

Darwin Initiative Annual Report

Important note

To be completed with reference to the Reporting Guidance Notes for Project Leaders – it is expected that this report will be about 10 pages in length. **Submission deadline 30 April 2008**

Darwin Project Information

Project Ref Number	Project 162/15/017
Project Title	Implementing a Recovery Plan for the Critically Endangered Pygmy Hog in Assam.
Country(ies)	India
UK Contract Holder Institution	Durrell Wildlife Conservation Trust
UK Partner Institution(s)	Zoological Society of London
Host country Partner Institution(s)	1. Forest Department (FD), Ministry of Environment and Forests, Government of Assam. 2. IUCN – SSC Pigs Peccaries and Hippos Specialist Group (PPHSG) 3. Pygmy Hog Conservation Programme Research & Breeding Centre (PHCPRBC), Basistha, Assam
Darwin Grant Value	£182,000
Start/End dates of Project	Apr 2006 – Mar 2009 (July 2006 start)
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	1 Apr 2007 – 31 Mar 2008 Annual Report 2
Project Leader Name	Prof. John E. Fa
Project website	None at present
Author(s), date	John E. Fa, Goutam Narayan, Rajan Amin

1. Project Background

The main purpose of this project is to improve the conservation status of the critically endangered pygmy hog (*Porcula salvania*) in Assam, enhance habitat management practices of tall grasslands in Manas Tiger Reserve (MTR) - a UNESCO World Heritage Site, which supports the last remaining population of this species - and expand the species' distribution by establishing new populations with local captive-bred hogs in a former range area, the Sonai Rupai Wildlife Sanctuary (SRWS) and the adjacent Nameri National Park (NNP). This project will assist India in implementing the CBD and help MTR be removed from the 'List of World Heritage Sites in Danger'. Specifically, it will 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 including, (but not confined to pygmy hogs) through the establishment of community-based biodiversity and environmental education, outreach and sustainable development programme. Delivering these objectives coincides with key objectives of the Environment and Forest Departments of the Govt. of Assam and (Union) Govt. of India, under the auspices of a renewed MOA and new 5-year strategic development plan.

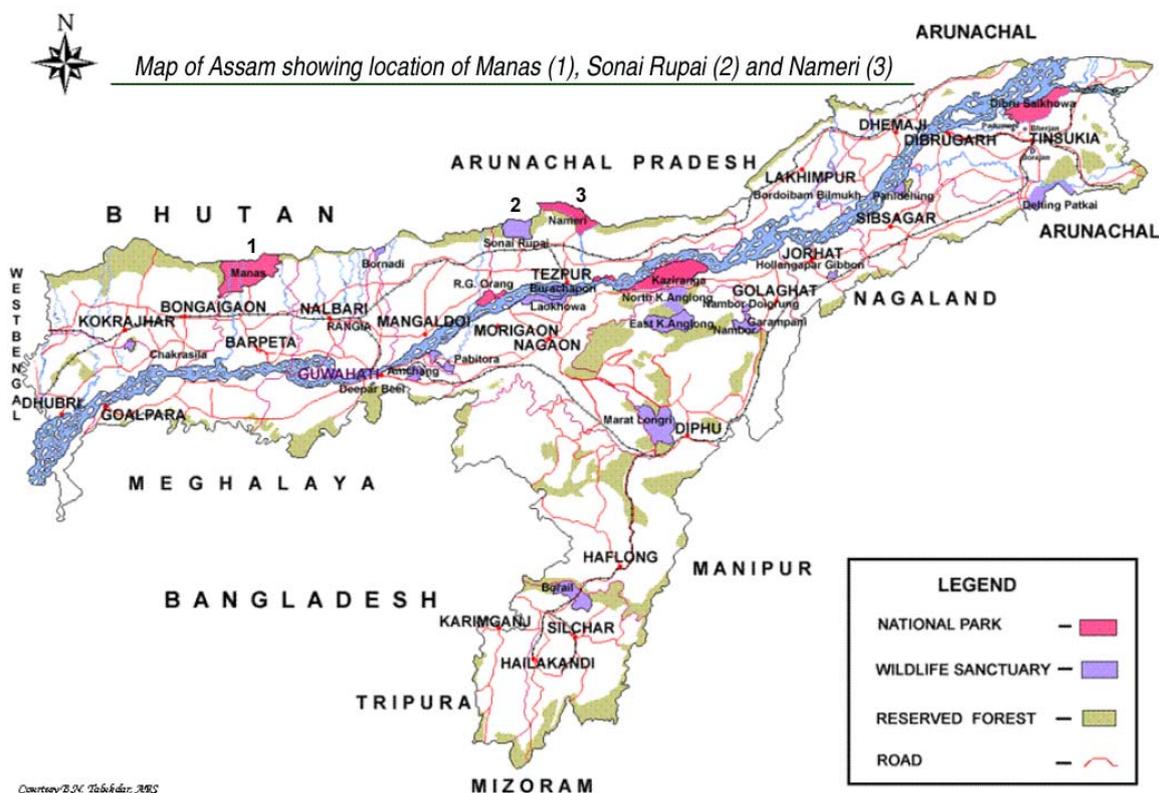


Fig. 1. Map of Assam, showing location of study sites

2. Project Partnerships

The Darwin Pygmy hog project has three main partners: the Ministry of Environment and Forests, Government of Assam (MoEF, GoA), The Forest Department of Assam (FD), under the MoEF, GoA and The Pygmy Hog Conservation Programme Research and Breeding Centre (PHCPRBC). The PHCPRBC at Basistha, with a pre-release centre at Potasali, is run by the Durrell Wildlife Conservation Trust in close collaboration with the IUCN/SSC Pigs, Peccaries & Hippos Specialist Group (PPHSG). These facilities focus on captive breeding, field conservation and environmental awareness.

The project has worked closely, and most productively, with the Forest Department of Assam in implementing capacity-building, and preparing for field work in the Manas National Park (MNP); the core area of the larger MTR, and where the last remaining populations of the pygmy hog are still found. Project partnership has been most effective, and the project has received the fullest support and encouragement from even the highest level at the MoEF. We have also initiated very promising collaborations with a number of NGOs in the region.

3. Project progress

3.1 Progress in carrying out project activities

Although there was some delays in implementing parts of the projects as originally planned, we have managed to initiate and conduct all operations envisaged for the year. The project has already started making a significant impact on the ground, by training Forestry Department personnel and motivating communities in the boundary of the MTR. We are also continuing with the preparation of release hogs, for re-introduction during the next dry season (May 2008).

(a) Pygmy hog surveys

Rapid surveys were carried out in the areas under Bansbari range of Manas where pygmy hogs were known to occur. In addition, similar surveys were also carried out in some grasslands in the Bhuyanpara and Panbari ranges, particularly in areas that had become accessible after cessation of political disturbances in the region to establish presence or absence of pygmy hogs in these areas of the Park. These surveys included covering randomly laid transects through the grasslands in the months of April and May. Pygmy hogs were found in all three ranges of the Park. Although presence of the species in Bansbari and Bhuyanpara ranges was known, this study proved that pygmy hogs continue to survive in the extensive grasslands of Panbari range too. Unfortunately, due to early commencement of rains these surveys could not be conducted after mid-May, limiting the number of transects and sample size. The study was unable to provide adequate data for a reliable estimate of the population of the species (see Annex 3 for the report "*A rapid survey of pygmy hog *Porcula salvania* and its grassland habitat in Manas National Park*" for details of the study).

(b) Capacity building

The project continued its capacity building efforts and ensured that the benefits will accrue despite staff changes through the implementation of an institutionalised on-site on-going modular training programme.

Frontline protection staff

The second training and capacity building workshop for frontline protection staff of Manas National Park as well as those from Sonai Rupai Wildlife Sanctuary, Nameri National Park, Barnadi Wildlife Sanctuary and Orang National Park was conducted at Nameri Range from 12 to 17 November 2007. Altogether 14 trainees participated in the training and 13 of them completed it successfully – 3 as Accredited Trainer and 6 as Accredited Monitor (see Annex 5:

Monitoring and Protecting Wildlife – Darwin Training Course for Frontline Field Staff of Assam - a report). As in the first Darwin training course held in Manas in March 2007, the level of competence of the frontline staff was found to be lower than expected and follow-up trainings will be conducted for the staff narrowly missing the qualifying grades.

The instructors and accredited monitors from the intensive training courses at Manas and Nameri were assisted in conducting field based training for some other protection staff in the area of their work. Posters, manuals, trainee guides and data recording booklets were produced in local language (Assamese) for distribution among trainees [see Annex 6: *Monitoring and Protecting Wildlife – Instructor’s Training Manual – Darwin Training Course for Frontline Staff of Protected Areas of Assam* (in Assamese); and Annex 7: *Monitoring and Protecting Wildlife – Field Training Manual – Darwin Training Course for Frontline Staff of Protected Areas of Assam* (in Assamese)]

These trainers and monitors were given direct assistance by a field biologist contracted for the purpose. Altogether 43 new trainees from the following three ranges of Manas participated in these follow-up training programmes: Bansbari Range 9 trainees (6 frontline staff and 3 conservation volunteers); Panbari Range 19 trainees (9 frontline staff and 10 conservation volunteers); Bhuyanpara Range 15 trainees (10 frontline staff and 5 conservation volunteers/casual labourers). Binoculars and GPS were supplied to those key camps where the staff regularly went on patrolling in the Park (see Annex 8 for Interim Progress Report on *Monitoring Manas Wildlife - Training Frontline Field Staff of Manas National Park*).

School teachers

An educator workshop for the conservation of Manas and its grassland habitat was held in Guwahati from 7 to 10 July 2007 in collaboration with *Centre for Environment Education* (CEE) and a local NGO, *Green Manas*. Eighteen teachers representing over ten rural middle and high schools from Bansbari and Panbari ranges participated in the workshop. All participants were provided with travel allowance, and lodging and boarding. In addition training kits consisting of education material, posters and stickers were distributed.

The workshop used a combination of illustrated talks, interactive games, discussions, film shows and field trips to impart training to the teachers with focus on grasslands and threatened wildlife of Manas. The training sessions included topics such as concept of ecosystem, components and techniques of EE, threatened wildlife of Manas, and nature trail for field observation of animals, and plants.

Post training assistance is being provided to the trainees to undertake awareness generation programmes in their respective schools and community. Two high school teachers from Panbari range have conducted three programmes each in their own schools. Stationery, stickers, and printed material were given to these teachers to facilitate the extension work.

Local NGOs

The project assisted in a couple of stakeholders’ workshops on “Communities, wild tiger and their habitat: Enhancing community participation in formulation and implementation of conservation and education programmes” jointly organized by *Aaranyak* and *EcoSystems-India* at Potasali (Nameri) and Bongaigaon (Manas) in May 2007. Other collaborators included *Nature’s Foster*, *Green Manas* and some other local NGOs.

Manas training and community centre

The construction of the Manas centre at Bansbari was started in April but it suffered a setback due to damage of roads and bridges connecting Bansbari to Park HQ town of Barpeta Road. The constriction continues and is expected to be completed after mid-2008.

(c) Community engagement/involvement

Under the community initiative, preliminary survey of the fringe villages and discussions with the community were conducted to identify the model villages for village level interventions. Following this exercise, three villages: Barengabari (Bansbari range), Thaijobari (Bhuyanpara range) and No. 3 Sourang (Panbari range) have been selected. These villages exhibit severe dependence on forest resources with the potential to reduce the extraction of forest products. Subsequent consultation with the community has revealed that the village level interventions will be need-based, and will consider the development priorities of the community to garner its support for reduction in harvest of major and minor forest produce.

A socio-economic survey including the resource use pattern was conducted, followed by focus group discussions (with women, men, self-help groups) for need assessment of proposed interventions. The interventions are being introduced in a phased manner to instill a sense of stewardship in the people of project villages as well as secure the active participation of the community. In Barengabari, entry-level activities were initiated to strengthen the involvement of the villagers. Assistance was provided to renovate a bamboo foot bridge in anticipation of the rainy season. Without this bridge there is no access to the village. Interventions planned for the project villages include alternative income generation sources (bee-keeping, food preservation training, fishery), supply of potable water, reduction of human-elephant conflict through trip-wire, chilly use as a deterrent) and veterinary care. However, owing to severe floods the implementation of community activities have suffered a setback.

Similar community conservation initiatives have also been started around Nameri and Sonai Rupai, the potential reintroduction sites. By addressing the alternate livelihood and health issues of the economically backward communities in these areas we intend to win their confidence before starting community conservation initiatives for protection of the grassland habitats we wish to restore.

Both frontline protection staff and the fringe area communities are being encouraged to deal with each other in a reasonable manner to reduce conflict for better conservation of the protected areas.

(d) Conservation Breeding and Preparation for Re-introductions

Conservation breeding

The conservation breeding programme of pygmy hogs to release into the wild, within the terms of the Darwin project has focused on furthering preparations for reintroduction of captive bred hogs in 2008. Since the reintroduction plans involves 'soft-release' of captive hogs in selected sites, development of the pre-release centre was one of the important activities of the project in the period.

In order to provide captive-bred pygmy hogs for the pre-release facility in Potasali and eventually for reintroduction in Sonai Rupai, efforts were resumed to produce more hogs at Basistha breeding facility after a gap of about five years. In 2007, eight sows farrowed at Basistha (with litter size 2 to 6), and 23 hoglets from seven of these litters survived. Under a planned breeding programme, nine marked females have been kept in with identified males in separated breeding enclosures and we are expecting 7-8 more litters to survive in 2008. In March 2008, the captive population stood at 80 and this could well be 15-20% of the entire population of the species on earth.

Status of the captive hog population on 31 March 2008		
Basistha	Adult wild hog	1 (1.0)
	Adult captive-born hogs	37 (15.22)
	Juveniles (2007 born)	13 (6.7)
Potasali	HOLDING ENCLOSURES:	
	Adult captive-born hogs	9 (4.5)
	PRE-RELEASE ENCLOSURES:	
	Adult captive-born hogs	6 (4.2)
	Juveniles (2007 born)	10 (3.7)
Total		79 (35.44)

Pre-release facility

The pre-release facility at Potasali was developed further. After securing the entire area with chain-link and electric fence, a strip of 30 m wide land around the 6 ha plot was acquired for creation of a buffer zone belt around the pre-release centre. Constructions of three of the four pre-release enclosures were completed and one of the enclosures was tested by putting a couple of captive hogs there on trial basis. A temporary bamboo observation tower was constructed and later it was replaced by a proper steel tower to observe the hogs in the pre-release enclosures and also to catch or restrain the hogs under this centrally located structure.

Besides the pre-release enclosures the Potasali facility consists of a holding enclosure for 4 small groups of hogs. The entire facility is protected by a 5-strand 1 km long solar power fence to ward off wild elephants at night and livestock in daytime. A 7 foot high chainlink fence with a two strand power fence line on top forms the second level of protection against all intruders. The pre-release enclosure measure about 3200 m² each and are secured using strong woven bamboo fence. A couple of power fence line has been provided inside the bamboo fence to keep the hogs in. Natural grassland habitat has been created inside these enclosures by planting vegetation from original habitat of the species. The lower part of the observation tower is connected to the small nestling baiting enclosures inside each of these large enclosures to facilitate capture of the hogs when required.

A total of 18 hogs belonging to three social groups were shifted to the Potasali pre-release enclosures in December 2007. It was encouraging to note that these hogs significantly changed their behaviour within a few weeks and became like wild animals. They foraged actively and profitably in the simulated grassland and avoided contact with their own caretakers. Sixteen (7 males and 9 females) including ten yearlings will be finally released in the Gelgeli grasslands of Sonai Rupai in early May 2008 and preparations are underway.

A student WCS-India's M.Sc. (Wildlife) programme began scientific behavioural studies on the captive hogs at Basistha and later shifted to Potasali to determine behavioural changes in these hogs in the pre-release enclosures. The study will form a part of his post graduate dissertation (see Annex 4, a proposal for M.Sc. Wildlife dissertation - *Assessing changes in behaviour of pygmy hog from captive conditions to semi-wild conditions prior to reintroduction into the wild*)

Release sites

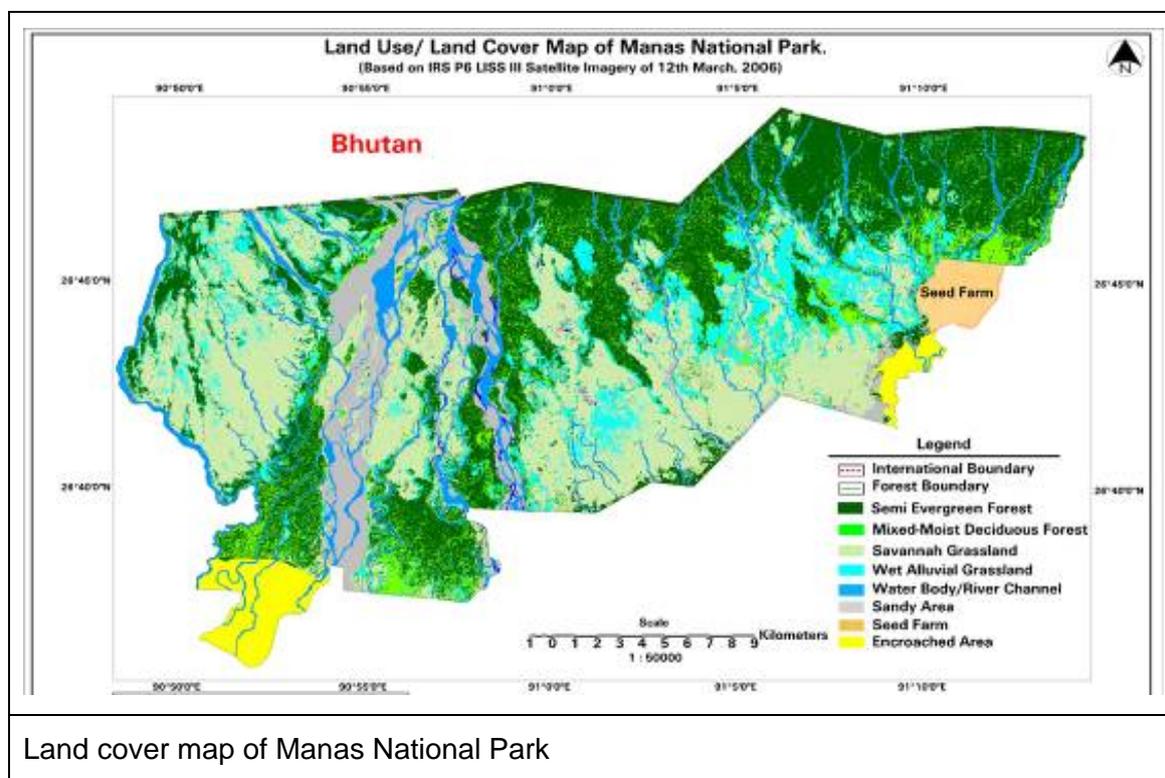
Several meetings were held with the new Divisional Forest Officer (DFO), Western Assam Wildlife Division, in-charge of the Nameri and Sonai-Rupai, to discuss the protection and management strategies for better habitat conservation in these PAs and for our plans to release pygmy hogs in restored grasslands. The protection and habitat management in these PAs have improved significantly in the recent months and many of our recommendations are being implemented by the new DFO. The results are apparent as the habitat is looking better. Reconstruction of Gelgeli protection camp located at one of the planned release sites in Sonai Rupai has been completed and it is being refurbished by our project.

Site for construction of release enclosures for the soft release process was identified in consultation with the Sanctuary management. It has been pointed out for the security of the release site just one protection camp (at Gelgeli) will not be sufficient and another camp halfway between the Range HQ at Kalamati and Gelgeli is essential. The project personnel tried to raise funds for construction of this camp but have so far been able to get only about a fifth of required amount of about GBP 6,000.

(e) Land cover assessment of Manas National Park

A detailed land cover map of Manas National Park has been produced with local partner organisations. The land cover map is being used to conduct surveys and assess the impact of fire. The last 5 years of spatial fire alert data have been obtained and analysed (from the University of Minnesota).

Detailed assessment of the changes in the grasslands over a period of twenty years is also being planned using IRS LISS 3, Aster and Landsat satellite data; land cover / vegetation classified using field control points.



Land cover map of Manas National Park

(f) Literature review of use of fire for grassland management.

A detailed literature review was prepared (see Annex 9 for *Fire as a source of heterogeneity in floodplain grasslands*). The review aims to evaluate fire as a management tool and its role in influencing forage availability and quality in floodplain grasslands as well as its consequences for the associated faunal species. This information along with the results from the grassland studies will be used to develop effective grassland management practices for the conservation of threatened biodiversity of *terai* grasslands.

(g) Development of GIS database system

A comprehensive patrol based wildlife monitoring GIS database system has been developed and is to be implemented in Manas Tiger Reserve, Nameri National Park, Sonai Rupai Wildlife Reserve and staff trained in its use. (see Annex 10 *Patrol based wildlife monitoring GIS database system*).

The GIS database system allows illegal activities, sighting of various species of animals, animal mortalities and patrol logs to be recorded and a series of reports (including GIS based) to be produced. Indices of patrol effort, illegal activity and animal abundance can also be derived from the data. This system is complementary to the training and implementation of field procedural mechanisms developed and undertaken in the Darwin Project.

(h) Grasslands awareness poster

A set of two posters for use in grassland awareness has been produced (see Annex 11).

(i) Workshop in Jersey

A workshop was held in Jersey in end July 2007 to review and to prepare and action plan for the project activities. Besides the project personnel (Dr. John E. Fa, Dr. Rajan Amin, Mr. William Oliver, Dr. Goutam Narayan, and Dr. Parag Deka) the workshop was attended by Dr. Mark Stanley-Price, Mr. Quentin Bloxam and Dr. Stephan Funk of Durrell, and Ms. Nandita Hazarika of EcoSystems-India.

3.2 Progress towards Project Outputs

Substantial progress was made with the project outputs as most targets, except a few were achieved. Severe floods in Manas area and Sonitpur district caused serious operational problems and many planned activities could not be completed on time. These activities have been postponed and are being taken up after the flood waters receded. This will however not affect the budget and will have some impact on timetable delaying some of the project activities a little.

3.3 Standard Output Measures

Code No.	Description	Year 2 (Total)
8	JF = 10 x 3 weeks; RA = 10 x 3 weeks	Yes
7	Training manuals, guidance notes and accreditation tests	20 sets
7	Training posters	20 sets of 14 posters
12B & 7	Fully operational GIS-based Grassland Mammal Information Management System with user manual and tutorials.	Under preparation
10	Conservation education, awareness and teaching material including conservation education booklet produced.	In progress. A set of two posters on grasslands; a grassland activity booklet is also being developed.
6A	At least 10 trained instructors	14 participants, 3 qualify as trainers, 6 as monitors
6A	At least 8 trained staff in field tools and procedures, data processing and reporting.	9 staff trained in field tools and procedures but none found suitable staff for data processing and reporting.
6A	At least 8 trained staff in GIS	0
2	2 MSc students trained in conservation research	1
6A	At least 30 trained staff in large mammal monitoring and survey techniques.	43 participated in the follow-up of training
11B	6 scientific papers produced and submitted.	1
7	Social, cultural and economic assessment report	Assessment underway in 3 fringe villages
3	At least 20 teachers and relevant park staff and members of local groups and NGOs trained in environment education	18 local school teachers
9	3 standardised annual large mammal status reports at park level produced.	0
6A	At least 5 park ecologists and monitoring staff trained in habitat assessment techniques.	3 post-graduate students trained
14A	Community seminar, forums and projects	6
14A	Habitat assessment seminar and report.	1
12A	Vegetation database.	Under preparation
10	Vegetation maps; Habitat assessment manual; Pygmy hog habitat suitability and viability model and sensitivity map produced	1 map produced, others under preparation
15A & 15B	National and UK press releases, radio broadcasts.	1 interview, news and TV items

Table 1 Publications

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £ (if applicable)
Journal Molecular Phylogenetics and Evolution Vol 45; 427-436	The pygmy hog is a unique genus: 19th century taxonomists got it right first time round*. Funk SM, Verma SK, Larson G, Prasad K, Singh L, Narayan G, and Fa JE. August 2007	Elsevier	http://dx.doi.org/10.1016/j.ympev.2007.08.007 www.sciencedirect.com www.elsevier.com/locate/ympev	NA
Posters	A set of two grasslands poster	PHCP	Durrell and EcoSystems-India	NA
Training Manual	1. Monitoring and Protecting Wildlife – Instructor’s Training Manual – Darwin Training Course for Frontline Staff of Protected Areas of Assam (in Assamese); 2. Monitoring and Protecting Wildlife – Field Training Manual (in Assamese)	PHCP	Durrell and EcoSystems-India	NA

4. Monitoring, evaluation and lessons

The project has been monitored jointly by Durrell and ZSL-Darwin Fellow Dr Rajan Amin, with support from William Oliver, Chairman IUCN/SSC Pigs Peccaries & Hippos Specialist Group. The situation in Assam especially around the MTR remains precarious. However, despite this, we feel we have able to make sufficient progress on the project. We have received continued cooperation from with the local authorities and are confident of making slow albeit steady progress in the coming years. All project participants believe that the Darwin Initiative funding has been catalytic in providing an opportunity to undertake long overdue activities to protect the pygmy hog and other species in the lowland grasslands of Assam.

5. Actions taken in response to previous reviews (if applicable)

Not applicable

6. Other comments on progress not covered elsewhere

7. Sustainability

The pygmy hog conservation programme is one of Durrell’s flagship projects. To ensure continuity of Darwin activities into the future, Durrell, along with ZSL, is actively seeking further financial support. A project proposal submitted to the Critical Ecosystems Partnerships has been approved for grant in October 2008. Also, a major fund-raising dinner (The Pygmy Hog

Party) was held at the Royal Banqueting House, Whitehall, in October 2007 was a big success. Further, ZSL has expressed interest in supporting the project beyond the lifetime of their Darwin involvement. Durrell is not proposing any exit strategy for the project, but it is looking at empowering local expertise to continue the activities started by the Darwin project.

8. Dissemination

Dissemination of results to date has been limited to distribution of reports to partners and associated organisations, and government departments.

9. Project Expenditure

**Table 2 Project expenditure during the reporting period
(Defra Financial Year 01 April to 31 March)**

Item	Budget (please indicate which document you refer to if other than your project schedule)	Expenditure	Balance
Rent, rates, heating, overheads etc			
Office costs (e.g. postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment			
Others			
Salaries (specify)			
TOTAL			

10. **OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes**

I agree for ECTF and the Darwin Secretariat to publish the content of this section

Annex 1

Report of progress and achievements against Logical Framework for Financial Year: 2007/08

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/planned for next period
<p>Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</p> <ul style="list-style-type: none"> the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources 		<p>(report on any contribution towards positive impact on biodiversity or positive changes in the conditions of human communities associated with biodiversity e.g. steps towards sustainable use or equitable sharing of costs or benefits)</p>	<p>(do not fill not applicable)</p>
<p>Purpose To build local capacity in Assam to have the capacity and information systems for: 1) pygmy hog conservation; and 2) meet overall CBD objectives for the area.</p>	<p>Improved information on wild pygmy hog populations, and habitat available for effective management and implementation of a forward five-year strategy.</p> <p>Regular reviews and feedback reports.</p>	<p>Some progress has been achieved in working with all local stakeholders in the MNP, particularly the fringe area communities. Results towards the larger biodiversity and sustainability goals cannot be demonstrated yet.</p>	<p>Information-gathering and analyses of data on species and habitats to be advanced during this period.</p>
<p>Outputs</p> <p>a) Comprehensive system for monitoring of pygmy hog populations, other associated grassland species and their habitats in MTR established.</p>	<p>Distribution, habitat use and relative abundance of the pygmy hog, and other grassland species in MTR extrapolated.</p> <p>Fully working GIS database system at SRWS/NNP (by Y2)</p> <p>Minimum of 8 staff trained in GIS, use of database system, data analysis and status reporting (Y2).</p> <p>Annual status reports</p> <p>Impact of burning on pygmy hog</p>	<p>Rapid pygmy hog surveys conducted in 3 ranges of MNP to establish presence or absence of pygmy hogs. Pygmy hogs were found in all the ranges of MNP.</p> <p>Patrol based GIS database system being developed.</p> <p>Annual status reports prepared</p> <p>A detailed literature review prepared to evaluate fire as a management tool and its role in influencing forage availability</p>	<p>Pygmy hog surveys covering more areas of MNP in all three ranges of the Park.</p> <p>Field trial of GIS database system.</p> <p>Study on spatial and temporal pattern of fire in the grasslands.</p>

	<p>populations and other wildlife understood, and prime habitats identified by Y2.</p> <p>Habitat sensitive area maps and PHVA models produced (Y2).</p> <p>Habitat assessment manual produced; at least 5 staff trained in habitat assessment (Y2).</p> <p>Conservation priorities for specific areas in MTR developed by Y2.</p> <p>2 MSc's trained.</p>	<p>and quality in floodplain grasslands as well as its consequences for the associated faunal species</p> <p>Land cover map based on satellite imageries prepared.</p> <p>Manual preparation underway and training deferred</p> <p>One Masters student trained in behavioural aspects of pygmy hog; and 3 post-MSc persons trained in habitat assessment studies</p>	<p>Dissertation and paper on behaviour pygmy hogs during soft release.</p>
<p>b) New pygmy hog populations established in SRWS/NNP.</p>	<p>Suitable release sites within SRWS/NNP identified by Y2.</p> <p>Improved protection, monitoring and grassland habitat management in SRWS/NNP by Y2.</p> <p>Captive-bred hogs from PHCPRBC in Guwahati moved to 'pre-release' holding and management enclosures, and 25 hogs released and monitored in SRWS/NNP by Y2.</p>	<p>Report on habitat assessment and suitable release sites within SRWS/NNP.</p> <p>8 frontline staff members from SRWS/NNP staff trained in protection, monitoring and grassland management.</p> <p>A total of 18 hogs belonging to three social groups were shifted to the Potasali pre-release enclosures. There was significant change in behaviour of the hogs.</p> <p>Release of pygmy hogs in SRWS deferred to Y3 (May 2008) owing to completion of protection camps in the release site area.</p>	<p>Collaboration from SRWS / NNP staff.</p> <p>Advising SRWS / NNP authorities and staff for better management and protection of the grassland habitat.</p> <p>Infrastructure development for better protection of the pygmy hog release sites.</p> <p>Soft release and monitoring of hogs.</p>
<p>c) Trained and accredited instructors for pygmy hog and other grassland species conservation, continuing training of field patrol and monitoring staff.</p>	<p>Minimum of 10 park staff trained and accredited as instructors by Y2.</p> <p>Minimum 30 patrol and monitoring staff trained.</p>	<p>14 staff trained, 9 of them as trainers or monitors; and achievement levels summarised in training assessment reports.</p> <p>43 trained in a follow-up training</p>	<p>Trained staff supported and advised for carrying field training programmes for other staff members.</p>

	Training manuals and posters.	exercise. Motivation levels remain low, mainly due to poor working conditions and field infrastructure. Manuals and posters (set of 14 posters) in Assamese prepared and distributed. Tests prepared.	Motivate field staff to monitor during patrols.
d) Community education programme.	Minimum of 20 school teachers and relevant park staff and members of local groups and NGOs per year trained in accredited conservation and environment education (Y1-Y3). A social, cultural and economic assessment of the MTR adjoining communities undertaken. Outputs used to inform and support local government organisations and NGOs in developing community livelihood initiatives. Outreach programme implemented.	14 local school teachers trained in EE methods and tools and relevant issues pertaining to grasslands and pygmy hog conservation Resource material in regional language for EE programmes distributed. Three project villages in fringe areas of MNP identified and rapport building exercises initiated with PRA tools. Need assessment undertaken and livelihood initiatives planned.	Education and Community Liaison Officer carry out socio-economic assessments and entry level activities in the three identified village. Teachers carry out EE activities with their students; follow-up by Education and Community Liaison Officer. One more Teachers Training Programme in collaboration with CEE Livelihood training
e) Publications and publicity.	Community education awareness material produced and published in Assamese and local Bodo languages Radio broadcasts. 2 papers submitted to peer-reviewed journals by Y3.	Set of grasslands posters for community awareness and education produced. Preparation of booklet on grasslands in progress Copies of all publications sent to Darwin Initiative No radio broadcasts but interviews and news items One paper published.	Wide publicity about projects activities through print and electronic (TV, Internet) media. A paper and a book chapter.

Activities: Activity Milestones (summary of implementation timetable)			
Field training and workshops	<p>Intensive on-site training of SRWS/NNP park monitoring staff followed by on-going training on periodic basis by local trainers.</p> <p>Training of SRWS/NNP park officers in GIS, data entry and management, data quality control, and basic data processing using Grassland Mammal Information Management System and field protocols.</p> <p>Training of SRWS/NNP staff in the use of radio tracking equipment</p> <p>Training workshop: park ecologists and monitoring staff trained in habitat assessment and management techniques</p> <p>Workshop: PHVA analysis of pygmy hog and associated grassland species data gathered by MTR and SRWS/NNP staff.</p>	<p>6 day training of 14 + 43 frontline staff from Manas, Barnadi, Sonai Rupai and Nameri Parks. Motivation levels remain low, mainly due to poor working conditions and field infrastructure.</p> <p>None owing to absence of suitable candidates for such training as well as installation of GIS database.</p> <p>Planned for next year prior to release of the hogs</p> <p>Three post-graduates trained in habitat assessment and management</p> <p>None</p>	<p>Another instructor's training programme for 15 frontline field staff.</p> <p>Follow-up training by Accredited Trainers. Improved level of staff motivation for field data collection.</p> <p>Identification of a suitable SRWS / NNP staff for training in data entry.</p> <p>Training in monitoring of released hogs to SRWS staff.</p> <p>M.Sc. (Wildlife) student for habitat assessment</p>
Field monitoring and research programme	<p>Establishment and monitoring of pygmy hog populations in SRWS/NNP;</p> <p>Vegetation database and vegetation</p> <p>Final report on habitat status and impact of burning, livestock grazing and harvesting</p>	<p>Suitable sites identified within SRWS/NNP for introduction of pygmy hogs.</p> <p>Land cover assessment of Manas NP done based on satellite imagery.</p> <p>Literature survey (leading to paper) on threats to grasslands and its management undertaken.</p>	<p>Monitoring of released hogs and habitat at SRWS. Identification of additional release sites in Assam.</p> <p>Land cover assessment map of Manas.</p>

	<p>Distribution and abundance of pygmy hog populations known in MNP</p> <p>MSc studies completed ; second annual park status reports produced</p> <p>Initial PHVA model</p>	<p>Pygmy hog surveys conducted in 3 ranges of MNP</p> <p>One MSc dissertation proposal generated, to be completed by July 2008</p> <p>Good quality monitoring and survey data collected and stored in database.</p> <p>Annual report prepared for submission to DI</p> <p>None as studies not completed</p>	<p>Pygmy hog surveys in Manas.</p> <p>Habitat use and some other information from the wild necessary for PHVA will be collected</p>
Field tools and procedures	Yr 2: Habitat assessment manual and management guidelines developed	Under preparation.	
Publicity material and papers	<p>2 radio broadcasts per year (Yr 2);</p> <p>Education material produced (Yr1-3);</p> <p>5 publications submitted by Yr 3</p>	<p>None. But pygmy hog project featured in news items (print, TV) and interview</p> <p>Posters on grasslands prepared. Booklet on grasslands underway.</p> <p>1 paper in peer reviewed journal published</p>	<p>TV features and news items.</p> <p>A paper and a book chapter.</p>
Community programme	Yr 1-3: Training of at least 60 community school teachers and relevant park staff and members of local groups and NGOs in environment education.	14 well motivated local school teachers, trained in EE tools, and conservation issues	<p>Socio-economic assessments and Livelihood training in the three identified Manas village.</p> <p>EE activities in local schools by trained teachers</p>
Project management	Yr 1-3: Project monthly meetings; Annual park field assessment reports; 6 monthly and annual Darwin progress reports; Final Darwin project report	<p>Project staff meetings held in Assam; annual meeting in Jersey.</p> <p>Annual and half-yearly reports submitted to Darwin Initiative; project progress reports produced at regular intervals</p>	<p>Project staff meetings Assam and annual meeting in Jersey.</p> <p>Half-yearly and annual reports to Darwin Initiative.</p>

Annex 2

Logical Framework

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising out of the utilisation of genetic resources 			
<p>Purpose</p>			
<p>To build local capacity in Assam to have the capacity and information systems for: 1) pygmy hog conservation; and 2) meet overall CBD objectives for the area.</p>	<p>Improved information on wild pygmy hog populations, and habitat available for effective management and implementation of a forward five-year strategy.</p> <p>Regular reviews and feedback reports.</p>	<p>Annual park staff status reports on wildlife populations.</p> <p>Recommendations for pygmy hog meta-population and habitat management.</p> <p>At least one new pygmy hog population restored.</p>	<p><i>High level support within FD and MoEF, GoA, for the aims of the pygmy hog conservation and management strategy developed by project.</i></p>
<p>Outputs</p>			
<p>a) Comprehensive system for monitoring of pygmy hog populations, other associated grassland species and their habitats in MTR established.</p>	<p>Distribution, habitat use and relative abundance of the pygmy hog, and other grassland species in MTR extrapolated.</p> <p>Fully working GIS database system at MTR (by Y1), SRWS/NNP (by Y2) and PHCPRBC (by Y1).</p> <p>Minimum of 8 staff trained in GIS, use of database system, data analysis and status reporting (Y1 and Y2).</p>	<p>Wildlife monitoring data in system database.</p> <p>Papers published on relationship between distribution and abundance of species and habitat characteristics.</p>	<p>Retention of staff with specialised training skills and experience, and high motivation.</p> <p>Support for equipment</p>

	<p>Annual status reports</p> <p>Impact of burning on pygmy hog populations and other wildlife understood, and prime habitats identified by Y2.</p> <p>Habitat sensitive area maps and PHVA models produced (Y2, Y3).</p> <p>Habitat assessment manual produced; at least 5 staff trained in habitat assessment (Y2).</p> <p>Conservation priorities for specific areas in MTR developed by Y2.</p> <p>Long-term plan for pygmy hog conservation developed by Y3.</p> <p>2 MSc's trained.</p> <p>Local BSc and MSc student placement studies.</p>	<p>Report of habitat suitability analyses for pygmy hogs produced to guide management practices.</p> <p>Number of annual status reports.</p> <p>Sensitivity maps and PHVA models produced to guide management practices.</p> <p>Habitat assessment manual and number of staff trained.</p> <p>Digital and photographic products to aid MTR resource managers.</p> <p>BSc, MSc reports and certificates.</p> <p>5-year conservation plan for pygmy hogs produced.</p>	<p>maintenance and repairs.</p>
<p>b) New pygmy hog populations established in SRWS/NNP.</p>	<p>Suitable release sites within SRWS/NNP identified by Y1.</p> <p>Improved protection, monitoring and grassland habitat management in SRWS/NNP by Y2.</p> <p>Captive-bred hogs from PHCPRBC in Guwahati moved to 'pre-release' holding and management enclosures, and 25 hogs released and monitored in SRWS/NNP by Y2.</p>	<p>Report on habitat assessment and suitable release sites within SRWS/NNP.</p> <p>Number of SRWS/NNP staff trained in protection, monitoring and grassland management.</p> <p>Pygmy hogs released in one new area and status monitored over time.</p>	<p>Full collaboration from SRWS/NNP staff.</p>

<p>c) Trained and accredited instructors for pygmy hog and other grassland species conservation, continuing training of field patrol and monitoring staff.</p>	<p>Minimum of 10 park staff trained and accredited as instructors by Y1. Minimum 30 patrol and monitoring staff trained. Training manuals and posters.</p>	<p>Numbers of staff trained and achievement levels summarised in training assessment reports. Quality of training manuals and posters</p>	<p>Trained staff retained and stimulated instructors. Well motivated field patrol and monitoring staff.</p>
<p>d) Community education programme.</p>	<p>Community education and liaison officer appointed by Y1. Minimum of 20 school teachers and relevant park staff and members of local groups and NGOs per year trained in accredited conservation and environment education (Y1-Y3). A social, cultural and economic assessment of the MTR adjoining communities undertaken. Outputs used to inform and support local government organisations and NGOs in developing community livelihood initiatives. Outreach programme implemented.</p>	<p>Number of school teachers and relevant park staff and members of local groups and NGOs trained. Community awareness and education material produced. Quality of assessment report, summary produced in local language for communities and local groups. Number of outreach activities undertaken. Number of livelihood initiatives started.</p>	<p>Suitable education and community liaison officer available. Teachers have continued interest in CEE training.</p>
<p>e) Publications and publicity.</p>	<p>Conservation education material produced and published in Assamese and local Bodo languages by Y1. Community education awareness material produced and published in Assamese and local Bodo languages by Y1. Radio broadcasts. 2 papers submitted to peer-reviewed journals by Y3.</p>	<p>Copies of all publications sent to Darwin Initiative.</p>	<p>Outlets for publications and publicity willing to participate.</p>

Activities	Activity Milestones (summary of implementation timetable)	Assumptions
Field training and workshops	<p>Yr 1: Training workshop in monitoring and survey methods (2 wks Sept 06); Initial intensive on-site training of MTR park monitoring staff followed by on-going training on periodic basis by local trainers (4 wks, Oct 06); training of MTR park officers in GIS, data entry and management, data quality control, and basic data processing using Grassland Mammal Information Management System and field protocols (1 wk, Oct 06); training of MTR staff in the use of radio tracking equipment (2 days, Oct 06); training workshop of MTR and SRWS/NNP park staff in production of annual status reports (1 wk, Mar 06).</p> <p>Yr 2: Intensive on-site training of SRWS/NNP park monitoring staff followed by on-going training on periodic basis by local trainers (4 wks, Oct 06); training of SRWS/NNP park officers in GIS, data entry and management, data quality control, and basic data processing using Grassland Mammal Information Management System and field protocols (1 wk, Oct 06); training of SRWS/NNP staff in the use of radio tracking equipment (2 days, Oct 06); training workshop: park ecologists and monitoring staff trained in habitat assessment and management techniques (1 wk, Oct 07); workshop: PHVA analysis of pygmy hog and associated grassland species data gathered by MTR and SRWS/NNP staff.</p> <p>Yr 3: Training of park staff in GMIMS's future support and development (Jun 08); workshop: final PHVA analysis of pygmy hog and associated grassland species data gathered by MTR and SRWS/NNP staff throughout the project (Mar 09); workshop to develop the long-term plan for the conservation of pygmy hogs and the grassland habitats (Mar 09).</p>	High level of staff motivation.
Field monitoring and research programme	<p>Yr 1: Protocols for monitoring and habitat surveys produced and agreed Aug 06; Monitoring of pygmy hog populations and other associated grassland species started by Oct 06; 2 MSc park students start MSc field projects (Oct 06); Suitable areas within SRWS/NNP identified for establishment of pygmy hog populations by Mar 07; first annual park status reports produced (Mar 07).</p> <p>Yr 2: Establishment and monitoring of pygmy hog populations in SRWS/NNP Apr 07 onwards; Vegetation database and vegetation (Sept 07); Final report on habitat status and impact of burning, livestock grazing and harvesting (Sept 07); Distribution and abundance of pygmy hog populations known in MNP by Dec 07; MSc studies completed (Dec 07);</p>	<p>Suitable sites identified within SRWS/NNP for introduction of pygmy hogs.</p> <p>Highly trained and stimulated instructors.</p>

	<p>second annual park status reports produced (Mar 08); Initial PHVA model (Mar 08).</p> <p>Yr 3: third annual park status reports produced (Mar 09); Final PHVA model (Mar 09); Habitat and security assessment of new pygmy hog sites in SRWS/NNP (Mar 09); Forward management plan for pygmy hogs (Mar 09).</p>	<p>Good quality monitoring and survey data collected and stored in database.</p>
Field tools and procedures	<p>Yr 1: Monitoring training and test material developed (Aug 06); GIS based Grassland Mammal Information Management System developed (Aug 06); GIS database system implemented at MTR (Oct 06), SRWS/NNP (Apr 2007); Data recording and assessment procedures produced (Sept 06); Status reporting templates developed (Mar 07);</p> <p>Yr 2: Habitat assessment manual and management guidelines developed (Sep 07)</p>	<p>None.</p>
Publicity material and papers	<p>2 radio broadcasts per year (Yr 2 & 3); Education material produced (Yr1-3); 5 publications submitted by Yr 3</p>	<p>None.</p>
Community programme	<p>Yr 1: Education and community liaison officer recruited (May 06); Initial set biodiversity and environmental education teaching and awareness material produced (Aug 06); Social, cultural and economic assessment report (summary in local language) and meeting with relevant groups and organisations (Dec 06); Community outreach programme initiated (Jan 07); Support in development of suitable community livelihood initiatives started (Jan 07).</p> <p>Yr 1-3: Training of at least 60 community school teachers and relevant park staff and members of local groups and NGOs in environment education.</p>	<p>Able to employ suitably qualified community education officer.</p> <p>Well motivated school teachers, local groups and NGO staff.</p> <p>Community support.</p>
Project management	<p>Yr 1: Steering committee established (May 06)</p> <p>Yr 1-3: Project monthly meetings; Annual park field assessment reports; 6 monthly and annual Darwin progress reports; Final Darwin project report</p>	<p>None.</p>

Supplementary material

Following Annexure are attached:

Annex 3: *A rapid survey of pygmy hog Porcula salvania and its grassland habitat in Manas National Park* – a report.

Annex 4: *Assessing changes in behaviour of pygmy hog from captive conditions to semi-wild conditions prior to reintroduction into the wild* – a proposal for M.Sc. (Wildlife) dissertation.

Annex 5: *Monitoring and Protecting Wildlife – Darwin Training Course for Frontline Staff of Protected Areas of Assam, Nameri, November 2007*

Annex 6: *Monitoring and Protecting Wildlife – Instructor’s Training Manual – Darwin Training Course for Frontline Staff of Protected Areas of Assam* (in Assamese)

Annex 7: *Monitoring and Protecting Wildlife – Field Training Manual – Darwin Training Course for Frontline Staff of Protected Areas of Assam* (in Assamese)

Annex 8: *Monitoring Manas Wildlife - Training Frontline Field Staff of Manas National Park – Interim Progress Report* – follow-up training report.

Annex 9: A literature review - *Fire as a source of heterogeneity in floodplain grasslands*

Annex 10: Patrol based wildlife monitoring GIS database system

Annex 11: A set of two posters to be used for grassland awareness

Annex 12: Photographs (not in other Annexure) – Meetings, teachers training, community outreach, pre-release facility, release sites in Sonai Rupai

Checklist for submission

	Check
Is the report less than 5MB? If so, please email to Darwin-Projects@ectf-ed.org.uk putting the project number in the Subject line.	Yes
Is your report more than 5MB? If so, please advise Darwin-Projects@ectf-ed.org.uk that the report will be send by post on CD, putting the project number in the Subject line.	Yes
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	No
Have you completed the Project Expenditure table?	Yes
Do not include claim forms or communications for DEFRA with this report.	No