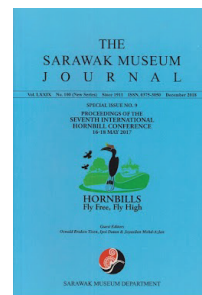




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### ARTIFICIAL NEST BOXES FOR HORNBILL CONSERVATION: A CASE STUDY IN KINABATANGAN, MALAYSIA

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#### ABSTRACT

Five artificial nest boxes for hornbills were erected along the river in the Lower Kinabatangan Wildlife Reserve, Malaysia in 2013. The nest boxes were built by a French non-government organization (i.e. HUTAN/KOCP) and two zoos from United Kingdom and France (i.e. Chester Zoo and Beauval Zoo). After the artificial nest boxes were erected in the forest, a comparative study between natural cavities and nest boxes was conducted from September 2014 to February 2015, to measure internal humidity and temperature. It is assumed that these two parameters are important factors for nest box occupancy. Data loggers (RHT 10 USB EXTECH) were used to measure temperature and humidity inside and outside of the natural cavities ( $n = 3$ ) and artificial nest boxes ( $n = 4$ ). For nest boxes, internal temperature ranged from 21.8 to 35.0°C while internal humidity ranged from 40.1 to 99.4%. On contrary, internal temperature for natural cavity remained low (from 22.5 to 27.5°C) while its internal humidity ranged from 95.9 to 100%. Camera traps recorded several species of hornbills such as Rhinoceros (*Buceros rhinoceros*), Wrinkled (*Rhabdotorrhinus corrugatus*), Bushy-crested (*Anorrhinus galeritus*), and Oriental Pied (*Anthracoceros albirostris convexus*) hornbills that visited the nest boxes. Rhinoceros Hornbill had attempted to seal the entrance of the artificial nest boxes while Oriental Pied Hornbill was the only species that occupied one of the nest boxes. These responses indicate that nest boxes could play an important role in providing alternative nesting sites for hornbills.

**Keywords:** Hornbills, artificial nest boxes, data loggers, camera traps, Rhinoceros hornbill, Kinabatangan, microclimate, cavity-nesters

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## Abstract

Five artificial nest boxes for hornbills were erected along the river in the Lower Kinabatangan Wildlife Reserve, Malaysia in 2013. The nest boxes were built by a French non-government organization (i.e. HUTAN/KOCP) and two zoos from United Kingdom and France (i.e. Chester Zoo and Beauval Zoo). After the artificial nest boxes were erected in the forest, a comparative study between natural cavities and nest boxes was conducted from September 2014 to February 2015, to measure internal humidity and temperature. It is assumed that these two parameters are important factors for nest box occupancy. Data loggers (RHT 10 USB EXTECH) were used to measure temperature and humidity inside and outside of the natural cavities (n = 3) and artificial nest boxes (n = 4). For nest boxes, internal temperature ranged from 21.8 to 35.0°C while internal humidity ranged from 40.1 to 99.4%. On contrary, internal temperature for natural cavity remained low (from 22.5 to 27.5°C) while its internal humidity ranged from 95.9 to 100%. Camera traps recorded several species of hornbills such as Rhinoceros (*Buceros rhinoceros*), Wrinkled (*Rhabdotorrhinus corrugatus*), Bushy-crested (*Anorrhinus galeritus*), and Oriental Pied (*Anthracoceros albirostris convexus*) hornbills that visited the nest boxes. Rhinoceros Hornbill had attempted to seal the entrance of the artificial nest boxes while Oriental Pied Hornbill was the only species that occupied one of the nest boxes. These responses indicate that nest boxes could play an important role in providing alternative nesting sites for hornbills.

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