

Breeding Behaviour of House Sparrow (*Passer domesticus*) in Selected Rural and Urban Areas of Sri Ganganagar District, Rajasthan

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Abstract

House Sparrow (*Passer domesticus*) is a common bird of the family Passeridae. It is widely distributed in many parts of the world. The species lives in close association with human settlements. The present study was carried out to investigate the breeding behaviour of House Sparrow in selected rural and urban areas of Sri Ganganagar District, Rajasthan.

A total of 30 nests were observed during the study. These nests contained 190 eggs. Out of these, 150 eggs hatched successfully. The hatching success was 78.95% (approximately 79%). During the study, 14 eggs were found to be infertile, while 26 eggs were broken or damaged.

The results showed that safe nesting sites, adequate food and water, and favourable environmental conditions played an important role in the successful breeding of House Sparrow. The findings provide useful scientific information for the conservation of *Passer domesticus*. The study also supports proper nest site management and the conservation of local biodiversity in Sri Ganganagar District.

Keywords: House Sparrow, *Passer domesticus*, Passeridae, Breeding Behaviour, Hatching Success, Nest, Sri Ganganagar District, Conservation.

1. Introduction

House Sparrow (*Passer domesticus*) is a common and widely distributed bird of the family **Passeridae**. It is found in many countries around the world. The species lives in close association with human settlements. Its natural range includes many parts of Asia, Europe, and North Africa. It has also been introduced into North America, South Africa, New Zealand, and several other regions. In India, it occurs in almost all agro-climatic zones. *Passer domesticus indicus* is the most common subspecies found in the country. The bird is commonly seen in both rural and urban habitats. It usually builds its nests close to human dwellings.

House Sparrow is an important part of the ecosystem. It feeds on insects, grains, and small seeds. During the breeding season, the parents mainly feed their chicks with insects. This helps the proper growth of the young birds. The species also contributes to the natural control of insect populations. In addition, House Sparrow is considered an

important **bio-indicator** of environmental quality. Its presence often reflects the availability of food, water, green vegetation, and suitable nesting sites in a habitat.

House Sparrow is generally a **monogamous** bird. The male and female usually remain paired during the breeding season. The body length ranges from **14 to 16 cm**, and the average body weight is **26–32 g**. The species builds nests in wall cavities, roof spaces, ventilators, tree holes, and other protected places. In northern India, the breeding season generally extends from **March to September**. In many parts of southern India, breeding may continue for most of the year under favourable environmental conditions.

During the last few decades, the population of House Sparrow has declined in many regions. Rapid urbanization, modern building designs, loss of natural nesting sites, extensive use of chemical pesticides, reduction in green cover, and limited food and water resources are considered the major reasons. These changes have affected both the breeding behaviour and breeding success of the species.

Several researchers have studied the general biology and breeding behaviour of House Sparrow. Important contributions were made by **Summers-Smith (1967)**, **North (1970, 1972)**, **Mirza (1972)**, **Anderson (1975)**, **Naik and Mistry (1980)**, **Heij (1985)**, **Crick and Siriwardena (2002)**, and **Raven et al. (2004)**. These studies described nest construction, breeding season, clutch size, incubation period, hatching success, and breeding performance. However, detailed scientific information on the breeding behaviour of House Sparrow in the rural and urban areas of **Sri Ganganagar District, Rajasthan**, is still limited.

Keeping this research gap in view, the present study entitled "**Breeding Behaviour of House Sparrow (*Passer domesticus*) in Selected Rural and Urban Areas of Sri Ganganagar District, Rajasthan**" was undertaken. The study aims to evaluate nest construction, clutch size, hatching success, and other important aspects of the breeding behaviour of House Sparrow. The findings are expected to provide useful scientific information for the conservation of *Passer domesticus*, proper management of nesting habitats, and the conservation of local biodiversity.

2. Materials and Methods

2.1 Study Area

The present study was carried out in selected rural and urban areas of **Sri Ganganagar District, Rajasthan, India**. The study sites were selected based on the regular presence of House Sparrow (*Passer domesticus*) and the availability of natural nests. A total of **10 study sites** were selected. These included **five rural** and **five urban** locations. The rural sites mainly consisted of traditional houses, livestock sheds, and agricultural fields. The urban sites included residential colonies, public buildings, and parks. Only naturally built nests were observed during the study. No artificial nest boxes were installed or used.

2.2 Study Period

The study was conducted from **January 2024 to December 2024**. Regular field visits were made during the breeding season of the House Sparrow. Each study site was visited at regular intervals. These visits helped in monitoring nest construction, egg laying, incubation, and chick development throughout the breeding period.

2.3 Field Observation

The breeding behaviour of House Sparrow was studied through **direct field observation**. All selected nests were inspected at regular intervals. The date of egg laying, number of eggs, incubation period, number of hatched chicks, and fledging of young birds were recorded for each nest. Care was taken to avoid any disturbance or damage to the birds and their nests during the observations.

2.4 Data Collection

The following information was recorded during the study:

- Total number of selected nests.
- Number of eggs in each nest.
- Incubation period.
- Hatching success.
- Number of infertile eggs.
- Number of broken or damaged eggs.
- Number of chicks and their fledging status.
- Type and location of each nest.

All observations were entered into a pre-designed field data sheet. Binoculars, a digital camera, and a GPS device were used whenever required.

2.5 Statistical Analysis

The collected data were analysed using **mean, percentage, and comparative analysis**. Hatching success, percentage of infertile eggs, and percentage of broken or damaged eggs were calculated. The results were presented in the form of **tables**.

3. Results

3.1 Nesting Behaviour

During the study period, a total of **30 active nests** of House Sparrow (*Passer domesticus*) were observed in the selected rural and urban areas. Most nests were found in traditional houses, wall cavities, roof spaces, ventilators, livestock sheds, and other protected places. The number of nests was higher in rural areas than in urban areas. This was mainly due to the better availability of suitable nesting sites in rural habitats. The nests were made of dry grass, small twigs, feathers, pieces of paper, and other locally available materials.

3.2 Egg Laying and Clutch Size

A total of **190 eggs** were recorded from **30 nests** during the study. The average clutch size was **6.3 eggs per nest**. Most nests contained **5 to 7 eggs**, while a few nests had fewer or more eggs. The eggs were generally pale greyish-white in colour with small brown spots.

Table 1. Egg Laying and Clutch Size

Description	Number
Total nests	30
Total eggs	190
Average clutch size (eggs per nest)	6.3

3.3 Hatching Success

Out of **190 eggs**, **150 eggs hatched successfully**. The overall **hatching success was 78.95%**. A total of **14 eggs (7.37%)** were infertile. Another **26 eggs (13.68%)** were found broken or damaged during the study.

Table 2. Hatching Success

Description	Number	Percentage (%)
Total eggs	190	100
Hatched eggs	150	78.95
Infertile eggs	14	7.35
Broken/Damaged eggs	26	13.68

3.4 Major Findings

- A total of **30 active nests** were observed during the study.
- **190 eggs** were recorded from the selected nests.
- **150 eggs** hatched successfully.
- The overall **hatching success was 78.95%**.
- **14 eggs** were found to be infertile.
- **26 eggs** were broken or damaged.
- Breeding success was higher in habitats that had safe nesting sites and favourable environmental conditions.

4. Conclusion

The present study provides important information on the breeding behaviour of House Sparrow (*Passer domesticus*) in selected rural and urban areas of **Sri Ganganagar District, Rajasthan**. A total of **30 natural nests** were observed during the study. Most nests were found in traditional houses, livestock sheds, wall cavities, ventilators, roof spaces, and other protected places. These observations indicate that safe and suitable nesting sites are essential for the successful breeding of House Sparrow.

A total of **190 eggs** were recorded from the observed nests. Out of these, **150 eggs hatched successfully**. The overall **hatching success was 78.95% (approximately 79%)**. A total of **14 eggs** were found to be infertile, while **26 eggs** were broken or damaged. The study showed that breeding success was higher in areas where suitable nesting sites, adequate food and water, and favourable environmental conditions were available.

The findings suggest that the conservation of natural nesting sites, the development of suitable habitats, and the availability of food and water are important for the conservation of House Sparrow. The present study provides baseline scientific information on the breeding behaviour of *Passer domesticus* in Sri Ganganagar District. It may also serve as a useful reference for future research, conservation, and habitat management programmes.

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