Malabar Pied Hornbill *Anthracoceros coronatus* (Boddaert, 1783)

Taxonomy

Kingdom: Animalia
Phylum: Chordata
Class: Aves
Order: Bucerotiformes
Family: Bucerotidae

Red list category and criteria

Critically Endangered- A2abcde+ A3bcde
Assessor: Maitreyi Hegde

Justification

Malabar Pied Hornbill population is observed to be declining especially in the southern and central Western Ghats. The population trend data over last 35 years show 85% decline because of continuing habitat loss, habitat degradation, and poaching. Considering the continuing threats in both protected and non-protected areas, it can be inferred that the species will continue to decline to an extent of >90% in the next 30 years which makes it being classified as 'Critically Endangered' under criterion A. The habitat quality is decreasing, and the threats of invasive species taking over it's vital food plants and nest trees are also evident.

Geographic Range

Anthracoceros coronatus is distributed in the forests of central India (Madhya Pradesh, Andhra Pradesh), eastern India (Bihar, Odisha), and in the foothills of the Western Ghats in parts of Maharashtra, Karnataka, Tamil Nadu, and Kerala. It is also native to Sri Lanka.

Extent of occurrence: 1,196,214.297 km^2

Generation Length: 9.7 years

Habitat and Ecology

A. coronatus is found in subtropical/tropical dry or tropical moist lowland or riverine forests, usually at the plains up to 300 m.

Hornbills are generally frugivorous, arboreal, and secondary cavity-nesters. They are the important agents of seed dispersal in tropical forests. One of the studies say, diet of hornbills of A. coronatus includes 68% fruits and 32% animals. Of the fruits, figs contribute 20% and non-fig fruits are 48% (Reddy 1988). They generally feed on fruits of *Styrchnos nux-vomica*, *Ficus glomerata*, *F. asperrima*, *F. mysorensis*, and *Diospyros montana* (Sneha & Davidar 2011). Five species of trees commonly preferred by these hornbills for nesting are *Madhuca longifolia*, *Terminalia* sp., *Dysoxylum binectariferum*, *Spondias pinnata*, and *Syzygium cumini*.

Use and Trade

It is said that the oil glands are used for traditional medicine but there is no evidence and no literature available. The hornbill is usually hunted for its meat.

Major threats

One of the major threats which is likely to continue in future is habitat destruction, due to encroachments, agriculture, monoculture timber plantations, hydro-electric and irrigation projects, tourism, and urban development (Mudappa & Raman 2009). Hunting by tribals and non-tribals and forest fire are proven to be major threats both in protected and non-protected areas of the Western Ghats (Bachan et al. 2011). Large scale collection of plant parts (NTFPs) of the nest trees and food trees of hornbills and spread of exotic weeds are also other major threats (Balasubramanian et al. 2004).

Population

Two-hundred-and-eighty-two individuals of *A. coronatus* were recorded from December 1983 to December 1984 (Reddy 1988) in Dandeli. The same study recorded encounter rate of 8 individuals per km^2 of these hornbills. Maximum number of 74 and a single biggest flock of 58 hornbills were recorded at Dandeli in March 1984. Highest number was noted near the food plants and the average number of hornbills in Dandeli was 21.69 (Reddy et al. 1990). In the year 2006–2007, total 44 individuals were observed in Dandeli. The mean numbers of hornbills recorded at the two roost sites, were 26±4.47 (n = 16) and 31.78±3.53 (n = 14), respectively. (Sneha & Davidar 2011). In the study conducted by Mudappa & Raman (2009), 96 individuals were recorded in Dandeli, Ganeshgudi, Mookambika, and Bhadra area. Dandeli– Goa landscape in Karnataka, Goa, and adjoining areas of Maharashtra (Amboli) were proven to be the main areas where two-thirds of the 131 Malabar Pied Hornbills recorded during the entire survey across Western Ghats were recorded. All detections were at elevations <600 m, with most being at elevations between 100 and 450 m. In the study by Pawar & Sadekar (2022), 62 individuals of Malabar Pied Hornbills in Dandeli region were observed. Bachan et al. (2011), in their study during 2004–2005, observed only two nests of Malabar Pied Hornbills in Vazhachal division of Anamalai range of Kerala State. Malabar Pied Hornbill nests were found only in low elevation riparian forests and they observed a very rare nesting density 0.009/ km^2 (Bachan et al. 2011).

In the central Indian region, *A. coronatus* have already been reported from different parts of the Satpuda range including Satpuda National Park, Pench Tiger Reserve, Satpuda Tiger Reserve in Madhya Pradesh and also in eastern Madhya Pradesh. From the Melghat Tiger Reserve (MTR), Maharashtra, *A. coronatus* was not documented until 2003. After effective protection measures for the forest corridors, *A. coronatus* habitat seems to be more favorable (Wagh et al. 2015). It is evident that *A. coronatus* has become well established based on the sighting data in MTR from 2003 to 2008 (Wagh et al. 2011).

Population Trend: There is a decreasing trend in population over 35 years of records since 1983¬-1984 till 2019. In Dandeli, which is still one of the strongholds for Malabar Pied Hornbill, declining encounter rates from 8.5 birds per km during 1983¬–1984 (Reddy 1988) to four birds/km in Dandeli in 2007 (Sneha & Davidar 2011) were reported.
Transect surveys by Mudappa & Raman (2009), in the various locations across the Western

Ghats revealed highest encounter rates of this species in Mollem National Park and Wildlife Sanctuary (range = 0.13/km to 1.61/km across six transects), Madei Widlife Sanctuary, Goa (0/km to 0.84/km across three transects), and lowest encounters at Dandeli Wildlife Sanctuary, Karnataka (0/km to 0.6/km across three transects).

In the study conducted in 2019, the Malabar Pied Hornbill density (± se) was 4.4 (± 1.6) individuals per km^2 and encounter rates were much lower (0.53 individual per km) (Pawar & Sadekar 2022).

Rapid surveys from 2004–2005 in the Western and Eastern Ghats of Tamil Nadu, Kerala, Karnataka, Goa and Andhra Pradesh include protected areas & reserved areas. Out of the total 536 hornbill individuals observed, only 12.3% were Malabar Pied Hornbills. Though Malabar Pied Hornbill was recorded in both Eastern and Western Ghats, it only occurred at a few localities as isolated populations (Balasubramanian et al. 2007).

There is 85% decrease in encounter rates of Malabar Pied Hornbills per km in last 35 years, in Dandeli and surrounding central Western Ghats region. Trend inferred from the literature data of 1984 till 2019 and lack of initiatives to restore degraded habitats proves the fact that the population will continue to decline to more than 90% in future. It should be noted that this decline is in its natural habitat inside the protected areas. Non-protected areas face even more threats and developmental pressures, hence endangering the hornbill populations in those regions as well.

Conservation actions

Participatory conservation, which includes tribals for hornbill conservation and monitoring, has been effectively adopted with the 'Kadars' endemic to the Anamalais, who perform traditional hornbill hunting (Bachan et al. 2011). To emphasize hornbill conservation in the region, a Hornbill Conservation Reserve was established in Karnataka's Uttara Kannada District in 2011. The northern Western Ghats' foothills and lowland forests, including sections of the Tillari region, have been designated as conservation reserves from 2020 to 2021 to help conserve the Sahyadri-Konkan corridor (Pawar & Sadekar 2022).

Research needed

Status and distribution data for *A. coronatus* is mainly confined to high occurrence areas such as Western Ghats, mostly to protected areas. Research is needed on bridging the knowledge gaps in population assessment and ecology in non-protected areas too since such habitats are at higher risk. More rigorous study is needed in its other native ranges in central or eastern states of India.

References

Bachan, K.H.A., R. Kannan, S. Muraleedharan & S. Kumar (2011). Participatory conservation and monitoring of Great Hornbills and Malabar Pied Hornbills with the involvement of endemic Kadar tribe in the Anamalai Hills of southern Western Ghats, India. *The Raffles Bulletin of Zoology* (24): 37–43.

Balasubramanian, P., R. Ravi, R. Venkitachalam, B. Maheswaran, N. Krishnakumar, V.S. Vijayan & S.N. Prasad (2007). Status and conservation of the hornbills in southern India, pp. 143–153. In: Kemp, A.C. & M.I. Kemp (eds). The active management of hornbills and their habitats for conservation. Proceedings of the 4th

International Hornbill Conference, Mabula Game Lodge, Bela-Bela, South Africa, 478 pp.

Mudappa, D. & T.S. Raman (2009). A conservation status survey of hornbills (Bucerotidae) in the Western Ghats, India. *Indian Birds* 5(4): 90–102.

Pawar, P. & V. Sadekar (2022). The foothills of the northern Western Ghats serve as a potential stronghold for threatened hornbill species. *Indian Birds* 18(5): 146–149.

Reddy, M.S. (1988). Some aspects of ecology and behaviour of hornbills with special reference to *Anthracoceros coronatus* (Boddaert) from North Kanara district of Western Ghats. PhD Thesis. Department of Zoology, Karnataka University, Dharwad, vi+127 pp.

Reddy, M. S., K.S. Muralidhar, M.R. Gandhi & S. Basalingappa. (1990). Distribution and variation in number of Malabar Pied Hornbills *Anthracoceros coronatus* (Boddaert) in selected areas of north Kanara forest of Western Ghats in Karnataka, India. *The Indian Zoologist* 14(1): 63–73.

Sneha, V. & P. Davidar (2011). Status survey of the Malabar Pied Hornbill in the Dandeli region, northern Western Ghats, India. The Raffles Bulletin of Zoology (24): 45–51.

Wagh, G.A., J.S. Wadatkar & K. Raju (2011). Preferential dispersal of Malabar Pied Hornbill from Himalayas to Western Ghats is through the Satpuda Hills, Central India. *The Raffles Bulletin of Zoology* 24: 69–72.

Wagh, G.A., J.S. Wadatkar & R.M. Kasambe (2015). Studies on the status, distribution, habitat ecology and strategic planning for conservation of Malabar Pied Hornbill *Anthrococeros coronatus* Central India. *Malayan Nature Journal* 67(2): 228–239.

H. Maitreyi, RHATC Fellow 2023–24, Zoo Outreach Organisation, Coimbatore, TN, India.