THE DECLINE OF POPULATION OF HOUSE SPARROW IN INDIA

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Abstract: - The population of house sparrows (*Passer domesticus*) in India has shown a declining trend in recent decades. In many places like Punjab, Haryana, West Bengal, Bangalore etc a very sharp decline has been observed by ornithologist. The species has shown a conservation concern in its native ranges. According to a recent study by Indian Council of Agricultural Research (ICAR) the house Sparrow population in Andhra Pradesh has reduced up to 88% and in other states like Kerala, Gujarat, Rajasthan it has dropped down up to 20%. In coastal areas of India the population has tremendously dropped to 70 to 80%. The main cause of decline of this species remains unidentified but it is believed the unavailability of nests because of modernization, constructions, and deforestation can lead to their decline. The other causes might also include rapid use of insecticides, competition with other species etc. Modern houses do not leave any space for the species to build their nests but in past few years artificial nest boxes are promoted like wooden nest boxes, shoes boxes as nests or earthen pots as nests, which give house sparrows an alternative to live in.

Key-Words: - Species, Population, Decline, Ornithologists, Artificial Nest Boxes, Conservation, Modernization

1 Introduction

The Gouraiya or the House sparrow belongs to the family Passeridae and is a little, stocky song bird with thick bill, short leg, measuring about 14-16cm, weight 26-32 gram and having a wing span of 19-25 cm. the sexes are dimorphic, that is , the males and females look different. It is most widely spread and abundant birds in the world [1]. In the Indian subcontinent they are commonly found in India including introduced populations in Andaman Islands; Pakistan, Bangladesh, Srilanka and Maldives [2]. House sparrow is a small bird with huge importance as it acts as an indicator of ecological balance of a habitat. It is closely associated with human habitation and can live in urban or rural areas. They are found in widely varied habitats and climate; it typically avoids extensive woodlands, grasslands and deserts away from human development. It feeds mostly on seeds of grains and weeds but also eats insects and other foods. Sparrow population has decreased considerably in many parts of the globe in particular urban suburban gradient [3]. In recent years India has seen a dramatic decline of house sparrow population and ornithologists have observed a sharp decline in house sparrow population across West Bengal, Bangalore, Punjab, Rajasthan, Delhi and Haryana, etc.[4] Perhaps, the transformation of human social organization influenced and is influencing the distribution of this species in many ways. Some of the ecologists believe that mentioned bird is a symbiotic species with human, hence recognizing and identified as bird species depended on human environments. It is an essential bird species as an equilibrant factors in ecosystems which have educational, recreational, economical and aesthetic values [5]. High reduction of sparrow population in London (60%), Glasgow (99%) and Hamburg (77%) have leaded to the inclusion on the Uk Conservation Red List [6-7].. This article tries to provide the overview of population decline in house sparrow around India.

2 Status in India

According to an ornithological survey conducted by the Indian Council of Agricultural Research (ICAR), the sparrow population in Andhra Pradesh alone has dropped by 80% and in other states like Kerala, Gujarat and Rajasthan it has fallen by 20%, while the turn down in coastal areas was as sharp as 70% to 80%. In recent years , ornithologists have observed sharp decline in house sparrow population across India in Uttar Pradesh, West Bengal, Punjab, Rajasthan, Delhi, Haryana, Bangalore, Mumbai and Hyderabad. In parts of Thiruvananthapuram, (Kerala), they had disappeared without a trace by

2003. In Lucknow (Uttar Pradesh) recent surveys reveal the complete absence of House sparrows in several sites since 2013. According to Bombay Natural History society (BNHS) the population of sparrow have indeed declined and low number of nests. A survey organised by the Bombay Natural History Society (BNHS) along with the Central Ministry of Environment and Forests indicate that the Hyderabad-Ranga Reddy zone saw a steep drop in the number of house sparrows from 2005 onwards.

3 Causes of decline

Several studies carried on house sparrow have cited varied reasons for their decline [8]. According to Bergtold [9], the early phase of the decline is likely to be linked to the gradual replacement of horse-drawn transport by automobiles. However, Baker et al. [10] and Shaw [11], stated that any population under stress, when affected by detrimental factors in the in the environment, would badly affect the populations to cause local extinctions and this would have lead to the large scale decline of the house sparrow. Some studies have demonstrated a number of relationships between density of house sparrows and human population density [12], conditions of buildings and hence availability of nest-sites [13], food supply [14], and amount of vegetation (green space) on breeding grounds [13]. The consensus emerging from these studies on the cause of urban sparrow declines was summarised by Shaw et al. [15], who reasoned that variation in the development and maintenance of urban landscapes explains the evidence that sparrows have declined less in areas with lower socio-economic status. Fuller et al. [16], stated that decline in population is due to changes are related to the increasing intensification of agriculture, can be attributed to a decrease in resource availability, primarily weed seeds and cereal grain. According to Green, [17], cereal, and other crop, seeds are increasingly sown with seed-dressings, which is likely to decrease the palatability of the seed to birds. Robinson et al. [18] revealed that populations have declined in urban and suburban since the mid 1970's due to the drastic alterations to the quality and composition of the urban landscapes. Several studies have shown that the availability of insectivorous food for nestlings during the breeding season influences the breeding success of the sparrows [19].

1. **Increased predation:** Many hawks and owls hunt and feed on house sparrows. These include Eurasian Sparrow hawks *Accipiter nisus*, and domestic cats *Felis catus*. The domestic cat, on the other hand, is a significant predator of House Sparrows (Churcher & Lawton 1987). Domestic dogs, raccoons and many snakes are also predators of house sparrow. The chicks are also attacked by predators such as crows, shikra and black kites.
2. **Competition for food from other urban species:** Feral Pigeons *Columba livia* and gulls *Larus*, particularly Lesser Black-backed Gulls *L. fuscus*, are the main potential competitors for food, but it is unlikely that either would give rise to a differential effect between the two urban habitats.
3. **Loss of nesting opportunities:** A reduction in the availability of suitable nest holes in modern buildings and renovated old buildings must have occurred. There is competition for nesting sites among the doves, Rock chats, Bulbuls and House Sparrows. Modern designs and house plans do not leave any crevices or space even outside4 the buildings that can be used for nesting by the sparrows.
4. **Disease:** House Sparrow populations affected by epidemic disease have been reported by Menegaux (1919-21) and Stenhouse (1928), but such declines are limited in duration because the disease organism attenuates as the host develops resistance – in other words, quite different from the present urban-center decline, which has continued for at least ten years.
5. **Traffic:** Greater volume of traffic leads to increased disturbance and pollution from exhaust fumes, both of which would be greater in city centers than small towns.

4 Conservation Strategies

House sparrows are opportunists and are able to live wherever there are suitable nesting sites, roosting sites and enough food availability. The recent decline of house sparrow *(Passer Domesticus*) in India as well as timely recognized. Therefore strategies and effort for their conservation are being implemented throughout the country to put a halt to the declining population before urbanization leads them to the category of the Critically Endangered.

In India, the Nature Forever Society (NFS), started by Mr. Mohammed Dilawar, has been working for the conser5vation of sparrows and other common flora and fauna since 2006. It has spearheaded programs and projects that are making a visible difference to sparrow population in cities. Some of the initiatives started by the NFS are "Common Bird Monitoring of India", "World Sparrow Day", "Project Save Our Sparrows"," Nature Forever Society Sparrow Award "and Adopt a Feeder and

Nest Program", among others. The Biodiversity and Wildlife Conservation Lab in the Department of Zoology, University of Lucknow together with the Uttar Pradesh State Biodiversity Board has also embarked upon sparrow conservation efforts through awareness. Artificial Nest boxes are being promoted by presenting them as mementos to dignitaries in various awareness programs.

On 15 August 2012, the then Chief Minister of Delhi Ms Sheila Dikshit declared sparrow as the "State Bird of Delhi". This declaration was part of "Rise for the Sparrows"-India's largest conservation program for sparrows. On January 2013, Bihar Chief Minister Mr. Nitish Kumar also announced the sparrow as the State Bird of Bihar.

The Nature Forever Society celebrated the first World Sparrow Day in India on 20th March 2009. The idea was to convey the message of conservation of the House sparrow and other common birds and also unmark a day of celebration to appreciate the beauty of biodiversity which we take so much for granted. The World Sparrow Day attempts to bring sparrow lovers and nature supporters on a common platform and start a conservation movement to save the common flora and fauna of the world. If possible people should try to provide an alternative nesting site for the House Sparrow. In this manner perhaps, we may succeed in bringing back the House Sparrowin our lives so that the future generation can also enjoy the pleasure of watching these small and chirping little birds in their homes.

5 Discussions

For a species to decline there must be either a reduction in breeding productivity or in survival. Survival can be determined from ringing recoveries or re sightings of colour-ringed individuals; determination of breeding productivity is much more difficult for a multi-brooded species like the House Sparrow, unless marked individuals are followed throughout the breeding season. In fact, it is too simplistic to treat productivity and survival as independent. For example ,the adults may work harder to maintain their output at a cost to their own survival. Shortage of winter food may not reduce survival, but could delay the onset of breeding (although this is not supported by the BTO's Nest Record Scheme, which suggests that the beginning of breeding has advanced by five days in the past 25 years, in line with climate change – Crick et al. 2002).Moreover, a proportion may fail to breed, or perhaps rear young which are not fit enough to survive and fill gaps in the breeding population. The situation in farmland appears to be quite distinct from that in urban centres. A major decline in farmland began in the late 1970s, but after a decrease of about 60% the population had stabilised by about 1995 .In contrast, a gradual decline in urban centres continued, with little change for 50 years from the 1930s, before the urban population went into free-fall in the late 1980s or early 1990s. A gradual and continuing decline is probably also taking place in suburbs and small towns, though it has not yet become catastrophic. The urban sparrow population itself is far from homogeneous and is more realistically split into birds which populate urban centres and those in the outer suburbs/small towns, perhaps subdividing the latter further by separating birds living in 'rural' built-up areas. Bower (1999) attributed the decline in House Sparrows due to lack of insects, particularly at the beginning of the breeding period. Further support for the idea that shortage of invertebrate food could be important is provided by preliminary results from an ongoing study in Leicester (Vincent et al. 2002). In 2002, there was found to be complete failure of 14 broods (46%) in suburban nests, all but one of these in nests where clutches had been laid after the end of May. In the majority of cases, the nestlings died after only a few days, suggesting that starvation, possibly resulting from lack of invertebrate food, was the cause. Van der Poel (2002) suggested that the decline in Dutch urban centres was down to a lack of insects. Unfortunately, no relevant data on invertebrate populations in urban habitats are available, and there is no consensus as to causes of the shortage, although garden pesticides could be a possible factor.

6 Conclusions

It would be expected that, with man's dominance of the world, the future would be bright for the bird, but it is now becoming evident that this is not the case. Thus it is clear that the availability of nesting sites is an important factor for maintaining a sustainable population in urban gradient regions. Hence, from the present study it is inferred that placing of artificial nest box is one of the best solution to enhance the dwindling house sparrows population, particularly in urban-suburban areas. After creating a congenial habitat it is in the hands of people to place an artificial nest in the city for house sparrows and also the concerned State Department should take necessary steps to monitor the sparrow populations regularly to prevent the vanishing species from the city and villages.

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