

**Aspects of Foraging Ecology and Habitat Utilization of Sri
Lanka Dull-blue Flycatcher (*Eumyias sordidus*) in the Horton
Plains National Park, Sri Lanka**

By

W. D. S. C. Dharmarathne

MPhil

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DECLARATION OF THE CANDIDATE

“The work described in this thesis was carried out by me under the supervision of Prof. (Mrs) W. A. D. Mahaulpatha, Senior Lecturer, Department of Zoology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda and a report on this has not been submitted in whole or in part to any university or any other institution for another Degree/Diploma”

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CERTIFICATION OF APPROVAL

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To the memory of my loving father

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ABBREVIATIONS

ANOVA	- Analysis of variance
CF	- Cloud Forest
CFD	- Cloud forest Die-back
CR	- Critically endangered
DWLC	- Department of Wildlife Conservation
EN	- Endangered
FIMS	- First Inter Monsoon Season
GL	- Grassland
GPS	- Global Positioning System device
HPNP	- Horton plains National Park
IBAs	- Important Bird Areas
IUCN	- International Union for Conservation of Nature
MANOVA	- Multivariate analysis of variance
NEMS	-North East Monsoon Season
NT	- Near Threatened
PCA	- Principal Component Analysis
RH	- Relative Humidity
SIMS	- Second Inter Monsoon Season
SWMS	- South West Monsoon Season
T	-Environmental temperature
VU	- Vulnerable
WS	- Wind Speed

RF	- Rain Fall
EM	- Early Morning
M	- Morning
MD	-Midday
AN	- Afternoon
E	- Evening

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W. D. S. C. Dharmarathne

ABSTRACT

Foraging ecology and habitat utilization of *E. sordidus* were investigated from September 2015 to February 2018 at the Horton plains National Park (HPNP) of Sri Lanka with objectives of to investigate distribution, population density and the habitat utilization in four climate seasons within different habitat types, to investigate the foraging ecology within HPNP and to propose management implications based on the information gathered through previous objectives. Three main habitat types were classified as Cloud Forest (CF), Cloud forest Die-back (CFD) and Grassland (GL). The line transect sampling method was adopted. Nine, 100m line transects were laid within each of the main three habitats. Bird surveying was restricted to the period between 0600h to 1000h on three consecutive days per month. Morphometric measurements were obtained from the mist netted individuals. The habitat variables such as canopy cover, fruit cover, flower cover, shrub cover, litter depth, prey availability and environmental variables were measured in each habitat for study habitat utilization of the species. Focal animal sampling method was used to study the activity of *E. sordidus*. Foraging behavior, prey attack behavior, food handling techniques, foraging site characteristics, preferred fruit availability and prey availability were recorded. Fecal sample analysis was used to study bird diet composition. Nest characteristics and nest site characteristics were recorded. Community interactions of *E. sordidus* and abundance in mixed-species foraging flocks were recorded. Population density differed significantly among the habitats of the HPNP ($p < 0.05$). Highest population density was recorded in CF habitat.

Population densities differed significantly among the four climate seasons ($p < 0.005$). Highest population density of 119.52 ± 25.34 (Mean \pm Standard Deviation) was recorded during South West Monsoon Season in CF habitat. The overall PCA result indicated that determining factors of habitat occupancy in CF habitats were availability of high canopy cover, high fruit availability and low wind speed.

Food searching behaviors of differed significantly among the three habitats ($p < 0.05$). *E. sordidus* explored 0.07 ± 0.06 meters per second in search of food and made 3.25 ± 1.56 (M \pm SD) foraging attempts per minute. Mean foraging height of was 4.18 ± 2.77 m (M \pm SD). They preferred trees with 6.04 ± 2.75 m (M \pm SD) height, 0.73 ± 0.41 m (M \pm SD) average diameter-at-breast height and 1.71 ± 0.71 m (M \pm SD) average trunk height in the montane forest habitat. There was a positive correlation between foraging height of the bird and height of the plant (Pearson correlation = 0.892, P-Value < 0.05). Utilized Relative foraging position of *E. sordidus* in the foliage column was 1.33 ± 0.17 m. There was a statistically significant difference in diet based on age (adults vs. nestlings) and in the Month x Age interaction Among the variables included in the MANOVA, the number of Order Hemiptera, Hymenoptera, Odonata, Lepidoptera and Isopoda showed strong difference between adults and nestlings. There were no any significant differences in prey composition by major taxa among the habitats ($P > 0.05$).

E. sordidus built open cup nests in cavities of road banks and tree holes. Grey headed canary flycatchers usually participated with Dull-blue flycatchers for areal feeding. Therefore conservation of montane cloud forest habitats is recommended to protect this species.

Key words: *Habitat utilization, Foraging Ecology, Tropical montane cloud forest, Endemic Insectivore, Sri Lanka.*