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PROCEEDINGS OF THE SEVENTH INTERNATIONAL HORNBILL CONFERENCE 16-18 MAY 2017

HORNBILLS
Fly Free, Fly High

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Habitat Fragmentation and Connectivity

WREATHED HORNBILL (*Rhyticeros undulatus*) IN MOUNT UNGARAN CENTRAL JAVA:
STATUS AND FACTORS THAT THREATEN ITS EXISTENCE

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Abstract
Mount Ungaran in Central Java is one of the Important Birds Areas (IBA) in Indonesia where one of the Hornbill species, Wreathed Hornbill (*Rhyticeros undulatus*) is found. Based on the IUCN 2016, Wreathed Hornbill has been listed as Least Concern (LC) and listed in Appendix II of the CITES. In order to conduct preservation and *in-situ* conservation planning of Wreathed Hornbill scientific data on ecology is needed. Therefore, the research on the Wreathed Hornbill in Mount Ungaran has been planned since 2010–2016. The results include species identification, early population and distribution, daily behaviour, habitat profile, nest-site characteristics, feeding behaviour, food consumed, habitat suitability and threats. While study on the dynamics of the home range of Wreathed Hornbill in Mount Ungaran is still ongoing. The implementation of this research is jointly pursued with the Forest Department, Natural Resources Conservation Center (BKSDA), Perhutani Central Java, Indonesia Hornbill, and LIPI (Indonesian Institute of Sciences), and IBBS (Indonesian Bird Banding Scheme).

Keywords: Mount Ungaran, Wreathed Hornbill, status, threats

INTRODUCTION

Hornbills (Family Bucerotidae) are frugivorous birds found in the Old World tropics. There are 13 hornbill species found in Indonesia, making Indonesia one of the richest and the most important countries for hornbill conservation in Asia. Asian hornbill is characterised by large, long and decurved bill, and has protruding casques (Kinnaird & O'Brien 2007). Wreathed hornbill (*Rhyticeros undulatus*) is one of the hornbill species that can be found in Mount Ungaran Central Java Indonesia. Mount Ungaran is

located between Kendal and Ungaran Regency with a total area of around 5.500 hectares. Mount Ungaran is one of the Important Bird and Biodiversity Areas (IBAs) in Indonesia (Rombang & Rudyanto 1999), especially in Central Java that has potential natural forest with high biodiversity. Based on the IUCN Red List of Threatened Species (2017), Wreathed Hornbill has been listed as Least Concern (LC) and on CITES, which belongs to Appendix II.

Hornbills are threatened with extinction because they are specialist with respect to habitat, food source, roosting and nesting sites (Krishna *et al.* 2012). Hornbills play a crucial role in the forest ecosystem as seed dispersers. The previous study from 2010–2016 showed that Mount Ungaran was a suitable habitat with the availability of food resources, water, shelter, perching, and nesting site for Wreathed Hornbill species (Rahayuningsih *et al.* 2011, 2015 & 2016). However, the preservation of Wreathed Hornbill in Mount Ungaran faces conservation challenges such as conversion of forest areas for tea, coffee, clove, and quinine plantation, agriculture, illegal logging, and other infrastructure developments. Other forms of human activities that are directly resulting in the elimination of this wildlife from the natural habitat are poaching and illegal trades. In this case, the research activities are still continuously conducted to develop the strategy of *in-situ* conservation management of wildlife, especially in Mount Ungaran. The objective of the study was to determine the status and factors that threaten the existence of Wreathed Hornbill in Mount Ungaran.

MATERIAL AND METHODS

Binocular (Nikon 8 x 30, 8.3"CF WF), Monocular (Nikon 20 x 60), GPS (Global Positioning System) Garmyn e-Trex 12 channel, Bird Field Guide: Sumatra; Java, Bali, Kalimantan (Maskinnon *et al.* 2010), camera, tape recorder, stopwatch, tally sheet and stationeries were used to survey this species in the study area.

The research was conducted from 2010 to 2016 in Mount Ungaran area, at five field stations: Gunung Gentong, Banyuwindu, Gadjah Mungkur, Medini, and Kalisid. The secondary data were obtained from interviews with local communities in eight villages around Mount Ungaran; there are (1) Ngresep Balong, (2) Banyuwindu, (3) Kalisidi, (4) Gogik, (5) Indrokilo, (6) Pasigitan, (7) Sumber Rahayu and (8) Gondang. In this survey, forty five informants were selected purposively to respond to questions. Informants were selected

from individuals representing groups in the society. The interview questions were related to the (1) general understanding and local knowledge on conservation of the hornbill around Mount Ungaran; (2) model the conservation strategy that has been developed there, and (3) constraints in the implementation of conservation programmes carried out so far and expectations of its development.

RESULT AND DISCUSSION

Wreathed Hornbill is one of Indonesia's iconic birds that should be preserved from extinction, although its status is of least concern. The main factors that could threaten its existence should be anticipated in advance. It is estimated that the forest area as the natural habitat for the birds is getting less. One of the efforts is to gain ecology data such as distribution, population, behaviour, zones of suitable habitat for the bird sustainability and also *in-situ* conservation strategies.

In 2010, we have identified the hornbill species in Mount Ungaran including, early behaviour, and the daily activity area. In 2011–2012, the result for the distribution and population showed that the density value of Wreathed Hornbill was 14.60 individuals/km^2. According to the diversity of vegetation from four research stations i.e., Banyuwindu, Gunung Gentong, Gadjah Mungkur and Watuondo, a total of 46 species of large trees, 17 species of medium trees, 27 species of small trees, 19 species of saplings and 27 species of herbs were recorded with the most common tree species in Mount Ungaran being *Ficus* sp., *Litsea* sp. and *Syzygium* sp.. Based on the observations, trees used as nest by the Wreathed Hornbill were *Syzygium* sp. and *Ficus* sp., are also a source of food for the hornbill. Hornbills from all studies combined especially in Asia utilise 497 fruit species from 135 genera in 46 families (Kinnaird & O'Brient 2007). The top five families ranked of species consumed are Lauraceae, Moraceae, Meliaceae, Myristicaceae and Annonaceae.

The previous studies showed that Mount Ungaran was a suitable habitat for the availability of food, water, shelter, perching and nesting site for Wreathed Hornbill species. Based on the landcover data from 1991–2009, the natural forest on Mount Ungaran was reduced almost 53.31%, while the secondary forest, plantation and the settlement were increasing (Rahayuningsih *et al.* 2015).

Data on nest record showed that from 2010–2016, a total of 17 nests were recorded. The nests were located at Gunung Gentong, Limbangan, Watuondo, and Kalisidi. The research also showed the tree species used for nesting by Wreathed Hornbill in Mount Ungaran were *Syzygium glabatrum, Syzygium vantisepticum, Ceratoxylon formosum* and *Ficus* sp.. Based on Poonswad (1995), the higher and larger trees will attract hornbills including Wreathed Hornbill as a nesting place and mostly from the genus Dipterocarpus and Eugenia. While in Mount Ungaran, Wreathed Hornbill usually used both species from the family Myrtaceae as nesting tree (*Syzygium glabatrum* and *Syzygium antisepticum*).

Understanding of habitat requirements for Wreathed Hornbills especially in Mount Ungaran is required for conservation and its management plan. Social and cultural survey was conducted from surveying 8 (eight) villages located at around Mount Ungaran: (1) Ngresep Balong, (2) Banyuwindu, (3) Kalisidi, (4) Gogik, (5) Indrokilo, (6) Pasigitan, (7) Sumber Rahayu and (8) Gondang. The aims were to investigate how people in eight villages looked at the position of Mount Ungaran, their local knowledge, and the existence of the Wreathed Hornbill based from the perspective of historical, sociological, and economical values. According to the survey, 71% of the people support that Mount Ungaran as a source of their livelihood. The public perceives the existence of Mount Ungaran is important because people are dependent on its resources. The people also claimed that the damage occurred at Mount Ungaran have negative impact on their lives. This is evident from the 84% of people who agreed, that there is a correlation between habitat damage and their livelihood in Mount Ungaran.

The question on Wreathed Hornbill existence as one of the icons of Mount Ungaran and its contribution to the ecosystem, resulted in 64% of people knew about the existence of this species at Mount Ungaran, but many do not know what are its role and benefits in Mount Ungaran (76%). A total 93% of the respondents reported not knowing the legend of the Wreathed Hornbill. The ignorance on the legend of the Wreathed Hornbill in relation to the history of the village is one factor that causes lack of awareness on the importance of Wreathed Hornbill for the preservation of Mount Ungaran. Also, 84% of the respondents did not know that Wreathed Hornbill is one of the protected bird by Indonesian Law, 78% still do not know the government's efforts in the preservation of the Wreathed Hornbill. Constraints on the Wreathed hornbill conservation were exacerbated by the presence of various forms of habitat destruction. A total of 73% of the respondents considered that they are among

those in the community who performed activities that damage the environment in the Ungaran. The dominant factors in habitat destruction include logging (56%) and hunting for trade (33%). The community are willing to support if there are rules that crack down habitat destruction and agreed to participate if there are programmes and dissemination efforts on the conservation of this species in Mount Ungaran (97%).

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