

Population Status of House Sparrow, *Passer domesticus* in Agra, Uttar Pradesh, India

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Passer domesticus (House sparrow) is widely spread all around the world. It is one of a species which is closely linked with human settlements and cultivation from ancient times (Ali, 1996; Chamberlain *et al.*, 2007) and serves as an indicator of overall ecological status of the given area. House sparrow is very flexible in making nests and can easily nest in houses, artificial cervices, holes in the walls, buildings and rocks, in the inverted cups of ceiling fans, cliffs cracks, inlets etc. The eggs are white, bluish white or greenish white, spotted with brown or greyish with the size of upto 2 inches and incubated by females for 10-12 days. It is omnivorous and feeds on insects, grains, flower nectar, fruit buds, and left over scrap from kitchens while young ones fed with aphids, grasshoppers, weevils etc (Crick *et al.*, 2002).

It is native to Europe, Asia, Mediterranean region, North and South America and some parts of Africa. It is widely distributed and monogamous bird with around 12 sub species. The Indian House Sparrow (*Passer domesticus indicus*) is a member of the old world sparrow family, Passeridae. It has different local names in different states of India. As it is an urbanized bird which is found in almost all parts of India but now its population is declining everywhere. UK added House sparrow to the Red List of UK endangered species in 2002 (Summers-Smith, 2003). It is once considered as most abundant and widely distributed birds in the world (Summer-Smith, 1988; Anderson, 2006) but now its population have declined markedly all over the globe since the mid 1980s particularly in urban and suburban landscapes of Britain, Northwest Europe, Central Europe, Berlin (Droscher, 1992), Dublin



House Sparrow (*Passer domesticus*)

(Prowse, 2002) and Western Europe (Summers-Smith, 1999; Crick *et al.*, 2002). The House sparrow population is thought to have declined by more than 50% in the last 30 years (Mitschke *et al.*, 1999) and is already red listed in the Netherlands.

In India also, the house sparrow population shows considerable decline at various places (Rajashekar and Venkatesha, 2008; Khera *et al.*, 2010, Bhattacharya *et al.*, 2010, Ghosh *et al.*, 2010, Chopra *et al.*, 2012). The possible cause of its decline reported as lack of nest sites, disease, lack of food availability, population explosion, competition, predation etc (Summers-Smith, 1999). In case of Uttar Pradesh also House Sparrow which was once a very common bird now shown a considerable decline in its population. The present study was an attempt to survey the different areas of Agra district, Uttar Pradesh (India) for assessing the population status of House Sparrows in and around urban and rural settlements.

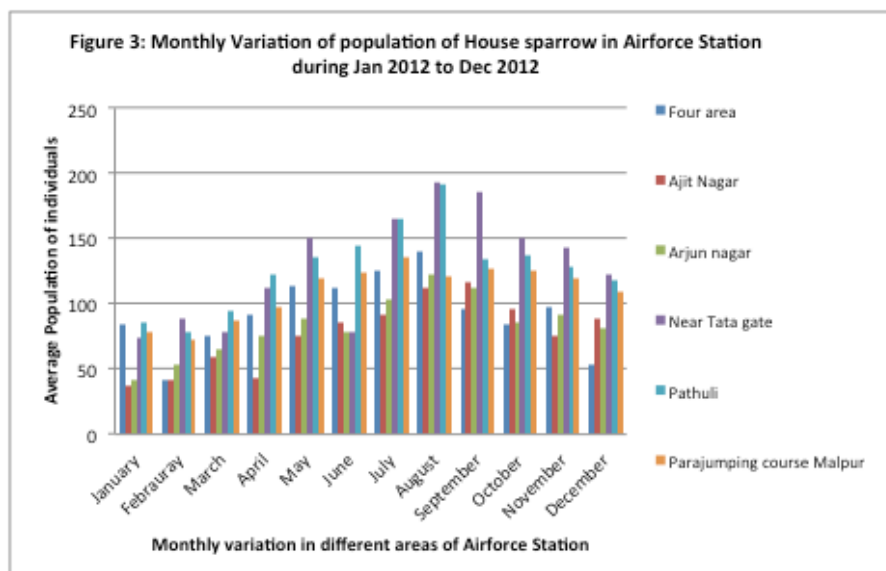
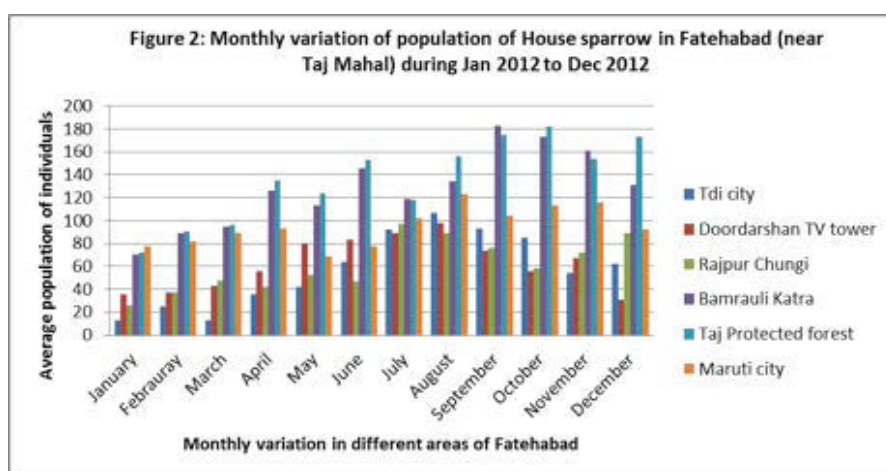
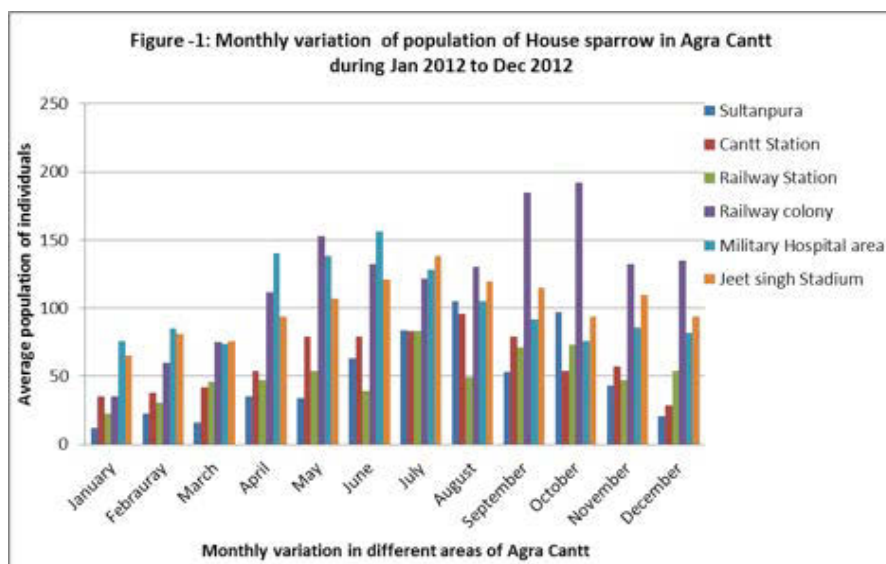
Materials and Methods

The present work was conducted in Agra city of Uttar Pradesh to collect data on the population of House sparrow. Agra is the city of the inimitable Taj Mahal. It is situated in western part of Uttar Pradesh between 27.11 N°- 27.18° N latitude to 78.0° E - 78.2° E longitude. Its altitude is 169 meters above sea level. On the North it is bounded by Mathura, on the south by Dholpur, on east by Firozabad and on the west by Bharatpur. Agra is situated on the banks of river Yamuna.

Study was conducted in the selected site during January 2012 to December 2012 on monthly basis. Four areas were selected in Agra region for the study namely- Agra cantonment, Fatehabad (near Taj Mahal), Airforce station and Dayalbagh. Three residential areas and three agricultural areas/

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open fields were selected for each of the four areas of Agra region. In Agra Cantt area three residential areas namely Sultanpura, Cantt Station and railway hospital; three agricultural areas/open fields namely Railway

colony, Military Hospital area, Jeet Singh stadium were selected (Figure- 1). Similarly, in the Fatehabad area (near Taj Mahal) three residential areas namely Tdi city, Doordarshan TV Tower area, Rajpur chungi; three agricultural/

open fields namely Bamrauli Katra area, Taj Protected forest, Maruti city were selected (Figure- 2). In Airforce station area also three residential area namely Four area, Ajit Nagar and Arjun Nagar; three agricultural/open fields including near Tata gate area, Pathuli and Parajumping course Malpura were selected (Figure-3). Also in the Dayalbagh area three residential areas namely PremNagar, Soami Nagar, Adan Bagh; three agricultural/open fields areas namely Khaspur, Lalgadi and Bahadurpur were selected (Figure-4)

For counting the number of House sparrows two methods were used namely Line transects (Watson, 1965) and Scan sampling (Altman, 1974). Birds were counted in the morning from 5:30 to 10:30 AM and the collected data was analyzed to estimate the population on monthly basis.

Results

During the study period from January 2012 to December 2012 the periodic monthly visits were made in residential area and agricultural area/open fields of the four selected areas of Agra region to collect the information about the population of house sparrow. The results of the population status of house sparrow in different areas of Agra region are listed in Table 1. The average population of house sparrow in residential areas and agricultural/ open fields of all over Agra region was estimated to be 881.99 and 1441.24 respectively.

Average population of house sparrow was observed maximum of 1147 individuals and 1524.33 individuals in selected residential and agricultural/ open fields of Dayalbagh area. While the average population of House sparrow was observed minimum of 642.66 individuals and 1305.33 individuals in the residential and agricultural/ open fields of Agra Cantonment area.

There is also a significant difference in the number of birds during different months of the study period. Monthly variations in the average population of house sparrows in four selected areas of Agra region were presented in Table-2. The average population of House sparrow vary from a minimum of 109.25 sparrows (Jan, 2012) to maximum of 257.50 sparrows (Aug, 2012) in overall Agra region and from minimum of 143.00 sparrow (Jan, 2012) to maximum of 295.67 sparrow (Aug, 2012) in agricultural area/ open fields and a minimum of 75.50 sparrows (Jan, 2012) to a maximum of 219.33 sparrows (Aug, 2012) in residential areas. Maximum number of birds were spotted during the months of July, August, September and October. While minimum number were spotted during the months of January, February and March.

Discussion and Conclusion

House sparrow was well documented near human habitations including villages, parks, godowns, semi-urban areas etc (Summers-Smith, 1988; Louther and Cink, 1992; Sharma, 2009). However, nowadays the population of House sparrows in residential and urban areas is getting more focus in India (Rajashekar and Venkatesha, 2008; Khera *et al.*, 2010; Battacharya *et al.*, 2010, Ghosh *et al.*, 2010, Chopra *et al.*, 2012). Several studies recorded maximum number of house sparrow in rural areas as compared to parks, gardens and industrial areas (Monika, 2005). In the present work also the population of house sparrow was maximum in agricultural area/ open fields of rural areas as compared to residential areas. The high number of house sparrows in agricultural areas (rural areas) is because of the available food grains, insects and suitable nesting site for them. In these areas various plant species such as

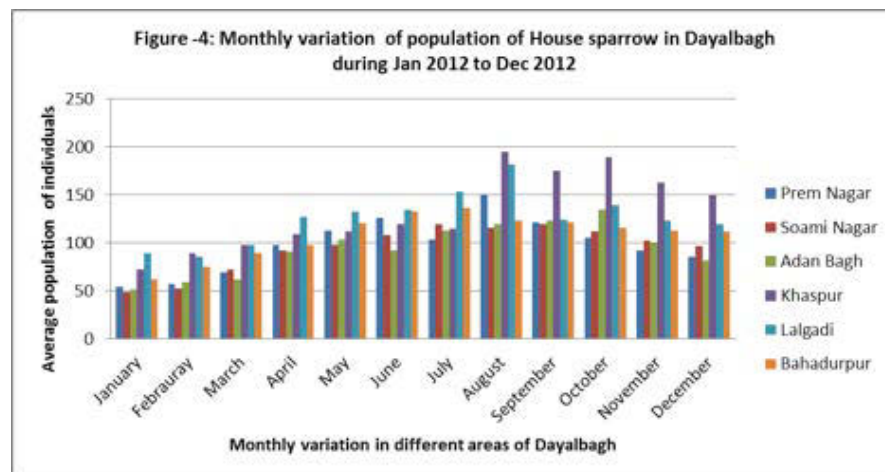


Table: 1 Average population of House sparrow in selected areas of Agra region

Selected study area	Dayalbagh	Agra Cant	Airforce Station	Fatehabad (near Taj Mahal)	Overall Agra region
Residential area	1147	642.66	1015	723.33	881.99
Open field/ agricultural area	1524.33	1305.33	1499.33	1436	1441.24

Table:2 Monthly variation of average population of House sparrow in different areas of Agra region during January 2012 to December 2012.

Month	Average population of house sparrows	
	Residential area	Agricultural area/open field
January	75.50	143.00
February	82.67	161.33
March	101.83	175.00
April	127.00	227.67
May	155.67	245.67
June	163.00	253.50
July	197.33	249.50
August	219.33	295.67
September	189.00	285.17
October	173.67	280.67
November	149.83	257.00
December	129.17	239.67

weeds, shrubs and bushes were also available for house sparrows. Several works have also recorded the variation in the populations of house sparrow in different seasons (Bohner *et al.*, 2003; Rajashekar and Venkatesha, 2008). Esterbrook (1999) also recorded the continuous decline in house sparrow number during winter. Robinson *et al.*, 2005 also reported the decline of sparrow population during winter. Similarly in the

present work the population of house sparrow was observed to be declining in winters. The possible cause of dwindling house sparrow population in selected areas of Agra region could be the loss of nesting sites or the decline of the sparrow's habitat due to urbanization, use of excessive insecticides kills the insects, which is the source of food for sparrow's young ones, mobile tower radiations and also the unleaded

petrol whose combustion leads to the formation of methyl nitrite, which is highly toxic to soft bodied insects and hence indirectly effect the number of young birds who fed on those insects.

In the present study, the maximum population of house sparrows were recorded in rural agricultural areas/ open fields of Dayalbagh area of Agra region while the minimum population were recorded in residential areas of Agra Cantonment of Agra region. While the maximum average population were recorded during the months of July, August and September. They are more common and high in number in rural agricultural fields as compared to the urban residential areas. Several measures can be adapted to stop their decline in future such as by making bird nests and hanging them at an appropriate place and at a sufficient height. So that common predators like cats, dogs etc can not reach them. Adapting organic farming can also be helpful in saving sparrows as it would not kill insects and enhance sparrows food availability. Species action Plans can also be adapted at state level as well as at national level.

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