

## PREFERENTIAL DISPERSAL OF MALABAR PIED HORNBILL FROM HIMALAYAS TO WESTERN GHATS IS THROUGH THE SATPUDA HILLS, CENTRAL INDIA

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**ABSTRACT.** – The Malabar Pied Hornbill *Anthracoceros coronatus* historically occurred in three discrete populations, in the eastern Himalayas, the Western Ghats, and Sri Lanka. Several hypotheses have previously been put forward to explain the disjunction of this and other bird species from the eastern Himalayas to the Western Ghats. It is not listed in the checklist of birds of Melghat Tiger Reserve (MTR). Various sightings from 2003 onwards show that the species now occurs there and is probably breeding. *Anthracoceros coronatus* has already been reported from Satpuda National Park, Pench Tiger Reserve, and Satpuda Tiger Reserves in Madhya Pradesh, and also in eastern Madhya Pradesh. All these areas together with MTR are located between the eastern Indian and the Western Ghats populations. Due to improved protection measures, the habitat in MTR region is now better developed, which has probably resulted in a suitable habitat for *A. coronatus*. The present paper identifies the missing link in the dispersal route of *A. coronatus* from the eastern Himalayan ranges to the northern tip of Western Ghats of Southern India through the Satpuda in Central India.

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**KEY WORDS.** – Malabar Pied Hornbill, dispersal route, Himalayas, Western Ghats, South Asia.

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### INTRODUCTION

The Malabar Pied Hornbill, *Anthracoceros coronatus* is a bird from the eastern Himalayas, with a geographically separate population resident in the wet zone of the Western Ghats (Ali & Ripley, 1987; Kemp, 1995). It is a resident species in the peninsular hills, from southwestern West Bengal and Bihar to North Andhra, the Western Ghats (mainly along the eastern edge), south of South Maharashtra (Ratnagiri), with another discrete population in Sri Lanka (Rasmussen & Anderton, 2005). It is a Near Threatened bird species (criterion NT C1) (BirdLife International, 2001) and its population is declining. According to Pande et al. (2003) it is a resident of the Kokan, Malabar and the Western Ghats up to 1000m. It is rare in Raigad, Thane districts and northwards.

*Anthracoceros coronatus* has already been reported from some parts of Satpuda range, including Satpuda National Park, Pench Tiger Reserve (Pasha, 1997), Satpuda Tiger Reserves in Madhya Pradesh (Koeltz, 1946) and also in eastern Madhya Pradesh (Jayapal et al., 2005). The Melghat Tiger Reserve (MTR) is an important forest area in the central part of the Satpuda range of hills. A total of 252 species of birds has been recorded to occur in the reserve (Sawarkar, 1987; Kasambe, 2002), but *A. coronatus* was not reported from MTR till 20<sup>th</sup> July 2003, and it is now well established in this area.

Several hypotheses have been put forward to explain the disjunction and dispersal of bird species between the eastern Himalayas and the Western Ghats (Hora, 1949; Ali, 1949) in India. The present paper identifies the missing link in the

Table 1. Sightings of Malabar Pied Hornbill *A. coronatus* in Melghat Tiger Reserve.

Date	Area	Coordinates	Altitude (ft)	Number	Observer
20 Jul 2003	Kolkaj 77°12'.30"E	21°29'.49"N	1386	3	K. Dhamge
5-8 Dec 2003	Raipur 77°16'.12"E	21°34'.52"N	1764	2	JW
21 Dec 2003	Raipur 77°16'.12"E	21°34'.52"N	1764	1	RK
Oct 2005	Chikhaldara 77°22'E	21° 21'N	3500	1	JW
21 Feb 2006	Near Kund	–	–	1	JW
10 Dec 2006	Raipur 77°16'.12"E	21°34'.52"N	1764	2	JW, GW
18 Feb 2007	Memna 77°18'.39"E	21°25'.43"N	2889	7	Y. Tarte, JW, RK
5 Oct 2007	Kolkaj 77°12'.30"E	21°29'.49"N	1386	2	JW, GW
6 Oct 2007	Chourakund Road 77°06'.39"E	21°32'.45"N	1262	1	JW, GW
22 Dec 2008	Chikhaldara 77°22'E	21°21'N	3500	2	JW, GW

dispersal route of *A. coronatus* from the eastern Himalayan ranges to the northern tip of Western Ghats and also reports their presence, present status and distribution in MTR.

Melghat region is located between 20°51'–21°46'N and 76°38'–77°33'E in the Maharashtra state of India. Melghat region is a part of the Satpuda Range of hills in the Central India. It extends over 3,970 sq. km area in the Amravati and Akola districts of Maharashtra (Fig. 1). Out of this, 2,200 sq. km is protected as Melghat Tiger Reserve (MTR) and includes five protected areas under unified control. These are Gugamal National Park (or the *sanctum sanctorum*), Melghat Sanctuary (the buffer zone), Narnala Wildlife Sanctuary, Wan Wildlife Sanctuary and Ambabarwa Wildlife Sanctuary. Melghat has southern tropical dry deciduous type of forest. In the MTR, some part of the forest is semi-evergreen starting from Chikhaldara hill station which is the highest point in Melghat Forest. The semi-evergreen type forest starts from the west side of Chikhaldara and extends to Kolkaj, Kund, and Koha–Koktoo villages. It experiences a seasonal tropical climate with temperatures ranging between 13°C and 22°C during winter and between 23°C and 45°C during summer. The annual rainfall ranges between 1,000 mm and 2,250 mm.

## METHODS

To understand the status and distribution of *A. coronatus*, more than 40 visits were undertaken since July 2003 to various parts of MTR, covering major habitat types in all seasons of the year. We conducted interviews with several senior, knowledgeable locals belonging to the Korku tribe, to obtain information about the past status of *A. coronatus*

by showing pictures and sometimes by showing the actual bird in the wild.

Available literature related to the species was reviewed, compiled and analysed. Data on fruiting plants used by *Anthraceroceros coronatus* for foraging in MTR was collected. Observations were taken with binoculars (Olympus/Nikon 10x50), and photography was done using a Pentax camera with 300mm tele-lens and FUJIFILM Finepix Digital camera. Locations of sightings of the species were recorded using a GPS unit.

## OBSERVATIONS

On 20 July 2003, three *Anthraceroceros coronatus* including an immature bird were first recorded in MTR near Kolkas

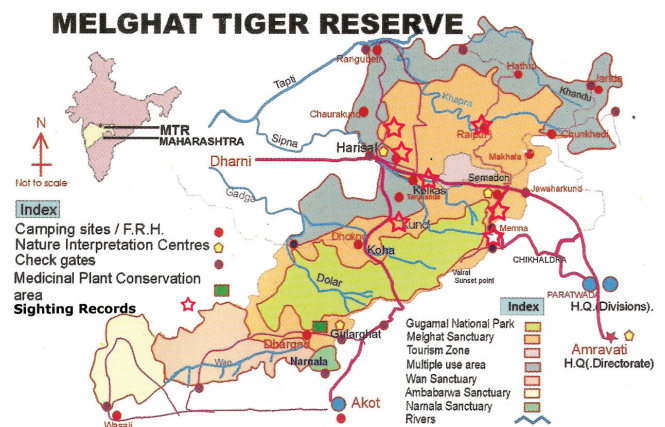


Fig. 1. Map of Melghat Tiger Reserve showing locations of sightings of Malabar Pied Hornbill *Anthraceroceros coronatus*.

by Mr. K. Dhamge, the then District Forest Officer of MTR. Many bird experts (D'Abreu, 1935; Sawarkar, 1987; Kasambe, 2003) have studied the avifauna of Melghat. This published literature had not previously reported the species. Moreover, this is not a species to be confused with any other bird or which may escape the attention of a good birdwatcher (Kasambe & Wadtkar, 2006). The interviews with local people revealed a complete lack of knowledge about the presence of this conspicuous bird before 2003. From surveys of different habitats in MTR, ten sightings were reported from 2003 to 2008 by the authors (Table 1).

As shown in Table 1, hornbills were found almost throughout the year in the study area. It indicates that this is not a passage migrant or vagrant to the study area. All ten sightings from MTR were reported only from the central part of the reserve and this area covers approximately 20% of the MTR. Crowns of large old trees like *Ficus* spp. are available in most of this area.

Food preferences of *Anthracoeros coronatus* were studied during our field visits. A total of eight fruit plant species were recorded, namely *Ficus bengalensis*, *F. religiosa*, *F. racemosa*, *F. infectoria*, *Syzygium cumini*, *Adina cordifolia*, *Schleichera oleosa* and *Grewia tiliifolia*. *Ficus* were found to be the major food source.

As shown in Table 1, we noted *Anthracoeros coronatus* in Raipur village and around Raipur only in the month of December. There were several ancient *Ficus bengalensis* trees around Raipur village. From November to January is the fruiting period of *Ficus bengalensis* in MTR and most of the time the hornbills were found to feed on these fruits. This observation indicates that these birds visit the Raipur area only during the fruiting period of *F. bengalensis*.

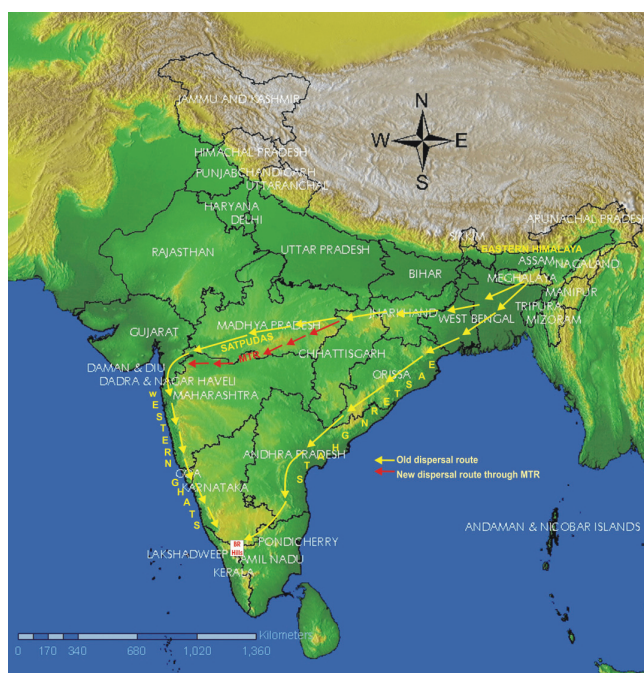


Fig. 2. Dispersal routes of wet zone species from North-East India to the Western Ghats. Arrows indicate direction of dispersal. (After Karanath, 2003)

## DISCUSSION

Several hypotheses have been put forward to explain the dispersal of source species from the eastern Himalayas to the Western Ghats. The Satpuda hypothesis (Hora, 1949; Ali, 1949) envisages the Vindhya-Satpuda range in central India as a “corridor” for the dispersal of taxa from the eastern Himalayas to the northern end of the Western Ghats (Shrinivasan & Prashanth, 2006). Hora (1949) postulated that the wet zone species colonised southern India by way of a once continuous corridor of tropical evergreen forests from the eastern Himalayas across the Vindhya–Satpuda range to the Western Ghats of South India (Karanth, 2003).

*Anthracoeros coronatus* have already been reported from different parts of the Satpuda range including the Satpuda National Park, Pench Tiger Reserve (Pasha, 1997), Satpuda Tiger Reserve in Madhya Pradesh (Koeltz, 1946) and also in eastern Madhya Pradesh (Jayapal et al., 2005). The Melghat Tiger Reserve is an important forest area in the central part of Satpudas. Probably due to the fragmentation of this corridor, the species was not reported from MTR till 20 July 2003. But after proper protection measures provided to the forest corridors and MTR region, suitable hornbill habitat became well developed again. A few birds might have spread from the Satpuda Tiger Reserves in Madhya Pradesh or Pench Tiger Reserve Madhya Pradesh in search of suitable habitat. As indicated by the sightings in MTR from 2003 to 2008 (Fig. 2), it is clear that the bird has become well established in this area.

The Malabar Pied Hornbill is a resident species of the eastern Himalayas and the northern Eastern Ghats, the Satpudas, and the Western Ghats. But it is not found in the southern part of the Eastern Ghats, particularly in the Biligirirangan hills (Shrinivasan & Prashanth, 2006). The peculiar absence of the species from the Biligirirangan hills provides indications of lower chances of dispersal of the species from the Eastern Ghats to the southern Western Ghats, thus, stressing that dispersal to the Western Ghats is more likely to have been exclusively along the Satpudas. Isolated records of the species along the Satpudas support this hypothesis.

The presence of a juvenile with adults further indicates that *A. coronatus* breeds in MTR region. We were unable to locate any nests in the study area during the survey period. This could be due to the vastness of the study area and the short durations of visits to the study area. The extent of suitable habitat, the spread of sightings, the occurrence in various months and the presence of a juvenile all point to this population being resident in MTR, not a passage migrant.

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