Observations at a nest of Helmed Hornbill
Rhinoplax vigil in Borneo, Malaysia

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Little is known about the nesting behaviour of the Helmed Hornbill Rhinoplax vigil because it occurs in low numbers and nests are difficult to locate. The nest cavity is usually high and hidden amidst thick foliage and the cavity’s opening is inclined upwards, making it hard to see from the ground. A nesting pair of Helmed Hornbills was observed in the Kinabatangan Wildlife Sanctuary between 2013 and 2017. We sought to determine the nesting period and associated behaviour, and to identify the type and amount of food provided to the female and chick over the nesting cycle. The nest was located inside the stub of a broken branch of a Shorea pachyphylla tree, 37 m up on the trunk. The pair began nesting in May in the drier months, and the single chick fledged in November the same year. The pair and the fledged young stayed together for at least six months. The male made a maximum of 11 visits per day to bring food to the nest midway through the breeding period. Food brought to the nest consisted of mainly figs, including Ficus stupenda, F. benjamina, F. stricta and F. crozieriana. The adult Helmed Hornbills delivered stick insects, beetles and praying mantis, while the chick itself caught and consumed a giant millipede at the nest entrance. The specific fig diet and nest cavity preferences make the species extremely vulnerable to environmental changes caused by logging and agricultural expansion. The added pressure from hunting for figs may be driving it to extinction. Therefore we recommend that their nests be located and offered protection by local authorities and communities through nest adoption schemes.

INTRODUCTION

The Helmed Hornbill Rhinoplax vigil is the largest Asian hornbill in the family Bucerotidae (Kinnaird & O’Brien 2007). It stands out among the Asian hornbills because of its distinctive calls, solid casque and long central tail-feathers (Plate 1). The species is territorial and it usually occurs in primary forests (Smythies 1981, Wells 1998). The species is classified as Critically Endangered as it is threatened by habitat loss and hunting for its solid keratin casque, which can be carved into decorative articles (Collar 2015, Beastall et al. 2016, Krishnasamy et al. 2016, BirdLife International 2018).

Surprisingly little is known about the basic biology and ecology of the species. Nesting occurs during the dry season when conditions inside the nest cavity are suitably dry (Poonsawad et al. 1995, Utovyo et al. 2017). Helmed Hornbills prefer cavities with a protruding entrance that bears its weight and does not damage its long central tail-feathers (Thiensongrusamee et al. 2001, Chong 2011, Utovyo et al. 2017). In Thailand, birds favour trees at altitudes of 300–800 m with a diameter at breast height of 105–216 cm and a height between 26 and 70 m (Thiensongrusamee et al. 2001, Poonsawad et al. 2013). They nest primarily in trees of the family Dipterocarpaceae, including Hopea spp., Shorea faguetiana, S. curtisii (Thiensongrusamee et al. 2001), Diplocyclos humberiatus (Utovyo et al. 2017) and others such as Koempasia parviflora (syn. K. excelsa) (Kemp 1995), Scaphium macrodactylon (Thiensongrusamke et al. 2001) and Dysoxylum grande (Kaut et al. 2015). They have one of the longest nesting periods of all the hornbills—between 167 and 172 days (Kinnaird & O’Brien 2007). Hornbills seal their nests to protect the female and chick from strong winds, rain and predators. In a process that can take two weeks, the female Helmed Hornbill seals herself inside the nest cavity for the majority of the period (Kinnaird & O’Brien 2007, Chong 2011). A pair usually has a single chick (Chong 2011, Kaut et al. 2015).

In all seasons figs make up 98–99% of Helmed Hornbill diets, while the rest is small animals (Iadiprakasa & Kinnaird 2004, Kinnaird & O’Brien 2007). A diet of figs provides hornbills with calcium, magnesium and fibre while being moderate in sugars, lipids and proteins (Balausubramanian et al. 2004, Kinnaird & O’Brien 2007). This diet meets the various needs of the birds, such as calcium for eggs and skeleton growth and amino acids for growth of feathers (Poonsawad et al. 2004).

Here we add to the limited data about the breeding behaviour and nesting ecology of the Helmed Hornbill, by reporting our observations at a single nest in Kinabatangan, Sabah, Borneo, between 2013 and 2017. While such information may only be indirectly useful the conservation of the species, it is of value in highlighting the degree of specialisation of this dangerously threatened bird and we hope it will stimulate a greater understanding among wildlife managers responsible for the design and implementation of successful conservation initiatives.

Plate 1. Female Helmed Hornbill Rhinoplax vigil perched at the natural cavity in Lower Kinabatangan Wildlife Sanctuary, Sabah, Malaysian Borneo, 31 October 2017.

STUDY SITE AND METHODS

The study took place in the 27,960 ha Lower Kinabatangan Wildlife Sanctuary, Sabah. The sanctuary was officially gazetted as a protected area by the Sabah State government in 2005 (Abram et al. 2014). The area consists of largely fragmented secondary forests surrounded by extensive oil palm plantations and mills, tracks and roads, villages, orchards and small farms (Ancrena et al. 2015).