# CEPF FINAL PROJECT COMPLETION REPORT

## I. BASIC DATA

**Organization Legal Name:** Durrell Wildlife Conservation Trust

**Project Title (as stated in the grant agreement):** Pygmy Hog Conservation Programme: improving the status of the critically endangered pygmy hog as a flagship for biodiversity conservation in the terai grasslands of Assam

**Implementation Partners for this Project:**

1. Forest Department of Assam [including Office of the Chief Wildlife Warden, Assam, and Project Tiger authorities in Manas and Nameri]
2. IUCN/SSC Wild Pigs Specialist Group
3. EcoSystems-India [including the consortium of local NGOs under Manas Conservation Alliance and the Manas Nameri Tiger Reserve Area (MANTRA) Initiative]

**Project Dates (as stated in the grant agreement):** 1 October, 2008 - 31 December, 2010

**Date of Report (month/year):** May 2011

## II. OPENING REMARKS

***Provide any opening remarks that may assist in the review of this report.***

The pygmy hog (*Porcula salvania*) is the smallest, most highly specialized and most threatened of the world's wild suids. It was formerly known or presumed to occur across a narrow strip of early successional tall grassland plains along the southern Himalayan foothills, extending from N.E. Uttar Pradesh and S.W. Nepal in the west, to northern West Bengal and N.W. Assam in the east. However, all confirmed reports and most anecdotal accounts dating back to its description in 1847 refer only to the latter areas; and, most recently, only to N.W. Assam, where the species was 'rediscovered' in 1971 after it was long suspected to have become extinct (Oliver, 1980).

By the mid-1990s the species was reduced to a single, fragmented population in the Manas National Park, possibly still extending into a neighbouring reserve forest (Oliver, 1993) when the Pygmy Hog Conservation Program (PHCP) was formally launched 1996. IUCN has long categorized the pygmy hog as Critically Endangered – Red List Category C2a(ii) – putting it among the most threatened of all mammals. It is listed on Appendix One of CITES and Schedule One of the Indian Wildlife (Protection) Act 1972. The species was formerly referred to as *Sus salvanius* as it was believed to be closely related to the Eurasian wild pig (*Sus scrofa*). However, recent mtDNA studies have revealed that it belongs to a separate monotypic genus *Porcula* (Funk *et al.* 2007)

The main purpose of this project is to improve the conservation status of Critically Endangered pygmy hog in Assam, enhance habitat management practices of tall grasslands, which support the last remaining population of this species in Manas National park, and expand the species' distribution by establishing new populations with local captive-bred hogs in a former range area, the Sonai Rupai Wildlife Sanctuary, Nameri National Park, and Orang National Park.

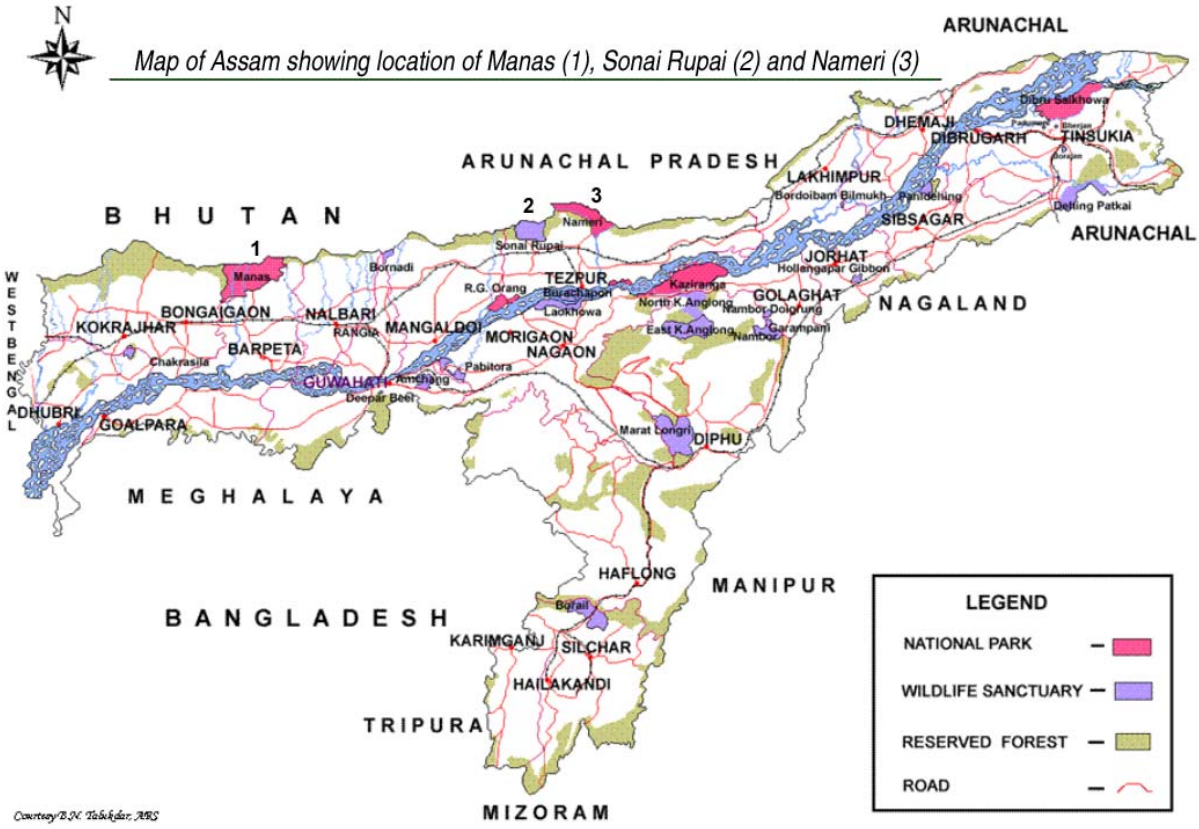


***Fig.1. Map of Assam, showing location of study sites***

## III. ACHIEVEMENT OF PROJECT IMPACTS

***Project Impacts**:*

***Long Term**:* To improve the conservation status of the critically endangered pygmy hog (*Porcula salvania*) and biodiversity in general in the terai grasslands in Assam

***Short Term**:* The protection and management of terai grasslands and their biodiversity are improved, in particular to support the long term survival of the pygmy hog.

***Describe the success of the project in terms of achieving its intended impact objective and performance indicators.***

Major achievements of the project include the successful reintroduction of pygmy hog in Sonai Rupai, where 35 hogs were released over the project period. Other outputs include capacity building of frontline forest department staff, production of training manuals on monitoring and protection of wildlife, initiation of community-based conservation action in fringe villages, and research on the species and its habitat by graduate and postgraduate students.

The project's purpose was to improve the conservation status of the Critically Endangered pygmy hog through the following: 1) develop human capacity and procedural mechanisms in wildlife and habitat monitoring, data analysis and status reporting; 2) improve management of the tall-grasslands through enhanced knowledge of the status of the habitats and the impact of factors including grassland burning and extraction activities on pygmy hog densities and other associated species; 3) reintroduce captive-bred animals in one or more areas within their recent known range, and implement improved

habitat management and protection of these areas via training of Forest Department personnel, and 4) build community involvement and support for the conservation of the tall grasslands and its wildlife through establishment of community-based biodiversity and environmental education, outreach and sustainable development programmes.

Excellent progress was made in the conservation breeding and reintroduction component with 35 hogs having been released, and monitoring has revealed that the reintroduced hogs are independently breeding and dispersing, making these initiatives highly successful. These efforts continue and the PHCP is confident that it will be able to establish more viable populations through continued reintroduction of captive-bred hogs.

***Were there any unexpected impacts (positive or negative)?***

Enlarging the scope of the project to include reintroduction sites of pygmy hog created opportunities for better management of alluvial grassland habitat in two of Assam's protected areas in addition to Manas. The officers and frontline field staff of Sonai Rupai Wildlife Sanctuary and Orang National Park were involved in scientific management of the habitat after some of their frontline staff of these two protected areas and of Nameri National Park were provided training by the project. Unfortunately, similar benefits did not accrue to the alluvial grasslands of Nameri due to poor protection against livestock grazing. Unfortunately the project has to date had limited effects on the level of burning within protected areas. Training within the two protected areas was shown to improve grassland management, and frontline staff limited planned burns. But large areas were still burnt by intruders passing through the protected areas. Addressing indiscriminate burning, especially from intruding groups that live on the periphery of protected areas remains the single greatest challenge to the restoration of grasslands in all protected areas of Assam including Manas.

Community conservation efforts in the three fringe villages of Manas have benefited about 100 households. In addition, about 25 more households have improved their alternative livelihood skills in two villages of Nameri. Through formation of self help groups in the project villages, member households have acquired new skills and honed their existing ones in weaving, sewing, handicrafts, food preservation, betel nut leaf plate making, piggery, and farming. The villagers are attempting to reduce resource use from Manas by promoting sustainable cultivation of cash crops (ginger, vegetables, rubber, etc.) and small timber (bamboo).

## IV. PROJECT COMPONENTS

**Planned vs. Actual Performance**

| Indicator | Actual at Completion |
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| **Output 1: Frontline Assam Forest Department staff in existing and reintroduction pygmy hog sites trained for better monitoring, protection and management of key grassland species and their habitat.** | |
| *Indicator 1.1:* Sustainable (i.e. extending beyond project period) training programme in place, with a minimum of 6 instructors and 40 monitors trained in data collection, recording and reporting during the project. | Thirty frontline staff members were trained by Pygmy Hog Conservation Programme (PHCP) prior to 2009. Of these at least 8 trained staff in Sonai Rupai, 4 in Nameri and 2 staff in Orang were engaged in survey and monitoring exercises. Subsequently, 15 frontline staff [10 from Sonai Rupai; and 5 from Orang] received training in grasslands management and monitoring of wildlife, |

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| | especially the pygmy hogs, in 2009-2010.<br>In addition, a total of 76 trainees from Assam Forest School attended 2-day training at Basistha and Potasali centres.<br>A training centre was established in PHCP's Bansbari Centre in Manas and an interpretation and training facility has also been set up at Potasali Centre in Nameri.<br>It has been decided that the instructors' training programme, developed by PHCP would be offered as a formal course at the Assam Forest School, Jalukbari. Proposed to be conducted twice a year for groups of 15 participants each, nominated by managers of PAs with grassland. Formalities for starting the course are at an advanced stage of preparation and await final government approval following agreement with the Assam Forest School and Forest Department. |
| *Indicator 1.2:* Course handbook (introduction and 10 course modules; set of laminated training posters and cards; trainee workbook, evaluation tests for each module) produced in English and then translated in Assamese | Two training manuals and a field book in Assamese and English produced: *Monitoring and Protecting Wildlife – Training Course for Frontline Staff of Protected Areas of Assam*: (a) Instructor's Training Manual, (b) Field Training Manual; and (c) Data Recording Field Book. Ten evaluation tests are also included in the instructors' manual.<br>A set of 12 posters and 30 animal ID cards used as teaching aids alongside the manuals produced in Assamese. |
| Indicator 1.3: 10 park staff trained and accredited as instructors. Each trained instructor prepared to impart training to other frontline park staff in Manas, Nameri, Sonai Rupai and Orang. | The trainers accredited by PHCP training course were assisted with resource material and equipment to train other frontline staff. But only a couple of them were able to find time so far to train others in the field, that too for only few weeks.<br>Following assessment of training and follow-up outcomes and feedback of stakeholders, it was concluded that the training should be conducted as a formal training course of Assam Forest School, instead of informal direct training by the Project. Therefore, discussions and negotiations were held with the Principal of the School as well as senior officials of Assam Forest Department. They have sought approval of the state government and are expecting to get it after state elections. |
| **Output 2: Awareness and education programmes are developed and implemented to introduce and popularise alternative livelihood options in fringe area communities to reduce dependence on the wild grassland resources.** | |

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| *Indicator 2.1:* Sixty (60) school teachers and civil society members/groups trained in conservation and environment education in 6 villages surrounding Manas National Park. | Forty-five local school teachers representing 15 middle and high schools, from seven villages around Manas NP underwent training in different environment education methods for imparting environmental awareness among school children and community members, with focus on grasslands and threatened wildlife of Manas, particularly the pygmy hog. The workshop used a combination of illustrated talks, interactive games, discussions, film shows and field trips to impart training to the teachers<br>Trained teachers were assisted during follow-up meetings to sustain conservation education activities in their schools. |
| *Indicator 2.2:* Training materials developed in English and translated into Assamese. | Training material prepared in English. After receiving feedback from teachers, some sections of the training manual were modified and translated to Assamese. It was decided not to translate the remaining sections as appropriate training material in Assamese was procured from Centre for Environment Education (CEE) for distribution. |
| *Indicator 2.3* Increased awareness among villages surrounding the PAs concerning the need to conserve grasslands and the possibilities of alternative livelihood options. | The community conservation initiatives continued in the three model fringe villages of Manas NP: Barengabari (Bansbari), Thaijoguri (Bhuyanpara), and Sourang (Panbari). Frequent meetings were held in these villages to encourage SHGs (Self Help Groups) members to adopt livelihood initiatives to reduce dependence on forest produce and linking their activities with alternative livelihood options. A rapid rural appraisal was conducted in a fringe village for monitoring of resource use.<br>Subsequently, SHG groups diversified their activities: started cultivating cash crops such as ginger, chilli, turmeric, jute, vegetables on their own land or leased plots, and selling hand woven cloth products. In addition capacity building was facilitated in beekeeping, pickle and jam making, betel nut leaf plate making, and tailoring. The members earned profits from sale in the local market. A bamboo plantation was also established. A SHG formed by ex-poachers is engaged in animal husbandry and has established a 2 ha rubber plantation. In addition, new SHGs have been formed and existing groups are able to get micro-credit from various sources. Monthly meetings are being conducted to monitor the progress of SHGs. About 100 SHG members have benefitted from the project's efforts. |

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| **Output 3: Measures to mitigate impacts of human-animal conflict introduced through the implementation of techniques such as solar power fencing and chilli planting (to dissuade elephants).** | |
| *Indicator 3.1:* Mitigation measures (Solar-powered fences and chilli fences) installed in 3 model villages. | Awareness meetings were held with communities to introduce mitigation interventions. Trial of measures spotlights and chilli (fence, chilli nursery) against raiding elephants was conducted. Spotlights are being used intensively, and demands for more such lights persist. Following installation of trip wires as an advance warning system, incidents of human-elephant conflict (HEC) were avoided in one of the villages. Rapid Rural Appraisal was conducted in Sourang village for designing the solar power fence.<br>A handbook on HEC mitigation methods produced through the Assam Haathi Project was distributed in project villages as well as others suffering from severe HEC. With assistance from Assam Haathi Project, interventions such as chilli nursery, trip wire, spotlights, etc. for human-elephant conflict mitigation were also introduced |
| *Indicator 3.2:* Lessons learnt and guidelines shared with other villages around Manas National Park. | Requests were received from neighbouring villages to initiate similar activities. As there was limited scope to get involved in additional villages, the guidelines and mitigation methods for human-elephant conflict were shared, and communities were urged to interact with the project village members for planning and implementation.<br>Following the success of SHGs in the project villages, surrounding villages were provided assistance on formation and operation of SHGs. They were urged to interact with the project SHG members for additional help. Also handbooks on HEC mitigation techniques were distributed. |
| **Output 4: Enhanced data on status of grasslands, impact of fires and distribution and abundance of key species collected by trained biologists for use in monitoring pygmy hog populations and other associated grassland species.** | |
| *Indicator 4.1:* Data collection and analysis methodologies developed in collaboration with National Park authorities. | Data collection methods were developed and park staff involved in the field testing. Subsequently data collection was carried out by project staff in consultation with Park staff. |
| *Indicator 4.2:* Scientific data on grassland ecology in Manas including information on effects of grass burning, livestock grazing, poaching as well as natural phenomenon (e.g. floods) collected. | Rapid habitat assessment surveys were carried out in Manas National Park initially by a biologist and later by project staff and graduate students. Data was collected using transect method and the location of sampled areas were recorded with GPS. The surveys |

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| | revealed evidence of the continuing survival of small populations of the pygmy hogs in Eastern and Western Ranges of Manas, but it also revealed increased level of burning and livestock grazing in the Bansbari Range, where the hog population showed a declining trend.<br>Efforts were taken to involve frontline protection staff and conservation volunteers from the local communities in habitat monitoring but this was not successful due to lack of motivation among them and their pre-occupation with protection duties, given serious shortage of staff.<br>Rapid surveys were carried out in Sonai Rupai, Nameri and Orang to assess the habitat quality for reintroduction of pygmy hog. |
| *Indicator 4.3:* Data collected by two Indian MSc students during implementation period of project, integrated into the database. | Two undergraduate students collected data in the fringe villages and the grasslands and compiled a dissertation towards partial fulfillment of requirements for their degree.<br>Another undergraduate student did her internship at the pygmy hog conservation breeding and pre-release centres.<br>Two other local undergraduate forestry students assessed the vegetative and soil characteristics in Manas, Sonai Rupai and Orang to compare the original pygmy hog habitat with the reintroduction sites<br>Another biology undergraduate student from University of Montana did his internship at the pygmy hog conservation breeding and pre-release centres.<br>Surveys to assess the current protection status, impact of management practices and presence of pygmy hog and other indicator species were carried out by a wildlife biologist is some areas of Manas central (Bansbari) range but he could not complete the study. Later, a graduate student surveyed the grasslands in the western (Panbari) and eastern (Bhuyanpara) ranges of the Park and submitted a thesis towards partial fulfillment of requirements for M.Sc. degree. |
| *Indicator 4.4:* Analysis of habitat use and long term trends carried out on existing data and data generated within the project | The data gathered by project staff and students are being integrated into existing information to formulate scientific recommendations for management of grasslands in the concerned Parks. |
| **Output 5: Project implementation is regularly assessed to ensure compliance with** | |

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| **commitments and ability to deliver outputs.** | |
| *Indicator 5.1:* Quarterly performance reviews conducted with project staff and Durrell staff. | Progress reports from project staff were sent to Durrell and performance review conducted by Durrell. |
| **Output 6: Maintenance of a healthy population of pygmy hogs in captivity and establishment of two new wild populations using captive bred hogs** | |
| *Indicator 6.1:* Approximately 60 hogs maintained in captivity at two centres (Basistha, Guwahati and Potasali, Nameri) | Between 2008 and 2010, an average of **62** pygmy hogs was maintained in captivity at Basistha and Potasali Centres of PHCP despite releasing **35** hogs into the wild during the period. The number of hogs in captivity on the following dates were:<br>31 Dec. 2008: **63** (28.35)<br>30 Jun. 2009: **62** (34.28)<br>31 Dec 2009: **64** (34.30)<br>30 Jun. 2010: **66** (38.28)<br>31 Dec. 2010: **62** (36.26)<br>These continued to be the **only captive pygmy hogs in the world** and every year 9-11 pairs of hogs were mated under a planned breeding exercise and the number of young hogs reared each year were:<br>2008: **17** (7.10)<br>2009: **21** (15.6)<br>2010: **27** (15.12) |
| *Indicator 6.2:* Preparing 10-12 hogs every year at the pre-release facility for release into the wild. | Social groups of unrelated and mostly young hogs were integrated at Basistha breeding centre before being transferred to a specially constructed 'pre-release' facility in Potasali. Every effort was made to 'pre-condition' the animals for eventual release by maintaining them in three separate social groups, in simulated natural habitats intended to encouraging natural foraging, nest-building and other behaviours; whilst also minimising human contacts to mitigate tameness and other behavioural characteristics arising from their captive management.<br>Each year 10-16 hogs were brought to the pre-release centre from the breeding centre to prepare them for survival in the wild. In 2010 too 13 hogs have been transferred to the pre-release enclosures to prepare them for release in 2011. |
| *Indicator 6.3:* Releasing 10-12 hogs every year into the wild using soft-release methods after ensuring proper protection and restoration of habitat at the reintroduction site. | The project staff coordinated with PA manager and frontline staff to ensure that the grassland habitat at the release site was managed scientifically and protected well. After 5 months tenure in the 'pre-release' enclosures these hogs were transferred to |

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| | temporary 'soft-release' enclosures constructed for this purpose. These enclosures were also rigged with two lines of electric fencing and kept under continual surveillance for about 72 hours as a precaution against potential predators and to deter incursion by wild elephants. They were released by simply removing sections of fence and allowing the animals to find their own way out.<br>Altogether **35** (18 males and 17 females) were thus released in restored grasslands of Sonai Rupai Wildlife Sanctuary during the project period. Each year three groups of hogs in following numbers and ratios were released into the wild using the soft release methods:<br>May 2008: **16** (7.9)<br>May 2009: **9** (4.5)<br>May 2010: **10** (7.3)<br>The plan is to release the next batch of hogs in Orang NP and **13** (5.8) hogs are being prepared for the purpose. Efforts to improve the habitat in Orang were initiated in 2009 by providing recommendation for scientific management of grasslands and training some frontline field staff of the Park. |
| *Indicator 6.4:* Monitoring of released hogs and their habitat. | It was the first time that captive bred pygmy hogs were released in such numbers in the wild and all efforts were taken to monitor them using field signs (nests, foraging marks, footprints, droppings etc.), baiting stations, and camera trap.<br>Radio-harnesses designed for post-release monitoring studies were also field-tested on six individuals, but unexpected problems in the long-term use of these harnesses were identified as the animals were either able to escape from them or they caused abrasion injuries to the hogs. It was therefore decided to use radio implants for future trials in 2011.<br>In the meantime the field tracking method is showing positive results and the indirect evidence and camera trapping suggest that at least two-thirds of the released hogs survived in the wild. Footprints of newborn hogs were seen in each year of release indicating successful farrowing in the wild by released females. Camera traps carefully deployed near active nests and trails have shown that hogs caught in camera appear healthy and in good condition. Some of these individuals were identified by hair-clipping marks made |

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| | before release. That the released hogs appeared to be in good health despite harsh weather and sometimes difficult foraging conditions up to nine months after their release was most encouraging in that it not only confirmed their survival, but suggested their successful adaptation to the wild. |

***Describe the success of the project in terms of delivering the intended outputs.***

- The major result of the project is the successful management of a captive breeding and release programme for the pygmy hog that has led to three releases into protected areas and a fourth release planned for May 2011. This is the most successful captive breeding project in India and the PHCP continues to hold the entire global captive population of the species. Monitoring has shown that a second wild population of pygmy hog has been established and the planned fourth release will establish a third population in a new area within Orang National Park. At present project staff are working with management and frontline staff at Orang National Park to improve protection and management of grassland habitat and simultaneously, three groups of hogs have been taken to the Potasali pre-release centre with simulated grassland habitat to prepare them for independent survival in the wild.
- The response to capacity building, namely training of frontline staff, school teachers, NGOs and other village level institutions (Self Help Groups) was good, however, efforts to establish mechanisms for wildlife and habitat monitoring and database management by the protected areas staff did not succeed. The impact of improved habitat management in the tall-grasslands is evident in Sonai Rupai, Orang and to a limited extent in Nameri. For example the field staff in Sonai Rupai WLS became actively involved in protection, management and monitoring activities such as preventing cattle grazing, human intrusion, cutting of fire breaks to prevent dry season grass burning, and reporting signs and sightings of reintroduced pygmy hogs, and other animals. Unfortunately similar positive results were not seen in Manas owing to several factors, including problems related to availability and motivation of frontline staff.
- Partnerships with grassroots NGOs for community engagement were fruitful, with the creation of village-level micro-credit institutions (SHGs) for sustainable use of resources and alternative livelihood generation. Such efforts in the three fringe villages of Manas NP have so far benefited about 100 households. In addition, about 25 more households have improved their alternative livelihood skills in two villages of Nameri Tiger Reserve.
- Though the training workshops had a very positive response, and the monitoring of wildlife during patrolling started off under the supervision of PHCP staff, this could not be sustained once the frontline staff was left to continue the monitoring on its own. This was attributed to low levels of interest and motivation, mainly due to serious lack of support facilities in the field camps, unwillingness of staff to work under these conditions. The senior authorities were apprised of this development and were requested to improve the field working conditions adequately in order to encourage the staff to undertake this additional responsibility of wildlife monitoring and recording in course of their regular duties.
- Through formation of self help groups in the project villages, member households have acquired new skills and honed their existing ones in weaving, handicrafts, food preservation, betel nut plate making, piggery, agriculture, and sewing. The outputs of the community outreach programme were achieved successfully, exceeding the targets. Spurred by the

success of livelihood alternatives, SHG members in the project villages are now interested in participating in conservation initiatives.

- The villagers are attempting to reduce resource use from the Manas by promoting sustainable cultivation of cash crops (ginger, vegetables, rubber, etc.) and small timber (bamboo).
- Some components of the project could not be completed in time due to various reasons, including deterioration in the security situation in the field sites. The training programme planned at Assam Forest School awaits government clearance and the data collection and storage system, being developed by a project partner at ZSL in UK, has not yet become fully operational due to technical problems with the programme.
- Students who carried out field studies in Manas have submitted their theses and are preparing scientific papers. Grassland data was collected from Sonai Rupai – the first release site, Orang – the next release site, and Manas – the site with the last viable population of the species before the reintroductions were undertaken.

***Were any outputs unrealized? If so, how has this affected the overall impact of the project?***

- The community conservation initiatives in the three fringe villages of Manas continued but deployment of the solar power fence acquired to mitigate human-animal conflict was held up on advice of the community members due to risky security situation. The equipment, supplies and provision for services for the operation have been arranged and on advice of the community members the work will be carried out after the state elections when the situation is likely to improve.
- Suitably trained field biologists were unwilling to make long-term commitment to work under very difficult field conditions for extended period of time. A couple of biologists selected for the job did not join after the trial period and another biologist left for higher studies after two months. Later the studies were carried out by project staff and students.
- Lack of motivation among frontline protection staff, mainly due to poor infrastructure and support facilities, and shortage of trained manpower were the main reasons behind failure to involve Manas staff in field studies. Further, some of the tasks concerning habitat studies and follow up action in monitoring wildlife could not be completed as our target groups performed much below our expectations despite efforts. This has added to our understanding that long-term commitment from the different stakeholders will be honoured only if direct incentives are offered.
- Although the selected frontline staff members participated in the capacity building and training programmes organised by the project, the accredited trainers were either unwilling or unable to fulfill the requirement of training other staff and the trained monitors refused to carry out wildlife monitoring methodically during patrolling duties due to the reasons mentioned above. Some of them also pointed out that these tasks do not form a part of their specified duties.

***Explain any actions taken to overcome these assumptions and risks.***

- Partnership with local organisations involved in similar work for implementation of the project activities.
- It is advisable to lower the expectations from the frontline Forest Dept. staff that need basic training and motivation besides improved facilities, equipment and infrastructure to fulfil project objectives.

- Decision makers, media and people at large are being informed to initiate action for improvement of infrastructure and facilities for frontline staff in Protected Areas.
- In order to improve the acceptability of the capacity building programmes it was decided to impart the training to the frontline staff as a formal course at the Assam Forest School. It is hoped that this will change their perception about the recommendation for actions about improved protection, management and wildlife monitoring in Manas, Sonai Rupai, Nameri, Orang and other protected areas of Assam. Since the instruction to carry out certain tasks to meet the objectives of regular field monitoring will be seen as coming directly from the senior officers of the Department, it will hopefully result in better implementation of the recommendations. After a series of meetings with the senior officials of the Forest Department and the Forest School, the proposal was accepted. The Assam Forest School has now sought the permission of the Assam Govt. to initiate the training workshops as a regular course of the School to be held twice a year. The curriculum, agenda, resource material preparation and planning for the course was done by PHCP in consultation with the officials of the department and was based on two similar training courses organised by the project. Although PHCP has been asked to make a financial deposit as contribution for the first such course, the Forest School will still need government clearance to make it a regular course as per the rules and in view of future financial implications. Officers of the Forest Department connected to the School are following up the case and hope to obtain the clearance soon.

## V. SAFEGUARD POLICY ASSESSMENTS

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

Not applicable

## VI. LESSONS LEARNED FROM THE PROJECT

***Describe any lessons learned during the various phases of the project. Consider lessons both for future projects, as well as for CEPF's future performance.***

The experience gained by project staff in Assam has been a key factor in sustaining the project operations. The implementation of the project has taught us that conservation action programmes that entail captive breeding, habitat restoration and reintroduction as well as community engagement have long gestation periods, and it is difficult to measure the impacts within a short span of time (less than 5 years). Further, some of the tasks concerning habitat studies and follow up action in monitoring wildlife could not be completed as our target groups performed much below our expectations despite efforts. This has added to our understanding that long-term commitment from the different stakeholders will be honoured only if direct incentives are offered.

***Major difficulties faced***

The main difficulties in implementation of this project largely related to serious shortage of suitable habitat for re-introduction and inadequate protection and management of the habitat. Although most of the remaining former pygmy hog habitats were inside Protected Areas, unscientific management of grasslands and lack of adequate protection were responsible for their degradation. These are:

a. Indiscriminate and often uncontrolled dry season burning of grass
b. Unsustainable and often ineffectively controlled livestock grazing

c. Unsustainable thatch grass and minor forest produce collection
d. Flash floods caused by natural or artificial dams
e. Poor economic condition of the communities living in the fringe areas of the concerned PAs resulting in their dependence on grassland resources for livelihood and their suffering due to human-animal conflict
f. Shortage of suitable frontline field staff in the PAs; poor facilities, training and equipment, resulting in low motivation among them
g. Failure of radio telemetry experiments on the hogs due to technical problems

***Major lessons learned***

If the recommendations made by research projects on sensitive and indicator species within the grassland habitat are implemented, the chances of success in rehabilitating this and other Critically Endangered species will increase substantially. Besides studies on pygmy hog and its habitat (Oliver, 1980 & Oliver and Deb Roy, 1993, Narayan et al. 2008, Deka et al. 2009, Narayan et al. 2010), recommendations made for the conservation of Bengal florican (Narayan & Rahmani, 1990) and hispid hare (Bell & Oliver, 1990) have come to similar conclusions:

a. The most important recommendation focuses on the control of indiscriminate dry season burning, which is an entrenched practice used by the forest management staff to improve grassland biodiversity and by local inhabitants of fringe area villages and illegal intruders. This practice has undoubtedly, and catastrophically, impacted the survival of many smaller species including the pygmy hog.

b. A well planned conservation breeding project capable of supplying adequate number of healthy individuals for re-introduction an play an important role in halting the decline of a species and restoring stable populations within adequately protected grasslands.

c. It takes years, if not decades, of persistent efforts to implement a successful recovery program.

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

As the CEPF grant was a complementary support, the design process was inbuilt.

***Project Execution: (aspects of the project execution that contributed to its success/failure)***

The situation in Assam especially around Manas and Sonai Rupai has always remained precarious because of local political disturbances. However, despite this, we feel that we were able to make significant progress during the project duration. With continued cooperation from the local stakeholders, we managed to achieve our goals with considerable success.

## VII. 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 |
|---|---|---|---|
| US Fish and Wildlife Service: *Wildlife without Borders – Critically Endangered Animals Conservation* | B | $ 40,760 | One year grant for conservation breeding and reintroduction projects. |

| *Fund* | | | |
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| Darwin Initiative, *Assam Haathi Project* | C | | The support is only for community livelihood and HEC mitigation activities |

***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*** *Complementary funding (Other donors contribute to partner organizations that are working on a project linked with this CEPF project)*
- ***C*** *Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF project.)*
- ***D*** *Regional/Portfolio leveraging (Other donors make large investments in a region because of CEPF investment or successes related to this project.)*

***Provide details of whether this project will continue in the future and if so, how any additional funding already secured or fundraising plans will help ensure its sustainability.***

Durrell has been actively involved in the pygmy hog project since the mid 1970s, soon after the species was re-discovered. Thus PHCP activities under the CEPF project will continue to be sustained, albeit on a smaller scale till further funding can be secured.

Among its achievements, the conservation breeding and reintroduction component is most likely to endure, given the magnitude of the conservation value of conserving the pygmy hog as well as the scale of technical and financial inputs. Efforts to mainstream the frontline staff training course into the Assam Forest Department's regular training agenda have been welcomed and are likely to make a positive impact. The receipt of USFWS grant will also ensure that the breeding and release operations continue until December 2011. The community initiatives in the fringe villages will be sustained in partnership with Assam Haathi Project (a collaborative project of Chester Zoo and EcoSystems-India) which works on mitigating human-elephant conflict. The legacy of infrastructure, skills, and staff created under the project will be utilized to sustain future activities. Moreover, all the project partners have signed a MoU valid until 2015 to collaborate for securing the future of the pygmy hog. Durrell is looking at empowering local expertise to continue the activities supported by the CEPF project.

The dissemination of the project achievements will continue even after the completion of the project as the CEPF component is part of the larger ongoing programme. As the PHCP progresses in the subsequent years, due credit will given to CEPF for having leveraged the programme to its current status.

## REFERENCES


Bell, D. J. and Oliver, W. L. R. (1990): Northern Indian tall grasslands: management and species conservation with special reference to fire. In: K. P. Singh and J. S. Singh (eds.): *Tropical Ecosystems: Ecology and Management.* Wiley Eastern Ltd., New Delhi: pp. 109-123.

Deka P. J., Narayan, G., and Oliver W. L. R. (2009): Reintroduced pygmy hogs (Porcula salvania) thrive a year after release – more hogs released in Sonai Rupai Wildlife Sanctuary, Assam, India. *Suiform Soundings* 9(1): 23-28

Funk, S. M., Verma, S. K., Larson, G, Prasad K., Singh, L., Narayan, G., Fa, J. E (2007). The pygmy hog is a unique genus: 19th century taxonomists got it right first time round. *Molecular Phylogenetics and Evolution* 45: 427–436.

Narayan, G., Oliver W. L. R. and Deka P. J. (2008). First captive bred pygmy hogs (*Porcula salvania*) reintroduced to Sonai Rupai Wildlife Sanctuary, Assam, India. *Suiform Soundings* 8(1): 16-26.

Narayan, G., Deka P. J., Oliver W. L. R. and Fa, J. E. (2010): Conservation breeding and introduction of the pygmy hog in North Western Assam, India. In: *Global Re-introduction Perspectives: 2010* (Ed. Soorae P. S.) IUCN/SSC Reintroduction Specialist Group, Abu Dhabi.

Narayan, G. and Rahmani, A. R (1990). Recommendations for Bengal Florican Conservation *in* BNHS Report on Status and Ecology of the Lesser and Bengal Floricans. Bombay Natural History Society, Bombay.

Oliver, W. L. R. (1980): *The Pigmy Hog – the Biology and Conservation of the Pigmy Hog, Sus salvanius, and the Hispid Hare, Caprolagus hispidus.* Special Scientific Rep. No. 1, Jersey Wildl. Preserv. Trust: 120 pp.

Oliver, W. L. R and Deb Roy, S. (1993): The pygmy hog (*Sus salvanius*). In: W. L. R. Oliver (ed.): *Pigs, Peccaries and Hippos: Status Survey and Conservation Action Plan*. IUCN, Gland: 121-129.

## VIII. ADDITIONAL COMMENTS AND RECOMMENDATIONS

## VIII. INFORMATION SHARING

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned and results. One way we do this is by making programmatic project documents available on our Web site, www.cepf.net, and by marketing these in our newsletter and other communications.

These documents are accessed frequently by other CEPF grantees, potential partners, and the wider conservation community.

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