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# Distribution of Sri Lanka Dull-blue Flycatcher (*Eumyias sordidus*) in the Horton Plains National Park

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## ABSTRACT

*Distribution of the Sri Lanka Dull-blue Flycatcher (Eumyias sordidus) was studied at Horton Plains National Park, from September 2015 to May 2016. Three main habitats were identified as Cloud Forest habitat, Cloud Forest Die-back habitat and Grassland habitat. Line transect method was used. Birds were recorded on three consecutive days in each month while travelling along these transects. About 104 individuals were recorded from the Cloud Forest habitat, 60 individuals from the Cloud Forest Die-back habitat and 2 individuals were recorded from the Grassland habitat. Relative abundance of the E. sordidus was 2.3% in the cloud Forest habitat and they were the ninth abundant species in that habitat. In the Cloud Forest Die-back habitat relative abundance of E. sordidus was 3.21% and it was the sixth abundant species. In the Grassland habitat the relative abundance of E. sordidus was 0.07% and it was twenty seventh abundant species. Present study revealed that Cloud Forest is the preferred habitat of E. sordidus in the Horton Plains National Park.*

**KEYWORDS:** Sri Lanka Dull-blue Flycatcher, endemic birds, Horton Plains, distribution

## 1. INTRODUCTION

It has been observed that rate of extinction among species confined to small islands are increasing (Bird life international 2012). This loss is largely due to their increasingly intolerance to the slightest ecosystem disturbances (Nsor & Obodai, 2014) and the fact that specialization to any one environment may limit a species ability to exploit multiple environments and have a wide range (Futuyma & Moreno, 1988). Therefore, it is very important to conduct research on the ecology of endemic bird species confined to specific areas to identify appropriate conservation methods.

## 2. LITERATURE SURVEY

Sri Lanka is a humid tropical island lying in the South Asian region, southwest of the Indian peninsula, in the Indian Ocean. Sri Lanka is, together with the Western Ghats of India considered as a global Biodiversity Hotspot (Myers *et al.*, 2000). Sri Lanka Dull-blue flycatcher, *Eumyias sordidus*, (Figure.1) also known as the Dusky-blue flycatcher, is a small passerine bird in the flycatcher family Muscicapidae (Walden, 1870).



**Figure 1.** Sri Lanka Dull-blue flycatcher.

It is an endemic resident species described as abundant in the central provinces of Sri Lanka (Del Hoyo *et al.*, 2005). It is considered as Near Threatened species (Birdlife International, 2014). The present study was conducted with the aim of identifying the distribution of *E. sordidus* in the habitats available to it at the Horton Plains National Park.

## 3. STUDY SITE

The study was conducted in the Horton Plains National Park (HPNP) located at 6°47'-6°50'N, 80°46'-80°50'E (Green, 1990). The HPNP occupies an area of 3,160 ha and is contiguous with Peak Wilderness Sanctuary to the west. It is in the Nuwara Eliya District at the eastern extremity, from September 2015 to to May 2016, West end of the HPNP plateau is dominated by Kirigalpotta (2,390 m) and northern end is dominated by Totupola Kanda (2,357 m), respectively second and third highest peaks in the country. Tropical montane cloud forests and wet pathana grasslands are the two distinct habitats in the park (Gunatilleke & Gunatilleke, 1990) with a narrow ecotone belt of shrubs and herbs between the two. Forest and patana form a mosaic, with a tendency for forests to be confined to the hilltops, mid or upper slopes, and for the grasslands and dwarf bamboo to be on the lower slopes and in the valleys (DWC, 2007).

Its mean annual temperature is 15C0 and mean annual rainfall is 2150 mm (DWC, 2007). The weather is dominated by persistent cloud cover and strong winds, sometimes gale-force, during the south-west monsoon (Bastable & Gunawardena, 1996). The driest months are January and February, when temperatures may reach 27C0. Wetland habitats occur in the waterlogged depressions in the valleys and surrounding smaller streams. Extensive areas of the montane forest have suffered from canopy die-back, the cause of which is uncertain but may be related to water stress or air pollution. The area of forest die-back, first observed in the

1960s, had increased from 87 ha (2.7% of the National Park) in 1967 to 956 ha (30.7%) by 1998 (DWC, 2005).

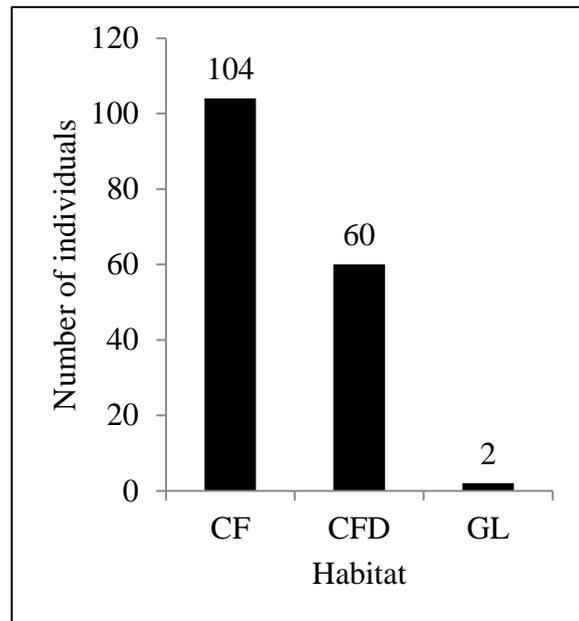
#### 4. METHODOLOGY

Three main habitats in the HPNP were identified as Cloud Forest habitat, Cloud Forest Die-back habitat and Grassland habitat. Three, 300 m fixed line transects were marked in each of these habitats using a Global Positioning System device (GPS). Birds were recorded on three consecutive days in each month while travelling along these transects, from 0530h to 1030h. Birds were observed through a 10x50 binocular. Opportunistic data and incidental observations were used to supplement the population estimates. Relative abundance of birds were calculated to determine population abundance within habitats using the equation, Relative abundance = Number of individuals of a species/Total number of individuals. Microsoft Excel™ and Minitab 14™ were used to analyze the data.

#### 5. RESULTS AND DISCUSSION

Total of 166, *E. sordidus* individuals were recorded during the study period. Significantly higher number of *E. sordidus* individuals were observed from the cloud forest habitat (n=104, 62.65%) and it was comparatively low in the cloud forest die back habitat (n=60, 36.14%). The lowest number of individuals were observed in the grass land habitat (n=2, 1.2%). (Figure.2).

In the cloud forest habitat, the highest number of 27 *E. sordidus* was recorded in the month of May 2016 and the lowest of 1 was recorded in December 2015. In the cloud forest dieback habitat the highest number of 17 individuals were recorded in the month of February 2016 and none were recorded in October and December 2015. Single individuals were recorded in March and April of 2016 in the grass land habitat (Figure3).



**Figure 2.** Distribution of *E. sordidus* in different habitats of the Horton Plains National Park. CF=Cloud Forest, CFD=Cloud Forest Dieback habitat, GL=Grass Land.

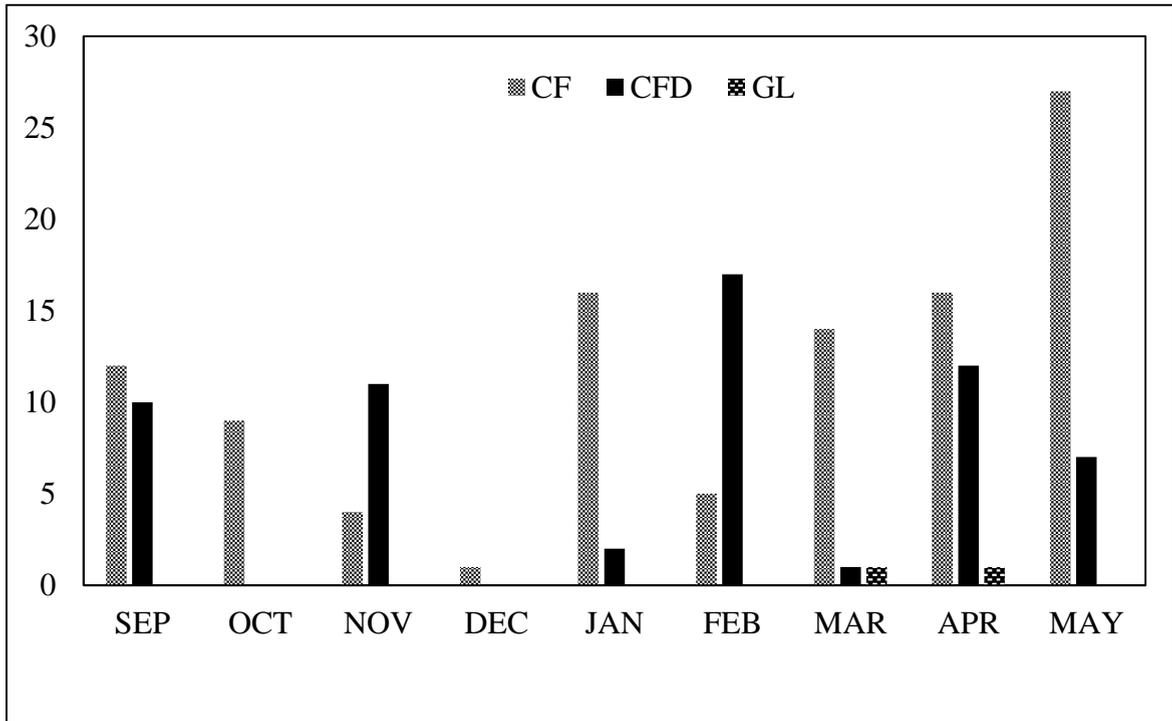
Total of 60 bird species were recorded in the cloud forest during the study period and a total of 45 bird species were recorded in the cloud forest dieback habitat. Total of 41 bird species were recorded in the grass land habitat.

Relative abundance of the *E. sordidus* was 2.3% in the cloud forest habitat and they were the ninth abundant species in that habitat. In the cloud forest dieback habitat the relative abundance of this species was 3.21% and it was the sixth abundant species. In the grass land habitat the relative abundance of *E. sordidus* was 0.07% and it was twenty seventh abundant species.

In the present study highest number of *E. sordidus* were recorded in the cloud forest habitat. The cloud forest habitat had a canopy cover of 81%±13% (M±SD). Therefore, it is evident that the habitat characteristics such as canopy cover influences the habitat selection of *E. sordidus*. Present study also revealed that in the Horton Plains National Park, the preferred

habitat of *E. sordidus* is the cloud forest habitat. Only two individuals were recorded in the grasslands where not have any canopy cover. Although there were scattered trees of *Rhododendron arboreum* in the grassland habitat they did not provide a suitable canopy. Therefore, the lack of the canopy cover may

have prevented *E. sordidus* from using this habitat. Compared to the grassland habitat the cloud forest die back habitat too had a considerable canopy cover. However, due to the forest die back the canopy was not continuous, which may have forced *E. sordidus* to use it at a lesser rate compared to the cloud forest habitat.



**Figure 3.** Monthly abundance of *E. sordidus* individuals during the study period at HPNP.

Previous studies have revealed that the breeding season of *E. sordidus* is in the first half of the year, March and April being the preferred months (Henry, 1998). The findings of the present study tallied with that of Henry (1998). About 72% of *E. sordidus* was observed in the first few months of the year from January to May. Only 28% was recorded from September to December. Present study revealed that grasslands were occupied by *E. sordidus* only during the months of March and April. These few birds could be either juveniles exploring the habitat, stragglers or adults collecting nesting materials or food items for feed nestlings and fledglings.

Total of 60 bird species recorded in the cloud forest during the study period indicates that it is the preferable habitat of most of the birds occupying the Horton Plains National Park. Approximately 45 bird species recorded in the cloud forest dieback habitat and the 41 bird species recorded in the grass land habitat clearly indicates that these habitats too are preferable habitats of various bird species.

However for *E. sordidus* the preferred habitat was the cloud forest. Even then the relative abundance of 2.3% of *E. sordidus* in the cloud forest habitat indicates that it is a rather rare bird species and was the ninth abundant species in

that habitat. In the cloud forest dieback habitat relative abundance of this species was 3.21% and it was the sixth abundant species. In the grass land habitat the relative abundance of *E. sordidus* was 0.07% and it was twenty seventh abundant species. This meant that the grass land habitat is its least preferred habitat.

Previous studies, have indicated that species with the smallest geographical ranges, such as those found on mountains or islands (Orme *et al.*, 2006) are the most threatened with extinction (Brooks *et al.*, 1999; Renjifo *et al.*, 1997), and will be more severely affected by climate change (Shoo *et al.*, 2005, White & Bennett, 2015).

Remnant populations of birds, for instance, are often restricted to mountain ranges (Channell & Lomolino, 2000) and Limited elevation range increases extinction risk (White & Bennett, 2015; Manne & Pimm., 2001). Species with narrow elevation ranges are also more sensitive to land cover change and will be severely affected by climate change (Sorte & Jetz., 2010).

## 6. CONCLUSION

It is well known that *E. sordidus* prefers wooded highland areas. Therefore, the conservation of montane forests along elevation ranges is essential for present and future species conservation of endemic montane birds including *E. sordidus*. It is equally important that cloud forests of the Horton Plains National Park are preserved to ensure the continuous survival of this elegant bird species.

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