



NEST MICROCLIMATE CONDITIONS OF TROPICAL MONTANE CAVITY NESTING FLYCATCHER *Eumyias sordidus* DURING INCUBATION AT HORTON PLAINS CLOUD FORESTS

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ABSTRACT

Cavities have long been known to provide energetic benefits to birds. Studies of microclimate in natural cavity nests of secondary-cavity-nesting birds are lacking, therefore, microclimate conditions during the incubation period of endemic Dusky-blue flycatcher (*Eumyias sordidus*) were investigated in the Cloud forest habitats between 2100m-2300m elevation range during the breeding seasons from June 2015 to May 2018 in Horton Plains National Park, Sri Lanka. When an active nest locates with eggs, each nest was visited within four-day intervals till the hatching. Initial weights of the eggs were measured using Pesola digital pocket scale. Surface temperatures of eggs were measured using EXTECH Infrared thermometer initially after incubation adults left the nest. Microclimate conditions in the nest cavity and the surrounding environment was measured using Krestral weather tracker. Total of 32 active nests were located in the tree holes. Micro climatic characteristics such as internal tree hole temperature, $22.45^{\circ}\text{C} \pm 2.94^{\circ}\text{C}$ (Mean \pm Standard Deviation) was significantly different from the ambient temperature, $16.34^{\circ}\text{C} \pm 3.07^{\circ}\text{C}$ (M \pm SD) (One way ANOVA, $p=0.01$). Relative humidity in the nest cavity, $75.83\% \pm 12.93\%$ (M \pm SD) did not significantly different from the ambient relative humidity $79.94\% \pm 13.57\%$ (M \pm SD) (One way ANOVA, $p=0.152$), But Relative humidity was comparatively low in the nest cavities compare to the surrounding environment (different was $4.11\% \pm 3.02\%$ (M \pm SD)). Clutch size of the *E. sordidus* was 1.92 ± 0.28 (M \pm SD) (1-3eggs), Egg weight was $2.93\text{g} \pm 0.08\text{g}$ (M \pm SD) and Water vapor flux resulted in an average egg-weight loss of $0.023\text{g} \pm 0.007\text{g}$ (M \pm SD) each day, culminating in a $0.32\text{g} \pm 0.12\text{g}$ (M \pm SD) reduction (10.81%) over the entire 14 days incubation period. The mean egg temperature under the parental incubation ($34.89^{\circ}\text{C} \pm 2.16^{\circ}\text{C}$ (M \pm SD)) is significantly different from that of the absence of parental incubation ($18.17^{\circ}\text{C} \pm 2.54^{\circ}\text{C}$ (M \pm SD)) (One way ANOVA, $p<0.01$). During the study, 92.16 % nests ($n=31$) were successful. About 7.84% nests ($n=1$) were unsuccessful due to predator attack. Present study revealed that available nesting habitats are more important for the secondary-cavity-nesting species like *E. sordidus* for fulfill their breeding requirements. Therefore Conservation of breeding habitats is recommended to protect this species.

Keywords: Tropical Montane, Cavity-nesting birds, incubation, Nest microclimate, conservation