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Vegetation of Kuldiha- Its characteristics to qualify the habitat for bird watching site in West Bengal, India

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Abstract
Vegetation is a green cover over the globe consisting of photosynthetic organisms *i.e.* from algae to angiosperms and gymnosperms. Vegetation is unique because it protects us even we get food from the photosynthetic organisms in our area. Small to smaller and large to larger organisms exhibit their importance as they are producers and we depend upon them as we are the consumers. Different levels of consumers depend upon different consumers even on producers for energy transfer from one trophic level to another trophic level. So, vegetation is important for all living creatures. Microorganisms grow on soil, on plants and inside the plants and run the process smoothly that are called biogeochemical process. Surface runoff of minerals and nutrition, even logical conversion of important forces are due to energy trapped from solar energy and thereafter conversion from one level to another level. So, always vegetation is important for our mother earth. Animals are consumers and depend upon producers and consumers. Like all animals, birds are important in the ecosystem and help us in many ways. So, bird study is important. Birds are unique creatures of god for their potential importance in ecologically diverse habitats as they directly and indirectly act and play a crucial role for productivity of ecosystem; they play a vital role to balance the ecosystem also. Watching and study of birds is called ornithology. Nature trails and jungle trails are within this because during study and research, field observation and record of birds and their behaviour study is important. During study of vegetation and its characteristics study, interactions study with local people is essential. It is also important because in the same habitats birds take help from plants in many ways with the indirect help of local people. In this communication authors are trying to discuss on vegetation of Kuldiha which is famous for bird watching because it is community based area that are well managed which can help outsiders to study birds. Side by side thick vegetation cover and its true ecological nature will be a prime object of this paper. Hope that researchers will continue the work with the paper that has unique characteristic vegetation in Kukldiha of Salboni block of Paschim Medinipur district in West Bengal.

Keywords: Kuldiha-Vegetation-Bird conservatory, status, management

Introduction

Vegetation is a common composition of green plant components in a specific habitat. Therefore terrestrial and aquatic are the types of vegetation which are different because of land having no water and aquatic vegetation with water. Both the types of vegetation help birds for their nesting materials, egg lying ground bed preparation even for the supply of food materials. Small twigs, fruits, seeds are used by the birds. These are the prime resource to grow and live the birds in a particular habitat.

Birds are the best gift of the nature as they stood high position for their genius value. The uniqueness is due to their colour, behaviour, role in the ecosystem including indirect significance. The amazing entities make the environment clean, green and eco-friendly as there are so many evidences on the diverse mutuality befitted component in the environment. We know better that a bird plays a role for different activities, the best known as owl that significantly controls the pests (rats and mice) to protect paddy, wheat and other important crops in our periphery. So, if we protect birds automatically they will protect pests over the globe. Crows and vultures collect dead carcases and clean the environment pollution free. The impact of the birds in the environment not only economical but it gives us valuable episode regarding charming and removes the monotony from baby to old aged persons. Good example is mini zoo, zoo, botanic garden, sanctuary and specific bird watching site or birding field. Our environment is our but the impact is more distant from other who gives us various activities by singing, chirpings and to make a melodious knowledge time to time even seasonally diverse situations. Therefore each and every sate nay country selected some birds as their state or national birds. We always awake up in the dawn from bed through chirping sounds made by our neighbours and stop to play and back to home in the dusk. So, a component and the plea of their conservation are essential to protect the environment eco-friendly.

Kuldiha is a village under Salboni block in Paschim Medinipur District of West Bengal, India. The village is situated on the metallic road Midnapore-Bhadutala to Lalgarh of Binpur-I Community Development block. It is flooded by a large number of vegetation but no patch of sal (*Shorea robusta*) dominated forest nearby though situated in between Bhadutal forest in one hand and other Jhitka of Lalgarh. The remaining sides are distantly covered by paddy field and some water bodies. It is a site with big bushy Tamarind (*Tamarindus* sp.) tree and Ficus tree. Forest species like Kusum (*Schleichera* sp.), Kelikadam (*Myrtagyna* sp.), Challa (*Holoptelia* sp.) etc. (Table 1, Fig. 1-3) are found with locally available tree species like Palmyra palm and date palm. Bamboos are found as thicket which boosts a large number of water fowls like white breasted water hen and purple moorhen.

Table 1: Vegetation components at Kuldiha, Medinipur (West), W.B.

Sr. No.	Scientific Name of Plants	Family	Frequency	Status
1.	*Acacia auriculiformis*	Leguminosae	70	
2.	*Adina cordifolia*	Rubiaceae	10	Frequent
3.	*Aegle marmelos*	Rutaceae	80	Common
4.	*Albizzia lebebck*	Leguminosae	20	
5.	*Artocaropus lakoocha*	Moraceae	10	Frequent
6.	*Artocarpus heterophylla*	Moraceae	20	
7.	*Azadirachta indica*	Meliaceae	30	
8.	*Bambusa balcoa*	Poaceae	20	
9.	*Bambusa tulda*	Poaceae	10	Frequent
10.	*Blumea* sp.	Asteraceae	20	
11.	*Borassus flabellifer*	Arecaceae	40	
12.	*Butea monosperma*	Leguminosae	10	Frequent
13.	*Butea superb*	Leguminosae	10	Frequent
14.	*Citrus decumana*	Rutaceae	20	
15.	*Cocos nucifera*	Arecaceae	30	
16.	*Cynodon dactylon*	Poaceae	20	
17.	*Cyperus* sp.	Cyperaceae	10	Frequent
18.	*Dactyloctenium aegyptiacum*	Poaceae	20	
19.	*Delonix regia*	Leguminosae	30	
20.	*Dillenia indica*	Dilleniaceae	10	Frequent
21.	*Eichhornia crassipes*	Pontederiaceae	20	
22.	*Enhydra fluctuans*	Asteraceae	50	
23.	*Eucalyptus* sp.	Myrtaceae	20	
24.	*Feronia acidissima*	Rutaceae	30	
25.	*Ficus benghalensis*	Moraceae	20	
26.	*Ficus religiosa*	Moraceae	20	
27.	*Gmelina arborea*	Verbenaceae	20	
28.	*Holoptelia integrifolia*	Ulmaceae	40	
29.	*Lemna minor*	Lemnaceae	30	
30.	*Madhuca indica*	Sapotaceae	20	
31.	*Mangifera indica*	Anacardiaceae	60	
32.	*Mimusops elengi*	Sapotaceae	50	
33.	*Murraya paniculata*	Oleaceae	70	Common
34.	*Musa paradisiaca*	Musaceae	60	
35.	*Nicotiana plumbaginifolia*	Solanaceae	20	
36.	*Nyctanthes arbour-tristis*	Oleaceae	30	
37.	*Odina wodier*	Anacardiaceae	20	
38.	*Phoenix sylvestris*	Arecaceae	40	
39.	*Phyllanthus* sp.	Euphorbiaceae	30	
40.	*Psidium guajava*	Myrtaceae	50	
41.	*Ruellia* sp.	Acanthaceae	30	
42.	*Samanea saman*	Leguminosae	20	
43.	*Schleichera oleosa*	Oleaceae	20	
44.	*Spondia dulcis*	Anacardiaceae	10	Frequent
45.	*Streblus indica*	Moraceae	30	
46.	*Swetenia mahagony*	Meliaceae	40	
47.	*Tamarindus indica*	Tamarandaceae	20	
48.	*Tectona grandis*	Verbenaceae	40	
49.	*Terminalia arjuna*	Combretaceae	80	
50.	*Terminalia belerica*	Combretaceae	20	
51.	*Terminalia chebula*	Combretaceae	20	
52.	*Terminalia crenulata*	Combretaceae	10	Frequent
53.	*Ziziphus jujuba*	Rhamnaceae	10	Frequent

Note: 10% means frequent and 80% above called common.

Bird Composition

Many migratory birds like Asian Open Bill Storks, black headed ibis, Indian ibis, Taiga flycatcher and ruby throats are recorded during winter. The common bird species are Myna, Parakeet, Rock pigeon, Herons (Fig. 3) including pond heron are common though bat is found during winter to summer. During monsoon to post monsoon huge migratory birds like Open bill storks are available (Fig. 2). Little Cormorant, Night heron, Indian Roller, King fisher, Sparrow, Scaly breasted Munia, various tits, Dove, Mourning Dove, and Starling are available when there are sufficient available food found in the field. A fresh water reservoir is a permanent water resource that attracts large number of birds time to time. Therefore, it may be a new horizon for birding that love birds and love environment.

We can introduce 'A home stay concept' to promote birding and to develop economy without hampering the natural beauty and natural resource to protect the environment clean, green and eco-friendly. In this way we can conserve the real habitats of birds and their vegetation because local

people protect it for the wealthy vegetation which would support the local habitats that automatically will preserve the bird species in a large way.

Birds are ready visitors that visit frequently from place to place even from continent to continent. A good number of birds visit different sites due to change of environment particularly for their feed and reproduction. As the site is not homogenous for their easy life period so they need movement from one place to other. A good example of Birds of migratory kind in our West Bengal is Storks and Siberian Cranes even and in Lake Chilka of Odisha a large number of Pelicans and Flamingos. They come to thrive there for a temporary period to hatch eggs and carry a good number of off spring during their back journey. Whatever true for those mentioned above other always move from the local area regionally for their nesting, roosting and for acquisition of feed. The supply of feed from natural reservoir is not plenty so they search their ready or new habitat to collect their needful one. For roosting and nesting they take a shelter for their own which is protected from any kind of enemy in the said habitat. Big trees, shrubberies, jungle, garden shrubs, river bank, stone caves, rock caves, monuments, barrage, rail station premises (Shed, rail crashed), forests, margin of lakes, temple and church, old buildings are the habitat for bird nesting and roosting. They come out during dawn and come back in dusk. Round the day they move here and there and collect their daily feed and carry valuable things to make their nests. Some birds are so common that they harbour in buildings and in cottage of men and collect food grains from villagers' premises. Good examples are pigeon (Rock pigeon) and Sparrows (House). Common dove (Spotted dove or ground dove) found nearer to locality and move nearby round the day and roosting on shed of buildings and in the branches of trees. Passerine birds like blue magpie robin, tailor bird are commonly found in the locality from dawn to dusk. Indian Cuckoos (Kokil) are nicely sings and move faster from one habitat to another habitat. Jungle babblers are common and are found in a group which collect insects from the environment. Birds are useful to human beings. A good example is the Crows (*Corvus splendens*) who pick the dirty bio-garbage that are fallen on the road, dust bins, drains or dirty places as it find their feeds and also clean our environment. It is a cleaver bird. Birds are also intelligent. A good example is the weaver birds once built its nest then they keep fire flies inside the nest, which lighted the nest. Cuckoos are very cleaver but lazy. They do not build their nest but lays their eggs in the nests of Crows which looks same.

Area Under Study

The study area is Kuldiha Village under Salboni Block of Paschim Medinipur District, West Bengal, India. Nearby agricultural land, gardens, ponds, canals, trenches, top of the huts, houses, cemented pillars, holes of trees and crop fields were taken to study and record the ecology including behaviour study of the birds. Study was conducted with local people for socio-structure of their daily-activities and even the scenario of cultivation practice. Study at forest was also conducted to know the migratory behaviour of some forest species including interactions of bird species for roosting and nesting.

Materials and Methods

Vegetation study was made using quadrat study. Ten study sites were selected randomly and quadrat basis information was recorded. Method of bird studying was divided in to 6 aspects but first three aspects used were to study the birds of Kuldiha in west Bengal and to record the behaviour in natural habitats. Photographs were taken from field by ordinary digital Canon and Nikon Cameras. Altimeter, Abenys Level, Temperature meter, GPS, Lux meter, Tape, and Stand of Camera including Binoculars were carried out in field during bird watching. Generally dawn and dusk were selected for each day visit in field with local map of the area though more or less regular watching of birds was made to know the situation thereby. General list of the plants and about the pattern of vegetation record floras were consulted. A check list has also been prepared about the common birds available in West Bengal. Some Bird sanctuaries of West Bengal and local preservation plots were selected to study and record the photography day by day to make an inference. All the characters from field and from the photographs were taken from some common books on birds and treatise made by Zoological Survey of India (ZSI) published time to time. Interesting micro bird habitats were marked for general study of watching and roosting of bird including nesting. Some net work resource was also studied well to know better about the bird watching. These are: (i) British trust for Ornithology, (ii) Royal Society for the Protection of Birds, (iii) American Birding Association and (iv) Cornell laboratory of Ornithology at Ithaca, New York, North America. Other literature and resource was consulted was Wildlife Rescue & Rehabilitation centre (WRRC), Bangalore, India. Literature[1-61] used for the study mentioned at reference part.

Results and Discussion

Result revealed that 53 plants were recorded from Kuldiha in different habitats (Fig. 1). In the present study some common birds were watched regularly but specific study which was conducted on the basis of relationship of birds with an old Tamarind and a Ficus tree along other migratory bird species. Study revealed 40 birds were present in the surrounding of Kuldiha (Fig. 1-3). The study also revealed that 20 common birds visited regularly at Kuldiha from nearby to the Tamarind and Ficus tree for roosting, sitting and touching (Table 1) it. All the birds presented in the table were our neighbouring birds though a few are migratory kinds. Sunbirds, doves, kingfisher, blue-tailed bee-eaters and crows (Table 2) were important birds because they act as pollinating agents, settlement of weeds, and used as scavenger birds respectively. More or less all birds were important in the ecosystem for dispersal of fruits and seeds and onset of plants to grow vegetation and keep environment clean and pollution free. They also act as biodiversity units. Vegetation reflects their sound growth and silent presence as they are the in borne creatures of Kuldiha.

Table 2: List of Common birds in and around Kuldiha, W.B.

SL. No.	English Name	Bengali Name	Scientific Name
1.	Common Myna	Shalik	*Acredotheres tristis*
2.	Pond Heron	Koch Bok	*Ardeola grayii*
3.	Greater Flameback	Kaththokra	*Chysocolaptes lucidus*
4.	Yellow bellied Sunbird	Holde Moutusi	*Cinnyris jugularis*
5.	Oriental magpie robin	Doyel	*Copsychus saularis*
6.	Crow	Kak	*Corvus splendens*
7.	Drongo	Finge	*Dicrurus macrocercus*
8.	Asian Koel	Kokil	*Eudynamys scolopacea*
9.	Blue-Throated barbet	Bara Basanta Bouri	*Megalaima asiatica*
10.	Coppersmith Barbet	Basanta Bouri	*Megalaima haemacephala*
11.	Green bee-eater	Banspati	*Meropos orientalis*
12.	Purple Sun bird	Moutusi	*Nectariana asiatica*
13.	Black-hooded oriole	Halde boni	*Oriolus xanthornus*
14.	Tailor bird	Tuntuni/Durga tuntuni	*Orthotomus sutorius*
15.	Red-vented bulbul	Bulbuli	*Pycnonotus cafer*
16.	Red-whiskered Bulbul	Bulbuli	*Pycnonotus jocosus*
17.	Spotted dove	Ghugu	*Streptopelia chinensis*
18.	Asian Pied Starling	Gue Shalik	*Sturnus contra*
19.	Chestnut-tailed Starling	Not Known	*Sturnus malabaricus*
20.	Jungle Babler	Chatare/Stabhai	*Turdoides striatus*

Conclusion

We should be very logical to conserve the biodiversity (flora and fauna) and to protect our environment. We should not create any illegal behaviour to disturb the environment and their components specially flora and fauna. We should be very realistic to access the environment and can provide some time to see the natural beauty and ecosystem component to enhance our knowledge and refresh mind. As the environmental studies included in the general degree course syllabus under Indian Universities so teachers should include field or project study on birds and surroundings that may be included as bird watching and study rather than research on the eco-habitats specially on Kuldiha as a local habitat for flora and fauna. Effects of chemical pesticides and insecticides on birds may be studied to access the real status of the environment and to draw a conclusion on birds and the local environment. Social study should also be included in near future to develop the people's participation. Hope that Government will take some initiatives to protect the eco-habitat and conserve the nature. Before the work each and every workers should record the research components and study in a particular way to know more about the vegetation, components and birds in the same geographical territory.

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Photographs on Vegetation and birds at Kuldiha

Fig 1: Green vegetation cover at Kuldiha surroundings

Fig 2: Open Bill stork at Kuldiha on *Holoptelia* sp.

Fig 3: Egrets at Heronry on tamarind tree at Kuldiha, W.B.

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