



STUDY ON PREFERENCE OF TREES FOR NESTING SITES AMONG ORDER CICONIIFORMES AT PCBL COLONY, DURGAPUR, WEST BENGAL, DURING RAINY SEASON

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ABSTRACT

The present study is an attempt to identify tree preference for breeding ground among different species of egrets, herons and cormorants which belongs to Order: Ciconiiformes at PCBL Colony, Durgapur, West Bengal. In spite of being residential colony there are very low chances of human disturbances. This area contains a large number of trees which provide nesting and breeding places for migratory herons and cormorants in rainy season. Five identified species were *Egretta garzetta*, *Ardea alba*, *Bubulcus coromandus*, *Nycticorax nycticorax* and *Phalacrocorax niger*. *Egretta garzetta*, *Ardea alba* and *Bubulcus coromandus* prefer mango tree for the making of the nest where as *Nycticorax nycticorax* and *Phalacrocorax niger* prefer eucalyptus tree for the same purpose. *Bubulcus coromandus* also prefer jack fruit tree for nest building purpose. Preference of trees for nest building may play a significant role in the maintenance of strategic life style as well as establish an evolutionary preview.

KEYWORDS: Ciconiiformes, egrets, herons, cormorants, nest building, Durgapur.

INTRODUCTION

Birds vary a great deal from one another in most of their life pattern like habitat, food, colorations, beaks, feet, size, plumage pattern, distribution and so on, likewise nests of birds are also having huge variations in their size, shape, structure, construction material used, construction pattern, selection of site for nest, nest architecture etc. Nest building in birds require extreme skills of engineering. In this regard birds have proved themselves expert engineers. Nest construction skills can be considered as a part of parental care or Instincts (Raval J.V., 2011). Wetlands are unique habitats for many water bird communities and migratory birds and surprisingly PCBL residential colony, Durgapur has served a home for large number of migratory birds. In breeding season round about 250-300 birds were seen. The area contains trees as well as quarters which makes the subject interesting and brings out the question of the interaction between human and birds. No detail abbreviation is available on the habitat use by egrets and herons in PCBL colony, Durgapur. Questions and concerns have also been raised about the presence of these migratory birds in the colony though there is a forest area just beside it. Hence, the present paper deals with the observation on preference of trees for nest building site among cormorants, herons and egrets as their habitat is observed in the PCBL colony, Durgapur. A number of works has been done on the types of nests and its evolutionary significance. Genetic variation might play an important role in the changing of the structure of the nest

(Yi-Ting Fang, 2018), unfortunately little works are available on the tree selection by particular bird species and its evolutionary importance.

Study area

Philips carbon black limited residential colony is situated in Durgapur, West Bengal beside NH-2, which falls between 23°30'28 N, 87°21'11 E. It has 46 quarters. There is a forest area adjacent to this residential colony and a water body nearby. The colony has a thick canopy of deciduous trees which provides the nesting place for egrets, cormorants and herons.

MATERIALS AND METHODS

Regular observation and all counts were made during early hours of the day during monsoon. The bird species was encountered with the help of Canon digital camera (16 mega pixel) and Lenovo A7000 phone (8 mega pixels). Identification was done with the help of "The Book of INDIAN BIRDS" by Salim Ali (2012) and some secondary sources of data like journals etc. have also been consulted to prepare the paper.

RESULTS

During our survey in PCBL residential colony we have observed that human disturbance is lesser than the forest area which is situated in its close proximity. This is probably a cause of the presence of birds in the colony. Three types of egrets, one type of cormorant and heron are identified. Which are:

Preference of trees for nesting sites among order ciconiiformes



FIGURE 1: Little Egret-*Egretta garzetta*



FIGURE 2: Great White Egret-*Ardea alba*



FIGURE 3: Cattle Egret-*Bubulcus coromandus*



FIGURE 4: Black-crowned night Heron-*Nycticorax nycticorax*



FIGURE 5: Little Cormorants-*Phalacrocorax niger*

Nest building sites are observed in close proximity. The area is covered by different types of trees, but main trees are mango, eucalyptus, Indian fig, coconut and jack fruit.

An approximation has been made in percentage to show different types of trees by pie chart.

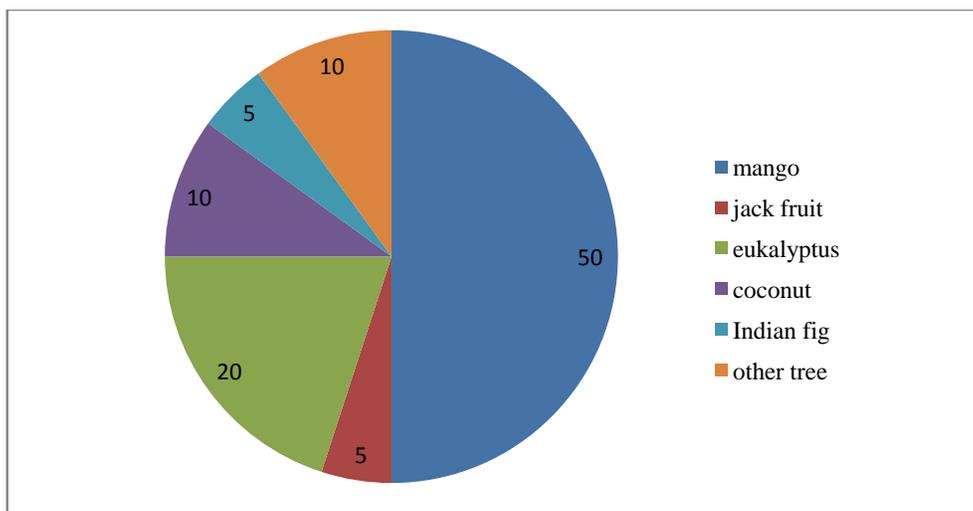


FIGURE 6: Pie chart showing distribution of different trees in PCBL colony.

Egretta garzetta, *Ardea alba* and *Bubulcus coromandus* prefer mango tree for the making of the nest where as *Nycticorax nycticorax* and *Phalacrocorax niger* prefer eucalyptus tree for the same purpose. *Bubulcus coromandus* also prefer jack fruit tree for nest building purpose. Number of nests in mango tree is more than the nests on the eucalyptus and jack fruit tree. Trees at the periphery of the colony are less nested than the trees at the core of the colony. Same mango tree can be occupied by three species of the above mentioned egrets, whereas sharing of same eucalyptus tree by herons and cormorants is less frequent. Egrets build their nests at the canopy layer, but canopy layer is less used by herons, lower branches are more useful for nest building purpose. Nest building at the canopy is also common for the cormorants. Parental care is seen in all the five species of birds.

DISCUSSION

The origin of nests built on land probably traces back to the origin of land life and of the land egg in reptiles. The eggs of reptiles are often buried or concealed in pits in the ground, and generally take much longer to hatch than do those of most birds. Development of eggs in ancestral birds was speeded up with the origin of direct parental incubation which in turn probably arose in avian evolution in close association with homeothermic and ability to fly. Nests are so closely related to habitat and habits in any given species that there has been a tremendous amount of recurrent, convergent, and parallel evolution of different nest types in birds, making it difficult to delineate particular phylogenies (Nicholas E. Collias, 1964). Traditionally, it was thought that natural selection and the requirement to minimize the risk of predation determined the design of completed nests. However, it is becoming increasingly apparent that sexual selection also influences nest design (Mark C. Mainwaring *et al.*, 2014). Water body plays a very important role in the nest building site of egrets and herons. These species can make nest beside the water body but the place should be undisturbed. Wetland is found in proximity of the PCBL colony and as the place is fully undisturbed for nesting of the birds. Wetland has proved its importance for the nesting ground of egrets and herons. A minimum water level should be maintained to attract more number of egrets, storks and herons, since most of the species prefer to forage in such low level water areas (V. Vasudeva rao *et al.*, 2015). Parental care is found in the egrets and herons, in the day time although the nest is guarded uniparentally, till the end of foraging by the other parent. Parental care in egrets is also reported by Masahiro Fuiioka (1989). Arrival of these animals in the breeding ground is highly correlated with the arrival of monsoon, because monsoon offers plenty of food in the wetlands for these bird species. There is an interesting relationship between arrival of Asian Open Bill Stork and rainfall. This is because of the fact that the nest building trees along with the available food, particularly snails in that micro habitat significantly depends on rainfall which triggers their reproductive success (Dhua *et al.*, 2013). Thus the present work is in close agreement with the previous worker. Selection of particular tree by bird species must play some evolutionary role. Nests on the tree might give the species proper niche where it can breed or camouflage from the surrounding, thus can increase the reproductive success. Although very less work has been

done on the selection of particular plant species for nest building. *Pandanus* sp. of Pandanaceae at coastal area can protect soil from soil erosion and also protect some birds like white breasted kingfisher and sparrows. Some plants are common in hills which attract birds due to their beautiful colour. A good example is colourful *Rhododendron arboreum* in hilly areas of West Bengal that harbour beautiful tits. Asare or *Viburnum* sp. in high altitude attracts large number of birds for their shelter even for long term nesting. Series of jhau plantation (*Casuarina* sp.) stand luxuriantly and grow near coastal area and give shelter to crows and cranes (Das *et al.*, 2016). Migratory birds are the key mobile links that contribute to the function of diverse eco-system. This makes migratory bird's prime witnesses to global climate change. The rhythmic patterns of arrival of birds in PCBL colony are phenomenal as well as very much seasonal. Choice for building nests as observed in this work egrets prefer mango and jackfruit tree and eucalyptus is preferred by heron and cormorants. This result shows an evolutionary significance. Egrets are different from herons in the colour pattern. A definite colour pattern is found in heron whereas egrets are white with some shades of colour. Mango tree is evergreen, non-deciduous and the canopy layer is dense, whereas the eucalyptus tree is evergreen but not as dense as mango tree. Egrets might choose the mango tree because it can hide easily in the dense canopy of the mango tree, in the eucalyptus it can be easily seen, and the herons show a similar colour pattern with the bark of the eucalyptus tree, but the plumage colour pattern of cormorants is not exactly similar with that of the bark of the eucalyptus tree this may be the reason it makes it nest on the canopy of the eucalyptus tree. The result show a very distinctive evolutionary pattern of nest building behaviour in the egrets, herons and cormorants found in the rainy season at the PCBL colony, Durgapur.

CONCLUSION

Studies suggest that minimum water level is an important source to attract egrets, herons and cormorants since most of the species prefer to forage in low level water areas. The area where PCBL colony is located not only serve them ample amount of trees for their habitat but also serve them a small water body nearby which fill their requirement for their food. The calm environment supports the event of these birds migrating in this area during rainy season. Different trees are chosen by different birds during the time of nest building show an evolutionary pivot for the succession of their offspring.

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