CEPF SMALL GRANT FINAL PROJECT COMPLETION REPORT

Organization Legal Name:	Amitha Bachan K. H.
Project Title:	COMMUNITY BASED CONSERVATION AND MONITORING OF GREAT HORNBILLS (*BUCEROS BICORNIS*) AND MALABAR PIED HORNBILLS (*ANTHRACOCEROS CORONATUS*) AND THEIR HABITATS OF THE ANAMALAI PART OF SOUTHERN WESTERN GHATS, INDIA THROUGH EMPOWERING THE ENDEMIC 'KADAR' TRIBE
Date of Report:	October-November 2010
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CEPF Region: **Western Ghats, India**

Strategic Direction: CEPF strategic Direction 1- Enable action by diverse communities and partnerships to ensure conservation of key biodiversity areas and enhance connectivity in the corridors

Grant Amount: $10,000

Project Dates: **1st September 2009 - 31st August 2010**

Implementation Partners for this Project (please explain the level of involvement for each partner):

The Kadar ethnic group & Forest department

The Kerala Forest Department (Vazhachal Forest Division and Parambikulam Wildlife Sanctuary of Anamalai) are supposed to implement the conservation and monitoring programme with the involvement of 'Kadar' ethnic community during and after the project period.

The adjacent forest divisions (Chalakkudy, Nelliyampathy and Malayattur) are expected to start the similar process after the completion of the project period.

The concerned community organizations (VSS/EDC) of the 'Kadar' ethnic community under each divisions of the forest department are also expected to continue the program. The Vazhachal Forest Division has engaged 8 tribesmen from 6 Kadar settlements of the division this year to protect and monitor hornbill nest sites (January –

March 2011). Tiger monitoring team (existing) and the hornbill monitoring team (developed as part of this project) of the Parambikulam Tiger Reserve has been engaged this year to monitor hornbill nests and nest sites by the Forest Department. The PI is monitoring and co-coordinating the process towards the preparation of 'Participatory Hornbill conservation and Monitoring Plan for the Parambikulam Tiger Reserve and adjacent region'. This would complete with commencement of this nesting season (April-May).

The WWF India is supporting the tribesmen of the Vazhachal Forest Division rest of the months as part of the 'Ecological Monitoring Process'. This is also part of CEPF project sanctioned to WWF India and The PI is preparing an 'Ecological monitoring frame work for the Vazhachal forest division involving Kadar' as a consultation to the WWF India. That involves monitoring of NTFP species and few endangered species including Hornbills.

Conservation Impacts

(Please explain/describe how your project has contributed to the implementation of the CEPF ecosystem profile).

The explanation should be geared towards mainly 1.3. Support civil society to establish partnerships with state agencies to implement science-based management and conservation of priority sites, and only additionally 2.1 Monitor and assess the conservation status of globally threatened species

Identification of Major Conservation Issues

The project area (Anamalai) landscape is one of the three biodiversity hot spots in the Western Ghats (Nayar 1996). It was reported as the most important habitat for Hornbills in the entire Western Ghats Mudappa & Raman 2007). Degradation of potential forests with suitable nesting trees (large old growth trees with natural cavities) and poaching of hornbill squabs were reported as the major reasons for the diminishing hornbill population (Kemp 1995, Poonswad 1998, Kannan and James 1999). Forest fire, degradation of nesting trees and their vegetation due to past forestry operations, threat of conversion of forest area and traditional poaching by the ethnic community were identified as major threats to the hornbill population in the area by the present study.

Impact on the Kadar tribe and their empowerment

The project succeeded in locating and protecting 62 Great Hornbill nests and six Malabar Pied Hornbill nests. All the nests were monitored and protected ensuring fulltime involvement of 27 Kadar tribesmen from nine settlements (eight VSS/EDC's) under Vazhachal and Parambikulam divisions of the area. A preliminary survey was conducted in the adjacent divisions (Chalakkudy, Nenmara and Malayattur) involving (8) tribesmen from these areas as part of the program. Awareness programs, participatory surveys, monitoring and protection of nest trees have helped to spread a message across the landscape on the significance of the conservation of hornbills as well as the role of local communities (especially forest dwelling primitive *Kadar* tribes) in conservation and management of the native species. Involving the Kadars in conservation of the endangered flagship bird of the state while ensuring the livelihood of the people, i.e., supporting their traditional practices in forest dwelling, has been

recognized as good example of participatory conservation and monitoring process. The concept not only increased the potential of conservation but also succeeded in ensuring the rights of the tribe, and promoting a shift from 'right to hunt (food)' to 'right to protect a sustainable means of livelihood.

The project also succeeded in empowering the tribesmen in scientific survey and monitoring. Few of them were selected as trainees. A survey format, schedule and protocol were developed for the entire landscape with sub-plans for all the administrative divisions.

Impacts on Hornbill Conservation

Scientific survey of the vegetation characteristics and incorporation of GIS (Mapping) of the selected nest sites revealed varying status of nesting habitat within the landscape unit also within various vegetation types. The data revealed that 75% of the existing Great Hornbill nest trees experience at least a single factor of degradation of the nesting habitat. This indicated three important needs to assess the status and conservation of hornbills in the area. 1. Need for assessment of vegetation status of nesting and foraging habitat of the Hornbills especially the larger hornbill species (Great Hornbill and Malabar Pied Hornbill), 2. Need for vegetation enhancement and protection of nesting habitat based on detailed study involving local ethnic communities, and 3. Need for assessment of the conservation status of the birds based on the extent of vegetation, status of nesting and foraging vegetation, and status of nesting trees in their whole distribution range. The restriction of the Malabar Pied hornbill into very low elevation evergreen forests or riparian forests (100-400m MSL), endangered status of the habitat and nest trees of Malabar Pied Hornbill in its only existing habitat in Kerala reveals that the bird is highly endangered, and it has to be considered under endangered category.

Mapping of the vegetation and nest locations of the Hornbill species reveals information on their distribution in relation to evergreen vegetation of the landscape. This provides data on the fragmentation of the habitat and also provides indications towards important vegetation corridors, and their enhancement. This could be a better link to the strategic direction 3 of the CEPF ecosystem profile.

Annexure 2. Fig. 1. Hornbill nests & extent of forests

The study reveals that hornbills are good indicators of rainforest fragment quality. It also brings out the fact that the analysis of the vegetation features (status and nature of community composition of the vegetation) is very important in real conservation and assessment of status of a species. The data generated here indicate varying degree of degradation stages of the hornbill nest trees and their habitat within a single vegetation type. Hence understanding the vegetation dynamics of hornbills and their habitat, especially of Great Hornbill, is a good indicator (tool) to understand the vegetation dynamics of the rainforest fragments. The study also provides some methodological inputs for the study of hornbills and their habitats and also on the future participatory conservation and management of species.

Impact on Vazhachal FD (CEPF Priority Site)

This project has brought out importance of the Vazhachal forest division as an important and unique hornbill habitat with representative samples of primary forest stands. This also provided the primitive 'Kadar' tribe an important role in the conservation and monitoring of flagship species. The programme helped to develop their self-esteem while supporting their traditional instinct as well as recognizing their role in conservation of primary forests of the area through the programme.

The programme brought international attention to the importance of the area through strong scientific documentation. The recognition of the low elevation riparian forest at Vazhachal as an important and unique habitat for all the south Indian species of hornbill has become one of the few important reason to stall the commissioning of proposed Athirappilly Hydro Electric project.

The programme also recognized as an important initiative to bring proper long-term conservation of the area with the involvement of the 'Kadar' community. The methodology has become significant to establish community right and habitat right to the primitive tribe 'Kadar' while implementing Forest Right Act.

Please summarize the overall results/impact of your project against the expected results detailed in the approved proposal.

1. The project succeeded to develop a systematic monitoring and protection programme for hornbill nest sites of the target area (Parambikulam Wildlife Sanctuary and Vazhachal Forest Division) involving 'Kadar' ethnic groups under the department of forests. Also, the study succeeded to initiate a potential survey in the contiguous habitat in the adjacent forest administrative divisions (Chalakkudy, Nenmara and Malayattur divisions).

2. A total of 62 Great Hornbill 6 Malabar Pied Hornbill nests were protected during the study.

Map1. Distribution of Hornbill Nest sites (Annexure 3.)

The study area covers an overall 83% (1727 sq. km.) of the total area (2077 sq. km.) of the landscape and 95% (1810 sq. km) of the Kerala part of the landscape. Intensive surveys for nest trees were carried out in the Vazhachal forest division and the Parambikulam Wildlife sanctuary covering 33% of the potential hornbill habitat of the landscape and 49% of its Kerala part

3. The Participatory Conservation

The process entailed the continuous involvement of 27 Kadar tribesmen from 11 settlements of the Vazhachal and Parambikulam forest divisions. Continuous involvement of tribes from Anapantham settlement (Chalakkudy division) was not obtained because of short duration of the project. But, an initial survey of the Hornbill nest sites was conducted from the area and also from Nenmara-Nelliyampathy.

The program was operated through the concerned forest department and involvement of VSS (Vana Samrakshana Samithy)/ EDC (Eco Development

Committee. In the Vazhachal Forest Division an internal fund rising for the program was done this year for the engagement of the tribesmen during nesting season. This helped in ensuring the sustainability of the program. The project supported internal meetings, engagement of the tribesmen during non-nesting periods, training, and also extended support during the end of the nesting season after the forest department support elapsed. But an action plan was prepared based on the distribution of the hornbills in the areas and their ecological requirement for all the forest administrative units of the Kerala forest department (excluding Tamil Nadu area) of the landscape. This would help to continue the participatory conservation and monitoring process during the coming years.

The tribesmen were empowered to such an extent that the Vazhachal and Parambikulam forest divisions can continue the monitoring autonomously. Training of the forest department staff and monitoring of the progress of the work would be the only necessity. A technical support for the other forest divisions (Chalakkudy, Nelliyampathy and Malayattur) may be required for achieving the final goals.

4. Reduced pressure on NTFP (Non Timber Forest Resources)

Though the main NTFP collectors (forest dwelling people) were engaged in the conservation and monitoring of hornbill during the nesting season (January – May), their dependence on the NTFP for livelihood shifted to the conservation programme. This has reduced their dependence on the NTFP resources.

As a result the programme paved way for the “Ecological Monitoring” programme to monitor the NTFP and endangered species this year 2011 under the CEPF programme of WWF India, towards the preparation of a long-term ecological monitoring frame work for the division.

5. & 6. Status of the Great Hornbills in the Kerala part of Anamalai Landscape unit

Out of the 62 Great Hornbill nests monitored, 46 (75%) were prone to forest fire previously, 32 (52%) had been poached by tribesmen, 37 (60%) had some sort of damage to nest trees and 6 (10%) fell down during last 5 years. This indicates that only 15% (16) trees are safe from degradation. The degradation factor positively correlated with degraded stages of the representing vegetation. Undisturbed nest sites positively correlated with forest areas with better tree density, diversity and extent.

Fig. 1.1 Threat Factor Index Annexure 2.

The hornbill nest density in the area was found to be 0.26 per sq. km. of the evergreen forest habitat. It is correlated more with the extent of evergreen forest habitat than the total forest area. In non-evergreen forests, Great Hornbill nests were restricted to semi evergreen and riparian zones of the moist deciduous forests.

Status of Malabar Pied hornbill in the Southern Western Ghats

The study revealed that the Malabar Pied Hornbills are endemic to low elevation (100-300m) evergreen forests. In the Moist Deciduous Forests, they are confined to the low elevation riparian evergreen/semi-evergreen forests. In

the study area the distribution of Malabar pied hornbills are restricted to 300ha of low-elevation riparian forest in the elevation range of 100 – 350 m MSL. Only 6 nests have been identified so far and maximum population was 12-16 individuals.

These indicate very narrow distribution range of the species (0.3 %) of the total potential forest area of the landscape. All the nest trees are under threat from various factors, especially damage to tree due to degradation and opening of the forest, damage to the roots due to flash flood induced by dams and degradation of nest trees due to forest fire of the past.

The riparian vegetation at Vazhachal – Athirappilly region (Athirappilly, Vazhachal and Charpa ranges) of the Vazhachal forest division is the last remaining habitat of the Malabar Pied Hornbill in the Kerala part of Western Ghats.

The entire Malabar Pied Hornbill habitat is under threat by the Proposed Athirappilly Hydroelectric Project by the Kerala State Electricity Board. This indicates urgent measures to protect the species from local extinction. There is a need for urgent attention of national and international conservation communities.

The study also indicated that the Malabar Pied Hornbill has a very narrow range of distribution. A detailed species-habitat assessment all over its distribution range is needed. Also raising of its conservation status to 'Endangered' category is important.

7. Potential hornbill habitat in the landscape (identification of critical areas)

The potential forest area suitable for hornbill nesting in the landscape is about 890 sq. km., about 43 % of the total forest area (2027 sq. km) of the landscape. This includes 620 sq km (70%) within six forest administrative divisions of the Kerala state and the remaining 270 sq km (30%) in the Valparai-Topslip area of Tamil Nadu. The project area under the study covers 588 sq. km (65 %) of the forest area of the landscape. Among the various administrative units in the Kerala part of the landscape the Vazhachal forest division occupies maximum extent of evergreen forest habitat suitable for Hornbills, 191 sq. kms (30%). This is followed by Parambikulam Wildlife sanctuary 111 sq. kms (18%), Nelliyampathy forests 110 sq. kms (18 %), Malayattur forests 101 sq. kms (16%), Chalakkudy forests 74 sq. kms (12 %)., and Chimmony forests 32 sq. kms (0.5 %)

Table 1. Hornbill Nest data from the landscape (See Annexure 1)

The Sholayar and Vazhachal forests of the Vazhachal forest division account for 80% (based on density per potential forest area) of hornbill nests of the study area. The present implementation area (Parambikulam and Vazhachal) covers nearly 50% of suitable hornbill habitat of the landscape. The program provided basic data and methods for doing similar species/habitat conservation and monitoring program in the adjacent forest divisions.

Some important hornbill conservation priority sites of the landscape are follows:

1. The data shows (Map 2) hornbill nesting grounds at Vazhachal (180-220m MSL), the riparian forest is the most threatened and unique habitat.

i. The area is <5 sq. kms,

ii. vegetation is degraded,

iii. Unique nesting habitat for three important (Great Hornbill, Malabar Pied Hornbill & Malabar Grey Hornbill),

iv. only available nesting location of Malabar Pied Hornbill in Kerala & v. the low elevation (180m MSL) nesting ground of Great Hornbill.

The riparian forest is 10-40m width and the adjacent area is the Teak plantation. Urgent vegetation enhancement measures has to be taken to ensure the protection of the habitat

2. The 'Karianchola' area of the Parambikulam Wildlife Sanctuary also posses little extent of forests and need special protection

3. The Vazhachal, Charpapadam, Poringalkuthu-Karanthodu and Anakkyam areas of Vazhachal forest division and the Vengoli area of the Parambikulam Wild Life Sanctuary have >5 sq. km forest area but are heavily degraded and need special attention

4. The Nelliyampathy, Thuthanpara, Kavala, Karapara- Orukombankutty, Sholayar-Karimala- Malakkapara and Valpara region represent best hornbill nesting grounds of the landscape with primary forest areas > 50 sq. kms.

The Malakkapara – Karimala – Sholayar – Orukombankutty region represent maximum density of Hornbill nests and high extent primary forest.

Bioclimate and Vegetation of the landscape

A detailed bioclimate and vegetation of the landscape were derived and mapped during the process using the information provided by (Amitha-Bachan 2010) and following the methodology and classification provided by (Meher-Homiji 2001). This indicated a gradient of Dry Deciduous bioclimate (<1500mm rainfall and 5-7 dry months – Kuriyarkutty area of Parambikulam) to Wet-evergreen (>3000mm rainfall, 2-3 months dry months – Valparai -Sholayar-Nelliyampathy) regions. The potential hornbill habitat includes a range from Dry evergreen forests in the Top Slip-Karianchola area to wet evergreen forests. The intermediate range includes low elevation evergreen and wet evergreen forests (Medium – High elevation) Hornbill nest sites were also recorded in the secondary forest types like semi-evergreen and moist deciduous forests. In the case of Moist Deciduous Forests, hornbill nests were confined to riparian evergreen vegetation. The riparian vegetation in a moist Deciduous Forest habitat represents Evergreen and Semi evergreen riparian forests (Amitha-Bachan 2010).

Annexure 3. Map 1. Hornbill Nest locations

The important hornbill habitats of the Chalakkudy and Nenmara forest divisions has become a part of the Parambikulam Tiger Reserve along with upper reaches of the Vazhachal Forest Division. The vegetation map provides distribution of hornbill nest sites and importance of the Vazhachal Forest Division.

All the data would contribute to the CEPF-funded Western Ghats Biodiversity Portal Project

Implication of the participatory conservation programme

It is the first model participatory conservation and monitoring programme for the Hornbills involving local ethnic communities from our region. It also ensures the right of the forest dependant primitive ethnic community over the forest without compromising either forest conservation priorities or the traditional instincts of the ethnic group. This study also provided an in-depth analysis of the paucity of nests and nesting grounds of the Great hornbill and Malabar Pied hornbill in its most pristine and important habitat in the Western Ghats.

Fig. 3. Nest trees of Great Hornbills Annexure 2.

The Great Hornbill and Malabar Pied Hornbill here found to depend on large old growth trees for nesting. These include 19 different species, 95% of which are the dominant trees of the different forest types of the hornbill nesting grounds (fig. 1). About 90% of the species are endemic plants and 50% are of endangered (RET) category. About 85% of the nest trees are susceptible to at least a single cause of threat.

Hornbill Nest sites - Indicators of the status of the available primary forest

The vegetation data of the hornbill nesting grounds reveals the real status of the representing forests. It also provides insight into the future forest dynamics and survival of the hornbills and their dependant nest trees in future. The vegetation analysis of the nesting ground revealed 10 different community compositions to the Great Indian Hornbill nesting grounds. It was segregated using Species similarity/ dissimilarity between the studied vegetation plots.

Fig. 4. Cluster Analysis of the Hornbill nesting vegetation, Annexure 2.

These 10 clusters were analyzed for vegetation characteristics such as diversity (Shannon & Simpson) and Basal Area in order to reveal hierarchy in between.

Fig. 5. Comparison of nesting habitat type, Annexure 2.

This revealed that the Hornbill nesting locations represent 10 different conditions of the primary evergreen forest vegetation. This include highly diverse vegetation (Cluster 4 - Vazhachal & Cluster 7 – Sholayar) to heavily degraded vegetation (Cluster 9 – Vazhachal & Cluster 10 – Parambikulam).

Fig. 6. Plant community composition of the (Low-elevation evergreen undisturbed) Annexure 2.

Fig. 7. Plant community composition of the group 7, Sholayar (Medium elevation evergreen undisturbed) Annexure 2.

Fig. 8. Plant community composition of the group 9, Vazhachal (Low-elevation evergreen undisturbed) Annexure 2.

Plant community analysis of the 10 vegetation clusters provided 10 different community compositions to the representing vegetation types. This includes heavily degraded vegetation stands (Vazhachal) with abundant secondary growth of *Ochlandra* (Fig. 8), to highly diverse low elevation evergreen (Fig. 6) at Vazhachal and highly diverse medium elevation evergreen (wet-evergreen or rainforest) at Sholayar (Fig. 7).

The vegetation data on hornbill nesting grounds forms the requirements for the next level intervention in the conservation and management of the hornbill habitat. The data indicate requirement for varying vegetation protection and enhancement measures for each and every hornbill nesting grounds. These includes raising of nursery of hornbill nesting tree species and their associated plants, planting based on the requirement and priority, protection from further degradation and also various protection and nesting enhancement measures for each nesting trees. All these need involvement of the ethnic 'Kadar' community and their expertise in the collection seeds, rising of nursery, planting and protection. This could develop a mosaic of enhanced vegetation units around each hornbill nests in near future

Future and sustainability of the program

It is supposed to evoke policy level changes to incorporate these ethnic communities in management of forest resources especially among hornbill habitat. Only such a policy change can ensure sustainability of the conservation and monitoring program. The program succeeded to bring a requisite for the continuity of the process from the part of the forest department and also from the tribesmen. Because of this, the Vazhachal Forest Division decided to continue the program during the succeeding year (2011) and the empowered tribal group has played a crucial role as an important pressure group to ensure the continuity. The tribesmen have made their need to continue the process to the forest department during the last VSS meeting at Vazhachal. This could be regarded as a great success of the program.

The Vazhachal division has implemented the conservation program using their high value biodiversity management support during the project period (2009-10)The CEPF-ATREE Small Grants Program provided basic facilities, training and helped to fill necessary gaps in order to strengthen the process. The Vazhachal Division is continuing the process in this year (2011) and that is a successful impact of the program. Continuation of the program in the adjacent areas (Parambikulam, Chalakkudy and Nelliyampathy) is also on progress.

Please provide the following information where relevant:

Hectares Protected:

Important 62 Great Hornbill nest site locations and six Malabar Pied nest site locations of the 23700 ha primary forests of the Vazhachal and Parambikulam Tiger Reserve.

Species Conserved:

Great Hornbill (*Buceros bicornis*) and Malabar Pied Hornbill (*Anthracoceros* coronatus) supporting the interest of the primitive forest dwelling 'Kadar' ethnic community

Corridors Created:

The project helped to generate data to identify important rainforest fragments and corridors in the landscape. This could be an indication for the future conservation program. Map. 2. (Annexure 3)

The low-elevation riparian forest at the Athirappilly-Vazhachal (100-250m MSL) along the Chalakkudy River in the Vazhachal Forest Division is the only available such habitat in the Southern Western Ghats (Amitha Bachan 2010). It is the low-elevation nesting site of Great Hornbill (180m) and only available nesting location of the Malabar Pied Hornbill in the region.

The primary forests of the Vazhachal forest division records maximum hornbill nests compared to that of Parambikulam Wildlife Sanctuary and Nelliyampathy (Map. 1 & Fig. 1).

Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives.

Empowering the tribe

Since most of the tribal participants (80%) are illiterate, the monitoring and recording of the data progressed very slowly. An external support was required for recording the data. Engaging the tribesmen in a group of two, at least one with some knowledge to write either in Malayalam or Tamil was a successful experiment. Training of three persons in record keeping and field training also supported the program. Engagement of three (one full time and others part-time) trainees from the tribesmen also supported the process in great extent. Awareness programs in all the tribal settlements also had a great impact on the process. The involvement of the tribesmen in the program also enhanced their involvement in various conservation and PFM activities in the area.

Fig. 9. Tribal Participation in the Programme Annexure 2.

The programme provided chances for participation of more tribesmen representing the important hornbill habitat of the landscape. Also it extended support for these forest dwelling tribesmen 5-8 months apart from that provided (8 men three months) by the Vazhachal Forest Division.

Participation of the 'Kadar' tribesmen contributed to the biodiversity conservation of the area through following ways:

- This hornbill monitoring process increased perambulation and patrolling of the entire forest area and strengthened protection from poaching and forest fire (The nesting season of hornbill is the fire season)
- Protection of the all the nesting trees from poaching and forest fire ensured this year
- The participation of the tribesmen from forest area other than Vazhachal forest division (Parambikulam, Nelliyampathy & Chalakkudy) was for the first time and that has initiated the need of protection of hornbills and their nesting grounds in the area
- As a result this year the Parambikulam Tiger reserve has engaged the Tiger Monitoring team and the Hornbill monitoring team to continue the activity.
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Fig. 10. Tribal Participation for the last 6 years Annexure 2.

Empowering the forest department staff & the Public

The forest department staff, especially those in charge of VSS / EDC was (5 VSS & 2 EDC) involved in the monitoring of the activities of the conservation programme. They also trained to document data on the monitoring sheets and also to engage the tribesmen regularly. The forest staff in charge of VSS/EDC and the Range officers attended every meeting and training sections. They were also provided with field book, pamphlets and data sheet. This has supported to make the hornbill conservation and monitoring process as part of the existing protection mechanism of the area (Forest Department – Tribal VSS link). This would help in the preparation of a long-term plan for the monitoring and protection of hornbills and other forest resources. It has initiated this year 2011 with the collaboration of FD, Kadar tribe (mainly the hornbill monitoring team), WWF India towards the preparation of a long term ecological monitoring frame work for the region.

A total of 39 public awareness programs were conducted during this period. Nine were done in various tribal settlements, 1 in the tribal school, 1 in a model residential school, 2 in the local public places, 18 in the nature camps and 8 in various schools around the area Photographs, posters and a documentary were exhibited during the program. Pamphlets and short information notices were also distributed. This has helped to spread a message of the significance of the area, especially as an important hornbill habitat among the civil society and future generation. Many have raised their concern over the threat to Low-elevation hornbill habitat, mainly the only available Malabar Pied hornbill habitat and the riparian forest during the discussion of the impact of Proposed Athirappilly Hydro-electric project in Vazhachal (Hindu, 19-3-11, Annexure 4.).

Were there any unexpected impacts (positive or negative)?

The programme brought out the importance of local indigenous communities and their expertise for implementing various conservation measures. This has a great

stake in the real conservation and enhancement forests and important species in future.

The Hornbills habitat data – provide detailed information of the gradient of degradation of representative habitat – thus providing insights on the future forest dynamics.

Important conservation units were identified from Hornbill nest data and the habitat data (Map. 2)

The program brought out the need for correlating the vegetation aspects of the habitats in species-oriented studies and conservation programs.

Lessons Learned

Project Design Process: (aspects of the project design that contributed to its success/shortcomings)

Selection of the right problem (hunting or poaching of Hornbills), right area (most important hornbill habitat in the Western Ghats) and the right participants (the Kadar tribes & Forest Department) were the reasons for the success of the program.

This arose from scientific observation of the hornbills, the local ethnic community and the dependant habitat. The hornbills and Kadar depend on same forest habitat and also each other for their survival. The depletion of the habitat is equally threatening both the 'Kadar' and the Hornbills.

Step-by-step improvisation of the process with regular scientific experimentation and lessons learnt from the experiments was another reason for success.

Expertise in the plant taxonomy, bioclimate, vegetation and geography of the area provided basic tools. This multipronged approach explains the success of the program.

Empowerment of the tribe while supporting their legacy has helped in ensuring the continuity of the program. The hornbill monitoring guards are important role players in the forest management activities of the area. They acted and continue to act as an important pressure group to persuade the forest department to continue the program.

Project Implementation: (aspects of the project execution that contributed to its success/shortcomings)

A deep understanding of the community, their tradition and continuous interaction with the people supporting their traditional instincts were the major reasons for success.

A good understanding of the landscape and a multidisciplinary and ecological approach incorporating vegetation, geographical and ecological data, also contributed to the success of the programme.

The empowerment of the community and the scientific backup of the process played equal and crucial role for the success of the program.

Other lessons learned relevant to conservation community:

The 'Kadars' have great expertise in difficult rainforest terrains of the Anamalai. Their non-agrarian and non aggressive life practice has a great role in the conservation of the rainforest habitat of the area.

The increased alcohol consumption that comes with increased earning is a serious problem concerning the tribes. This can become a reason for a cultural extinction of many tribal groups. The present program has become an example of the empowerment of a primitive tribe in a right direction. As a result most of the tribesmen have began to participate seriously with many decision-making process related with their community.

The project throws light on the importance of raising their self-esteem with increased earnings. Identification of correct livelihood avenues for them by participatory means was an important reason for the success of the project.

The hornbill conservation program was an indication in the right direction. The program not only supported their traditional instinct to wander in the forest but also provided a respectful position for their skills and knowledge. This would be far better and sustainable way and, coupled with effective tourism management, can improve livelihoods for the primitive tribal group.

ADDITIONAL FUNDING

Provide details of any additional donors who supported this project and any funding secured for the project as a result of the CEPF grant or success of the project.

Donor	Type of Funding*	Amount	Notes
Forest Department	Employment of tribes High Value Biodiversity Fund	Rs. 1,00,000	Engaging 8 tribesmen for Three months of the nesting season in the Vazhachal Forest Division

****Additional funding should be reported using the following categories:***

A *Project co-financing (Other donors contribute to the direct costs of this CEPF project)*

B *Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF project.)*

C *Regional/Portfolio leveraging (Other donors make large investments in a region because of CEPF investment or successes related to this project.)*

Sustainability/Replicability

Summarize the success or challenge in achieving planned sustainability or replicability of project components or results.

Involving the primitive tribal people and the forest department in the conservation of an endangered bird species was the great challenge in the project.

The short duration of the project was also a challenge and it was tackled with past five years of experience in the area and subject. The following aspects contributed to the success of the programme:

1. Our expertise in the area and familiarity with the people,
2. Implementation of the program through their community organisations (VSS/EDC) under forest department,
3. Selection of experienced tribesmen as trainees and
4. Identification of correct space within the conservation mechanism of the forest department.

Delay in the processing of permission from the forest department especially for the protected area (Parambikulam WLS) was a problem to begin the work.

Data gathered during past few years (The PI's Ph.D. programme to assess the riparian vegetation) in the landscape, voluntary support rendered to various programs of the forest department and expertise in GIS helped in analysis of the bioclimate and mapping of the vegetation of the area.

This program provides a strong base and methodology for future resource (forest, NWFP, species, watershed) management involving local communities especially ethnic communities. This has become inspiration for other programs envisaged in the areas especially concerned participatory management and ecological monitoring of the NTFP's (Non Timber Forest Produces). We foresee this would initiate proper eco-restoration program with proper participatory habitat enhancement activities in near future.

Summarize any unplanned sustainability or replicability achieved.

An analysis of the extent of potential habitats, assessment of the nesting habitat brought out four important aspects

Understanding of the species –habitat (extent, status and composition of the vegetation) relationship was very important in sustainable conservation and management of a species.

The varying status of nesting habitats in the area revealed the importance of the Hornbills as an indicator of the varying conditions (status) of a rainforest habitat.

The data gathered here indicated that the extent of vegetation provide only a superficial account on the status of vegetation and assessment of its

quality (status) and has great implications in the sustainable conservation of a forest related species, especially Hornbills.

The detailed understanding of habitats, identification of nesting grounds and identification of dependant plant species were done with the help of local ethnic communities. If blended with scientific expertise can provide quality tools for the conservation of important species and their habitat. All the 30 great hornbill and 6 Malabar Pied Hornbill nests were located using the previous knowledge of the tribe. Remaining 32 were identified with their improved skill supported with scientific surveys, continuous interaction and the effort of the whole team.

The forest department recognized the participatory conservation and monitoring of the flagship bird as an important step in the conservation of the species and their habitat. As a result the forest department initiated conservation and monitoring of Hornbill nesting sites involving the 'Kadar hornbill monitoring guards' in the Vazhachal, Nelliyampathy, Malayattur forest divisions and Parambikulam Tiger Reserve this year (2010-11).

The cooperation of the Kadar tribal people, their involvement and increased self esteem is remarkable and their requisite for the continuation has become a reason for the continuation of the conservation programme this year.

Safeguard Policy Assessment

Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project.

The execution of the entire process was very transparent during all stages of its process. Total of 38 village level meetings were conducted in nine important villages of the area. 20 regional level meetings, 6 centralized meetings, 36 field trainings and 15 awareness programmes were conducted for the tribesmen during this period (Table 5.).

Incorporation of Forest Department staff, tribal VSS/EDCs members and village elders were ensured in the meetings and that provided provisions to express the participant's complaints and opinions on a regular basis. Hence the Divisional Forest Officers and the project team (including tribes) had the opportunity to take necessary steps towards implementation of the safeguard policies.

Performance Tracking Report Addendum

CEPF Global Targets
(Enter Grant Term)

Provide a numerical amount and brief description of the results achieved by your grant. Please respond to only those questions that are relevant to your project.				
Project Results	**Is this question relevant?**	**If yes, provide your numerical response for results achieved during the annual period.**	**Provide your numerical response for project from inception of CEPF support to date.**	**Describe the principal results achieved from July 1, 2007 to June 30, 2008. (Attach annexes if necessary)**
1. Did your project strengthen management of a protected area guided by a sustainable management plan? Please indicate number of hectares improved.	Yes			Reserve Forests, 500 ha, protection from fire and poaching
2. How many hectares of new and/or expanded protected areas did your project help establish through a legal declaration or community agreement?	No			
3. Did your project strengthen biodiversity conservation and/or natural resources management inside a key biodiversity area identified in the CEPF ecosystem profile? If so, please indicate how many hectares.	Yes	Samples of 23700 ha		Ensured protection (from fire and poaching) of important regions in the Vazhachal Forest Division : 19100 ha Parambikulam Wild Life Sanctuary : 4200 ha
4. Did your project effectively introduce or strengthen biodiversity conservation in management practices outside protected areas? If so, please indicate how many hectares.	Yes	19199 ha		Vazhachal Forest Division : 19100 ha Involved more people in conservation of an endangered species and monitoring of its nest trees. Such conservation practice is new to the areas outside protected areas
5. If your project promotes the sustainable use of natural resources, how many local communities accrued tangible socioeconomic benefits? Please complete Table 1below.	Yes			

If you answered yes to question 5, please complete the following table.

Table 1. Socioeconomic Benefits to Target Communities

Please complete this table if your project provided concrete socioeconomic benefits to local communities. List the name of each community in column one. In the subsequent columns under Community Characteristics and Nature of Socioeconomic Benefit, place an X in all relevant boxes. In the bottom row, provide the totals of the Xs for each column.

Name of Community	Community Characteristics								Nature of Socioeconomic Benefit											
									Increased Income due to:											
	Small landowners	Subsistence economy	Indigenous/ ethnic peoples	Pastoralists/nomadic peoples	Recent migrants	Urban communities	Communities falling below the poverty rate	Other	Adoption of sustainable natural resources management practices	Ecotourism revenues	Park management activities	Payment for environmental services	Increased food security due to the adoption of sustainable fishing, hunting, or agricultural practices	More secure access to water resources	Improved tenure in land or other natural resource due to titling, reduction of colonization, etc.	Reduced risk of natural disasters (fires, landslides, flooding, etc)	More secure sources of energy	Increased access to public services, such as education, health, or credit	Improved use of traditional knowledge for environmental management	More participatory decision-making due to strengthened civil society and governance.	Other
Kadar tribe 25 people (9 settlements)			x	X			x		x			X				x		x		x	
Kadar tribe 9 people (3 settlements)			x	X			x					X						x		x	
Malya tribe 2 people (1 settlement)			x				x					X								x	

Total				3	2			3		1			3				1		2		3		

If you marked "Other", please provide detail on the nature of the Community Characteristic and Socioeconomic Benefit:

Additional Comments/Recommendations

A participatory hornbill conservation plan for the Parambikulam Tiger Reserve and its adjacent region is under preparation involving the Kadar ethnic community, their community groups (VSS/EDC) and the forest department. This includes microlevel plans for each forest administrative units. For the preparation of a complete conservation plan for Hornbills of the area it need data from areas that did not cover in the present programme i.e. Topslip and Malayattur forest area. We are collecting data in this nesting season (February-May 2011) with the support of forest department.

Presented a paper in the Indian Biodiversity Congress 2010 Annexure 6

Information Sharing and CEPF Policy

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned, and results. Final project completion reports are made available on our Web site, www.cepf.net, and publicized in our newsletter and other communications.

Please include your full contact details below:

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Legend to Annexures:

Annexure 1

Table 1. Hornbill Nest data from the landscape

Table 2. Forest area and number of Hornbill nests monitored in detail

Table. 3. Comparison different vegetation groups / clusters

Table 4. Tribal Participation from various forest divisions 2009-10

Annexure 2. Figures

Fig. 1. Hornbill nests & extent of forests
Fig. 1.1 Threat Factor Index
Fig. 2. Nesting success of Great Hornbill and Malabar Pied Hornbill
Fig. 3. Nest trees of Great Hornbills
Fig. 4. Cluster Analysis of the Hornbill Nesting Vegetation
Fig. 5. Comparison of nesting habitat / vegetation type
Fig. 6. Plant community composition of the group 4, Vazhachal(Low-elevation evergreen undisturbed)
Fig. 7. Plant community composition of the group 7, Sholayar (Medium elevation evergreen undisturbed)
Fig. 8. Plant community composition of the group 9, Vazhachal (Low-elevation evergreen undisturbed)
Fig. 10. Tribal Participation for the last 6 years

Annexure 3.

Map 1. Hornbill Nest locations and Vegetation of the landscape
Map. 2. Important Hornbill Conservation Areas of the Anamalai landscape (Kerala part)

Annexure 4.

Report in “The Hindu” daily newspaper dated 19-3-2011
URL: http://www.hinduonnet.com/2011/02/19/stories/2011021969412600.htm

Annexure 5. Documents prepared and distributed as part of the program

a. Hornbill nest monitoring sheet
b. Pamphlets, poster and documents distributed
c. Meetings conducted
d. Field trainings
e. Nest monitoring
f. Awareness programs

Annexure 6.

Abstract of the paper presented at Indian Biodiversity Congress 2010

Annexure 1. Tables

Table 1. Hornbill Nest data from the landscape

Division	**Vazhachal**					**Parambikulam**			**Malayattur**	**Nenmara**	**Chalakkudy**	**tot**
Range	**Ath**	**Cha**	**Vaz**	**Kol**	**Sho**	**Kar**	**Sun**	**Oru**	**Kut**	**Nel**	**Vel**	
Nest data	1+2	7+2	22+2	0	28	4	0	NA	0	0	0	**68**
Habitat data	1	0	6	0	6	4	0	NA	0	3	0	**20**
Location data	2	7	22	2	31	4	2	NA	2	3	6	**81**

Ranges: Ath = Athirappilly, Cha = Charpa, Vaz = Vazhachal, Kol = Kollahirumedu, Sho = Sholayar; Kar = Karimala, Sun=Sungam, Oru = Orukomban; Kutt = Kuttambuzha, Nell = Nelliyampathy; Vell = Vellikulangara.

Table 2. Forest area and number of Hornbill nests monitored in detail						**Total**
Division	**Parambikulam**	**Vazhachal**				**2**
Ranges	PARAMBIKULAM	VAZHACHAL	SHOLAYAR	ATHIRAPILLY	CHARPA	5
Total Forest Area	285.5	85.3	135.5	82.0931	57.47	645.8631
Primary forest	46.12	41.061	118.8265	0.5	30.9612	237.4687
Great Hornbill Nests	4	22	28	1	7	62
Malabar Pied Hornbill Nests	0	2	0	2	2	6

Table. 3. Comparison different vegetation groups / clusters										
	Group 1	**Group 2**	**Group 3**	**Group 4**	**Group 5**	**Group 6**	**Group 7**	**Group 8**	**Group 9**	**Group 10**
Simpson Diversity (1/D)	8.98	9.5	12	31.01	14.25	9.895	19.61	20.182	3.255	12.6
Shannon Diversity	1.01	1.017	1.0836	1.329	1.153	1.135	1.2135	1.212	0.764	1.128
Basal Area Dominance	932.81	433.185	674.42	304.28	142.81	163.24	369.95	151.20	40.76	120.24

Table 4. Tribal Participation from various forest divisions 2009-10				
Forest Divisions	Vazhachal	Parambikulam	Nenmara (Nelliyampathy)	Chalakkudy
Tot participants	20	5	1	1
Supported By FD	8	0	0	0
Supported by the Programme	12	5	1	1

Table 5. Meetings conducted during the programme					
Name of Village / Place	**Village level**	**Regional**	**Centralised**	**Field Training**	**Awareness Programs**
Vazhachal	4	6	4	8	3
Pokalppara	3	0	0	2	1
Mukumpuzha	2	0	0	1	1
Vachumaram	4	3	0	4	1
Sholayar	6	1	0	5	2

Malakkapara	8	6	1	6	3
Kuriyarkutty	4	0	0	4	1
Earth Dam	4	0	0	3	1
Nelliyampathy*	3	1	0	2	0
Parambikulam*	0	3	1	0	1
Anapantham	0	0	0	1	1
	38	**20**	**6**	**36**	**15**

Annexure 2.

Fig. 1. Hornbill nests & extent of forests

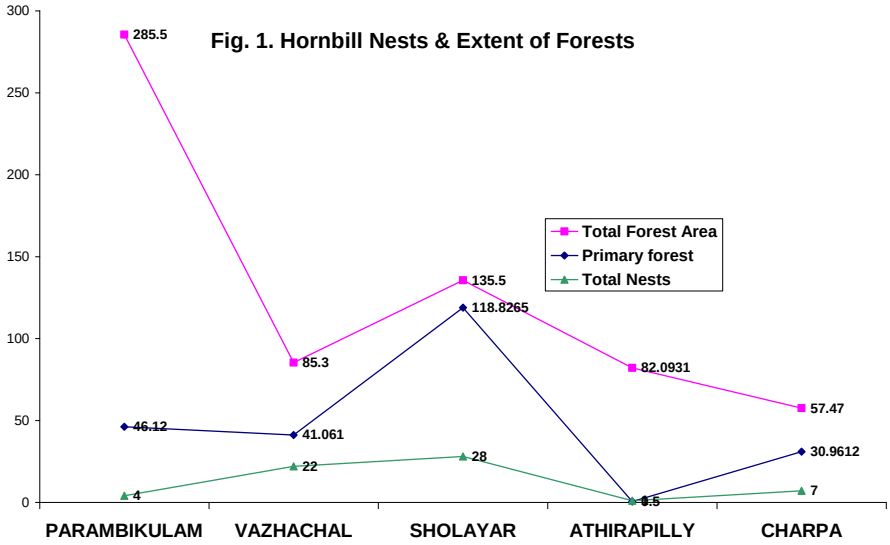


Fig. 1.1 Threat Factor Index

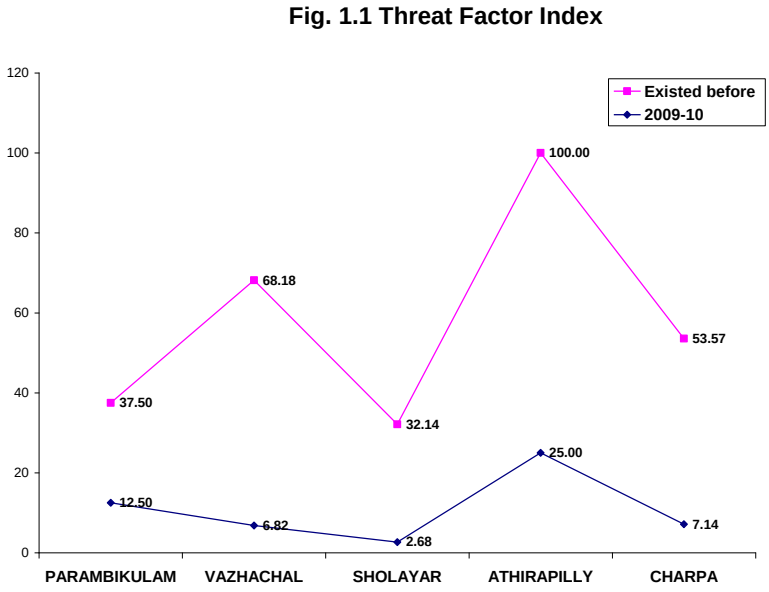


Fig. 2. Nesting success of Great Hornbill and Malabar Pied Hornbill

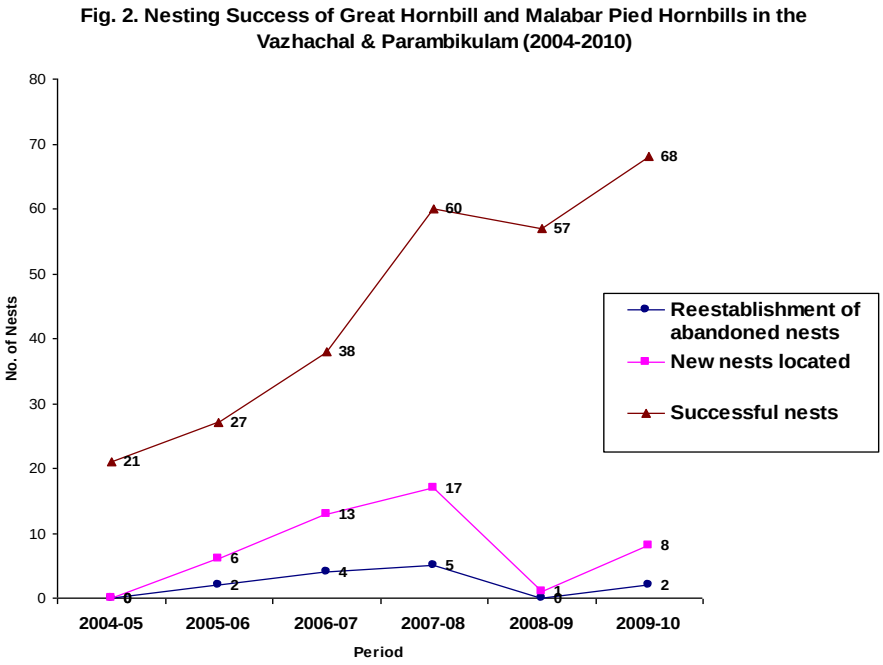


Fig. 3. Nest trees of Great Hornbills

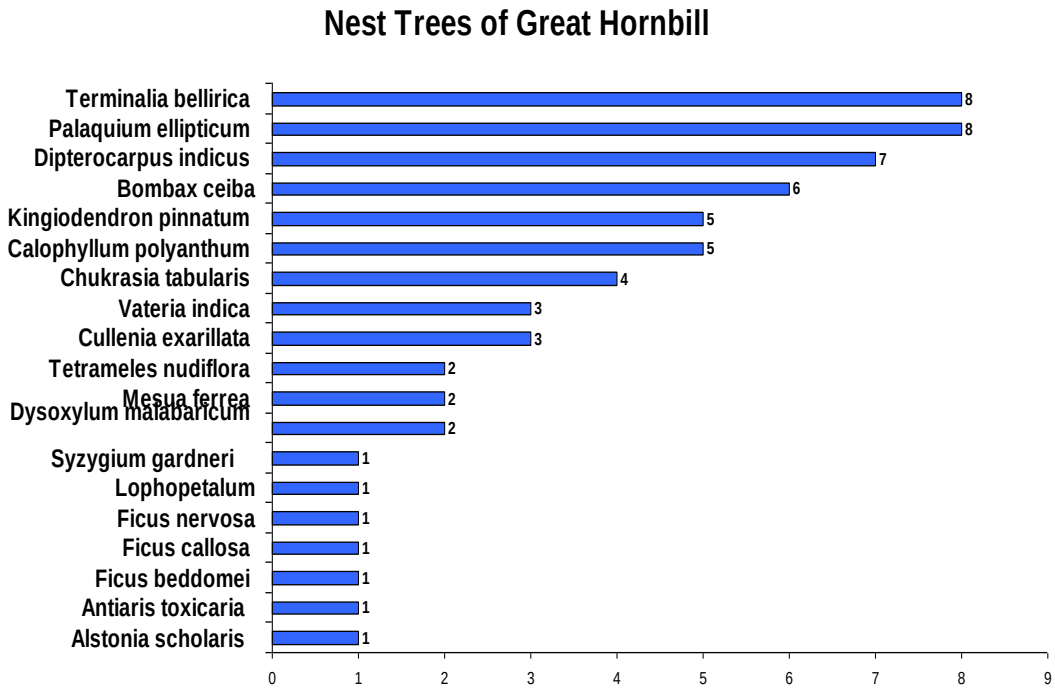


Fig. 4. Cluster Analysis of the Hornbill Nesting Vegetation

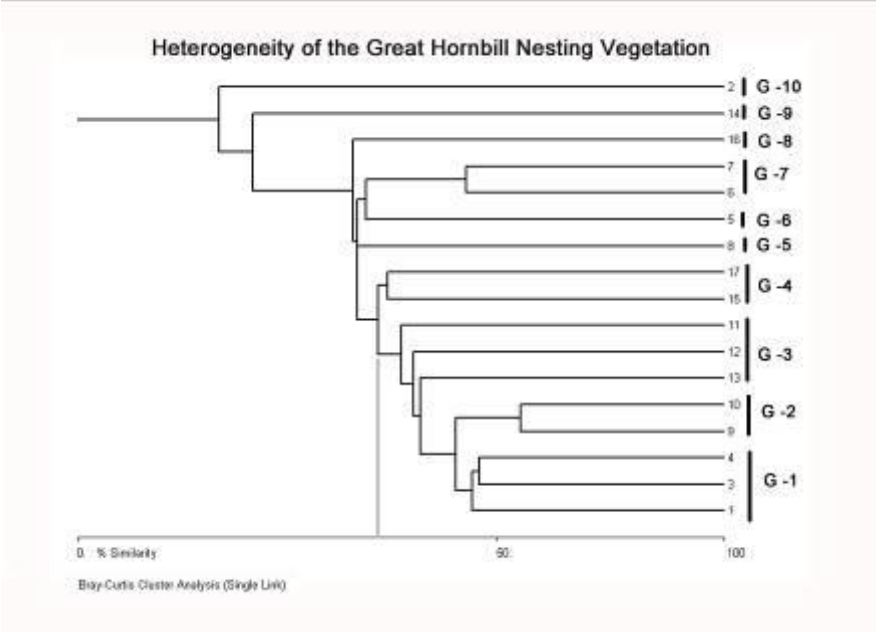


Fig. 5. Comparison of nesting habitat / vegetation type

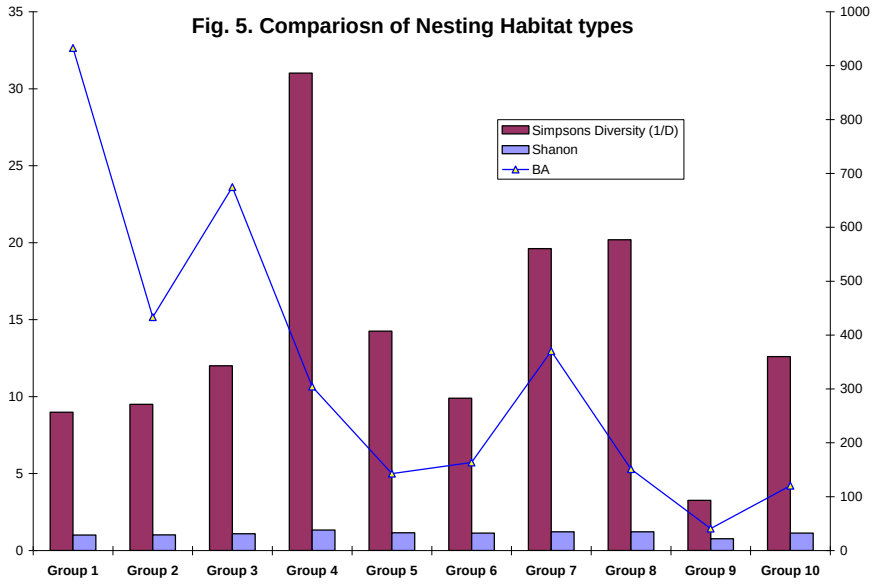


Fig. 6. Plant community composition of the group 4, Vazhachal(Low-elevation evergreen undisturbed)

Fig. 6.Dominat Plants Vegetation (Group - 4, Vazhachal)

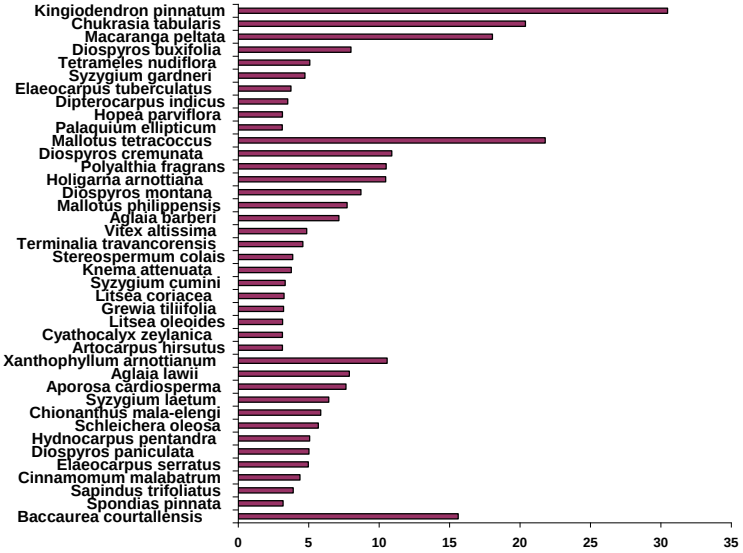


Fig. 7. Plant community composition of the group 7, Sholayar (Medium elevation evergreen undisturbed)

Fig. 7. Dominat Plants Vegetation (Group - 7- Sholayar)

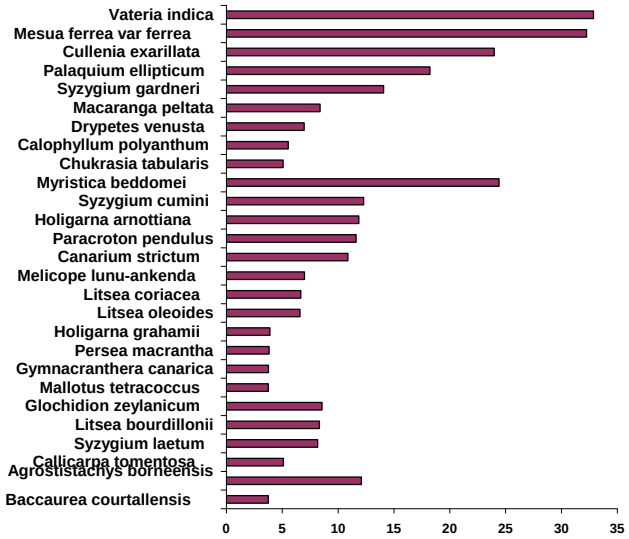


Fig. 8. Plant community composition of the group 9, Vazhachal (Low-elevation evergreen undisturbed)

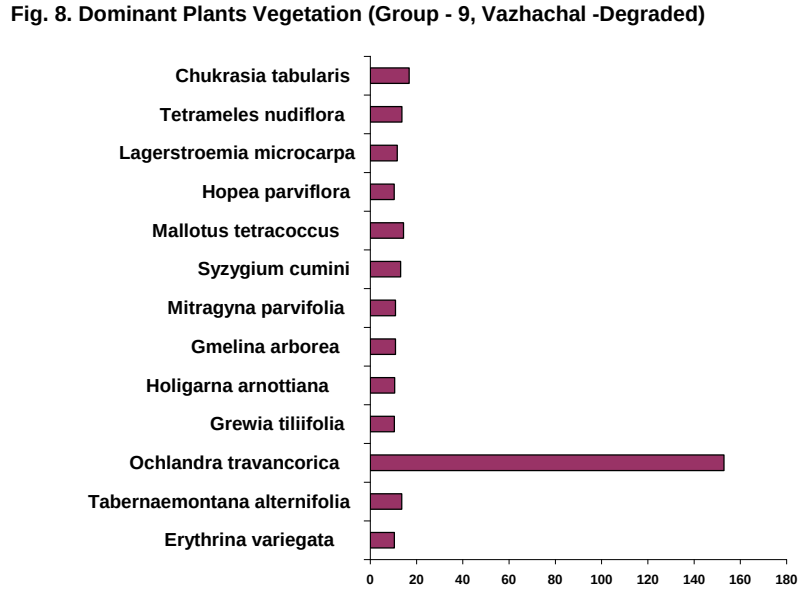


Fig. 9. Tribal Participation in the Programme

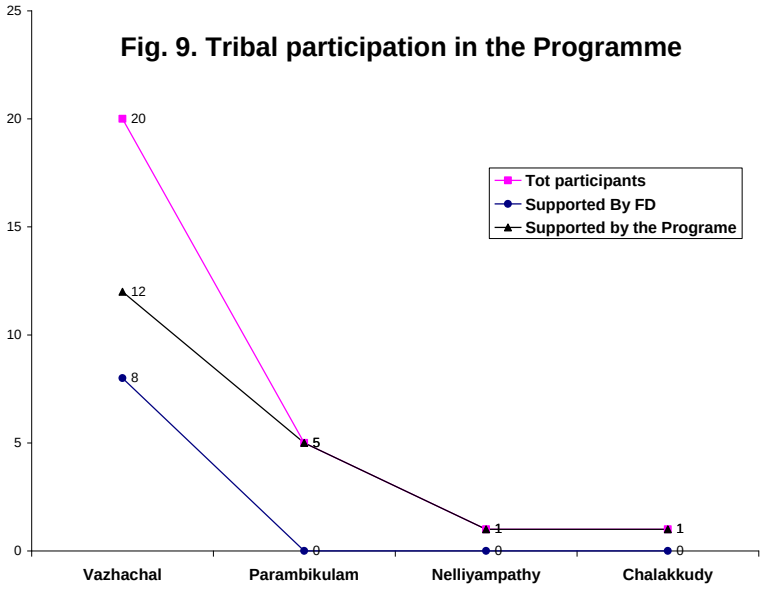
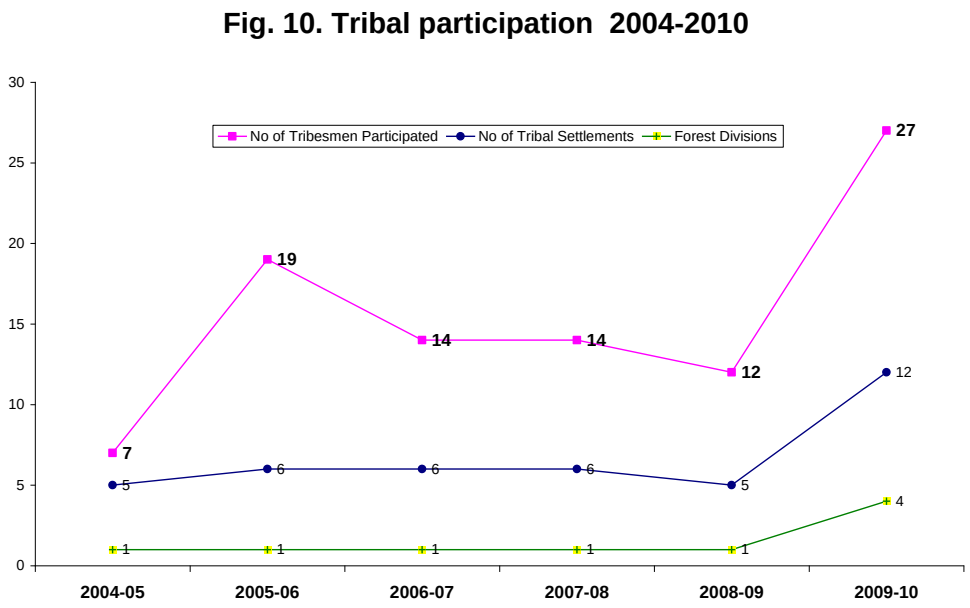
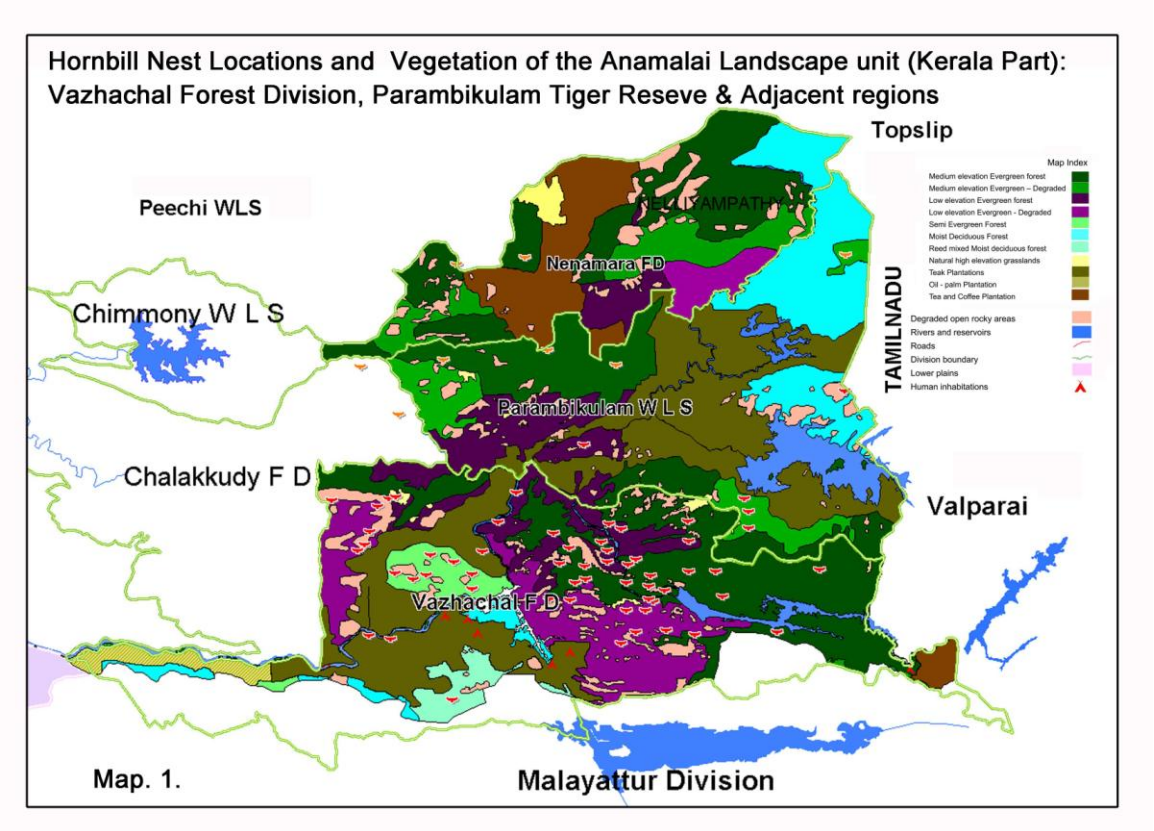


Fig. 10. Tribal Participation for the last 6 years

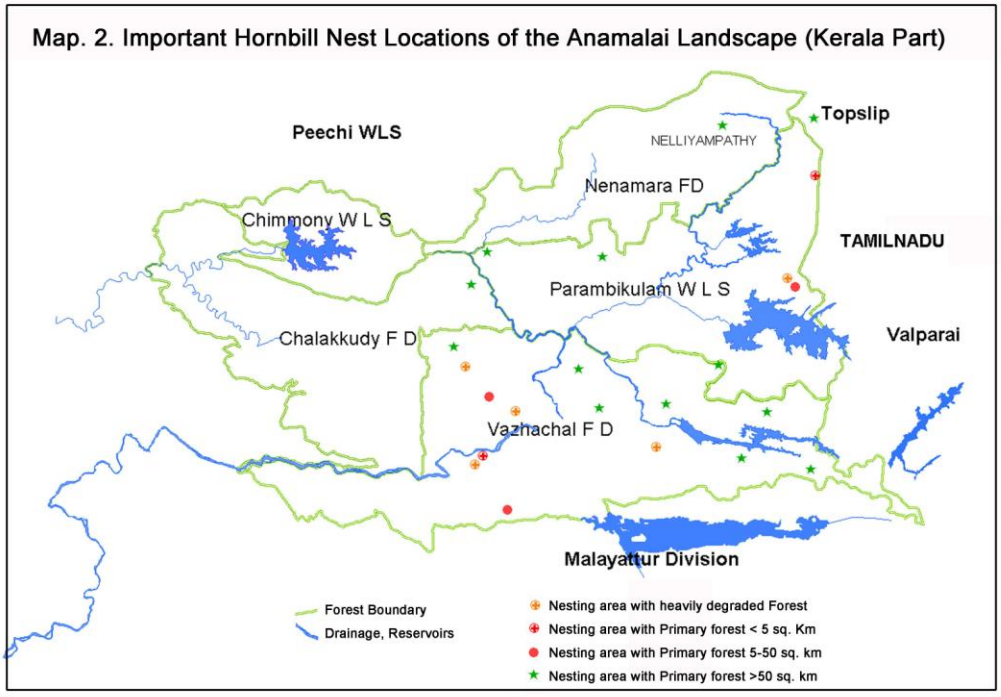


Annexure 3.

Map 1. Hornbill Nest locations and Vegetation of the landscape



Map. 2. Important Hornbill Conservation Areas of the Anamalai landscape (Kerala part)



THE HINDU

Published: February 19, 2011 02:02 IST | Updated: February 22, 2011 15:40 IST

Athirappilly project threatens hornbills

Mini Muringatheri

The Hindu A Great hornbill near its nest. Photo : Special Arrangement

'They are endemic to low elevation forests in limited locations of South India and Sri Lanka'

If you trek deep into the Athirappilly-Vazhachal forests in the Southern Western Ghats, chances are that you may hear, from up in the canopy of trees, a heavy whooshing sound – somewhat similar to that of a jet airplane. If you are lucky, you will catch a glimpse of a magnificent bird, the Great Hornbill. But if the 163-MW Athirappilly hydroelectric project proposed by the Kerala State Electricity Board comes through, these unique birds might vanish from these forests.

The survival of the hornbills hangs in the balance as the Western Ghats Ecology Expert Committee, led by environmentalist Madhav Gadgil, is set to submit its report on the environmental impact of the Athirappilly project by the end of March. If the committee approves the project, it will lead to the submergence of the hornbills' habitat.

The unique low-elevation (180 m MSL) riparian forest in the Athirappilly-Vazhachal area is the only location where you can find all the four South Indian species of hornbills — the Great Hornbill (the State Bird of Kerala), Malabar Pied Hornbill, Malabar Grey Hornbill, and the Indian Grey Hornbill. Their resonating 'tock.tock.tock' calls and the whooshing sound of their wing flaps have earned them the local name 'Malamuzhakki' (the one that creates an echo in the hillsides).

"The Athirappilly-Vazhachal forests are the only available nesting location for the threatened Malabar Pied Hornbills (Anthracoceros coronatus) in Kerala. They are endemic to low elevation forests in limited locations of South India and Sri Lanka," says K.H. Amitha Bachan, a researcher and consultant to Kerala Forest Department and the World Wildlife Fund-India Ecological Monitoring Programme. The other location where this species is found is the Dandeli area in Karnataka.

The prime threat to the species, apart from increased poaching, is lack of suitable nesting trees and feed. Mr. Bachan says that hornbills have an umbilical relationship with the rain forests. Forests undisturbed by humans are crucial for their survival. The natural hollows of high-canopy trees serve as their nests. They are extremely sensitive to disturbances. Though their long bills prevent binocular vision, their sharp eyes and good hearing alert them to the slightest movement on the forest floor. "During our surveys, we located as many as 57 nests in the Vazhachal Forest Division. We found three Great Hornbill nests in a two-kilometre stretch at a 200-metre altitude. This could be one of the last remaining low altitude riparian evergreen forests in the Western Ghats."

Keywords: Athirappilly power project, hornbills, endangered species

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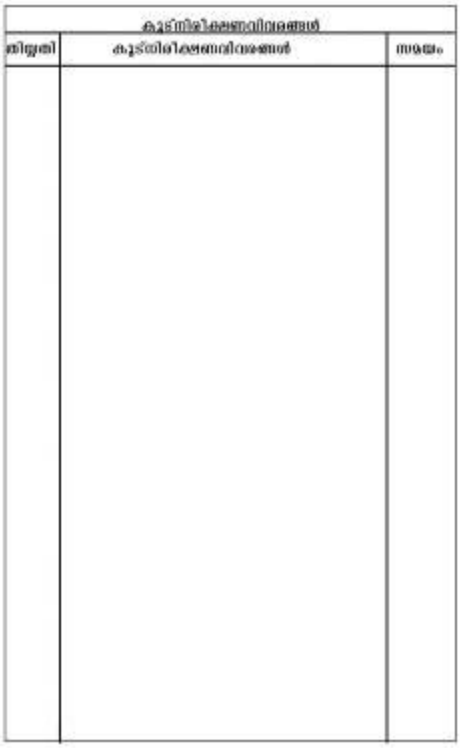
Keywords: Athirappilly power project, hornbills, endangered species

Annexure 5. Documents prepared and distributed as part of the programme

a. Hornbill nest monitoring sheet



കൂടുനിരീക്ഷണറിപ്പോർട്ട്

തിയ്യതി	കൂടുനിരീക്ഷണറിപ്പോർട്ട്	സമയം

വേഴാമ്പൽ കൂട് സർവ്വേ ഫോം

കൂടിരിക്കുന്ന സ്ഥലം (റെയ്ഞ്ച്/ സെക്ഷൻ / ബീറ്റ്):

മരത്തിന്റെസ്വഭാവം : പച്ചമരമാണ് / ഇലപൊഴിയും / പ്ലാന്റേഷൻ / പുഴയോരക്കാട് / തോട്/ വരക്കൂട്ട്

കൂടിരിക്കുന്ന മരത്തിന്റെ പേര് : ശാസ്ത്രനാമം

മരത്തിന്റെവണ്ണം ഉയരം താഴ്ചയിലുള്ള

ഉയരം കൂടിരിക്കുന്ന ഉയരം തൊട്ടടുത്തകൊമ്പിൽനിന്നുള്ള ദൂരം

കൂടിന്റെ ദിശ കൂടിന്റെ വണ്ണം കൂടിന്റെ വായ് ഭാഗം വിസ്താരം

കുഞ്ഞിനെതീറ്റുന്നത് വേട്ടക്കാൻ മറ്റാരുമില്ലാതെ

മനുഷ്യശല്യം കാടുതീ

മരത്തിന്റെസ്വഭാവം (അടഞ്ഞകാട്/ വെളിച്ചമുള്ളത് / തുറന്ന്)

പുഴയോരം ആണെങ്കിൽ 1. കുത്തൊഴുക്ക് 2.മണ്ണിടിച്ചിൽ

3. വെള്ളം / ഒഴുക്ക് കുറവ് 4. ഉണക്ക്

(മറ്റ് മരങ്ങൾ)
പേര് വണ്ണം

പരീക്ഷണത്തിന്റെ പേര്

b. Pamphlets, poster and documents distributed

കാടർ ആദിവാസികളുടെയും വനംവകുപ്പിന്റെയും പങ്കാളിത്തത്തോടെയുള്ള വേഴാമ്പൽ സംരക്ഷണ പദ്ധതി

പശ്ചിമഘട്ടത്തിലെ ആനമല മേഖലയിലെ വാഴച്ചാൽ പറമ്പിക്കുളം വനപ്രദേശമാണ് ദക്ഷിണേന്ത്യയിലെ വേഴാമ്പലുകളുടെ പ്രധാന ആവാസകേന്ദ്രം. പ്രാക്തന ഗോത്രവർഗ്ഗമായ കാടർ ആദിവാസികളും ലോകത്ത് ഇവിടെ മാത്രമാണുള്ളത്. 2004-2005 ൽ വാഴച്ചാൽ വനം ഡിവിഷൻ തുടങ്ങിവെച്ച വേഴാമ്പൽ സംരക്ഷണ പദ്ധതി ഈ മേഖലയിലെ വേഴാമ്പലുകളുടെ സംരക്ഷണത്തിന് നിർണായകമായ പങ്കുവഹിച്ചു. തുടർന്ന് 2009-2010 വർഷത്തിൽ സി. ഇ. പി. എഫ്. /ഏട്രി പശ്ചിമഘട്ടസംരക്ഷണ നിധിയുടെ സഹായത്തോടെ പങ്കാളിത്ത വേഴാമ്പൽ സംരക്ഷണ പദ്ധതിക്ക് രൂപം കൊടുക്കുന്നതിനും ശാസ്ത്രീയാടിത്തറ കെട്ടിപ്പടുക്കുന്നതിനും പറമ്പിക്കുളം മേഖലയിലേക്ക് വ്യാപിപ്പിച്ച് കൂടുതൽ ആദിവാസികളെ പങ്കെടുപ്പിക്കുന്നതിനും ലക്ഷ്യമിടുന്നു.

മലമുഴക്കി വേഴാമ്പൽ

ഉദ്ദേശലക്ഷ്യങ്ങൾ

1. കാടർ ആദിവാസികളുടെ പങ്കാളിത്തത്തോടെ വംശനാശ ഭീഷണി നേരിടുന്ന മലമുഴക്കി വേഴാമ്പൽ, പാണ്ടി വേഴാമ്പൽ എന്നിവയുടെ സംരക്ഷണം ഉറപ്പാക്കുക.
2. ശാസ്ത്രീയ നിരീക്ഷണങ്ങളിലും വനസംരക്ഷണ പ്രവർത്തനങ്ങളിലും പങ്കാളികളാക്കുന്നതിലൂടെ കാടർ ആദിവാസികളെ ശാക്തീകരിക്കുക.
3. കൂടുതൽ ജീവസംവാദന മാർഗ്ഗങ്ങൾ സൃഷ്ടിക്കുന്നതിലൂടെ വനത്തെയും വന വിഭവങ്ങളെയും ദോഷകരമായി ബാധിക്കുന്ന പ്രവർത്തനങ്ങളിൽ നിന്നും വിട്ടു നിൽക്കാൻ സഹായിക്കുക.
4. കാടരുടെ വനത്തെക്കുറിച്ചും വനവിഭവങ്ങളെക്കുറിച്ചുമുള്ള പരമ്പരാഗത അറിവുകൾ, സ്വതസിദ്ധമായ കഴിവുകളും, പാട്ടുകളും, വേഴാമ്പലുകളെ സംരക്ഷിക്കുന്നതിനും ഇരുവരും ആശ്രയിക്കുന്ന ആവാസ വ്യവസ്ഥയെ സംരക്ഷിക്കുന്നതിനും ഉപയുക്തമാക്കുന്നതിലൂടെ ദോഷത്തിന്റെ അന്തസ്സ് ഉയർത്തിപ്പിടിക്കുക.
5. ശാസ്ത്രീയ നിരീക്ഷണങ്ങളിലൂടെ വേഴാമ്പലുകളെക്കുറിച്ചും, അവയുടെ ആവാസവ്യവസ്ഥയെക്കുറിച്ചുമുള്ള വിവരങ്ങൾ രേഖപ്പെടുത്തുക.

പാണ്ടി വേഴാമ്പൽ

പ്രധാന പ്രവർത്തനങ്ങൾ

1. കാടർ ആദിവാസികൾക്ക് ശാസ്ത്രീയ നിരീക്ഷണത്തിനും, വേഴാമ്പൽ സംരക്ഷണ പ്രവർത്തനത്തിനും പരിശീലനം നൽകുക.
2. വാഴച്ചാൽ വനം ഡിവിഷന്റെ വേഴാമ്പൽ സംരക്ഷണ പ്രവർത്തനങ്ങൾക്ക് വേ സാങ്കേതിക സഹായം ചെയ്യുക.
3. വേഴാമ്പൽ സംരക്ഷണ പ്രവർത്തനങ്ങൾ പറമ്പിക്കുളം മേഖലയിലേക്ക് വ്യാപിപ്പിക്കുക.
4. ബോധവൽക്കരണ പരിപാടികൾ സംഘടിപ്പിക്കുക.
5. വേഴാമ്പലുകളുടെ പ്രജനന സമയത്ത് ശാസ്ത്രീയനിരീക്ഷണവും സംരക്ഷണ പ്രവർത്തനങ്ങളും നടത്തുക.

നേട്ടങ്ങൾ

1. വാഴച്ചാൽ വനമേഖലയിലെ വേഴാമ്പൽ സംരക്ഷണ പ്രവർത്തനങ്ങൾക്ക് തുടർച്ചയും ശാസ്ത്രീയ അടിത്തറയും നൽകാൻ കഴിഞ്ഞു.
2. പറമ്പിക്കുളം, വാഴച്ചാൽ മേഖലയിലെ പന്ത്രണ്ടോളം ആദിവാസി ഊരുകളിൽ നിന്ന് 40 ൽ അധികം ആദിവാസികളെ പങ്കെടുപ്പിച്ചു. ഇവരിൽ 20 പേർ തുടർച്ചയായി സംരക്ഷണ പ്രവർത്തനങ്ങളിൽ ഏർപ്പെടുന്നു.
3. വേഴാമ്പലുകളെ പിടിച്ച് ആഹാരമാക്കിയിരുന്ന ആദിവാസികൾ ഇന്ന് സംരക്ഷകരായി മാറിയിരിക്കുന്നു.
4. നമ്മുടെ ദേശീയ പക്ഷിയായ മലമുഴക്കി വേഴാമ്പലിന്റെ എണ്ണത്തോളം കൂടുകളും, വളരെ അപൂർവ്വമായി കണ്ടുവരുന്ന പാണ്ടി വേഴാമ്പലുകളുടെ ആകെ നിലവിലുള്ള അഞ്ച് കൂടുകളും സംരക്ഷിച്ച് പോരുന്നു.
5. എല്ലാ കാടർ ആദിവാസി ഊരുകളിലും, സ്കൂളുകളിലും പ്രകൃതി പഠനകൂട്ടായ്മകളിലും ബോധവൽക്കരണ പരിപാടികൾ, ഡോക്യുമെന്ററി പ്രദർശനം, ലഘുലേഖകളുടെ വിതരണം എന്നിവ നടത്തുകയും കുട്ടികൾ മുതൽ മുതിർന്നവർ വരെ എല്ലാ ആദിവാസികളെയും ബോധവൽക്കരണ പരിപാടികളിൽ പങ്കാളികളാക്കി.
6. കേരളത്തിൽ വാഴച്ചാലിലെ പുഴയോരക്കാടുകളിൽ മാത്രം കണപ്പെടുന്ന പാണ്ടി വേഴാമ്പലുകളെ വംശനാശത്തിൽ നിന്ന് സംരക്ഷിച്ചു.

കൂടുതൽ വിവരങ്ങൾക്കും നിർദ്ദേശങ്ങൾക്കും,
അമിതാ ബച്ചൻ കെ.എച്ച്
ഐ.എഫ്.എസ്
ഡി.എഫ്.ഒ - വാഴച്ചാൽ ഡിവിഷൻ

നന്ദി

കേരളവനം വകുപ്പ്, ഡി.എഫ്.ഒ., വാഴച്ചാൽ ഫോറസ്റ്റ് ഡിവിഷൻ, വാർഡൻ പറമ്പിക്കുളം വന്യജീവിസങ്കേതം, ഡി.എഫ്.ഒ.പാലക്കാട് ഫോറസ്റ്റ് ഡിവിഷൻ, വനം വകുപ്പ് ജീവനക്കാർ, കാടർ ആദിവാസികൾ, വന സംരക്ഷണസമിതി, സി.ഇ.പി.എഫ്.-ഏട്രി പശ്ചിമഘട്ട സംരക്ഷണനിധി

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c. Meetings conducted


d. Field trainings


e. Nest monitoring



f. Awareness programs


Understanding species-habitat relationship and role of ethnic communities in conservation and management of Hornbills and their habitat, Anamalai's (Parambikulam Tiger Reserve) Southern Western Ghats

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Introduction

The forests of Anamalai's landscape are one of the important among the three biodiversity hot spots in the Western Ghats and were reported as the most important habitat for the Hornbills in the entire Western Ghats. Degradation of potential forests with suitable nesting trees (large old growth trees with natural hollows) and poaching of hornbill squabs were reported as the major reasons for the diminishing of hornbill population here and also from other parts of the world. Potential moist primary forests in the landscape are located around the boundary of recently established Parambikulam Tiger Reserve of Kerala. Hunting by the endemic '*Kadar*s' were cited as an important threat to hornbill population in the Anamalai Landscape unit, most important Hornbill habitat of Western Ghats and suggested need of continuous monitoring and protection against hunting of squabs as an important conservation measure. The 'Kadars' are non agrarian, forest dwelling, primitive tribe with a limited population (<2000) within 24 settlements of the landscape. They are also on the verge of cultural extinction due to continuous displacement and depletion of rainforest habitat of the landscape. This paper elucidate the significance of involving local ethnic communities in monitoring and conservation of important species like hornbills, need of assessing the status of habitat and understanding species-habitat relationship in the conservation and management of biodiversity.

Methodology

A preliminary survey in the Vazhachal division conducted during 2004-05 with support of the Kerala Forest Department (KFD) and the endemic *Kadar* tribal people. The survey was developed into a participatory monitoring and conservation programme with involvement of community groups (VSS—Vana Samrakshana Samithy). They were trained in the field to monitor hornbills during the nesting season. Protection of nesting trees was ensured with regular patrolling of the selected tribal guards. A support from the CEPF-ATREE small grants 2009 was used to strengthen and spread the program across the landscape involving local ethnic people and also to asses the status of the nesting habitat of Great Hornbill and Malabar Pied hornbills in the area. Mapping of the potential vegetation and hornbill nest sites were done using GIS. Analysis of the composition and status of nesting trees and their habitat was done while laying out 15 m radius circular plots. Protection and monitoring all the identified nest trees through

empowering the ‘Kadar’ tribesmen was also done.

Result and summary

A total of 62 Great Hornbill 6 Malabar Pied Hornbill were protected during the study. Involvement of 36 ‘Kadar’ tribesmen from 11 settlements of the Vazhachal and Parambikulam forest divisions were ensured during the process. An initial survey was conducted at the adjoining divisions. The potential forest area suitable for hornbill nesting in the landscape is about 890 sq km, about 43 % of the total forest area (2027 sq. km). These include 620 sq km (70%) within six forest administrative divisions of the Kerala state and the rest 270 sq km (30%) in the Valparai-Topslip area of Tamil Nadu. The Sholayar and Vazhachal forests of the Vazhachal forest division account for the 80% Great Hornbill nests and the covers about 50% of suitable hornbill habitat of the landscape.

The Great Hornbill here found to depend on 19 emergent trees species of which 90% of the species are endemic plants and 50% are of endangered (RET) category. About 85% of nest trees of Great Hornbills and all the recorded nests of Malabar Pied Hornbills were prone to various threats indicating the vulnerability of Hornbill nest sites. There is direct correlation between degradation nest trees with that of representing vegetation. The Malabar Pied hornbills found restricted to a single location in the low elevation (100-300m) riparian evergreen forests of Vazhachal. All the six nest trees located are under threat and suitable nest trees are absent in the habitat. Urgent measures should be initiated to protect the species from extinction.

Understanding the status of nesting habitat and species-habitat relationship would provide important data in the conservation of species like Hornbills and that could lead us into effective specific habitat enhancement and protection strategies. It is important to protect all the nesting sites of hornbills in the landscape with proper participatory protection and habitat enhancement activities. Involvement of local ethnic community can contribute significantly to the conservation and monitoring of forest habitats and also for important species. The very knowledge and skill within each ethnic group could be utilized in the conservation of biodiversity and that can also support the survival right of the ethnic groups.

Acknowledgement

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