

Conservation techniques for perpetuation of House Sparrow *Passer domesticus* L.

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Abstract

House Sparrow (*Passer domesticus*) is a widely distributed human commensal bird species. It has been disappearing from four decades for various anthropogenic reasons. Among them, habitat loss is the main threat to its existence. As the House Sparrow is a secondary hole-nesting bird, it needs small clefts for breeding activity. For that, it uses our homes for their nesting activity. Advances in the house designs and our lifestyle found to be the major obstacles to provide such small clefts for their propagation. To overcome this problem and to perpetuate this bird species, we have followed a specific conservation method. We installed our own designed protective nest boxes in the study area starting from a particular location and then expanded to the new areas depending on need. Our experiments gave us a positive result and we succeeded in our conservation approach. We observed 97% and above occupancy in the installed nests and there is a significant increase in sparrow population during the past seven years of our study.

Passer domesticus is commonly known as House Sparrow, the only bird ubiquitous and makes nests in the roofs of our houses¹. In the course of evolution, House Sparrow has evolved from *Bactrianus* race and habituated to live in grass lands. When the human settlements began, it moved from grass lands to cultivated lands as they provide sustainable food resource. They slowly moved from crop lands to human settlements for adequate food resource and secured shelter, then it became human commensal¹¹. Amparo *et al.*² say that Sparrows are the ecological

indicators, because they are non-migratory and associated with anthropic areas.

Observations of Crick *et al.*⁵ and Summer-smith¹² explained that the sparrow population has decreased^{6,12}. The survey by Indian Council of Agricultural Research in the year 2010 noticed that the House Sparrow population has been reduced to nearly 80% in several states including Andhra Pradesh^{4,7,8}. Survey reports state that the decline of the House Sparrow population has declined beyond 90% in the state of Andhra Pradesh⁹. Most

of the studies reveal that habitat loss is the main threat for their existence. Several studies suggest that there is more demand for breeding spaces^{3,4}. Balaji³ proved in his studies that by providing nest boxes one can resolve the problem of habitat loss³. Still there is a need to improve the nest box design for House Sparrows⁵. We have prepared a protective nest design with some modifications to the model suggested by British Trust Ornithology to suit to local climatic conditions¹⁰ (Fig. 1).

Study area :

Jangareddigudem (17.1223° N, 81.2923° E) is an upland area of West Godavari District of Andhra Pradesh state of India. It is 55 KM from the district headquarters Eluru. This area is at 74 meters above median sea level, with 15.8 Km² area. Study area is a semi-urban town with tropical climate consists more of open areas. The town is also devoid of bulk food resources like paddy and cereals for sparrows. At the beginning of our work, we have conducted census on sparrow population. Our survey states that sparrow population was decreased than the remote time.

Installation method plays an important role in occupancy and utilization of the nest boxes. Annual maintenance of the nest boxes makes a healthy environment in the nest box that facilitates regular breeding activity. The specifications of our methodology are listed here.

1. The Nest boxes were installed in both North and East directions at the houses of the study area.

2. We have installed one nest box for every three houses.
3. We have expanded the installation to new areas in latitude wise from the starting location i.e. Ayyanna Colony of Jangareddigudem, located towards south-west edge of the town which contained moderate food resources, to meet the need and demand for the new generations.
4. All the nest boxes were installed in safe place that is away from predators and to be identified easily by the sparrows.
5. To attract the sparrows towards the new nest boxes, we have tied paddy spikes to some of the nest boxes, where there is delay in occupancy (Fig. 2).
6. Annual maintenance is one of the important factors for long term utility of the nest boxes. Towards it, we use to clean all the nest boxes during non-breeding time or immediately when the fledglings left the nest box. It helps in maintaining a healthy environment for the next generations, free from pest and other diseases (Fig. 3).
7. We use to specify the date of cleaning with reference to annual maintenance. At Nest 219, we can observe that a couple of sparrows re-occupied after removing the old grass nests and cleaning (Fig. 4).

During the past seven years *i.e.*, from 2014 to 2020, we have installed more than 570 nests in the study area. The occupancy rate was around 97.6% (Mahesh & Suseela¹⁰). Our experiments in nest installation mechanism and other practices in conservation view, gave us a successful result to increase the sparrow



Figure 1: Our own designed nest box with improved features



Figure 2: Paddy spikes hanged at a nest box



Figure 3: Author removing old nests from nest box.



Figure 4: Re-occupancy after removing old nests

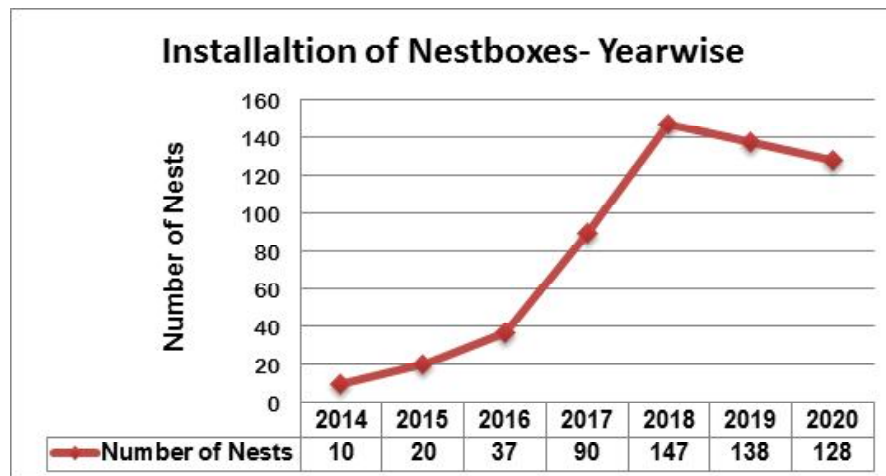


Figure 5: Number of nests with installed year.

population. Fig. 4 explains the number of nests and their demand for the grown population. Total number of nests in the past seven-year study is 570. Among them 550 nests were occupied and utilised for breeding.

After installation of each nest, we monitored regularly for their occupancy and nest construction and breeding activity. After installation, about 45% of the nests were occupied within 30 days. Nearly 40% of the nest boxes were occupied in the next 30 days. From the remaining 15% of the nest boxes, around 10% were occupied in a span of 90 days. Few nests were not occupied and the reasons for non occupancy vary from one nest to another nest box.

It was observed that nearly 45% of the nest boxes were occupied within 30 days from the date of installation. It indicates a greater demand for nest boxes by the new generations. In 2014, we noticed the presence of only 3 pairs of sparrows at the initial conservation point. When we started our conservation studies with the installation of nest boxes in the year 2014, only 14% of the nests were occupied (5 nests out of 30), in the first 30 days indicating the less population of House sparrows. Whereas in the year 2018, nearly 45% of the nests were occupied within first 30 days of installation. It clearly showed a raise in Sparrow population in the study area (Fig. 5).

Bhattacharya *et al.*⁴ installed nest boxes in open areas, public places and near to water tanks. They observed some disturbance to the nest boxes by other bird species and to

avoid that they have arranged mesh-like guard on the top of the nest boxes. No specific disturbances have been reported by Balaji³ because they arranged their nest boxes in secured areas. In our study, we have arranged nest boxes in the houses requesting the house owners, under the slab, at open space, where the sparrows can approach easily.

The reasons for non occupancy were not common to all; in some areas it was due to entry of House Gecko (*Hemidactylus sp.*) and one nest was occupied by Indian Robin (Nest Box. 89). For another nest (Nest Box No. 400) we didn't find any reason for unoccupancy. At the time of installation, a couple of sparrows were present in that area but we for reasons not known that nest box remained unoccupied.

We succeeded in attracting House Sparrows towards the nest boxes by placing paddy spikes in the year 2018. When the nest box 156 was left free for about 60 days, we hanged paddy spikes to that nest box and to our surprise, within a span of two days nest box was occupied. It is one of the successive nest boxes, has been utilized five to six times for breeding per year. The reason for delay in the occupancy about 30 days and beyond could be the time needed for maturation of juveniles to become adults.

Our journey for conservation of House Sparrow has been started in April 2014. The achievement of 97% occupancy of the nest boxes shows the compatibility of this nest box model and breeding success. By the end of 2018, 292 nest boxes were in use indicating an increased population in the study area. It also reflects the number of adult sparrows. When all occupied 292 nest boxes were

utilized by one pair, the minimal adult sparrows would be 584, excluding juveniles. Till date the conservation work is in progress.

We are thankful to the public of Jangareddigudem town for understanding the need of House Sparrow conservation and for extending their support to carry out our research and conservation work by accepting to install nest boxes in their houses. We sincerely thank all of them for their co-operation at the time of data collection and at the time of observation of nest boxes throughout the year. We are also thankful to the Non-Governmental Organization –SPARO for its support.

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