



Role of height in site selection for nesting in wooden nest boxes and natural sites by Indian Myna

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Abstract

The Indian myna (*Acridotheres tristis*) are distributed all over India, also known as an Asian starling (family Sturnidae and order Passeriformes) that has become also established in many parts of the world, outside of its native range due to accidental or deliberate introduction by humans. They nest where built in holes or cavity of walls, trees, wells, rocks, old buildings, under pass of highway and railway station etc. The experiment was started on 2nd March 2022 in which ten wooden boxes were placed at different heights (9 to 10 feet, 12 to 15 feet and 18 to 20 feet) in campus of government degree college B.B. Nagar, Bulandsahar, U.P., India. In this study area the total number of eggs laid were seventeen (17) in breeding month from March to July 2022 for a period of five months. It was observed that all the three nest boxes were placed on the wall of the ground floor, which were placed at a height of 9 to 10 feet, and these three nest boxes were completely safe from predators, adequate amount of food and water, protected from storms and naturally conducive for the development of chicks or reproductive success of Indian myna. So Indian myna preferred these areas for selection of nesting sites.

Key words: Nesting material, egg laying, Indian myna, wooden nest box, height, natural sites

1. Introduction

Common myna is a medium sized bird (body length from 23 to 26 cm, weight from 80 to 145 g and wingspan from 120 to 142 mm) with characteristic yellow patch around the eye (King et. al., 1975) plump body, brown plumage, brown iris and having yellow bill and leg. The male and female common myna are monomorphic but males are slightly larger and heavier than female. Body length of male common myna is 239.1 ± 08.8 mm whereas body length of female is 227.7 ± 05.3 mm which is slightly smaller than male and tail length of male is 90.7 ± 00.7 mm whereas in female is 80.6 ± 01.5 mm. Now it is clear that these two characters are found slightly larger than female Indian myna (Dhandhukia and Patel, 2016). Indian myna (*Acridotheres tristis*) or common myna are passerine birds distributed throughout India (Ali and Ripley, 1983). They belong to the family Sturnidae of order Passeriformes (Chris et.al., 1999). It is one of the common birds found all over tropical the Asian countries (Ali et al., 1983). It is reported that they breed naturally in cavities and holes

in trees, rocks scraps, building walls, in old nest of other bird species and also in man made nest boxes (Kaur and Khera, 2014; Dhandhukia and Patel, 2012). Indian myna is a social bird and shows communal roosting. Communal roosting means it roosts together with other species of Myna as well as with other avian species, also known as heterogeneous roosting (Mahabal, A. 1997).

Both male and female common myna take participated in nest formation, incubation of eggs and other parental duties. Common myna are ground feeder, omnivorous, feeds on insects, arachnids, crustaceans, small reptiles and mammals and it forages on the ground among grass insects especially the grasshoppers (Genus *Acridotheres*) so known as grasshopper hunter (Rasmussen and Anderton, 2005), also feeds on fruits, grains, domestic edible waste, some orchard fruits, papaya, vegetables, seedlings of wheat and standing cereal crops (Bruggers, 1983). Previous studies have also indicated that the breeding of Indian myna was observed between March to September (Pell and Tidemann, 1977). They are picking prey from the surface of small pasture and grain but will also opportunistically feed on flowering nectar, fruiting tendrils, coplids and bushes (Feare and Craig, 1999). Selection of nesting site is considered to be one of the most important factors in reproductive success in many species of birds (Li and martin, 1991) and it has been recorded that in some species, reproductive success has been reduced due to poor nest site selection (Frederick, 1986). Nest were occupied by common myna along with other species such as rose - ringed parakeet, oriental magpie robin, spotted owlet and house sparrow etc. Panicker (1980) observed that when barbets completed their breeding, the nest was taken over by Brahminy myna at the height of 5 to 7.5 meters. The higher rate of nesting behaviour in the artificial nest box among the common birds in Mizoram is reported in the non forest / disturbed area i.e. 42.40 % other than in the forest / undisturbed area, provides more nesting materials as well as spaces for nest construction, which might not be available for birds in the non forested / disturbed area (Lalremsanga et. al., 2020). Bakhtawar et al., 2016 reported that the frequency of insect, rice, earthworm, dates, papaya and grasshopper were highest in the summer and lowest in winter whereas the frequency of wheat was highest in the winter and lowest in the summer. Some studies also reported that birds breed in nest boxes in comparison to natural sites (East and Perrins, 1988, Robertson and Rendall 1990).

2. Materials and methods

The study was carried out from March to June 2022 in the campus of Govt. Degree College, BB Nagar, Bulandsahahr, U.P., India in natural condition. Which latitude is 28.6443°N and longitude is 77.9710°E and 210 meters above the sea level. Indian myna search site for nest building were started in the beginning of the breeding season. The courtship behaviour was observed visually by binoculars (GOR Standard 10×50). Ten wooden nest boxes were put up on the different height of the study area dated on 02 March 2022. Each wooden nest box measured 22×20×26 cm in out side dimensions. All nest boxes had an entrance hole 7 cm in diameter on the front and situated 6 cm above from the bottom. Wooden perch of length 6 cm is also situated below 4 to 5 cm of entrance hole. Photographs were taken by 64.0 mega pixel with 20× extend Zoom by Realme GT Master edition mobile camera under natural condition. Data was collected from the nest by the help of 12 feet wood leader. The observations were recorded in the early morning and evening hours. All nests (natural sites and nest boxes) were monitored every day during the egg laying period (clutch completion) and till fledging date. Each female laid one egg in a day. In this study, the nesting sites, nests, eggs, chicks, juvenile of the bird, and adult birds, were not harmed in any way.

3. Result and Discussion

Indian mynas are monogamous and show territorial behaviour for protection of nesting sites during the breeding season. Generally myna started construction of their nest in the second week of March. At the time of site selection, courtship behaviour was seen in mid march of 2022. In male and female of common myna mated many times in early morning. It is continued until the day before the last egg was laid. Also reported in head bowing and bobbing by Kannan and James 2001. Common myna commonly breeds between March to September of every year and lay three clutches of eggs in one season (Pell and Tidemann, 1997). Common myna prefer red trees of Gulmohar followed by silver oak for making cavity nests and egg laying in comperision to other trees (Kaur and Khera, 2014).

In this study we observed that twigs and leaves of Neem (*Azadirachta indica*) was used in nesting material, neem work as insecticidal and antipathogenic agents, also has been reported by Sengupta, 1982; Clark and Mason, 1985; Dhandhukia and Patel, 2012. Green leaves in nest play an important role to provide soft bed for the nestlings and also maintain humidity in the nest (Sengupta, 1982). Common myna preferred those areas which are surrounded with trees and buildings to make nests.

A total of 10 wooden nest box were placed at different heights in the college campus. This work was done in the first week of March 2022. Three nests box were placed on the ground floor at a height of 9 to 10 feet. Two nest box were placed on Neem (*Azadirachta indica*, Family Maliaceae) and Kadam tree (*Neolamarckia cadamba*, Family Rubiaceae), at a height of 12 to 15 feet and five nest box were placed at a height of 18 to 20 feet height on the first floor of the college. It was observed that all the three nest box on the wall of the ground floor, which were placed at a height of 9 to 10 feet under rcc (Reinforced Cement Concrete) roof, were completely safe from predators, surrounded by adequate amount of food and water, protected from storms and naturally conducive for the development of eggs and chicks of Indian myna. so Indian myna selected these three nest box for his nesting site. Nest box which were placed at a height of 12 to 15 feet on Neem and Kadam tree, myna birds were not feel favourable place for development of eggs of Indian myna. Similarly, The nest box whose height was 18 to 20 feet, were also not found suitable for nesting sites by Indian myna (Figure 1).

Generally Common myna laid 4 to 5 eggs ($L \times W = 3.20 \times 2.17$ cm and average weight was 5.74 g) in one clutch and they were glossy, pale blue and oval in shape (Perkins, 2000), Egg volume was recorded with the help of mathematical equation (Borad, 1999). In this study area the total number of eggs laid were seventeen (17) in breeding month from April to June 2022. In which 15 young ones recorded so hatching success was 88.2%. After hatching 12 chicks were modified in to fledge of birds from out of 15 young ones, so fledge of birds success was 70.5% (Table 1). Chudasama and Dodia (2017) observed that fledging success in common myna and bank myna was observed 67.30% and 50.09%.

Table 1. Clutch size, hatching of eggs and fledging of bird in common myna during study-

| S.No. | Height of nest | Clutch size | Hatching of eggs | Fledging of birds |
|--------------------|-----------------|--------------|------------------|-------------------|
| Nest Box 01 | 10 Feet | 04 | 04 | 03 |
| Nest Box 02 | 9.5 Feet | 05 | 04 | 04 |
| Nest Box 03 | 9.5 Feet | 04 | 04 | 03 |
| Natural Site 01 | 9 Feet | 04 | 03 | 02 |
| Nest Box 04 and 05 | 12-15 Feet | -- | -- | -- |
| Nest Box 06 to 10 | 18-20 Feet | -- | -- | -- |
| Range | 9.5 Feet | 04-05 | 03-04 | 02-04 |
| Total | ---- | 17 | 15 | 12 |
| Percentage | ---- | 100% | 88.2% | 70.5% |

In this study it was observed that they usually made their nests at height range of 9 to 10 feet, also same result were found by (Kaur and Khera, 2014) and also noticed that due to safety of chicks, food availability or unfavourable condition, they evicting the chicks by holding them in the beak to shift in favourable area or another nest. This behaviour is considered to contribute to its success as an invasive species (Pande et al., 2003). Any physical measurement of nests (size or nesting materials used) should be done after the nestlings have fledged from the nest (Brave et al., 2020). In this study we noticed that material used in nest construction were shown as twigs, dry grass, leaves and roots, feathers of birds, piece of cloths, rubber ring, stem of local plant species, also found plastic bags, transparent polythene strips, snake slough, metal wire (Lamba 1963) and 3-4 pale blue eggs are laid (Watling 2001). Maximum nest material act as insulator that is help in decreasing heat exchange result play an important role in eggs incubation (Panicker 1980). Distance between breeding and feeding sites (abiotic and biotic components) also played an important role in the selection of breeding sites, along with safety from predators and inter-specific competition (Dhandhukia and Patel, 2012).

4. Conclusion

In this study it was concluded that generally Indian myna laid 4 to 5 eggs in one clutch. Indian myna preferred those areas for selection of nesting site which having 9 to 10 feet height from the ground level and this area should be completely safe from predators, adequate amount of food and water, protected from storms and naturally conducive for the development of eggs and chicks of Indian myna. In this study the hatching success of Indian myna, was 88.2% and fledge of birds success was 70.5% .

5. References

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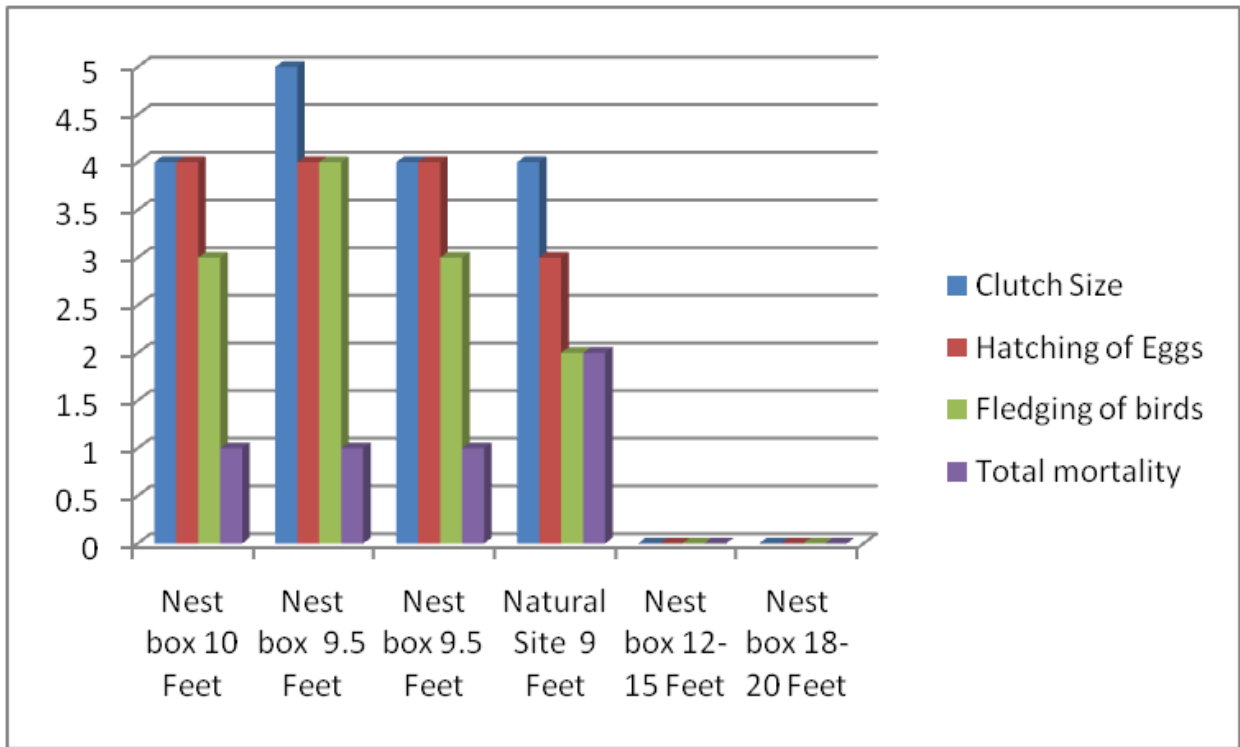


Figure 1. Graph show clutch size, hatching of eggs, fledging of birds and total mortality at different height in Indian myna (*Acridotheres tristis*).