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STUDY OF THE NESTING ECOLOGY OF SOME BIRDS IN HINGOLI DISTRICT, MAHARASHTRA

[1*]Pradnya R. Mujmule, [2]B. S. Salve and [3]Priyanka Patode

[1,2,3]Deportment of Zoology, Adarsh College, Hingoli (431513).

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***Corresponding Author**
Pradnya R. Mujmule
Deportment of Zoology,
Adarsh College, Hingoli
(431513).

ABSTRACT

Birds play an important role to control the population of different insects and pests. They are best markers of environmental quality. It is essential to keep on sighting the birds in any zoogeographical and ecological region outstanding to their ability to react with the habitat by their solitary parameter as presence or absence. The Nesting Ecology of some birds were studied in 12 Villages of Hingoli District, Maharashtra. The study was carried out in human Living areas. From April 2022 to February 2023 to study the pattern of nest site selection and the human approach or disturbances in birds nesting. The Ecology of birds describes how they fit into the environment where the live and coexist with other organisms. Nest is the structures Constructed by the birds to Lay their eggs, protect their offspring and also for the survival of the bird itself. Nest are the Compartment of bird which provide them shelter and support to reproduction. It is very important to understand the ecology of nest for conservation of birds. The recorded characteristics include height of nest, Nesting substrate (Natural / artificial), Nesting type, Nesting material. Nests were searched by visual observation from the survey total 190 nest of 12 species of birds were recorded. 76.96% of nest were found on natural substrate (Ex- trees, shrub etc) and 23.04% of nest were found on artificial substrate (Ex-Bamboo gate, on the beams of ceiling etc.). The Density of birds nest is highest in the winter season.

KEYWORDS: Nesting Ecology, Some birds, Hingoli District, Maharashtra.

I. INTRODUCTION

Birds are vertebrates with wings and Feathers, Birds are unique creatures with wonderful ability to fly but few birds species do not have strong enough wings to fly and so these Birds are flightless. Birds bodies are covered with light tough layer of feather and they have very

light skeletons. Instead of teeth they have horn like beak or bills. The ecology of birds describe how they fit into the environment where the live and coexist with other organisms. there are two main aspects in the ecology of birds, feeding ecology and breeding ecology. Birds are found worldwide almost in all the habitats. Nests are the structures constructed by the birds to lay their eggs, protect their offspring and also for the survival of the bird itself. Nests are constructed at the site where the individuals are safe from the predators and they have high reproductive success.

Pattern of nests are different for different species of birds. Different Species of birds use different nesting materials such as twigs, grass, leaves, mud, ribbon, spider web etc. The bird nest may be located on tree, on the roof, on the ground, on a platform over water etc.

Different types of commonly observed nest are

1. CUP NEST- As their name implies, cup-or cupped- nest are in fact cup shaped. The cup nest are resemble with a bowl or cup and it is the commonly used nest type. The cup nest is spherical inside with a deep depression. Most songbirds build cupped nests, such as Oriental Magpie Robin, Red Vented Bulbul, swifts etc.

2. PLATFORM NEST- Platform nests are flat, built on trees, on the ground, on the top of vegetation. Platform nests are usually made of twigs layered together and softened with addition of grasses of dirt. Many platform nests are large and used season after season by the same birds. Osprey, bald eagles, storks, Egrets, Herons are most common platform nesters.

3. CAVITY NESTS - A cavity –nest bird builds a nest, lays eggs, and raises young inside a cavity, a sheltered chamber, or another structure resembling a cavity. Some species are exclusively cavity nesters, meaning they only nest in cavity with a small entrance hole. Like burrows the cavities in trees provide protection and allow birds to heat their eggs. Birds like woodpecker, Bluebirds, many species of owl use holes in tree or construct their own cavity.

4. BURROW NEST - Burrow nests are shelter within trees or the ground that acts as safe havens for birds and their developing young's. Birds use their beaks and feet to carve out their own burrows. Most birds create their own burrow but some birds use burrows created by others or natural burrows. Burrows provide advantages like protection from predators and the weather. Birds like kingfisher, puffins made their nests in burrows.

5. PENDANT NEST - Pendant nests are elongated sac suspended from a tree branch. These are made from grasses or very thin twigs. Weaver, Sunbird etc. are common pendant nesters.

II STUDY AREA

My study was limited to the Hingoli District. The Latitude is of 19.43 N and Longitude is 77.11 E. It occupies an area of 4,526 km and has a population of 11,77,345 of which 15.60% were urban(as of 2011). Hingoli District is the educationally backward main business of the people is farming. The area of Hingoli District richly forest area and bird diversity are rich. The intensive study was conducted on different birds nest in the village areas of Hingoli District. The study was carried out in many areas like Hingoli, Balsond, Basamba, Borja, Chincholi, Ghota, Isapur, Parola, Samga, Aundha, Basmat, Narsi. The climate of the area is temperate. During summer seasion the temperature reaching a high of 38^{o} C. During winter seasion the temperature ranges from maximum 25^{o} C to minimum 12^{o} C.

III. MATERIALS AND METHODS

Nest Searching and Monitoring

Primary Data

There are different methods to study the nesting ecology of birds in a particular area. The survey was conducted month wise randomly among 12 villages in Hingoli District. There are total 180 household in 12 villages. The study was conducted in randomly selected 90 homegarden of household. Sites were systematically searched for nest 4-6 times per months from April 2022 to February 2023. Nest were searched by visual observation or gained information from the members of the particular home. The vegetation which may support nest were observed carefully. Active nest are monitored without causing any disturbances. The locations of each nest were mapped using GPS. Different ecological characteristics were observed in regards to the nesting. The recorded characteristics are

1. Height of the nest from the ground, 2. Height of the substrate (Natural/Artificial), 3. Nesting plant, 4. Nest type, 5. Nesting material.

Secondary Data

Journals and Some information's were also collected from village people, Also search on online resources like Google search, INFLIBENT, Wikipedia, Avibase and Birdlife International which provide proper information about birds.

Statistical Analysis

Statistical evaluation of the data is carried out with the help of Microsoft Excel 2007.

Materials Used

1. Camera (Nikon D3100), 2. Binocular, 3. A meter tap for measurement, 4. Record copy and pen, 5. GPS.

IV. RESULT

Number of nest

All together 190 nest were recorded in the study area. 156 nest were found on the natural substrate and 34 nest were found artificial substrate.

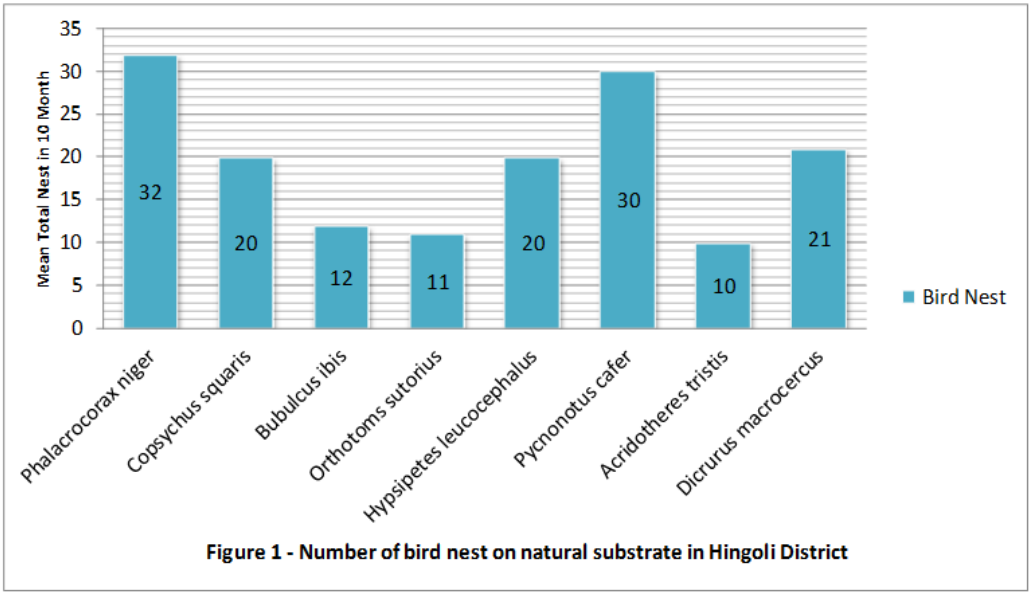

Figure 1 - Number of bird nest on natural substrate in Hingoli District

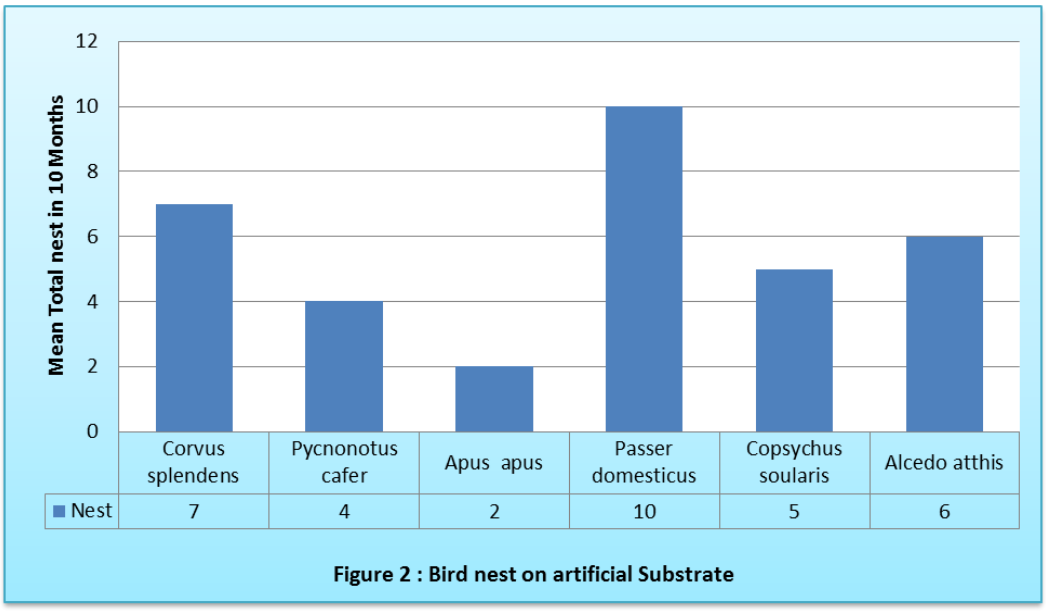

Figure 2 : Bird nest on artificial Substrate

Substrate

Different species of birds use different substrate to build their nest. Some birds use Natural substrate such as tree, shrub, climbers, ground, mud for nesting and some other use suitable artificial substrate such as roof of the house, artificial decorative plants for nesting.

Different substrate used by birds for nesting are shown in the Table 1 and Table 2:

Table 1: Natural Substrate Used By Birds.

Sr. No.	Bird Species	Common Name	Natural substrate (Tree, shrub, Climbers)
1	*Phalacrocorax niger*	Little cormorant	Coconut palms, Bushes reedbeds, Stand of bamboo.
2	*Copsychus squaris*	Oriental Magpie-Robin	Cascarbela thevelia. Cocos Nucifera, Dry spiny plant
3	*Bubulcus ibis*	Cattle egret	Azadirachta indica, Mangifera Indica, Ficus benjamina
4	*Orthotoms sutorius*	Common Tailorbird	Citrus limon, Climbers, Saraca Asoca
5	*Hypsipetes leucocephalus*	Black bulbul	Dens-growing vines like the sky Vino, Black berries of lantanas, Lantana hedge
6	*Pycnonotus cafer*	Red vented bulbul	Azadiracta indica, orchid, Jasminum Elongatum, Psidium guajava, Anona Squamosa, Bougainvillea spectabilis, Firmiana simplex
7	*Acridotheres tristis*	Common myna	Areca catechu, Cocos nucifera, on ground
8	*Dicrurus macrocercus*	Black drongo	Tectona grandis, Gmelina arborea

Table 2: Artificial Substrate Used By Birds.

Sr.No.	BIRD SPECIES	COMMON NAME	ARTIFICIAL SUBSTRATE
1	*Corvus splendens*	House crow	On power pole and other structure
2	*Pycnonotus cafer*	Red vented bulbul	On artificial tree, on bamboo pole, on a broken piller
3	*Apus apus*	Common swifts	The nest is located high up in the roof space under the eves of old houses and churches
4	*Passer domesticus*	House sparrow	Under the roof, Shutter of garage, Building, on the beams of ceiling
5	*Copsychus soularis*	Oriental Magpie-robin	Inside a cylindrical substrate, On a artificial tree, On a Bamboo gate.
6	*Alcedo atthis*	Small Blue kingfisher	Nesting in holes dug in the ground these holes are usually in earth banks on the sides of river lakes or man-made ditches

Nest Type

According to their necessity bird use different types of nest to lay eggs and protect hatchlings.

MATERIAL USED BY BIRD SPECIES TO CONSTRUCT DIFFERENT TYPES OF NEST

SR.NO	NEST TYPE	BIRD SPECIES	NESTING MATERIAL
1	Cup	Copsychus saularis Pycnonotus cafer, Hypsipetes leucocephalus, Dicrurus macrocercus	Fine grasses, Fibre soft fiber, Pieces of dry banana leaves, grass, fibers, twigs. Pieces of dry banana leaves, grass, fibers, twigs.
2	Platform	Passer domasticus, Acridotheres tristis, Bubulcus ibis, Phalacrocorax niger	Grass , Straw, Twigs etc Twigs, grass, snake slought, Leaves. Stand of Bamboo stick and Leaves.
3	Pocket	Orthotomus sutorius	Long Leaves, grass, dry small twigs, Nylon thread, cotton, Feathers.
4	Cavity	Alcedo atthis	Nesting in holes dug in the ground, Earth banks on the sides of river laks or man –mad ditches

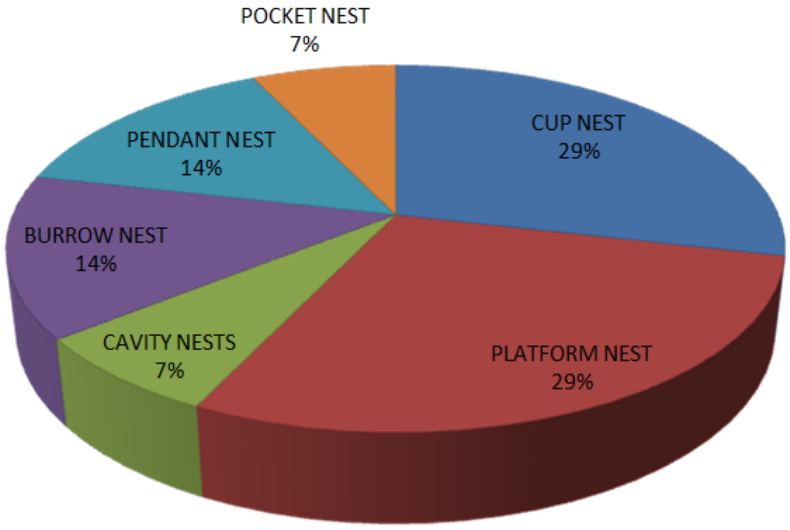

Figure 3 : Different type of nest found in Hingoli District.

V. DISCUSSION

Hingoli District is the educationally backward main business of the people is farming. The area of Hingoli District richly forest area and bird diversity are rich. The intensive study was conducted on different birds nest in the village areas of Hingoli DistrictDuring Survey the nest of 12 different bird species were recorded. It has been observed that some nest are active

ie. Adult birds were using the nest and some are inactive ie. The nests were left by the birds after grown up their chicks. Since the survey was conducted in the home garden of people, most of the birds select nesting substrate near the water sources, kitchen garden, flower garden agricultural area which can be the easy food source for them and in the shrub species that were densely grown which provide protection from predators and other environmental factors.

Birds prefer different height according to the suitability of nesting. fig 3. shows birds like Copsychus saularis (Average height 4.6 feet), Orthotomus sutorius (Average height 3.6 feet) mostly prefer sites close to the ground. Other some birds like Dicrurus macrocercus (Average height 29.5 feet), Pycnonotus cafer construct small nest in the fork of the branches located as unseen in the core of the plant and difficult to locate by the predators. Acridotheres tristis begin nest building in late February. The nests in urban areas are often founding houses or building, attic, drain pipes, on top of windows. Twigs, grass and leaves are used to build the nest, as well as cellophane, strig, paper and even snakeskin.

In the study area 5 types of bird nest were found - Cup nest, Pocket nest, platform nest, Cavity nest, pendant nest (fig.4). During the survey it has been observed that Acridotheres tristis (Common myna) build 2 types of nest- cavity nest and platform nest on trees or on the ground.

During study It has been observed that the Environmental conditions such as heavy rain, Storm and human activities, predators disturb their breeding activities. Due to harsh environmental conditions some nest may fall from the trees or branch may break with eggs or hatchlings which decline their breeding success Because some people used to eat the eggs. Some others cut the branches of some shrubs containing the nest so that the plant grow into a shape. Some birds build nest on the artificial substrate in the home are broke by the people due to soiled with dirt, faeces.

Although some human activities disturb their nesting some birds prefers nest building in human activities for the security of their nest which reduce the chances of predation by snakes, squirrel and predatory birds like crow.

Durability of nest is depending on type of nesting material used. Birds mainly used the materials which are long lasting such as Sticks. Cottons, feathers are soft materials used for

protection against impact and provide comfort to the eggs in the nest ex .sun bird and tailor. Grasses are used as lining materials in most of the birds nest.

Based on the following study it can be concluded that some birds are susceptible to complete habitat destruction. Some birds can withstand partial destruction of their habitat while some can adapt to the changing environment. If forested areas are gradually decreasing, sometime in the future all birds are bound to be affected due to increasing predator-prey relationship, place to shelter and mostly because of a decrease in food supply. To withstand a situation like this policy makers are calling on leaders around the world to make a change. Community participation is important for the conservation of these species because, these local avian species are not conserved in any other specific areas. For the conservation of these species, conservation of their habitat is necessary. There are some things that people can do to save the birds along with their nest those are around home, which will indirectly help to increase the bird's population. Low nesting species are at risk due to the predation of cats and dogs. As a support to the bird, owner can keep away their pets from the bird nesting site. People should avoid trimming and cutting of the plant holding the nest. People can provide artificial nest, for bird if they observe chicks falling from the tree with broken nest due to harsh environmental conditions which may lower the nest.

The study of avian ecology shows the distribution of bird nest of 12 different species in Hingoli District found seasonally and are found during April 2022 – February 2023. Study represents variations among different bird species. The analysis represents its density is highest in winter season. But some species like Acridotheres tristis are found in summer season as well.

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