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# ***Passer domesticus* (House Sparrow) Population in Urban and Rural Areas in Jodhpur (Rajasthan, India) and Conservation Measures**

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**Abstract:** Birds are the common indicators of ecosystem health. *Passer domesticus* (House sparrow) is the most familiar bird to humans. Within the last 3-4 decades, birds are declining all over the world; house sparrow is one of them. The present study was carried out to know the present status of house sparrow in urban and rural areas in Jodhpur district in the year 2022. Seasonal survey by using Line Transect Method (Anderson *et al.*, 1979) was carried out for which each area was divided into three sites in urban area- Main market sojati gate, Mandore krishi mandi and Nehru park. Likewise three sites were chosen in rural area- human habitat area, agricultural land and fellow/pasture land. Except this, direct observation and discussion with people was also done. The result shows that population density of house sparrow was found lowest (0.2/km<sup>2</sup>) in the city areas whereas highest (4.78/km<sup>2</sup>) in fellow/pasture land. In the study it was also noted that it likes to nest on *Ziziphus* and *Prosopis* like thorny shrubs and tree to prevent it as well as the young ones from enemies. House sparrow eats insects thus helpful in maintaining ecological balance and forms a part of food chain. New research in 2022 from Kings College London has found that seeing or hearing birds is associated with improvement in mental wellbeing. Habitat destruction, UV rays of mobile towers, use of pesticides and insecticides, decreasing human sensitivities towards others, packed houses, increasing roads and traffic and competition for food, artificial feeding on hard surface are some reasons for decline of its numbers. We can conserve them by using artificial nests, bird feeders, planting big trees, constructing some selves outside the houses and by preserving a corner of endemic plant species in offices and big institutions.

**Keywords:** *Passer domesticus*, House sparrow, Study area, Population density, Economic importance, Decline in numbers, Conservation measures

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## **Introduction**

*Passer domesticus* (House sparrow) as its common name indicates that it occurs within the human surroundings (Maxmellion *et al.*, 2020). It is the State bird of Delhi since 2012. 20<sup>th</sup> March is

celebrated as World Sparrow Day since 2010 in different parts of the world to aware the people<sup>(17)</sup> about this little creature. The decline of this species was reported widely in India (Goyal,

2005; Ghosh *et al.*, 2010; Malik *et al.*, 2014; Balwan and Saba, 2020; Sharma and Binner, 2020; Sharma *et al.*, 2020). A survey by Indian Council of Agriculture Research (ICRI) in 2010 shows that we have lost around 80% of its population all over the country. Ornithologist Survey conducted by Indian Council of Agricultural Research (2020) reported that the sparrow population in Andhra Pradesh alone has dropped by 88% and in other states like Kerala, Gujarat and Rajasthan it has dipped by 20%, while the decline in coastal areas was as sharp as 70% to 80% (Malik *et al.*, 2014). It was enlisted in IUCN Red Data List as least concern by Bird Life International (2011). Maxmellion *et al.* (2020) found house sparrows on 109 sites out of 169 surveyed. Possible causes and threats for decline in population have been studied by Malik *et al.* (2014). Public survey report on the cause of decline of sparrow population and environmental conditions, was published by Ghosh *et al.* (2010). Global decline (Kumar *et al.*, 2015; Berigan *et al.*, 2021) was found due to urbanization (Balaji *et al.*, 2017; Choudhary *et al.*, 2020; Narayanappa *et al.*, 2022; Swami and Kumar, 2022) which is main reason for habitat destruction. A study on impact of COVID-19 on house sparrow in Indian context shows that human interference influences the house sparrow population to decline (Bapat and Sreeranjini, 2023). House sparrow act as natural pest control, plant pollinator and also serves as dominant bird species of the ecosystem. Conservational strategy for House sparrow was studied by Sharma *et al.* (2020). Role of birds in agro-ecosystem was studied by Priya *et al.* (2022). The objectives of the present study are – (i) To know recent population status of *Passer domesticus* (House sparrow); (ii) Population density of *Passer domesticus* (House sparrow) in urban and rural areas; (iii) Economic importance of *Passer domesticus* (House sparrow); (iv) Reasons for decline in numbers; and (v) Conservation measures.

## Materials and Methods

Jodhpur is situated in the western part of

Rajasthan, India and forming gateway to the Thar Desert. The present study was carried out in urban and rural areas in Jodhpur district in the year 2022 to know the present status of house sparrow. Seasonal survey was carried out for which each area was divided into three sites in urban area- Main market sojati gate, Mandore krishi mandi and Nehru park. Likewise three sites were chosen in rural area- in Pal gaon; human habitat area, agricultural land and fellow/pasture land. Along with direct observation and discussion with people, Line Transect Method (Anderson *et al.*, 1979) was used for estimation of population of *Passer domesticus* (House sparrow). Density was estimated by using the following formula (Sale and Berknullar, 1988; Rodgers, 1991):

$$D = n / 2Lr$$

Where, D = Population density; n = Total no. of animals sighting; 2 = For both side of transect; L = Length of transect; and r = Mean perpendicular distance.

## Results and Discussion

For knowing population density, Seasonal Line transect (3 times in each season) were placed and 1 km distance was covered each time. Figure 1 shows that population density of house sparrow was found lowest (0.2/km<sup>2</sup>) in the city areas whereas highest (4.78/km<sup>2</sup>) in fellow/pasture land.

Figure 2 shows that highest numbers of house sparrow was observed in human inhabitant area in summer season while in pasture land in monsoon. Minimum number was recorded in city market area in monsoon and winter seasons.

### Economic importance of House sparrow:

*Passer domesticus* feeds on insects and larvae thus controls number of insects. It maintains ecological balance and plays an important role in food chain.

### Reasons for decline in numbers of House sparrow:

➤ Changing infrastructure of houses

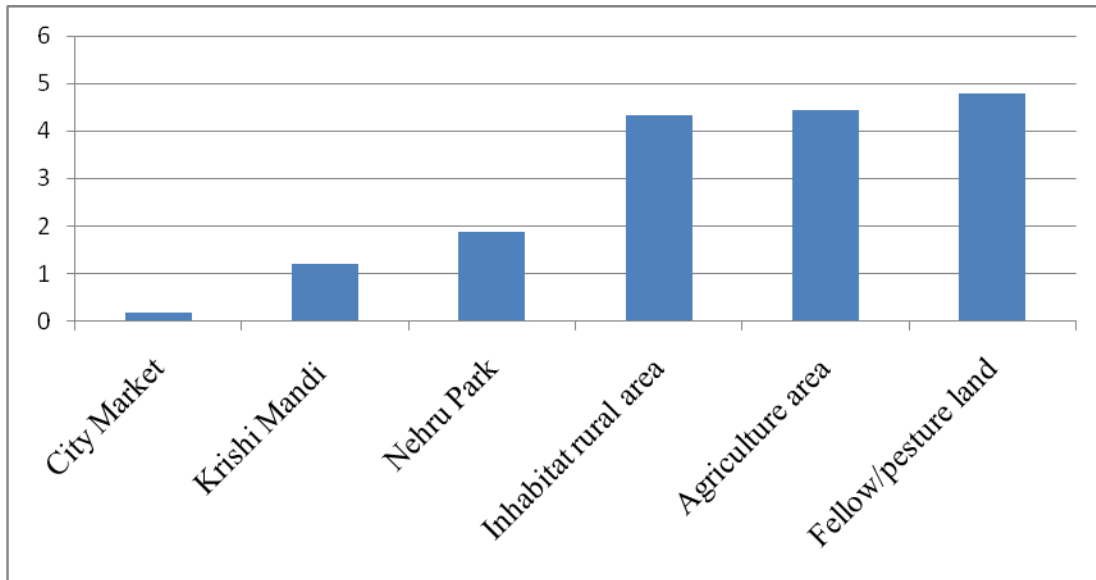


Fig.1: Population density of *Passer domesticus* (House sparrow) in urban and rural areas in Jodhpur.

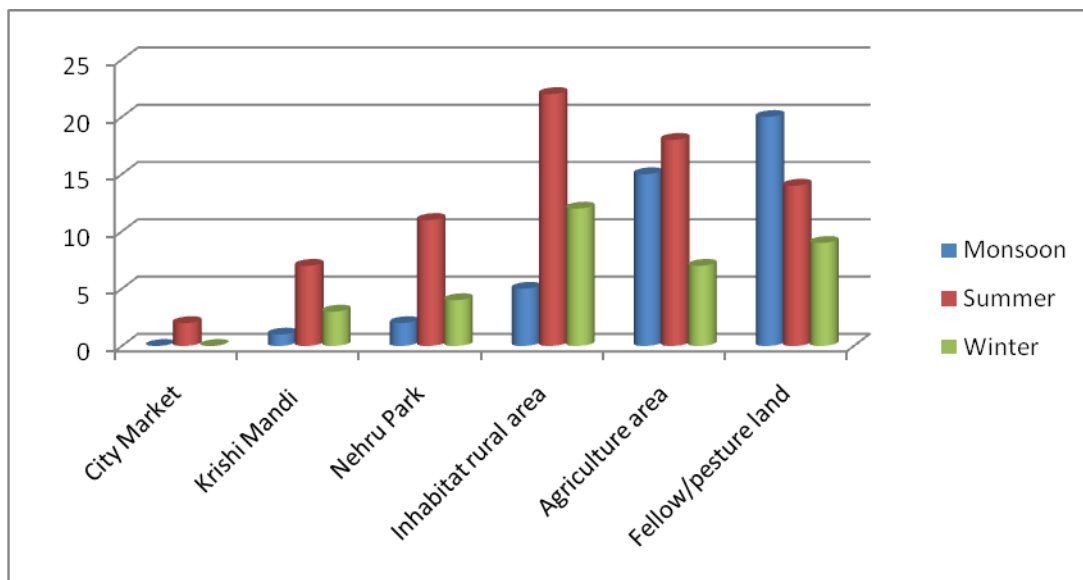


Fig. 2: Seasonal occurrence of *Passer domesticus* (House sparrow) in urban and rural areas in Jodhpur.

- Cutting of big sized tree
- Use of pesticides and insecticides
- Uv rays of mobile towers
- Competition for food
- decreasing human sensitivities towards others
- increasing roads and traffic
- Artificial feeding on hard surface are some reasons for decline of its numbers.

#### Conservation measures for decline of population of House sparrow:

- Artificial nests
- Planting big size trees
- Construction of racks outside the houses
- Implanting bird feeders and water sources
- Preserving a corner of endemic plant species in offices and big institutions.

*Passer domesticus* (House sparrow) numbers were found lowest in the city market area while maximum in pasture or fellow land in rural areas. Similar findings have also been reported by Balaji *et al.* (2017) and Kler *et al.* (2015). Berigan *et al.* (2021) used data of 21 years and found that in rural areas flocks were larger than urban areas. In the present study, it was also noted that House sparrow likes to nest on *Ziziphus* and *Prosopis* like thorny shrubs and tree to prevent it as well as the young ones from enemies (Sharma *et al.*, 2020). Berigan *et al.* (2021) noted that sparrow population declines by increasing distribution of Accipiter hawks in winter season. House sparrow eats insects thus helpful in maintaining ecological balance and forms a part of food chain. New research in 2022 from Kings College London has found that seeing or hearing birds is associated with improvement in mental wellbeing (Neuroscience News). Habitat destruction, UV rays of mobile towers, use of pesticides and insecticides, decreasing human sensitivities towards others, packed houses, increasing roads and traffic and competition for food, artificial feeding on hard surface are some reasons for decline of its numbers (Singh *et al.*, 2013; Berigan *et al.*, 2021). We can conserve (Sharma *et al.*, 2020) them by using artificial nests, bird feeders (Kumar *et al.*, 2015), planting big trees, constructing some selves outside the houses and by preserving a corner of endemic plant species in offices and big institutions. It is suggested that further study should be performed regarding the role of thorny shrubs and trees in conservation of House sparrow (*Passer domesticus*).

### Ethical Statement

The present study was approved by the Research Degree Committee of Department of Zoology, Govt. Girls College, Soorsagar, Rajasthan, India.

### Conflict of Interest

The author declares no conflicts of interest.

### References

Anderson DR, Laake JL, Crain BR and Burnham KP.

- (1979) Guidelines for line transect sampling of biological populations. *J Wildl Manage.* 43(1): 70-78.
- Balaji S, Baskaran S Pandiarajan J. (2017) Impact of urbanization on house sparrow population in Virudhunagar district, Tamil Nadu, India. *J Entomol Zool Stud.* 5(4): 493-497.
- Balwan WK and Saba N. (2020) Decline of house sparrow and common myna population in Doda region of Jammu and Kashmir, India. *Int J Biol Innov.* 2(1): 20-24.
- Bapat SR and Sreeranjini TM. (2023) Impact of COVID-19 lockdowns on house sparrows: Comparative study from an Indian context. *PLoS One* 18(8): 1-11.
- Berigan LA, Greig EI and Bonter DN. (2021) Urban house sparrow (*Passer domesticus*) population decline in North America. *Wilson J Ornithol.* 132(2): 248-258.
- Choudhary S, Chauhan NPS and Kalsi R. (2020) Impact of urbanization of seasonal population status and occupancy of House Sparrows in Delhi, India. *Curr Sci.* 119(10): 1706-1711.
- Ghosh S, Kim KH and Bhattacharya R. (2010) A survey on house sparrow population decline at Bandel, West Bengal, India. *J Korean Earth Sci Soc.* 31(5): 448-453.
- Goyal M. (2005) Preliminary survey of House sparrow (*Passer domesticus*) in three different areas of Haridwar, Uttaranchal. M.Sc. Dissertation. Gurukul Kangri University, Haridwar, India.
- Kler TK, Kumar M and Dhatt JS. (2015) Study on the population of house sparrow *Passer domesticus* in urban and rural areas of Punjab. *Int J Adv Res.* 3(9): 1339-1344.
- Kumar A, Kanaujia A, Kushwaha S and Kumar A. (2015) A house for the house sparrow. *Sci Reporter*, pp. 14. <https://nopr.niscpr.res.in/bitstream/123456789/31649/1/SR%2052%286%29%2014-19.pdf>
- Malik A, Hussain SD and Bargali HS. (2014) Case of house sparrow population decline: Role of Semi-Nomadic pastoralist community (Van Gujjars) in their conservation. *Int J Conserv Sci.* 5(4): 493-502.
- Maxmellion PME, Renukadevi K and Rajendran P. (2020) A survey on occurrence of House sparrow in Madurai District, Tamil Nadu, India. *Uttar Pradesh J Zool* 41(11): 136-146
- Narayanappa Y, Gautam A, Mahobiya K and Singh A. (2022) A pilot-study on the occurrence and probable factors influencing the population decline of House sparrow (*Passer domesticus*) along an urbanization gradient in Coimbatore district, India (Short Communication). *Biodiversitas* 23(8): 3884-3889.
- Neuroscience News. <https://neurosciencenews.com>



- Patel FP and Dodia PP. (2021) Roosting patterns of house sparrow *Passer domesticus* Linn., 1758 (Aves: Passeridae) in Bhavnagar, Gujarat, India. J Threatened Taxa 13(14): 20209-20217.
- Priya, Singh D, Delu V, Yodha K, Dahiya T, Kour A and Punia N. (2022) Role of birds in agro-ecosystem: A review on agricultural and economic ornithology. Pharma Innov J. SP-11(7): 2300-2314.
- Rodger WA. (1991) Techniques for wildlife census in India: A field manual. Wildlife Institute India, pp. 82.
- Rohitashwa R and Choudhary DN. (2022) Sparrow on postage stamps. Science Reporter, pp. 49-50. <https://nopr.niscpr.res.in/bitstream/123456789/59556/1/SR%2059%284%29%2049-50.pdf>
- Sale, JB and Berkmuller K. (1988) Manual of Wildlife Techniques for India. Wildlife Institute of India. Field Document No. 11.
- Sharma P and Binner M. (2020) The decline of population of house sparrow in India. Int J Agricult Sci. 5: 1-4.
- Sharma P, Binner M and Narwal G. (2020) Population status and factors affecting abundance of house sparrow: A review. Bull Env Pharmacol Life Sci. 9(5): 120-124.
- Singh R, Kour DN, Ahmad F and Sahi DN. (2013) The causes of decline of house sparrow (*Passer domesticus* Linnaeus, 1758) in urban and semi urban areas of Jammu Region, J&K. Mun Ent Zool. 8(2): 803-811.
- Swami R and Kumar M. (2022) Parameters related to decline the population of house sparrow, *Passer domesticus* (Linnaeus, 1758) in Indian Subcontinent. New York Sci J. 15(4):1-6.