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INSET TREE CAVITY NESTING SITE A METHOD OF CAVITY CREATION FOR ORIENTAL PIED HORNBILL (Anthracoceros albirostris)

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ABSTRACT

Populations of most hornbill species continue to decline due to hunting and habitat degradation. Hornbills rely exclusively on tree cavity sites for nesting and incubation as part of their breeding behaviour. Since they are not able to excavate on their own, they require the presence of existing tree cavities. Additionally, the natural cavity size suitable for species such as Oriental Pied Hornbill requires mature trees in which cavities have formed within larger diameter wood. In disturbed forests, or in the urban context, the availability of large trees with potential nesting sites is even more limited. Man-made nesting boxes have been considered as alternatives to help increase the hornbills' nesting options, but low nest productivity have been reported. This paper explores the practicality of using human assistance in creating inset tree cavities through the use of chainsaws and bore-cutting techniques to assist nesting of the Oriental Pied Hornbill (*Anthracoceros albirostris*) in Piasau Nature Reserve, an urban forest reserve in the state of Sarawak, Malaysia. These cutting and cavity excavation methods have been used successfully to resemble the natural process of cavity development for other secondary tree cavity nesting species.

Keywords: Inset tree cavity, cavity dwellers, Oriental Pied Hornbill, human assistance, bore-cutting

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INTRODUCTION

Hornbills (Bucerotidae) are the most widespread frugivorous birds in Asia and Africa (Kemp 1995) with 8 species found in the State of Sarawak, Malaysian Borneo. These bird species inhabit a wide range of habitats, including dry tropical forests and human modified landscapes (Shukla *et al.* 2015). Resources required by hornbills, such as nesting sites and fruiting trees may differ significantly across these habitats, therefore it is important to understand hornbill's ecological tolerance and to develop appropriate conservation strategies.

Hornbill nesting biology is complex: the female nests and incubates in a tree cavity, but the nest entrance is sealed by a layer of mud (Kemp 1969), with only a narrow slit that allows the male to pass food to the nesting female and the brood (Poonswad 1995). This nesting strategy is considered to have a higher anti-predation advantage since the narrow entrance limits access to the nest chamber (Poonswad 1995). Although hornbills are cavity nesting birds, these species are not able to excavate their own cavities. Therefore, limited cavities mean higher intra and inter-specific competition for nests (Pasuwan *et al.* 2011). Nest entrances of the hornbills are selected according to their body size although most of them will use oval to elongated entrances (Poonswad 1995).

The probability that a hornbill pair will find a suitable nest site in the forest is influenced by abundance and access to preferred substrate (Jones 2001). Hornbills at most times display high nest fidelity, often returning to the same nest site between breeding seasons (Kemp 1979) but as a secondary cavity-nesting species, they rely on the presence of existing cavities which typically can be found on old trees or snags. The availability of fruiting trees and suitable nest sites are considered the prime factors affecting nest site selection by hornbills (Poonswad *et al.* 2005).

In urban areas, shortage of suitable potential hornbill nests might be exacerbated by the limited number of large trees supporting cavities. In a human modified landscape like Piasau Nature Reserve (PNR), competition for nesting cavities in particular the Oriental Pied Hornbill (OPH) had developed for a substantial period of time. Most of the OPH individuals in PNR had fled outside the reserve, or in edge habitats due to the territorial behaviour of a highly territorial breeding pair, fondly known as “Jimmy and Juliet”.

This paper will explore the practicality of using human assistance in creating tree cavities through the use of saws and bore-cutting as a management tool to aid for cavity-dependent wildlife and especially for the OPH in Piasau Nature Reserve, an urban forest park in the state of Sarawak, Malaysia.

METHODS

In both urban and rural dwellings, where land is managed by removing trees, habitat loss will directly affect the availability tree nesting sites. Primarily, methods used to address habitat loss for secondary cavity dwelling species has