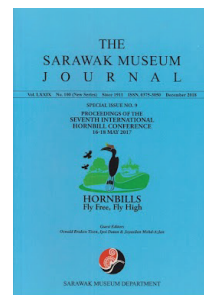




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HABITAT AND CONSERVATION STATUS OF RUFOUS-NECKED HORNBILL IN JIGME SINGYE WANGCHUCK NATIONAL PARK, BHUTAN

Sonam Dorji

Jigme Singye Wangchuck National Park, Department of Forest and Park Services
Email: sonamdorji1974@yahoo.com /sonamdorji1@moaf.gov.bt

ABSTRACT

The Rufous-necked Hornbill habitat characteristics and conservation was studied in Jigme Singye Wangchuck National Park (JSWNP). The focal-bird approaches was used to determine the habitat components such as, the structure on vegetation, species composition; food-trees and nesting were assessed in the hornbill habitat. A total of 78 respondents were interviewed from five villages using semi-structured questionnaires. Vegetation assessment showed that the evergreen broad-leaved tree has the highest percentage share of 62.5%. A total of 42 tree species and 9 food-tree species, dominated by Lauraceae family in Tingtibi, and 35 tree species and 8 food-tree species, dominated by Hemamelidaceae in Nabji were recorded. Diameter at breast height size of tree species ranges from 14 cm to 250 cm. Nests were found in the cavities of living tree trunks of different tree species having large girth and tall trees. Rural timber extraction, land use changes, cattle grazing, and the roads and utility corridors contribute significant threats to the hornbill habitat. About 93.6% of the respondents had strong liking towards hornbill. Using hornbill as flagship or umbrella species would contribute to long-term conservation of hornbill.

Keywords: Rufous-necked hornbill, habitats, conservation, species composition, threats, perception, JSWNP and Bhutan



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INTRODUCTION

Rufous-necked Hornbill (RNH) is a Critically Threatened species, categorised as vulnerable species. This large hornbill qualifies as vulnerable because it has a small, rapidly declining population as a result of destruction of evergreen forest and hunting. Its population has declined dramatically and is now very rare across much of its historical range (Birdlife International 2001). In Bhutan, RNH is listed in totally protected species under the schedule I and listed as endangered in the status of the Forest and Nature

Conservation Act 1995 and Rules of Bhutan 2006. Successful conservation of RNH will ensure conservation of other hornbill species in Bhutan, as it has the widest range of distribution. However, not much research has been carried out on habitat use for this particular species within its entire distribution range and limited information is available. Moreover, no study on this threatened bird has ever been conducted in JSWNP. Therefore, this study is proposed to assess details on habitat characteristics mainly on the quantification of various parameters of vegetation, conservation threats, and people's perception which are prerequisite towards understanding of the species survival. The main goal of this study is to document basic information on habitat ecology for conservation and management of RNH in JSWNP. Specifically the study aims to fulfil the following specific objectives: 1) to document the habitat characteristics (such as vegetation structure, compositions, feeding tree species, and nests characteristics) preferred by RNH in Tingtibi and Nabji-Korphu forests; 2) to identify the potential threats on conservation of RNH in Tingtibi and Nabji-Korphu forests; and 3) study the degree of awareness of the local people on RNH habitat and understand their relationships (example, foraging, roosting & nesting).

MATERIALS AND METHODS

Study area

The study was conducted in Tingtibi and Nabji-Korphu Park Ranges of JSWNP that fall under Zhemgang and Trongsa Dzongkhags respectively. These sites are the prime habitats that harbour the major population of RNH in the park.

Tingtibi Park Range is located in the southern part of the park which is contiguously linked to Royal Manas National Park. It has a total area of 1,10.45 square kilometres, and the altitude ranges from 500 m a.s.l. to 2,200 m a.s.l. and is broadly covered by warm-broadleaved forest, cool broadleaved forest and chir pine forests in few pockets. The forest was partly logged and simultaneously disturbed by cardamom cultivation during the 1990s. The study area was subjected to major disturbances by clearing forest for *tseree* (shifting) cultivation, power transmission lines, farm roads, cattle grazing from outside Dzongkhags (Bumthang and Trongsa Dzongkhag) and lateral highway that connects Trongsa and Gelephu. But equally the park has large tract of undisturbed forests.

Nabji-Korphu Range, located in the south-eastern part of the park is one of the remotest of the Park Range Office amongst four Range Offices in JSWNP, with a walking distance of two days from the nearby motorable (tarred) road called Riotala. It has a total area of 290.22 square kilometres, and the altitude ranges from 683 m a.s.l. to 2,300 m a.s.l. and is broadly covered by vegetation of warm broadleaved forests and cool broadleaved forests. Nabji-Korphu has diverse flora and fauna. The study area was subjected to major disturbances such as, construction of farm road and clearing forest tracts for rural electrification lines recently which may pose a significant habitat loss to wildlife. In addition, existing *tserree* (shifting) cultivation system may contribute to further habitat loss which may affect populations of wild ungulates, primates and large birds like hornbills.

The draft management of JSWNP (2012) revealed that there are 230 species of birds, 28 species of mammals and 453 vascular plants. More than 40 species of mammals are expected to be found in the park, of which four species are endangered, two near threatened, three vulnerable and six included in Schedule I of the Forest and Nature Conservation Rules 2006 and Act 1995. Of the birds, seven species are totally protected (FNCR 2006 & Act 1995) and eight species are for conservation interest in the park. Rufous-necked Hornbill *Aceros nepalensis* are confirmed to exist in Tingtbi and Nabji-Korphu areas as residential bird which are critically endangered and included in the Schedule I of the Forest and Nature Conservation Rules 2006 and Act 1995. Therefore, these areas are selected as study site to assess the habitat quality of the existing broad-leaved forest that supports the survival of the species which are of conservation importance at the regional and national level.

Field Survey

Field surveys were carried out following survey design adopted by William & Leonard (1993) in "Habitat Concept in Ornithology", the focal-bird approaches where habitat characteristics are measured at the location where a bird was observed. This study design was used to relate birds to habitat characteristics. Focal-bird plots often provide better descriptions of bird habitats than correlations of habitat to bird abundances. Owing to the geographical and rugged terrain of the park, it was not possible to deploy random sampling point. Therefore, convenience or purposive sampling technique was used in order to investigate the vegetation variables for correlation of the focal bird populations in two study regions.