

**IDENTIFICATION OF ASPECTS OF HABITAT
REQUIREMENTS AND POPULATION SIZE OF THE SRI
LANKA GREY HORNBILL (*Ocyceros gingalensis*) AND
MALABAR PIED HORNBILL (*Anthracoceros coronatus*
coronatus) AT MINNERIYA-GIRITALE NATURE
RESERVE, SRI LANKA**



By

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**Thesis submitted to the University of Sri Jayewardenepura
for the award of the Degree of Master of Philosophy in
Zoology on March 2011.**

DECLARATION

“The work described in this thesis was carried out by me under the supervision of Dr. (Mrs.) W.A.D. Mahaulpatha, Senior Lecturer, Department of Zoology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda and Dr. U.K.G.K. Padmalal, Senior Lecturer, Department of Natural Sciences, Open university of Sri Lanka, Nawala 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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ABSTRACT

Identification of aspects of habitat requirements and population size of the Sri Lanka Grey Hornbill and Malabar Pied Hornbill at the Minneriya-Giritale Nature Reserve is located in the Polonnaruwa District of North-Central Province; Sri Lanka was studied from March 2006 to February 2008.

Five habitat types were identified by analyzing the percentage of ground covered by grass, open area, canopy cover and water body coverage in ninety randomly selected points. Three line transects, totaling 2.25 km were marked in each habitat types. Six points were selected along each transect. In each point habitat data inside 25m radius density, height of trees, DBH, canopy emergence level, the tree branching pattern and number of hornbills were collected. Opportunistic data related to hornbills were also recorded during the study period. Rainfall data was obtained from the Department of Meteorology, Colombo.

Larger and tallest trees were recorded in the forest compare to the other habitats. Tree densities and mean values of the height differed significantly between the five habitat types except shrub mixed forest and surrounding environment (One way ANOVA, $P < 0.05$). Total number of 266 Sri Lanka Grey Hornbill and 62 Malabar Pied Hornbill were recorded during the study period. Sri Lanka Grey Hornbills were seen in all months of the study period. In contrast, Malabar Pied Hornbills were not observed in some months in selected habitats.

Average number of Sri Lanka Grey Hornbill recorded during the study was 63.5 ± 19.9 (Average \pm SD) in North East Monsoon season and 54 ± 4.24 (Average \pm SD) in South West Monsoon season. Total number of Sri Lanka Grey Hornbill did not vary significantly between the two monsoon seasons (t test, $t = -0.446$, $df = 11$, $p > 0.05$). Sri Lanka Grey Hornbill number varied significantly between breeding and non breeding season (t test, $t = -20.6$, $df = 1$, $p < 0.05$).

Average number of Malabar Pied Hornbill recorded during the study was 12.5 ± 4.94 (Average \pm SD) in North East Monsoon season and 13 ± 2.82 (Average \pm SD) in South West Monsoon season. Average number of Malabar Pied Hornbill did not vary significantly between two monsoon seasons (t test, $t = 0.104$, $df = 11$, $p > 0.05$). Average Malabar Pied Hornbill number varied significantly between breeding and non breeding seasons. The mean density of Sri Lanka Grey Hornbill (0.00024 ± 0.0002) was significantly ($p < 0.05$) higher than the mean density of Malabar Pied Hornbill (0.000048 ± 0.000049) during study period.

Malabar Pied Hornbill was recorded in trees with a DBH range of 100-119 cm and > 120 cm ($\chi^2=5.7$, $p<0.05$). Sri Lanka Grey Hornbill was recorded at large number in trees with DBH above 80cm ($\chi^2=26.56$, $p<0.0001$). Both species were not observed in the ground level (1m<) and understory (1-1.5m).

Ficus species were utilized by both hornbills during the study period. They also used *Azadirachta indica*, *Bridelia retusa*, *Drypetes sepiaria*, *Manilkara hexandra*, *Syzygium caryophyllatum*, *Syzygium zeylanicum* for feeding.

Sri Lanka Grey Hornbill nests were recorded in *Manilkara hexandra* and *Vitex altissima* trees. Nests of Malabar Pied Hornbills were not observed in the study area. During the study period nestling were fed with reptile species belonging to Agamids, Geckonids and insect species belonging to Lepidopterans, Othopterans, Hymenopterans, Mantoidians and Hemipterans and fruits of *Ficus tinctoria*, *Ficus racemosa*, *Ficus benghalensis*, *Bridelia retusa*, *Drypetes sepiaria* and *Syzygium zeylanicum*.

The study indicated that the Giritale Nature Reserve provides suitable habitat for both hornbill species and therefore warrants protection.