



# An Overview of Current Population Trends, Nesting, Breeding Behavior and Threats to House Sparrow Survival

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## ABSTRACT

The house sparrow is widely distributed in all types of habitat, including urban, rural, agricultural and forest. It shows very close association with human habitation because they generally live nearby houses and constructed nests on man-made structures. They utilize a broad range of nesting material, including plant matter and anthropogenic derived waste matter especially plastics, threads, hairs, pins, cloth parts etc. The clutch size of house sparrows ranges from one to eight eggs per nest and incubation lasts up to 14 days. Both male and female birds actively participate in nest construction and parental care of young. Rapid urbanization and industrialization have become major threats to sparrow survival. Population also declines due to a lack of appropriate nesting and roosting sites. Natural predators such as eagles, kites, owls, shikra and snakes feed upon house sparrows.

**Keywords:** House sparrow, Habitat, Nesting, Egg, Parental Care, Predator.

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## INTRODUCTION

The house sparrow (*Passer domesticus*) is a member of the Passeridae family and Passeriformes order. It is the most widespread and abundant bird species in the world (Anderson, 2006). In the Indian subcontinent, it is widely distributed in India, Pakistan, Bangladesh, Maldives and Sri Lanka (Ali and Ripley, 1987). They are usually found in urban and rural areas, including parks, gardens, houses, agricultural landscapes and forest habitat (Summers-Smith, 1988; Louthier and Cink, 1992; Blair, 1999; Monika, 2005; Chamberlain, 2007; Sharma, 2009; Dhanya *et al.*, 2015). At present, the population of house sparrows is continuously declining in several parts of the world (Anderson, 2006; Dhanya, 2012). A large proportion of the house sparrow population decline was recorded in Glasgow (90%), Hamburg (77%) and London (60%) in some years. It was included in the UK conservation Red List based on these regional declinations (Crick *et al.*, 2002; Prowse, 2002; Summers-Smith, 2005). In this review, I discuss about habit and habitat, current population trends, nesting and breeding behaviour and threats to house sparrow survival around the world.

### 1. Habit and Habitats of House Sparrow

The house sparrow is a common bird that lives in a variety of habitats, including agricultural lands, gardens, forests, rural areas and urban areas. They are closely associated with human habitation areas. They usually prefer to feed upon grains, seeds, discarded food materials and insects (Joshi, K.D. 2009). During the breeding season, insects are more preferred by house sparrows (Lowther and Cink, 1992). During the breeding season, an insect-rich diet provides support for the growth and development of hatchlings.

### 2. Current Population Trends in India

According to various studies, the house sparrow population is continuously declining in India (Rajashekar and Venkatesha, 2008; Khera *et al.*, 2010; Bhattacharya *et al.*, 2010; Ghosh *et al.*, 2010). These studies suggest that lack of food grain, including weeds, excessive use of pesticides and insecticides in agricultural areas and competition with other species are potential factors in house sparrow population decline. Balmori and Hallberg (2007) also found a possible link between electromagnetic radiation and sparrow population decline. Chamberlain (2007) observed house sparrow abundance decline in relation to urban to rural gradient. Several studies have found an interrelationship between house sparrow population and human population density (Summers-Smith, 1963), the availability of nesting sites and materials (Heji, 1985) and the density of food materials and vegetation cover, all of which influence house sparrow population in specific areas (Summers-Smith, 1959 and 1963). Seasonal fluctuations also influence flock size and number of house sparrows in a particular area (Easterbrook, 1999; Bohner *et al.*, 2003; Monika, 2005; Robinson *et al.*, 2005; Rajashekar and Venkatesha, 2008). Environmental conditions such as temperature, rainfall and humidity also influence the population density of house sparrows in a particular geographic region (Monika, 2005). Monika

(2005) also observed that the various seasonal factors such as rainfall, humidity, temperature etc. affect the population density of house sparrows.

### 3. Nesting and Breeding Behavior of House Sparrow

House sparrows frequently breed in rural and urban landscapes. They are constructed in open cup-shaped nests that are sometimes deserted and old nests are again utilized in the next breeding season (Cavitt *et al.*, 1999; Friesen *et al.*, 1999). The species typically builds its nests in man-made structures such as holes and crevices as well as artificial nest boxes (Summers-Smith, 1988). They are sometimes built in the grooves of buildings, dams, flyovers and walls. House sparrows usually prefer a wide variety of nesting materials, including fine branches, grass inflorescence, bird's feathers and anthropogenic-derived materials such as threads, plastic, paper pieces and hair (Indykiewicz, 1990). Dhanya *et al.* (2015) observed deserted nests of house sparrows in urban and rural areas of Coimbatore district. They found that the anthropogenic derived materials were more frequently found in deserted nests in urban areas as compared to rural areas. These materials were plastic parts, papers, cloths and fine threads. The structural layer was built using whole plant parts such as leaves, stems and twigs (Dhanya *et al.*, 2015). The inner layer of nests is typically composed of fine stems, branches, leaves and flowers. Sheep wool was also utilized for the construction of the structural layers of nests (Riper, 1977). The composition of nesting materials varies according to habitat and locality (Wimberger, 1984). House sparrows are monogamous and generally construct nests individually or in colonies (Joshi, K.D. 2009). House sparrows typically breed between January and May (Vincent, 2005). During breeding season, they perform various types of display behaviour, including frequent and high-pitched vocalization, collection of nesting material and bringing foods for hatchlings and nestlings (Martin and Geupel, 1993; Reale and Blair, 2005; Peach, 2008). The clutch size of the house sparrow ranges from one to eight eggs and incubation period varies from 10 to 14 days (Joshi, K.D. 2009). Male and female individuals work together to build nests and care for their young.

### 4. Threats of House Sparrow Survival

The population of house sparrows is possibly declining due to a lack of suitable nesting sites. Some studies have suggested that the loss of genetic diversity and parasitic infections may be responsible for house sparrow population declines world-wide (Hedrick and Kalinowski, 2000; Hawley *et al.*, 2005; Vangestel *et al.*, 2011). Predation of nestlings and adults by domestic cats also contributes to the decline in population count at the global level. Eagles, hawks, owls and snakes are also significant predators of house sparrows. Rapid expansion of civilization and industrialization reduced foraging and feeding grounds of birds including house sparrow (Cramp *et al.*, 1983; Robinson *et al.*, 2005). Lack of food material adversely affects the growth and development of juveniles and nestlings also contribute to breeding success among house sparrows (Newton, 1998). Chemically treated grains and polluted water are also factors in the death of house sparrows. Lack of vegetation cover in urban areas also reduces nesting, breeding and roosting sites for house sparrows. A criss-crossing network of cables, wires and other structures also injures house sparrows.



Figure 1- Male house sparrow collecting nesting material



Figure 2- Male and female of House sparrow



Figure 3- Female house sparrow feeds grains of weed

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