

## Conservation and Monitoring of Great Hornbill (*Buceros bicornis*) and Malabar Pied Hornbill (*Anthracosceros coronatus*) with the involvement of endemic Kadar tribe in the Vazhachal Forest Division, Anamalai part of southern Western Ghats, Kerala, India.

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### Introduction

Hornbills are generally frugivorous, arboreal, and secondary cavity-nesters and important agents of seed dispersal in tropical forests (Kemp 1995). They require natural hollows of large canopy trees and usually use the same nesting trees for many years. Historically, hornbills have also been subjected to hunting all over their range in Asia, adding to their vulnerability (Bennett *et al.* 1997). Of the nine species of hornbills in India, four occur in south India: the Great hornbill (*Buceros bicornis*), Malabar Pied hornbill (*Anthracosceros coronatus*), Indian Grey Hornbill (*Ocyrceros birostris*) and Malabar Grey hornbill (*Ocyrceros griseus*).

The forests of Vazhachal Forest Division occupy a central and pivotal position in the Anamalai landscape and link all the important forest areas in the vicinity.

In the Western Ghats region highest numbers of Great Hornbills occur here (Mudappa and Raman, 2009).



Three species, Great Hornbill, Malabar Pied Hornbill and Malabar Gray Hornbill sympatrically nest in the low elevation riparian areas of Vazhachal forests (Bachan, 2006). Earlier studies in various

parts of the Anamalai landscape indicated hunting by the endemic 'Kadars' as an important threat. Many have suggested need of continuous monitoring and protection against hunting of squabs as an important conservation measure (Kannan and James 1998; Datta, 1998; Bachan, 2006). The 'Kadars' are a primitive, seasonally nomadic, forest dwelling community endemic to the Anamalai hills of the Western Ghats. The majority of population (50%) lives in the Vazhachal Forest Division.

### **Materials and Methods**

A preliminary hornbill survey was conducted between November 2004 and May 2005 with field support of the *Kadars*. It was incorporated as a programme of the VSS (Vana Samrakshana Samithy) – a community organization of the tribe under the forest department. Tribesmen were selected based on their interest and experience in interior forest dwelling, many of them were poachers of hornbill squabs. The selected tribesmen were trained in the field to monitor nests during the nesting season and also for general surveys. Sheets were prepared in the local language

(Malayalam) to record and monitor nests. The selected hornbill guards perambulated each area during the nesting seasons, recording nest activities and protecting trees from forest fire and poaching. We accompanied each group once a month, verified their findings, ensured that they followed directions, documented their perceptions and slowly empowered them for scientific monitoring. Details regarding nesting trees were recorded during the process. At the very least, nest activities recorded were entry of females, hatching of chicks, existence of female inside, and fledging of chicks. For each nest six threat factors were recorded as positive or negative. Basic statistics of the relative threat values were used for comparison of threat factors for different regions and also for the success of the conservation programme.

### **Results and conclusions**

During the preliminary (2004-05) survey 25 nests (23 Great Hornbill and two Malabar Pied Hornbill) nests were located. There was gradual increase in the number of nesting trees discovered (24-25%) each year. After the project started, 57 Great

Hornbill and four Malabar Pied Hornbill nests were located during the four years of intensive search and all except one (which fell down in a storm) were found successful last year. Failure in nesting attempts was less (8-5%) during the time. Two previously abandoned nests were reoccupied during 2005-06, four during 2006-07 and five 2007-08. Among these eight were Great Hornbill Nests and remaining three were that of the Malabar Pied Hornbill. Great Hornbills here found to nest on trees greater than 2 m GBH (average 4.3 m) and tree height ranged 24-40 m with an average of 31 m. Great Hornbills were found to nest on 18 species of trees. Most nests were located on *Terminalia bellirica*. Out of the four Malabar Pied Hornbill nests three were on *Tetrameles nudiflora* and one on *Terminalia bellirica*.



Hornbill Guards marking the nest tree

About 30 people from all the six *Kadar* tribal VSS of the forest division participated in the programme. It became part of the regular Joint Forest Management – monitoring programme of the forest department and VSS. Incorporating the programme through the VSS and the Forest Department and making it part of their regular activities ensured the continuity of the process. The programme provided a means of sustenance to the people while preserving their traditional forest dwelling habits. After the implementation of the conservation programme during 2004-05 and up to the last nesting season (2007-08), threat factors reduced markedly. Among the six threat factors, hunting became non-existent and forest fire (85% to 5%) and human disturbance (24% to 5%) also reduced. Threat due to degradation of forest (85% to 47%) reduced although persisted, and the threat of flow fluctuation by dams (21%) remained a strong threat factor.

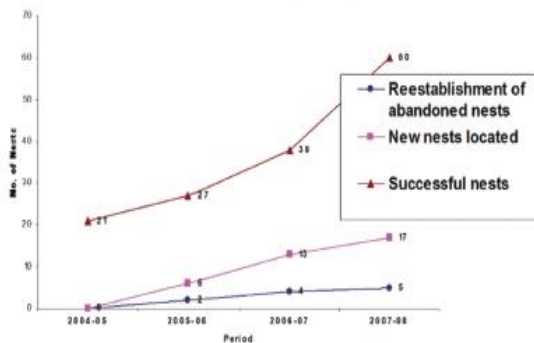


Fig. 3. Nesting Success of Great Hornbill and Malabar Pied Hornbills in the Vazhachal Forest Division (2004–2008).

The gradual increase in reoccupation of abandoned nests was probably due to the effects of the participatory conservation programme. The increase of Malabar Pied Hornbill nests from a single active nest (2004-05) to four active nests (2007-08) was critical to rescue the species from local extinction in their only available nesting habitat in Kerala. Increase in the nest encounter, nesting success, reestablishment of abandoned nests and the increase in participation of tribesmen in the programme and decrease in the intensity of threat factors could be attributed to this conservation programme. Now the programme has got wide acceptance, MoEF has supported 2010 for the continuity of the programme and other research initiatives like artificial nest installation, habitat monitoring and

management has been started here as a long term measure.

## References

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