HABITAT UTILIZATION OF BIRDS IN GRASSLAND HABITAT ADJESCENT TO MIHINTHALE SANCTUARY

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Dry zone of the country provides specific habitats including dry forests, grasslands and water bodies, for the dry zone avifauna. Among those ecosystems grasslands are comparatively less in species diversity but contain considerable richness of bird species though they are very fragile eco systems. The current study was carried out based on the remnant grass patch margined by the forest edge of the Mihinthale Sanctuary and the village. Even though this patch is influenced by the human pressure, the composition of vegetation in the grassland has significantly influenced the selection of the niches of the birds. Hence this study was mainly focused on recognizing the habitat utilization of the bird species in the selected site.

The study location is situated in Mihinthale adjacent to the Mihintale sanctuary. It extends up to about 2.64 km^2. The survey was started from November, 2011 to the end of February, 2012. Data was recorded from 06.00 to 0800 hr and from 1600 to 1800 hr in the evening. Two methods namely, line transect[1] and the opportunistic observation were used. Birds were counted along the fixed width of 25 m on either side of the belt transect using two pairs of binoculars (Bushnell 10x50) and identifications were made with the aid of field guides.

The grassland was occupied by a total of 81 species belonging to 35 families. Among them 2 were endemic species, 69 breeding residents, 14 winter visitors and 3, proposed endemic species. Sixty seven species were common in the study site while 3 were recorded as rare. All the birds were observed near the edges of the grassland, in the open area dominated by grass, shrubs, few trees scattered in the grassland and rocky area. The dominant species within the study area were Red-vented bulbul (*Pycnonotu scafer*), Spotted dove (*Streptopelia chinensis*) and Yellow billed babbler (*Turdoides affinis*) in both morning and evening hour.

Highest numbers of species were recorded from families Muscicapidae, Cuculidae and Sylviidae. The highest number of species (38) were recorded in the morning than in evening hours. The Shannon Diversity Index (H') were 3.54 and 3.52 for morning and evening, respectively, which showed slightly low diurnal variation in diversity of birds. Twenty nine species were recorded as highly abundant in the grassland and among them the Red-vented Bulbul (*P. cafer*), White-browed bulbul (*P. luteolus*), Common Iora (*A. tiphia*), Tawny-bellied Babbler (*Dumetia hyperythra*), Yellow-billed Babbler (*Turdoides affinis*) and Indian Robin (*S. fulicata leucoptera*) were higher.

The observed bird species in the study area can be categorized into seven trophic guilds. The majority was insectivores (41.96%) due to the abundance of insects in the grassland. Frugivores (22.32%) ranked as the second major group. The presence of the fruiting trees such as Fig (*Ficus carica*), Weera (*Drypetes sepiara*), Kon (*Schleichera oleosa*), Cashew (*A. occidentale*) and Mango (*M. indica*) make fruits available for frugivores. Flowering plants in the site attracted nectarivores (3.57%) and also attracted insects that attract insectivores.
Grasslands are special eco systems that provide habitats mainly for bird species and attract them by fulfilling the requirements of food and nesting cover.

The vegetation distribution of the study area is correlated with the distribution of bird species over the grassland. Especially Scaly Breasted Munia (*L. punctulata*) was found as a confined species to the area where *P. maximum* was present. Twenty two species of plants belonging to 16 families were recorded as predominantly utilized by the birds inhabiting the site.

P. maximum was the dominant grass species while *L. camara* and *Crotalaria pumila* were dominant as shrubs. All the tree species were occupied by birds for different purposes (Fig. 1).

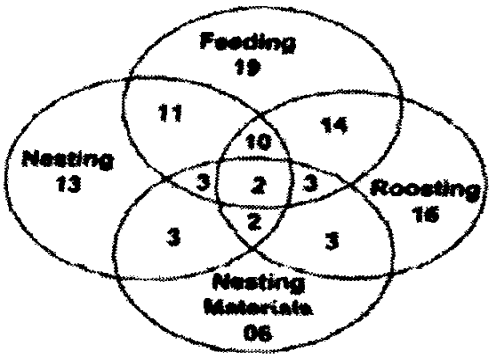

Figure1: Utilization of vegetation by Grassland birds

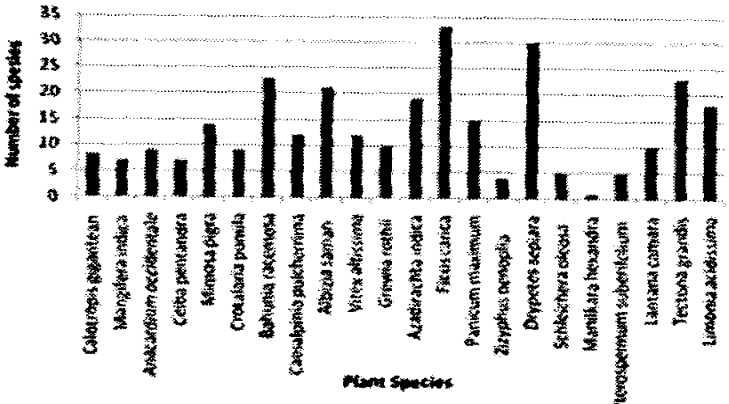

Figure2: Major tree species utilizing by the birds

All the plants were used for food while majority was habituated as roosting spots .With the onset of rain, most of the trees and bushes flowered and the fruits were available especially in *F. carica, Zizyphus oenoplia, D. sepiara, Schleichera oleosa*. Insectivores were attracted by the plants which were occupied by the invertebrate species (Fig. 2). Pirnia species and Babblers were attracted to *Crotalaria pumila* and *L. camara* with the presence of caterpillars and bugs at the time of the survey. Nectarivores occupied these plants due to flowering. Scaly-breasted Munia (*L. punctulata*) and White-rumped Munia (*L. striata*) can be highlighted for showing higher consumption of *P. maximum* for food (seeds) and for nesting materials (leaves). Among the trees, highest number of species utilized *F. carica* and *D. sepiara* and *A. indica as* they provided food for frugivores, insectivores, seed eaters while offering a roosting place. Sri Lanka Grey Hornbill (*O. gingalensis*), Malabar Pied Hornbill (*A. coronatus*), Brown Fish Owl (*K. zeylonensis*), Crested Serpent Eagle (*Spilornis cheela*) commonly used the trees mentioned above for roosting. Due to the availability of food, foliage density the confined birds who regularly occupied the grassland such as Rose-ringed Parakeet (*P. krameri*), Spotted Dove (*S. chinensis*), Orange-breasted Green Pigeon (*Treron bicincta*), Pompadour Green Pigeon (*Treron pompadora*), Tawny-bellied Babbler (*Dumetia hyperythra*) showed propensity for nesting within the study site.

Habitat dimensions are important more often than food-type dimensions which are more important than temporal dimensions in resource partitioning. Vertical height (spatial) distribution is one dimension of niche definition. On the basis of foliage density and bird individual and biomass profiles, four vertical strata were selected: (I) upper canopy and emergent (20 m up), (II) middle layer of lone trees and dry trees (10-20 m), (III) dense low shrubs (0-5 m), and (IV) ground level.

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