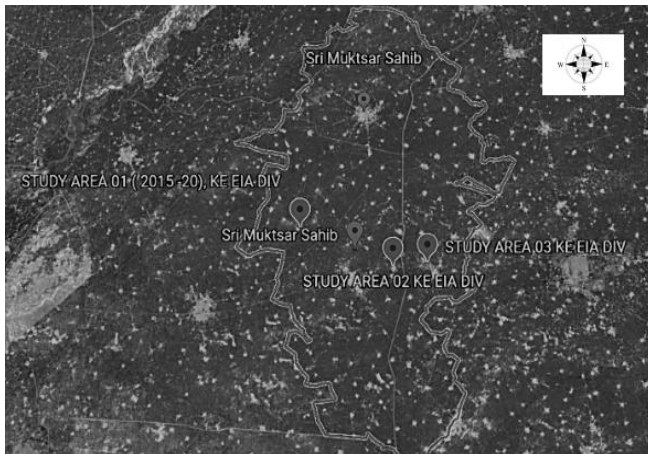


Image 03 Geographical locations of study fields in District Sri Muktsar Sahib

## II. SELECTION OF STUDY FIELDS

In present study three study fields were selected viz. study field 01 located near Bodiwala Kharak Singh, Malout-Fazilka link road ([30°16'38"N 74°23'20"E](#)); study field 02 located near Theri village, Bathinda-Malout SH 07 ([30°12'48"N 74°34'37"E](#)); study field 03 Gidderbaha, Husnar road ([30°13'09"N 74°38'44"E](#)).

Field surveys were started in the month of March of 2015 and continued till March of 2020. For the selection of study areas frequent visits were made to different locations and above mentioned three best locations were finalized on the basis of approachability, avifauna diversity and anthropogenic interference.

## III. FIELD SURVEY, OBSERVATIONS AND DISCUSSIONS

Occurrence of Greater Flamingo (*Phoenicopterus roseus*) signifies the importance of this geographical area; as this large sized bird species (125-145 cm.) is a rare visitor to Punjab(India) with few isolated records (Grimmett *at. al.*, 2011).

Field surveys to the selected research fields were made frequently during morning hours between 800 hrs. to 1000 hrs. and in evening between 1600 hrs. to 1800 hrs. as well as on random day timings and field records were collected for five consecutive years viz. 2015-16, 2016-17, 2017-18, 2018-19 & 2019-20. Photographs of study fields and avifauna were taken by using a NIKON D5100 camera with zoom lens and for live observations OLYMPUS 8x40 DPS-I binoculars were used.

First specimen of *Phoenicopterus roseus* was observed on May 15, 2015 (Fig.4) on study field 03 walking alone on shallow water along with a herd of buffaloes, no other member of this species was observed, and afterwards no record of *Phoenicopterus roseus* were found from this study field.



Image 04 Photograph of single juvenile *Phoenicopterus roseus* © V. Vishwas

On February 16, 2017 a flock of more than fifteen members of *Phoenicopterus roseus* were recorded; in which adult, immature and juvenile forms were included. This flock of these large sized birds was regularly observed for next ten days in study field 02 ([30°12'48"N 74°34'37"E](#)) Theri village, Bathinda-Malout SH 07.



Image 05- Mixed flock of *Phoenicopterus roseus* on study field 02 © V. Vishwas



Image 06- Immature & Juvenile forms of *Phoenicopterus roseus* on study field 02 © V. Vishwas





Figure 07

Study Field	2015-16			2016-17			2017-18			2018-19			2019-20		
	Ju	Imm	Ma	Ju	Imm	Ma	Ju	Imm	Ma	Ju	Imm	Ma	Ju	Imm	Ma
1	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab
2	Ab	Ab	Ab	Pr	Pr	Pr	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab
3	Pr	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab

**Table -01 Showing the status of *Phoenicopterus roseus* in different study fields during five consecutive years of observation  
Ju-Juvenile ,Imm- immature, Ma-mature ,Ab-Absent ,Pr-Present**

From study field no. 01 no observations of *Phoenicopterus roseus* were recorded during complete study, while numbers of other water birds were observed there. It is remarkable to note that micro habitat of study field 03 has completely destroyed due to anthropogenic encroachment, as water logging area during the initial phase of study in March 2015 was 10,086.26 sq.met., while study field 01 & 02 are on the edge of extinction due to conversion of water logging area in to agricultural land . The size of water logging area of study field 01 was 13,457.84 sq. met. on starting phase of study in March 2015 and the water logging area of study field 02 was 1,01,559 sq. met., which reduced to 1,773.5 sq.met. and 6,565.88 sq.met. respectively.



Figure 09

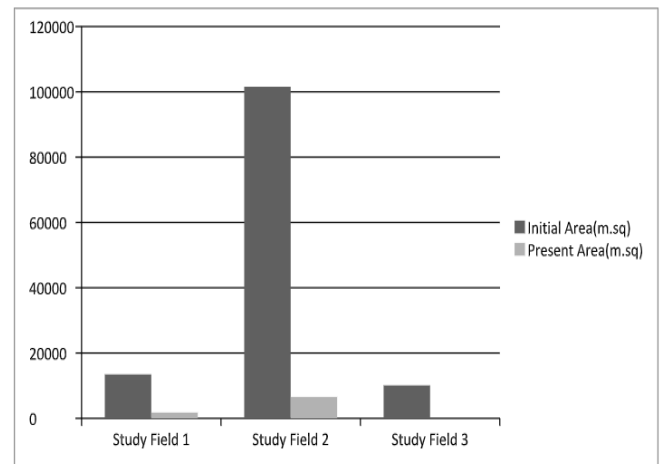


Figure 08

Present day Satellite Image of study field 01 ; Figure 4 showing water logging area(13,457.84 m<sup>2</sup> ) in beginning of study (March 2015) & Figure 5 showing the present day water logging area (1773.5 m<sup>2</sup> )



Figure 10



Graph 01 Graphical representation of change in water logging area of selected study fields

#### IV. CONCLUSION

Present study represents an important correlation between reducing avifauna habitats & avifauna diversity. In this study *Phoenicopterus roseus* played a role of an indicator species. During the tenure of five years of close observation significant changes in selected micro habitats and avifauna diversity were noticed; an important conclusion comes out that the role of small wetlands can't be overlooked as these also play important role in maintenance of avifauna diversity as micro habitats. Wetlands near human habitations are under severe threat and are vanishing rapidly .

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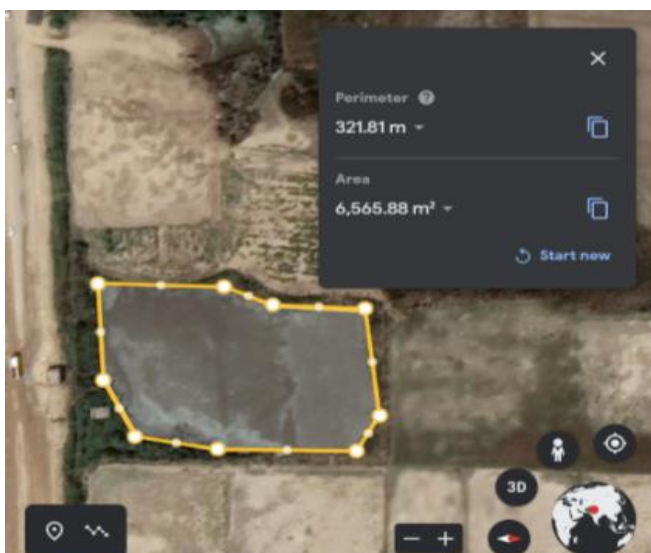


Figure 11

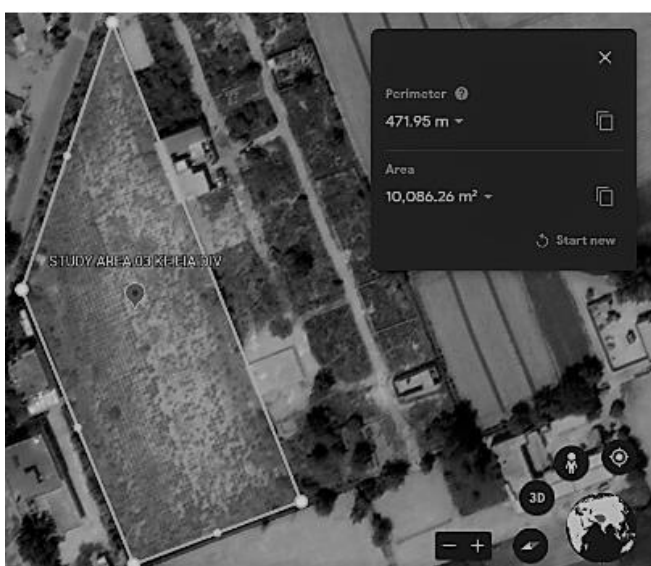


Figure 12