

# Breeding Behaviour of House Sparrow (*Passer domesticus*): A Case Study Govt. Science College campus, Sikar, Rajasthan, India

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## Abstract

House Sparrow (*Passer domesticus*) is a familiar bird of Sparrow family Passeridae found in most parts of world i.e cosmopolitan in distribution. Male bird is bright colored as compared to female which is light coloured. This bird is now days mostly observed in rural and urban areas and is found in close association with human habitation. The present study deals with the reproductive behaviour of the bird in Govt.sciencecollege,sikar of Shekhawati region of Rajasthan state from September 2022 to september 2023. During the course of observation 32 nest were observed with total eggs 192. Out of 192 laid eggs 144 eggs were hatched with a hatching success of 75 percent, where as 10(5.20%) eggs were found to be infertile and 38(19.79%) were found damaged or broken. Thus hatching success of House Sparrow in study area has 75 percent.

**Keywords:** House Sparrow, Passeridae, Cosmopolitan, sikar, Rajasthan, Breeding Biology ,hatching and nest

## 1. Introduction

Birds are one of the most aluring nature gift and are viewed as an environmental qualities. The House Sparrow (*Passer domesticus*) is one of them and is cosmopolitan. But in the present scenario the population of House Sparrow is declining in urban areas as well as rular area. It is found in Arabia, Central Asia, Sudan, North Africa, Iran, throughout Europe, Pakistan, India, Srilanka and Burma. It is an introduced species in North America, South Africa, New Zealand and Hawaiian Island. In India *Passer domesticus* is represented by three sub species (Salim Ali and Ripley,1974), of which *Passer domesticusindicus* is the common House sparrow and is present in all agro climatic regions of India. This bird is now a day is mostly observed in rural areas and is found in close association and also breeds in human habitations. It is an essential bird species as an equilibrant factors in ecosystems which have educational, recreational, economical and aesthetic values. They can play vital role in conservation of natural ecosystems health. The various aspects of this bird have been studied as biological indicator.

But the knowledge regarding feeding and Breeding behaviour in India is rather less. Accounts of general biology and breeding biology of the bird has been given by Summers Smith (1967); North (1970, 72); Anderson (1975); Mirza (1972) in Pakistan. H.Q. Crick, G.M. Siriwardena, National trends in the breeding performance of House Sparrows *Passer domesticus* (2002), C.J. Heij, Comparative ecology of the House Sparrow *Passer domesticus* in rural, suburban and urban situations (1985), M.J. Raven, D.G. Noble, S.R. Baillie, The Breeding Bird Survey, **Report 10** ( 2004), Naik and Mistry (1972, 1980) gave a detailed account of the breeding season and reproductive rates in Baroda, Gujarat. This study was carried out with the objective to study the breeding behaviour of the House Sparrow, as little is studied regarding this aspect in the temperate region. The house sparrow, locally known as 'Choria' chidkali are monogamous and long term pair bond is maintained throughout and between breeding seasons. The average size is 14-16 cms. and weight is nearly 26-32 grams. It is a small bird and beak is thick. Legs short. Chest unstreaked. Summer Smith (1967) has given the accounts of general biology and breeding biology of the House Sparrow. Naik and Mistry (1972, 1980) gave a detailed account of the breeding season and reproductive rate of the bird in Baroda, Gujarat. But in Northern parts of India, the breeding season extends from March to September, October in central India, while the breeding season is throughout the year in Southern India. (Aliand Ripley, 1978). A general account

of breeding biology of the House Sparrow was therefore taken up at Sikar and Shekhawati areas of Rajasthan. The study was conducted from September, 2022 to September, 2023.

## 2. Material and Methods

### 2.1 Study Area

The study regarding the breeding biology of House Sparrow was conducted at Govt. science college, sikar of Shekhawati region of Rajasthan state. The study area is about 10 km from District Headquarter of Sikar and the study area lies at an elevation about 2 hectare. Govt. science college, situated in between Sabalpura and Bherupura village is an agricultural rural area within experimental crops of Barley, wheat, mustered and pulses. In the study area, there are mostly kacha houses and cattle sheds where the birds took shelter and were used for breeding activities. The climate condition of the study area is of temperate type with December to March harsh winter conditions. The sparrows were seen in the Govt. science college, sikar areas throughout the year. Many nests in various locations in college campus area were selected to record egg laying date, clutch size incubation and nestling periods. No nest boxes were installed and the data is based on observation of natural nest and only fully constructed nests were taken for recording the data. The nests were checked at regular interval.

## 3. Results and Discussions

The nests were constructed by birds in the study area in the roofs of the college campus. The data on breeding behaviour was recorded from nests in the college campus, because in this, area most of the Campus are with electric light hole as these nests are easily accessible. The nests were constructed of grass fibers, papers and other material present in the surrounding and nests are not of a particular shape. Time taken for nest construction is not recorded, but some time old nests were used by the bird.

### 3.1 Egg Clutch Size and Incubation

The eggs are pale greenish or grayish white marked with brown -bleckish. The brown marking are concentrated at the base. The average size of egg is 2-2.2 cm and width is 1.31.6cm. During the course of study and the House Sparrow completed 32 nests. These nests contained a total of 192 eggs. The average size of 32 completed nest were 192 eggs, a female Sparrow laid 4 to 6 eggs in a nest. The eggs are laid at an interval of 20 hours. 4 to 6 eggs are more common in nest size, as 23 (%) had 6 eggs and 8 nest (%) had 5eggs and 12 eggs were present in 3 (%) nest and nest 1 (%) contained only as few as 2 eggs. During the course of observation few nest were observed only with one egg which was later on found missing, and therefore were not taken for determine the clutch size. Naik and Mistry (1980) also reported the normal clutch size of 3 to 4 eggs in House Sparrow in Baroda (Gujarat). Summers- Smith (1963) reported that the clutch size normally varied from 2 to 8 eggs in House Sparrow, but in one sub species *Passer domesticus, bactrianus*, Gavrilov found 10 eggs in a nest. Incubation period is the interval of time between laying of the last egg in the clutch and hatching of that egg when all the eggs hatch (Nice, 1954a). The incubation period in House Sparrow commenced after the clutch size is completed. The incubation period in the study area varied from 10-12 days with an average of 11 days. This is completed from the day of laying of the last egg to the hatching of one or all eggs in that clutch. Clutch refer to the total no. of eggs laid in a single nesting attempt. The incubation duty in House Sparrow is performed by both, although female does most of the incubation as compared to males. But during the night female alone sat on the eggs where as male rested in a nearby place. Van Tyne and Berger (1959) have stressed that mere sitting on the eggs does not necessarily mean that they are applying heat to eggs.

The data which is obtained on the hatching success from 192 eggs laid in 32 nests, out of 192 eggs laid, 150 eggs hatched which gives a hatching success of 78.1% (Table 1). The No. of infertile eggs out of 192 eggs laid was 10(5.20%) and those found damaged or broken were 32(16.6%).

### 3.2 Nestling and Nestling Period

The newly born of the House Sparrows when hatched are light pale in colour, naked and fleshy and are ncolous. After hatching both parents start feeding the young ones with small soft bodied insects. They open eyes when they are 2 to 3 days old and feather formation on body is completed by 12-13 days. The nestling period is determined by counting the day from hatching until the day the young bird left the nest. The nestling period as calculated for 145 nestlings ranges from 14 to 19 days and an average of 16.5days.

### 3.3 Nestling Mortality

In the study area out of the 150 hatched eggs, 145 nestling flew successfully out of the nests and 5 were found missing (including dead nestlings) which gives mortality rate of 96.6% (Table 1). Nestling of the House Sparrow have high mortality rate and the most common causes were found of falling out of nests. This accidental falling out of the nest was observed when the nestling is 4-9days old. The breeding success in the ratio of nestling fledged out of the nest to the number of eggs laid and overall breeding success in the House Sparrow was calculated as under:  $\frac{\text{Total No. of chicks fledged} \times 100}{\text{Total No. of eggs laid}}$  The calculation indicates that out of 192 eggs laid, 145 nestling flew out of the nest which gives breeding success of 75.52% (Table 1).

Table 1: Hatching and Nestling success in House Sparrow at Govt. science college, sikar.

No. of Nest	Total egg laid	Total hatched egg	Total dead nestling	Total nestling flew out of nest
1	6	5	1	5
2	6	5	0	5
3	5	4	0	4
4	6	4	0	4
5	6	5	1	5
6	8	5	0	4
7	5	4	0	4
8	6	5	0	5
9	6	5	1	5
10	6	5	0	5
11	7	4	0	4
12	8	4	0	3
13	6	5	0	5
14	5	4	0	4
15	6	5	0	5
16	6	5	0	5
17	6	5	0	5
18	5	5	0	4
19	6	5	0	5
20	6	5	0	5
21	6	4	0	4

22	6	4	0	4
23	7	4	0	4
24	7	5	0	4
25	6	5	0	5
26	5	4	0	4
27	5	5	0	5
28	6	5	0	5
29	5	4	0	4
30	6	5	1	5
31	6	5	0	5
32	6	5	0	5
Total-	192	150	5	145

#### 4. Conclusion

In the study area the House Sparrow build nest in the roof ,light pipes holes ,houses, cattle sheds and in the cervices of the buildings. The breeding season was observed from January to June because rest of months, rare nest was observed because of medium temperature. A female laid about 4 to 6 eggs in a clutch where as incubation period is 12 to 16 days and both sexes shared the duties. Nestlings are nidicolous with weak legs and broad beak with yellow boundary comparatively adult and took 14 to 20 days to fledge. Both parents feed the young ones. The hatching success of House Sparrow in study area has 78% whereas overall breeding success is 75.52%.

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