



**Darwin Initiative Evaluation of Closed Projects in
India and Nepal**

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The Darwin Initiative

The Darwin Initiative is a UK Government small grants programme which was launched at the Rio Earth Summit in 1992. It aims to assist countries rich in biodiversity but constrained by financial resources to implement the Convention on Biological Diversity (CBD). The Initiative is funded and managed by the UK Department of Environment, Food and Rural Affairs (Defra). This is the UK Government's main support to other countries (including the UK's Overseas Territories) in their implementation of the CBD, and more recently the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS), through the funding of collaborative projects which draw on UK biodiversity expertise.

Monitoring and Evaluation

The Darwin Initiative has a comprehensive Monitoring and Evaluation (M&E) programme in place which is central to informing on the progress of the Darwin Initiative against its goal – 'to support countries that are rich in resources but poor in financial resources to meet their commitments under one or more of the major biodiversity conventions: the Convention on Biological Diversity; the Convention on Migratory Species; and the Convention on International Trade in Endangered Species'.

The M&E programme is used in a number of ways to help inform on best practice, to support ongoing projects in their delivery, to strengthen the Darwin Initiative itself, and to demonstrate the gains Darwin Initiative projects have made in conserving biodiversity through partnerships between the UK and developing countries.

The Darwin Initiative M&E programme is essentially centred on performance monitoring and impact evaluation. The M&E programme assesses legacy and impact at different levels with lessons drawn out from each level:

- At the project level – in terms of host country institutions and local partners and beneficiaries, and in terms of conservation achievements;
- At the national and ecoregion level – in terms of host country policies and programmes, and, if relevant, at a cross-boundary and eco-region level;
- At the international level – in terms of emerging best practices, and the conventions themselves;
- At the UK level – in terms of legacy and impact within UK institutions.

This report was undertaken by Peter o'Hara on behalf of the Darwin Initiative

Cover Photo Credit: Vultures in the Vulture Care Centre in Pinjore, Haryana, northern India. Three of the projects covered in this review were focused on vulture conservation.

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INVESTOR IN PEOPLE

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Acronyms

ACA	Annapurna Conservation Area
BNHS	Bombay Natural History Society, India
CBD	Convention on Biological Diversity
DI	Darwin Initiative
CDB TU	Central Department of Botany, Tribhuvan University
DPR	Department of Plant Resources, Ministry of Forests and Soil conservation, Nepal
ECTF	Edinburgh Centre for Tropical Forests
KATH	National Herbarium and Plant Laboratories
KMTNC	King Mahendra Trust for Nature Conservation
MOU	Memorandum of Understanding
NAST	National Academy of Science and Technology(previously RONAST)
NTNC	National Trust for Nature Conservation
RBGE	Royal Botanic Gardens Edinburgh
RONAST	Royal Nepal Academy Of Science and Technology (renamed NAST)
RSPB	Royal Society for the Protection of Birds
TU	Tribhuvan University, Nepal
TUCH	Tribhuvan University Central Herbarium (at CDB TU)
UNEP	United Nations Environment Programme
WWF	World Wildlife Fund

Executive Summary

Closed project evaluations are designed to draw out lessons about Darwin projects which may only emerge with hindsight a few years after the funding has finished. This closed project evaluation in northern India and Nepal focused on a cluster of 6 projects. The summary below highlights some key achievements and lessons. Later in this report are detailed reviews for each project according to criteria set in the TOR for this review (See Annex 1).

Three of the projects reviewed (**10-013, EIDP05, 12-027**) were set up in response to the catastrophic vulture declines in India and Nepal from the 1990s onwards. These well planned, effective and dedicatedly-led projects, which were timely and responsive to an immediate need, could provide a model for other Darwin projects. Their impact has been felt far and wide. A key strength that made the projects relevant was the responsiveness in their approach (and that of the Darwin Initiative) when the initial hypothesis of a viral epidemic being the primary cause of vulture decline was superseded by the probable cause of the ingestion of a veterinary analgesic drug in livestock. Diclofenac was found to cause renal failure and resultantly death in vultures when they ate the carcasses, according to research conducted by another organisation in Pakistan. The projects played a key role in getting Diclofenac banned in India and Nepal as well as putting a spotlight on vulture conservation in general in India, Nepal and internationally. The discovery and ban of Diclofenac has provided a neat text book cautionary tale which highlights how human behaviour can unintentionally have a devastating impact on wildlife - and when conservationists do good science and talk 'truth to power' even changes in national law are possible relatively quickly. Neat, quick fix solutions are rare in conservation, so this bite sized intriguing tale of tragedy and hope will appeal both to conservation organisations and their supporters – this story has been effectively communicated by these projects. Although the Diclofenac story made headlines, the less prominent development of world leading expertise in vulture care and the responsive, experimental and questioning approach by members of the project team (even questioning if the Diclofenac story is really as neat as it appears) as well as the skill of dealing with sometimes stifling bureaucratic systems and individuals, are all attributes that may be key in the long and difficult journey ahead for vulture recovery. Funding is secured for the work for the next 5 years. The key dangers to sustainability and long term success may include that local people are not willing to shoulder the higher price for the alternative to Diclofenac. The bureaucracy, especially in India, might stifle the project activities and a danger that the international funders will not stay the course when the story of vulture recovering which may be decades long, is not as neat, tangible and quick as dealing with the probable cause of decline. Considering that vulture biology dictates that recovery can take place only over the long-term and with the ex-situ breeding of the project the numbers of vultures bred will be small, the problem may simply be too profound and widespread, however, for a single fixed-term project to deal with, no matter how successful it is. But the project may inspire more widespread recovery efforts.

Project **6-052** and its successor **11-020**, although not as dramatic as the vulture story, also focused on a clear and rational purpose and like the vulture project had a high degree of local ownership and leadership driving the project ahead. Nepal's rich flora is not matched by in-country high quality botanical data or institutional and individual expertise in the whole range of skills needed to establish in-country collections and documentation up to international botanical standards. In fact, most of the botanical data and expertise in Nepali botany resides in the UK. These projects went about redressing the balance through data transfer and capacity building. The key difference between the projects was that the first focused on a few people, partners and clear tasks, whereas the latter attempted to cast the net further to get more people and institutions involved which seemed to have both additional benefits and limitations. For example, as numbers increased, time was an issue, especially in the visit to the UK and also that a minority of the Darwin scholars did not have a supportive organisational environment for them to continue their work in botany after their UK exposure. Saying this, these projects, with strong local leadership and good UK support, have generally done what they said they would do and Nepal's botanical and taxonomical capacity has been increased and here seems to have been a re-invigoration of support both from within the country and among foreign partners for this work.

Project **11-020** was designed to improve the biodiversity assessment capacity, and therefore the management, of the largest protected area in Nepal, Annapurna Conservation Area. The project had a mix of foci in its design with more conventional biodiversity surveys and survey related trainings combined with exploration of the economic impact of conservation on local people which is very relevant to national park management in Nepal. The project was largely successful in producing Guidelines for Biodiversity Assessment and Monitoring for Protected Areas and conducting good quality trainings with a balanced mix of theory and practice, but the project fell short when it came to thoroughly exploring the impact of conservation on the local people. However the project faced a major obstacle of the Maoist insurgency being active in the area where it had planned to work.

Overall these 6 projects ranged from very successful to moderately successful. Success seems to have been highest when a clear cut rationale was expressed by local partners before proposal writing began, and where there was strong local leadership of the project. Also success seems to have come where the project was realistic in its scope with clear outputs and where it didn't bite off more in the initial proposal than the technical expertise could chew in implementation. As well as responsiveness both on the part of the project and the Darwin Secretariat to changing circumstances, it appears that the success of the projects were as much or more to do with effective communication skills rather than good technical expertise – dealing effectively with cross cultural working arrangements - respecting different organisational cultures and dealing patiently and diplomatically with sometimes stifling bureaucracies. The vulture related projects are an interesting case study which show what Darwin can achieve by focusing on the right topic/species, being in the right place at the right time, with good expertise, good responsiveness, effective communication and decisive local ownership and leadership of the project.

The reviewer would like to thank all the people who kindly made time for this review in their busy schedules. Your time and effort is much appreciated.

Background

The Darwin Initiative

The Darwin Initiative seeks to help safeguard the world's biodiversity by drawing on UK biodiversity expertise to work with local partners in countries that are rich in biodiversity but poor in financial resources. Particular emphasis is placed on:

- Conserving biological diversity within the context of the Convention on Biological Diversity, including sustainable use and the fair and equitable sharing of benefits arising out of the utilisation of genetic resources;
- Improving collaboration with host country/ies and strengthening their capacity to carry forward Darwin funded initiatives;
- Enhancing the overall legacy of Darwin projects.

On behalf of the Darwin ECTF Monitoring and Evaluation programme, Peter O'Hara of LTS International conducted a field visit to institutions and sites associated with 6 Darwin Initiative projects in northern India and Nepal as part of post project evaluations. Ms Ganga Gurung provided local organisational support in Nepal.

The field visit to host institutions and field sites in India and Nepal was undertaken between 8 and 16 September 2007. The review aimed to assess the outcomes of the individual Darwin Initiative funded projects and identify lessons drawn from what worked well as well as from what did not work so well.

The methodology of the evaluation

The methodology included a review of all existing project documentation, meetings with project stakeholders in India and Nepal for group discussions, site inspections where appropriate and questionnaires (See Annex 3) distributed to UK project leaders. In introducing the evaluation, the emphasis was placed on the lesson learning aspect.

It must be noted that to a large extent, the reviews contained in this report are based on short interactions with a relatively small number of people. Also, omissions were made as information provided had to be summarised. Although efforts were taken to verify the points made from different people's viewpoints, the author of the report takes full responsibility for any misrepresentations, misinterpretations or mistakes. They are not intentional.

The guiding criteria for the evaluations are contained in the Terms of Reference in Annex 1.

Individual project reviews

10-013: Conservation of critically endangered Gyps spp. vultures in India (April 2001 – March 2004)

EIDP05: Building capacity for the recovery of critically endangered Gyps spp. vultures in India (July 2004 - June 2007) is an extension of 10-013 - activities and achievements overlap so both are discussed together.

This project was set up in response to observations by the Indian project leader, Dr Vibhu Prakash in the mid 1990s, that vultures had undergone a dramatic decline in numbers in India – more than 90%. The purpose of the project was to assist Indian scientists by developing a recovery plan for the critically endangered vultures (*Gyps indicus* and *Gyps bengalensis*) and to develop the capacity in India to implement it. Planned outputs included research and training and communicating findings to a wider audience. The initial assumption about the cause of the decline of the vultures was that it was probably a virus - and a lot of early project activities looked into pathology of dead birds and collected live birds for a captive breeding program. However, towards the end of the first project, research findings from Pakistan showed that a painkiller used for livestock called Diclofenac was present in the dying and dead vultures. This drug was introduced into veterinary practice in the region in the years immediately before the rapid decline in vultures was observed. Although harmless to livestock, even in very low doses it caused gout and death in vultures. With the key probable cause for the decline identified, the project focused on establishing the captive care facility for vultures, determining the progression of the decline via annual surveys, and on developing a recovery plan and capacity building related to the skills needed for vulture care. The leading project organisation in the UK was the Institute of Zoology, Zoological Society of London and the main Indian partner organisation was the Bombay Natural History Society (BNHS). Other partners included the Royal Society for the Protection of Birds (RSPB), the Poultry Diagnostic Research Centre (India), National Birds of Prey Trust (UK), and CSIRO Australian Animal Health lab.

10-013 Project purpose: To assist Indian scientists to prevent the extinction of two critically endangered bird species by producing a recovery plan for the Gyps spp. vultures (*Gyps indicus* and *Gyps bengalensis*) in India and to develop the capacity to implement it.

EIDP05 Project purpose: Extension project, to build capacity within India for the recovery of Indian Gyps vultures.

Relevance: With such an unprecedented decline in vulture numbers, urgent action was needed – not only to conduct research on why the vultures were declining and to implement strategies aimed at recovery, but also to raise the profile of vultures and their decline in India with national policy decision makers. The project was both timely and well designed to match these needs with good science, good communication and dedication for the work among both Indian and UK partners. The communication between local and UK partners in the project design was also good. There was support from the local government, which was undoubtedly a result of the partnership with Dr R D Jakati the head of Haryana Forest Department, but also there was a lot of energy and time invested in dealing with Indian bureaucracy.

A key strength in making the project relevant was the responsiveness in its approach when the initial hypothesis was revised.

Vulture decline also had dramatic effects on people throughout the country. Village representatives met by the reviewer complained of the smell of the decaying carcasses and the increase in the wild dog population feeding on the carcasses. Also a lower caste group who used to collect both the bones and the skins of the dead livestock once the vultures had removed the innards, had seen their livelihood disrupted as villagers adopted a practice of burying carcasses because of the smell. This burying of the carcasses itself incurred more cost and time and unpleasantness for people.

Arresting the decline in vultures, and eventually aiming at a recovery of the species, is not only relevant because it is protecting an endangered species, but also the vultures had been providing a free waste disposal service – which seems to have been appreciated more in their absence.

Efficiency: The project's initial focus on a viral epidemic hypothesis may have been considered a mistake and thus inefficient – but the project had to start with some hypothesis and based on the evidence presented at the time, a viral epidemic was a logical start. Many of the activities carried out were still relevant later in the project – for example, the building of the initial infrastructure at the breeding centre, the lessons learned with regards to capture and housing the birds, and much of the training and generally gaining a greater familiarity with vultures proved valuable later on.

In terms of costs and value for money – as can be seen from the effectiveness and impact elaborated in the following – for relatively modest funding the project's effects and impacts were astonishingly wide reaching. The project expenditure throughout seemed prudent and clearly detailed in reports, all changes were adequately justified in requests to DI and subsequently approved.

Effectiveness: The project did indeed play a major role in helping formulate the national 'Action Plan for Vulture Conservation in India' – published in April 2006 by the Ministry of Environment and Forests, Government of India. This vulture recovery plan provides a strategic guide and action steps to arrest vulture decline and manage the recovery – very importantly with high level government support. Project activities directly contributed to raising awareness about the Diclofenac problem to senior government officials and internationally through the publishing of articles in respected journals, as well as presenting in various international meetings. Of note was a proposed joint resolution regarding long term commitments to vulture conservation put forward at the World Conservation Congress in 2004 by representatives of the Government of India and project partners. This awareness-raising undoubtedly significantly contributed to the government decision to ban Diclofenac use in veterinary medicine in India, although even before the ban at a national level, several State governments introduced bans as a direct result of the findings produced by and lobbying of the project team and partners.

The project has built a solid foundation in terms of an effective research team with good veterinary and pathology skills and the infrastructure at the breeding centre– all essential for the long road ahead in the captive breeding programme and eventual planned re-introduction to the wild.

The breeding centre is impressively constructed and managed – drawing lessons from other breeding programmes around the world, notably the experiences with Condor breeding in the USA and European vulture breeding programmes in France and Israel. Also there has been a high degree of on site experimentation with other conservationists around the world learning from the innovations developed by the project.

The training conducted by the UK experts was generally seen as being effective: Dr Andrew Cunningham's expertise and training approach was particularly valued according to local partners. With some trainings conducted by UK partners, it was considered by local partners that there could have been an improved match between training need and content and although difficulty in scheduling was recognised, local partners would have ideally preferred more say in when UK partners would conduct the training.

Impact: It is clear that for modest funding this project which in terms of conservation support to India is only a drop in the ocean, it has made ripples that influenced national legislation and internationally raised the profile and thus the funding for vulture work in India.

With all its impressive achievements to date – impact in terms of vulture recovery in India is far from being assured – the project did achieve what it said it would do in terms of better preparation to deal with this crisis and much more besides (with its role in the legal ban on Diclofenac and playing a role in the spectacular elevation of Indian vultures in the conservation agenda nationally and internationally). For example, UK environment Minister, Elliot Morley was present at the opening of the Vulture Care Centre in Pinjore in February 2003. Vultures in India were reclassified as a schedule 1 protected species during the course of the project putting them on par with Indian tigers - the project's activities had a probable direct affect on this reclassification.

It is, however, well recognised by the local partners that vulture recovery is a long term proposition – and that the long road ahead will have many challenges (See lessons and recommendations that follow). The vultures are still in decline and captive breeding is in its early days and very experimental. Although it must be noted that most vultures have not reached breeding age yet in the breeding centre in Pinjore, only one chick has successfully hatched and it died. With vultures averaging only 0.5 surviving offspring a year in the wild, and with captive breeding of these vulture species really unknown territory, unlike the banning of Diclofenac which may stop the catastrophic decimation of vultures in the wild, there appears to be no quick fix solution to the recovery of the population, a recovery which may span decades.

Apart from the direct impacts there are many indirect impacts related to breaking new ground in understanding vultures, from behaviour, to pathology to appropriate housing materials. All these new skills may pay dividends in the future, not only for vultures but for captive bird breeding in general in India and beyond.

At a local level the captive breeding centre in Pinjore has provided significant revenue for local people – through purchasing local construction materials, hiring people, providing electricity to the local village and buying goats to feed the vultures from a local butcher which amounted to as much as £2,000 a month.

Note: See impact section in the related project 12-027 for related elaborations.

Sustainability: Funding and technical assistance at the moment does not seem to be an issue at the moment, with Darwin and other organisations providing ongoing support to the work. The whole dramatic vulture decline story and the intriguing and apparently neat casual relationship with Diclofenac seems to have caught the imagination of various organisations and their financial supporters, helping organisations raise funds and in turn support has been guaranteed for the work for the next 5 years from various sources. What will be crucial is that the momentum of interest in vultures is maintained – especially with the recovery being a lot less 'quick fix' and possibly sellable than the probable cause of decline.

Note: See Sustainability section in the related project 12-027 for more elaborations.

Conclusions and recommendations: *Note:* As lessons and recommendations are cross cutting and overlapping all are grouped together in the 'Conclusions and recommendations' section of related project 12-027 - that follows.

12-027: Prediction and management of declines in Gyps species vultures (Oct 2003-Sept 2006)

This project was linked with the projects described in the previous review – as a result it must be noted that it is sometimes difficult to exclusively attribute achievements, lessons etc to any one project.

Although the initial focus was on identifying the possible causes of the declines in the vulture population and the possible role of infectious disease, in response to the identification of probable cause being Diclofenac in 2003, this project also readjusted its focus, revising the proposal accordingly. Although some aspects remained, such as the further development of the breeding centre, there was a shift away from disease identification and mitigating its spread. Instead more clearly demonstrating the casual linkage between Diclofenac and vulture decline was prioritised – with an aim to hasten the ban on Diclofenac. Also a focus on exploring a safe substitute to Diclofenac, a drug called Meloxicam was explored. The leading UK project institution was the RSPB, and the main Indian partner was again the Bombay Natural History Society. The UK institutional leader of the other vulture project, the Institute of Zoology, Zoological Society of London was a partner in this project and the Indian Veterinary Research Institute and the Wildlife Institute of India were brought in as new partners. The project spread its scope not only to other areas of India but also to Nepal where vultures had been suffering similar declines. The partner in Nepal was Bird Conservation Nepal. Links were also established with many related organisations in 9 other countries in Asia, Africa and Europe.

Project purpose: To evaluate the relative importance of different cause of declines, including toxins and disease; Mitigation of population declines and potential species extinction; Develop strategies and capacity to minimize spread of Gyps declines across the range of states and manage the impacts of Gyps declines.

Relevance: The image of vultures in India has changed: from a dark reputation as ugly, dirty scavengers they now have been seen in a new light with their absence being felt ecologically, economically and socially. So the relevance of the project's work is clear. The reviewer could tangibly notice their absence by a dog's smelly carcass that remained untouched for days on the road to the breeding centre - under normal circumstances this would have been quickly stripped clean by vultures. There was a clear need to build on the successes of the **10-013** project. The project partners responded quickly and effectively to the emerging issue of Diclofenac poisoning and adjusted the project proposal well to be relevant under the new circumstances.

Efficiency: This project, although more expensive than the first, appears to be good value for money. As well as contributing to constructing a second breeding centre the project expanded into Nepal where it was the first vulture project of its kind.

Effectiveness: The project was most effective in providing evidence and increasing pressure for the ban of Diclofenac both in India and Nepal. In the latter, an impressive high profile awareness campaign was conducted. There was only 3 years between the discovery of Diclofenac as probable cause of vulture decline in 2003 to its ban just 3 years later by the Indian and Nepali governments. The effective research and dissemination of results by the project and lobbying/networking undoubtedly played a major role in achieving this impressive feat. A key strength in this project seems to have been its dissemination strategy targeted at the national and international scientific community, national and local vets, national and local government officials and the pharmaceutical industry. In Nepal the project was much more effective in engaging with the pharmaceutical industry whereas in India even though substantive efforts were made this proved more of a challenge. The project partner in Nepal, Bird Conservation Nepal, had a huge influence on both highlighting the dangers of Diclofenac through getting involved with high profile burnings of Diclofenac and it was also involved in a high profile launch of Meloxicam, the safe alternative.

The trainings conducted by the UK partners seem to have been generally effective although needs and delivery in terms of some content and timing might have been improved. Also there seems to be a small issue of a clash of organisational culture which occurred in the projects: in the UK there is often a more lateral and flexible organisational culture and India in general has a more hierarchical approach with clear lines of command – trying to mix both did seem to cause some frustration and confusion. Not a major issue but one that arose during some of the visits by UK partners to India.

This project not only improved and enlarged the Vulture Care Centre at Pinjore in Haryana, but also established a new breeding centre in West Bengal. The breeding centre in Pinjore is concerned to ensure vultures are treated with great care and that the centre does not become a zoo. The centre in Pinjore is really off the beaten track, an unmarked turn off from the main road along a bumpy track through the forest.

Key challenges the project faced included the difficulty in obtaining permits to collect live vultures for the breeding programme. This was compounded by the reclassification of vultures from schedule 4 to 1 in 2002, the top of the list in India – this can ironically be partly attributed to the work of the initial Darwin project in raising the profile of vulture conservation. This resulted in significant delays and difficulties as numerous permits were required from 3 levels of government including national level. The project partner, Dr R D Jakati, the chief wildlife warden in Haryana state where the breeding centre is based, has been extremely supportive of the project work, and a real friend and did his best to help the project. However Dr Jakati was replaced by an official in 2005 who, from numerous accounts, created various obstacles to the collection and transport of live vultures and to the vulture work in general, simply because he could. This completely disrupted catching plans for 2005. Dr Jakati then returned to his post. However adhering to complex procedural requirements and working to please and build good links with bureaucratic officials has been a drain on project staff time and energy.

This project, maybe more so than the other vulture project, has been more politically – strategically motivated in its partnership building – aiming at maximising lobbying potential to get research findings accepted at national level. In the other project, partnerships were more focused on technical expertise which meant roles were much clearer according to local project partners.

In Nepal, government support for the project was high: for example, after being informed about the work by the project, the Chief of the Department of Drug Administration called one of the main producers of Diclofenac in Nepal in June 2006 and by end of July they had stopped producing it. Also good links had been formed between the project and the Department of Livestock in Nepal.

The media coverage in both India and Nepal has been very high profile. In Nepal as well as numerous large newspaper articles, a prime time television documentary was focused on the topic – which ‘named and shamed’ a company that had ignored the Diclofenac ban.

Impact: Moving beyond the banning of Diclofenac, it is important to consider the impact of the ban on local vets and local people who still need to administer painkillers to their livestock. Meloxicam, the sole tested substitute, is roughly twice as expensive as Diclofenac in India, but apparently more effective per dose. In Nepal, although still more expensive, the comparative cost is more favourable. The problem with Meloxicam, apart from the very real problem of the higher price – which has the negative impact of local people paying the extra cost for protecting vultures, is that the size of the dose is smaller than Diclofenac. It seems that size of dose and strength of dose are linked in the minds of particularly local vets and local people. An innovative way that the ‘size matters’ issue was addressed by one pharmaceutical company director in Nepal is discussed in the following ‘Conclusions and recommendations’ section.

Although of course difficult to directly attribute responsibility, it is quite probable that an indirect impact of the intense and widespread dissemination efforts of the both projects has been an increased global awareness of the potential secondary impacts of the veterinary products on wildlife. When Diclofenac was about to be introduced in South Africa, the media highlighted the problems with Diclofenac and it was not subsequently introduced.



Goat carcasses that were stripped clean in minutes at the Vulture Care Centre in Pinjore – highlighting the natural and free waste disposal service vultures had been providing in the wild. The payment to a local butcher for goats was as much as £2,000 per month – who then pays the goat herders - a large injection of money in rural India.

Sustainability: The local partners would like to see a 15 year commitment from funders so that they can plan long term. At the moment there is medium term support – funding commitment for 5 years with an MoU with RSPB for this period. In Nepal, WWF, IUCN and others are supporting the ‘vulture restaurant’ a community run venture where vultures are fed with carcasses that are not contaminated with Diclofenac.

As so much of the work in India, especially the collection of live birds, depends on the cooperation of the State government, an MoU is being developed to try to ensure that the support will continue even if the very supportive partner in government, Dr Jakati, is transferred to another position. The project already has good links with the central zoo authority in India. Although this project is very high profile it is also dealing with a species in the highest conservation category combined with India’s complex bureaucracy means there is often months to wait for key decisions from the government. With such a complicated and long chain of officials to get approval from, even one or two less than cooperative government officials can make life very difficult for the project. It must be noted that during the projects’ implementation the involvement of the British High Commission was extremely helpful in raising the importance of the project to the Government of India, which help in turned helped lubricate the bureaucratic processes.

This project and the other vulture project has been the ‘baby’ of Dr Vibhu Prakash, who has been the driving force throughout the projects’ duration. He seems to handle decisions at every level in the projects. This may appear to some like having too much control for one individual and thus creating risks for sustainability if he leaves, but on the other hand throughout the world there are examples where the conservation of certain species has largely been attributed to the dedication of individuals who do take control and personally drive the work forward. Dr Vibhu Prakash seems to be one of these individuals and is committed in the long term to the vulture work.

A risk for the longer term is that the captive breeding centres could set a bad precedent to other organisations with less integrity who see the label of a ‘breeding centre’ as a way to legitimize setting up zoos where endangered species are on display for the public. What was made very clear by the vulture conservation team members, and could probably be made clearer in some of their publications and articles, is that ex-situ conservation - captive breeding should only be considered in extreme cases – with such a catastrophic decline and danger of poisoning still there, the captive breeding centre was a legitimate, last resort response to stop species from becoming extinct.

Another potential threat to the recovery of the vultures is that in India and Nepal, whenever something is banned legally, that does not necessarily mean it will not be produced and used. The grassroots understanding of Diclofenac as the cause of the decline of vultures is extremely important so that villagers are on board with the justification for the ban – especially when they are shouldering the cost of the higher price of the replacement - Meloxicam. When the reviewer held a meeting with village representatives from adjacent villages to the Vulture Care Centre in Pinjore, although very appreciative of the financial contribution the centre provides to the local economy – including the provision of electricity to the local village – when asked about their understanding of the reasons for vulture decline their responses were fascinating. They noticed that there seemed to be a lack of dead vultures, which led them to believe they were probably captured. When asked how this could happen, they suggested that because this would be difficult to do technically, it was probably the American military with all its high-tech gadgetry that was responsible. They were unsure why the Americans would take the vultures, but one suggestion was that maybe their ability to dispose of dead carcasses quickly was of value, another suggestion was that they were captured so that they could be used in medical experiments. Although the Diclofenac cause was explained with the village representatives by Dr Prakash they were not entirely convinced. Dr Prakash confirmed that he had heard similar stories in other parts of India where villagers were attributing blame for the cause of the vulture decline to the American military.

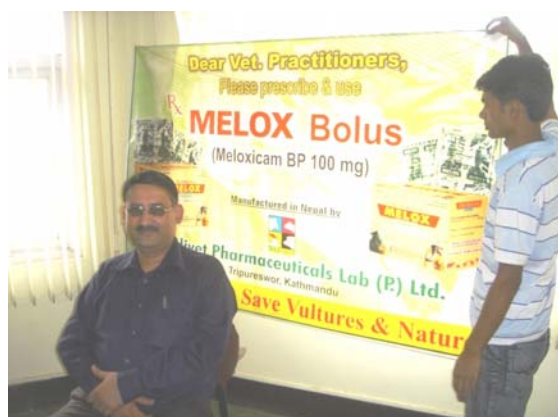
If villagers are going to financially bare the brunt of paying more for a Diclofenac substitute, if they are not even aware or convinced of Diclofenac poisoning being the cause of the decline, they will at best reluctantly adhere to the ban on Diclofenac and at worst create a demand for a black market demand for Diclofenac. Communication of the Diclofenac story to the wider population may be a next priority for those working with vulture conservation, some good simple education materials were developed by the project but considering the scale of this task – lobbying the government to include this story in school curricula may a next step – can the success in changing national legislation be repeated in changes to school curriculum? The story would make an excellent case study. Also although veterinary practitioners are generally aware of the reason for the ban in Diclofenac, they are also not fully convinced (personal communication with Veterinary Pharmacist in Nepal).

Probably more immediately important than raising awareness of the damage done by Diclofenac, is to provide clearer incentives for people to use the alternative Meloxicam, and as Dr Hem the project coordinator in Nepal also advised, it is important to develop other alternatives. Although the price of Meloxicam is reportedly being reduced because it has come off patent and because the scale of production is increasing, according to the director of the main company in Nepal that produces it, Medivet Pharmaceuticals Lab Ltd. the production costs of Meloxicam are higher than the production costs of Diclofenac – so there will always be a price differential. To deal with the difference in the size of the dose, Mr Rajbhandari the director of Medivet in Nepal got around this misconception by simply bulking up the Meloxicam tablets with inert materials including talcum powder so that they are of a comparable size to Diclofenac.



The village representatives near the breeding centre in Pinjore, during discussions with Dr Prakash and the reviewer, thought that the American military had somehow taken the vultures away by using some hi-tech gadgetry, whereas in Nepal villagers thought a reason for decline may be the felling of Kepoc trees, which were favoured roosting trees for vultures.

In terms of the financial impact of the switch to Meloxicam at Medivet in Nepal, Diclofenac had made up only 5% of their total sales. Once the switch to Meloxicam was made, the company was prepared to absorb roughly a 25% reduction in profit for this 5% share of sales so that the price of Meloxicam could be reduced to better compete with Diclofenac. So in terms of the overall impact of the switch on this particular company it was modest. However Medivet's support of the switch did help its public image and at its own expense it produced and distributed a large number of posters highlighting how Meloxicam would contribute to saving vultures.



Keshab Rajbhandari, the director of Medivet, a veterinary pharmaceutical company in Nepal, with a poster produced and distributed by his company advertising Meloxicam, the replacement for Diclofenac which is safe for vultures.

When asked about the effect of the ban on vets and villagers in Nepal, Mr Rajbhandari stated that those who were operating closer to the Indian border were still getting illegally produced Diclofenac from India. Also, he had come across some cases of the veterinary use of Diclofenac that was intended for human consumption. Also he said that vets were prescribing mixtures which include Diclofenac, for example mixing it with Paracetamol was popular. He suggested that to enable Meloxicam to compete with either the real or perceived benefit of these mixtures, the same path should be followed with Meloxicam, combining it with other drugs that are not harmful to vultures. Medivet are planning a new production facility that can manufacture Meloxicam in injection form, the first of its kind in Nepal - injection is more effective and according to Mr Rajbhandari the perception among villagers and vets is that it is much stronger than tablets (bolus), the most common form of administering Meloxicam at present.

As well as the many unknowns associated with captive vulture breeding, there will also be the challenges of re-introducing vultures to the wild. For example, in the absence of vultures the behaviour of people has changed - they are now burying carcasses - and with the increase in the number of wild dogs they are now poisoning wild dogs – which may pose new risks for vultures. Just as the decline in vultures exposed the critical role that vultures play in environment and their impact on social and economic life, research around re-introduction of vultures may require a holistic approach – encompassing ecological, socio-economic and cultural aspects as well as effective communication and public awareness campaigns.

Conclusions and recommendations (relevant to both vulture projects): The discovery and ban of Diclofenac has provided a neat text book story. However good science requires keeping an open mind and continually questioning assumptions – even if that means making the story a little less neat and clear. Local members of the project team have numerous questions and as good scientists are uncomfortable to state they have conclusively found the answer in Diclofenac alone. For example, only older birds seem to die, young nestlings, even though they are fed the same contaminated food as their parents, do not die. There is speculation among project personnel that Diclofenac may not be the sole cause of death, but a very important component in a cocktail of reasons which could include less food supply and the spread of a herpes virus. Reconciling good science with a marketable story for fund raising may prove a challenge for vulture work in the coming years if indeed the story does become more complicated.

The ex-situ captive breeding programme in itself has had a few critics. Capturing some of the remaining few young birds in the wild of a critically endangered species was understandably questioned by local people. Not only is the population in the wild at a critically low level, but mortality rates of young vultures still remaining in the wild was and is still very high. If the project team had not captured the young vultures in the wild, there would have been a high probability of an early death from Diclofenac poisoning.

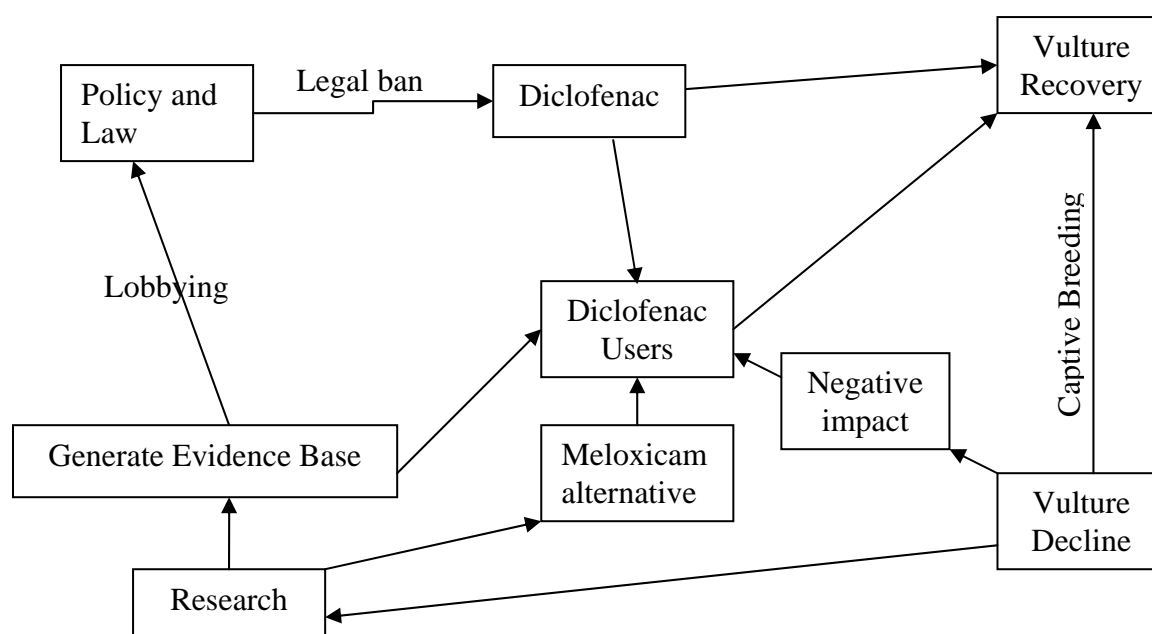
What is a key asset for the future is the enormous amount of knowledge there has been generated about vultures in the project by Indian, UK and Nepali partners. Professor David Houston – an internationally renowned vulture ecologist – from Glasgow University was involved as an adviser to the first 2 projects, **10-013** and **EIDP05** but not in **12-027** which may have been a weakness of this project, as he made a valuable contributing to the two projects he was involved with. The local team are now leaders in understanding vulture behaviour and in handling vultures in captivity.

Dr Vibhu Prakash has a deserved reputation as the foremost vulture expert in India – and he has detailed insights into vulture behaviour that may be essential during the long breeding process and complicated re-introduction process. The expertise developed by the team and the exchange of ideas between UK and local partners and high level of experimentation has led to many innovations – they have led the way in many areas.

Clearly what made this a success was the dedication of Dr Prakash, the single point problem that was identified, and the problem being one that could be relatively easily be solved through effective policy change at the high level and a practice change amongst local veterinarians.

Figure 1 maps out an indicative process outlining the way research can be used to identify the problem, establish the evidence base and then using that to change behaviour, at government level and amongst the users. In the case of the three inter-related Darwin Projects, the policy-level lobbying was successful, but the users on the ground are still struggling with translating the evidence into something that the rural owning poor can understand. Incentives for using the alternative (safe) product are as yet insufficient to deliver whole scale change. Innovation from the local pharmaceutical companies will be needed.

Figure 1: Mapping the research-advocacy-impact chain



These three projects have generated some useful lessons for communication in terms of research and advocacy.

- Undertake research to understand the problem.
- Remain open to new thinking (in this case the impetus for project change in direction came from research in Pakistan).
- Understand the broader impact of the loss of vultures on public health so that incentives for conservation can be identified
- Generate an evidence base for change, then lobby public and private sectors.
- At the same time, implement a programme of effective *ex-situ* conservation.
- Undertake research into alternative drugs
- Successfully manage the advocacy campaign to both get a ban on the manufacture of Diclofenac,

Whilst extinction has been staved off, the process of rehabilitation will be gradual (15 years) and less glamorous than the species saving initiatives of the past 6 or so years,

The project was very successful at generating publicity not only India and Nepal but globally about the side effects of Diclofenac. Engaging with international NGOs that have effective lobbying capacities assisted this.

6-052 Plant Information and Technology Transfer for Nepal (Oct 1997 - Sept 1999)

This project, run in partnership between the lead UK institution, the Natural History Museum (NHM), and lead partner institution in Nepal, Tribhuvan University working with the National herbarium in Nepal, had a clear cut rationale and purpose of addressing the imbalance, where the majority of botanical specimens, information and expertise on Nepali flora resides in the UK and not in Nepal. With guidance and facilities provided by the UK partners, this repatriation work was largely conducted by Nepali researchers themselves, notably Dr Krishna Shrestha who spent the duration of the project in the UK as a 'Darwin fellow', and 4 other Nepali researchers who spent three months in the UK as 'Darwin scholars'. This project was a forerunner of the **12-030** project reviewed in the next section. The main planned objectives of the project included repatriating data in electronic and hard copies and enabling further study in Nepal by providing a bibliography of works which cover Nepalese flowering plants and bryophytes. An additional output added during the project implementation was producing paper-based (printed) versions of a checklist of flowering plants to be used by people in Nepal lacking access to the electronic databases.

Project purpose: To transfer Nepal vital information on vascular plants and bryophytes in Nepal.

Relevance: There was a clear need for the project idea expressed by Nepali partners who met the UK project personnel prior to the project proposal formulation. The project was relatively straight-forward and focused on design with clear outputs and a clear partnership with clearly defined roles and responsibilities, good communication by UK and Nepali partners when face to face, but some difficulties in communication when remote. It must be particularly noted that having Dr Shrestha in the UK throughout the project ensured that project decisions and outputs were catered to the needs and context of Nepal and this helped in many communication matters between the UK and Nepal. Although UK partners provided examples of how the work could be done, the end products, including the database, were ultimately shaped by the Nepal project partners so that there was a better fit to Nepali needs.

Efficiency: The project seems value for money, particularly when considering that the project paved the way for future work and projects, with related work still ongoing. The technical methodology applied by the project seems to have been appropriate, although there was a comment from a local partner that may be with a certain publication, producing it in Nepal may have been more cost effective. There were several budgetary adjustments during the project and these were on the whole satisfactorily justified.

Effectiveness: The neat and clear objectives of the project were largely met except for a delay in one publication, so it was overall an effective project – most notably a substantial amount of data on the flora of Nepal was repatriated.

The 4 Darwin scholars in this project each spent three months in the UK receiving training, but largely they were busy with the task of repatriation of data. Although the number of Darwin scholars was revised down from 6 to 4, it does appear that the rationale for this – the inability to find sufficient appropriate candidates in Nepal who could carry on the work afterwards, seems to have been justified. The reviewer met these scholars and it did seem that they were carefully selected to ensure their exposure would be relevant to their subsequent work on their return to Nepal.

Impact: As well as the repatriation of data which has provided foundations for subsequent in-country work, the expertise and botanical taxonomic activity in Nepal were both increased as a direct result of this project, with the expertise and confidence of the Darwin fellow and scholars all growing, so that they have been able to play a greater contribution to furthering taxonomical study of Nepal. The Darwin fellow and driving force behind the project in Nepal, Dr Krishna Shrestha has been subsequently involved in numerous initiatives in Nepal and around the world, including Nepal taxonomical work at Missouri Botanical Garden, USA. Of the four Darwin scholars, Dr Devendra Bajracharya, Mr Tilak Gautam, Mrs Nirmala Pradhan, and Ms Sangeeta Rajbhandary, one has completed his PhD as a result of his involvement and works within Tribhuvan University; one has returned to her university post and leads ethnobotanical projects, and now started working for her PhD; one has returned to the Natural History Museum in Kathmandu and is collaborating with UK and other scientists on Nepali bryological research for her PhD degree; and the final has also managed to maintain a role related to botanical work.

In general, the project's key impact has been providing foundations to build subsequent work on - it left Nepal with more capacity to understand its biodiversity, as well as providing baseline data for taxonomic work. The project has provided a comprehensive information source which is available for consultation by anyone dealing with wild plants in Nepal. This resource is currently only available in English, but realistically, in its present, form the data is only aimed at the scientific community in Nepal whose working language is English.

The National Herbarium in Nepal seems to also have had a boost by being involved in the project, and has received renewed attention from the government in Nepal since this project - new management has been installed and new support from foreign donors has been received.

Another indirect impact of this project was that project raised awareness of the Darwin Initiative in Nepal generally, helping open the door to the many other projects that have subsequently been focused on Nepal.

Sustainability: As well as providing the basis for the subsequent Darwin project, this project also fed into the Flora of Nepal project which is a current active project led by the Royal Botanic Gardens, Edinburgh. The reactivation of the taxonomical work in Nepal attributed to this project helped encourage Japanese taxonomists to again collaborate and support work in Nepal. There have been numerous offshoots including books produced in the last few years that can at least partly be attributed to the work of this project, as they were written by the Darwin Fellow and Scholars and used repatriated data. So the legacy does appear to be strong and lasting – although taxonomical work and the National Herbarium in Nepal still have challenges to overcome, many related to lack of materials and finances, which were beyond the remit of the project.

Conclusions and recommendations: Having a Nepalese Darwin Fellow based in the UK for the duration of the project ensured that decisions were always taken with a detailed understanding of Nepali needs and context: particularly of note was a better cultural and organisational understanding of how things are done in Nepal. Likewise the UK project leader, Bob Press's previous expertise and experience in Nepal proved valuable in planning a project that was grounded and pragmatic. As stated by both the UK and the Nepali project partners, a lot of the work that made the project successful was beyond the technical scope of the project, but was to do with complicated logistics, administration and building relationships with people and institutions who could help make things happen in Nepal. So it was a great help that the project leaders (both UK and Nepali) were not only good scientists but also effective organisers and communicators.

The relationship between the project leaders and the Darwin Secretariat also seems to have been friendly, and the high degree of flexibility shown by the Secretariat was appreciated, which enabled the project to get over obstacles or deal with changes in direction that bit more easily. It was also noted by a member of the project team, that during the period when this project was operating, there was a simplicity in budgeting and in getting budgets revised which suited researchers/scientists who may not be strong in these aspects of project management. It was also suggested that, since that time, the budgeting requirements may have become more cumbersome for Darwin project leaders.

A broader lesson for Darwin projects, some of which risk being overly ambitious, is that this project seems to have been successful because of the scope of the project and outputs being clear, realistic and within the expertise of the project partners. Also, it is clear both from discussions with various people involved in the project and through the reviewer meeting him, that Dr Krishna Shrestha's ownership of the project idea, his expertise, enthusiasm and dynamism seems to have played a large part in driving this project along to achieve what it did.

The lessons may best be communicated through use as a case study at the Darwin Workshops for new or prospective grantees,

12-030 Building capacity for plant biodiversity inventory and conservation in Nepal (July 2003 to Oct 2006)

The purpose of this project was to build on the achievements of **6-052**, but with a greater focus on institutional and human resource capacity building. Eighteen Nepali personnel were to be trained in modern techniques of data recording, plant collections, identification and herbarium management. This training was planned to include three training workshops in Nepal, three field trips to less explored areas of Nepal, and also visits to the UK for 16 Darwin Scholars for short-term training on herbarium management and identification of new and unidentified specimens from the field work. The project was headed by the Royal Botanic Gardens, Edinburgh (RBGE) with the co-ordinating organization in Nepal being the Royal Nepal Academy of Science and Technology (RONAST) which subsequently changed its name to NAST once royal associations were severed in Nepal.

Project Purpose: Building capacity for plant biodiversity inventory and conservation in Nepal.

Associate collaborating partners in Nepal included the Department of Plant Resources (DPR) and the Central Department of Botany, Tribhuvan University (CDB TU) which was the co-ordinating institution for the previous project.

Relevance: As with its forerunner, this project's relevance was clear, Nepal's rich flora is not matched by in-country high quality botanical data or institutional and individual expertise in the whole range of skills needed to establish in-country collections and documentation up to international botanical standards. The project's emphasis on a spectrum of skill sets seems very relevant, from field collection and survey techniques to collect high quality, data-rich herbarium specimens, manage specimens in collections, and biodiversity documentation and conservation assessment. Also, the capacity building approach seems to have been very practical and hands-on particularly in the field survey expeditions which seem to have been much appreciated by the participants met by the reviewer in Nepal.

The project also fitted well with the Government of Nepal's 10 year plan and Nepal's National Biodiversity Strategy to prioritize institutional and human resource strengthening for biodiversity conservation.

Efficiency: The final report gave a clear indication of annual and total project expenditures and any variation justification all seem reasonable. In terms of design and implementation, there does seem to have been more challenges to assess the efficiency in this project's implementation compared to its predecessor – partially caused by the more elaborate organisational partnerships set up in Nepal during this project and slightly more ambiguous outputs – particularly with regards to the impact of the capacity building on some of the individuals involved (explained further in 'effectiveness' section that follows).

Effectiveness: Most activities that were planned were implemented: the 3 training workshops in-country which were linked to the 3 field and training expeditions, and 16 Darwin scholars from 8 organisations made brief visits to the UK for training. One area where the project fell short on plans was its original ambitious expectation with regards to where it would have its expeditions. Because of political unrest in many parts of Nepal, it was harder to get off the beaten track to the lesser explored areas. However, the hands-on training dimension of the field expeditions was not affected by this restriction.

Even with expeditions in more explored areas, quite a large number of species new to Nepal were recorded as well as a better understanding being gained of the distribution of various species. Large number of species and specimens were collected and brought to the two main herbaria in Nepal at Godawari DPR and Tribhuvan University. As planned, the project was able to develop a database of information on flora on Nepal which is accessible via the internet (www.efloras.org and/or www.floraofnepal.org). As far as the planned preliminary conservation assessments for 50% of species collected, according to those met in Nepal, this was only partially achieved. 18 botanists were trained as planned and on the whole the Nepal based training seems to have been effective. Also, training materials produced which can be used to guide botanists in Nepal.

In terms of how effective the different activities were, when the reviewer asked participants to name the most effective part of the project for them – it was unanimously the 'hands-on' practical field expeditions which covered quite concrete skills for sample preparation and how to write a taxonomical account of specimens. When participants were asked about the most memorable event, the study visits to the UK were mentioned. However although much appreciated, it was expressed by some that they were too short (a couple of weeks in most cases) to be really effective in terms of capacity building. A typical visit by a Darwin scholar involved 10 days at the Royal Botanic Gardens in Edinburgh, 1 day in Kew Gardens in London and 1 day at the National History Museum. It generally appeared that the strengths of these trips were in their ability to inspire rather than to provide in-depth training or thorough study of collections of Nepali specimens. The most inspirational part of the UK visits, according to some of the Darwin Scholars interviewed, related to how the herbaria in the UK were managed. Some said that it was difficult to find time to interact with UK experts, although others said they were satisfied with the time spent with UK experts. It was, however, expressed that the visits were extremely well organised and overall it was a great experience.

Impact: As this was part of an ongoing long-term strategy to build the taxonomical capacity in Nepal, it is difficult to judge in concrete terms at a point one year on from the end of the project, what its contribution was to the 'big picture' of biodiversity conservation in Nepal. In terms of benefits to taxonomical knowledge in Nepal, even with the field expeditions focusing on relatively well visited areas and with an emphasis on training during them, 5 or 6 species new to Nepal were discovered during the field work. With the focus of this project on capacity building, there are often factors beyond the control of the project that influence capacity building impact. However, as opposed to the first project where the 4 Darwin scholars seemed to return to supportive organisational environments that further nurtured their skills, a minority of the Darwin scholars in this second project did not have the support and were unable to build on their inspirational exposure in the UK, simply because their jobs in Nepal did not allow them to do relevant work. There also seems to have been a lack of coordination of Darwin scholars after the project, and the Chief of the National Herbarium of the DPR (KATH) took the initiative to call a meeting with them recently to follow up on what has been happening since and discuss ways to coordinate among them. Overall, there seems to have been an increase in terms of published botanical documents as an impact of this project from the participants who were involved – so it does look like expertise and activity has increased. Financial constraints still impede a substantive improvement of the national herbarium at Godavari and at the Tribhuvan University Herbarium (TUCH). The Darwin Initiative made some material contribution in terms of equipment and literature, although this was a fraction of what it needed. But a substantial infrastructural investment was beyond the remit of the project.

Sustainability: There does seem to have been an increase in international funding for botanical taxonomy in Nepal, although this may also be partly due to optimism about the current political situation in the country. Of note is that the RBGE has a continued commitment to the work and will soon establish a Flora of Nepal Research Centre in the National Herbarium which builds on the outputs of this project. Two of the Darwin Scholars from this project are now undertaking postgraduate research at RBGE, a PhD and an MSc, the latter funded by a Darwin Initiative Fellowship award.

Conclusions and recommendations: The key difference between this project and the previous one seems to have been both its strength and weakness. The strength was an attempt to cast the net further than the first project to get more people and institutions involved than previously, but this resulted in sometime quite a limited involvement and impact on some - for example, the Darwin scholars who did not have a supportive organisational environment for them to continue their work after the training. Suggestions were made from Nepali project partners that maybe more commitment could have been better secured from all the institutions who supplied people for the Darwin scholarship programme, to create a more enabling environment for the scholars on their return. One local partner suggested that assigning Darwin Scholars to work at least one day a week at the National Herbarium would be a good way for them to focus to maintain their enthusiasm and skills development.

With casting the net wider for Darwin Scholars it was important to ensure a good and just selection process. This selection process seems to have been considered fair – the process was part selection by institutions and part open competition.

With the field expeditions turning up 5 or 6 new species new in more visited areas of Nepal, this indicates that there is more to learn in terms of botanical surveys in less explored areas. With the political situation more peaceful now and fewer 'no-go' areas the opportunity to extend field surveys to lesser visited place is certainly there. However although expeditions may be the more exciting aspect of the work, there is a huge backlog at the herbarium of reportedly 50,000 specimens to be properly described and processed (see photo that follows) which may be more of a priority than collecting new specimens.



The new chief of the National Herbarium at Godavari, Dr Sushim Ranjan Baral, with 3 colleagues (2 are Darwin Scholars) standing in front of some of the samples collected from field expeditions that have yet to be properly processed described and stored.

In terms of capacity building the workshop and expeditions seemed to get the mix between theory and practice right and made for a very stimulating learning environment – with participants gradually becoming more confident in a learning by doing way as the training progressed, so that by the end of the training they would work independently with the trainers only as observers.

Because of a family tragedy at the time of the review, the reviewer was unable to meet with the Nepali coordinator of the project, Professor Bajracharya who had been the Vice-Chancellor of National Academy of Science and Technology (NAST) at the time of the project, but has since retired. Although Professor Bajracharya's personal taxonomical expertise was seen as clearly relevant to the project, there were some local project partners who questioned the selection of NAST as the main Nepal project partner, because they felt that in terms of relevant technical expertise and mandate, other institutions were more suitably placed to coordinate, including the Department of Plant Resources, Ministry of Forests and Soil Conservation. There does, however, seem to have been some valid pragmatic reasons for selecting NAST, partly to do with the bureaucratic ease of starting the project with NAST as opposed to other institutions. No matter what the real reasons were, this issue seems to have festered throughout the project – and may have been more effectively discussed during the project. There was also a few other grievances generated during the project and these may simply be a consequence of opening up the project to more people and institutions, and the associated difficulty in effective communication when there are 'many cooks'. It meant that more care had to be taken to ensure that communication was effective and institutional hierarchies carefully considered. Cultural differences may also have come into play – UK partners may be quick to air grievances in public, whereas Nepali partners may have been a little less direct. As a UK project partner said 'in hindsight silence does not equal consent' in Nepal. A UK project partner suggested that it may have been a more effective way to get senior figures in the local institutions on board if they had benefited from a study visit to the UK and indeed the RBGE is now considering a fact-finding study visit for these senior figures in the near future.

As in the first project, Dr Krishna Shrestha seems to have played a key driving role. There does seem to have been good local ownership of the project and it was even suggested by a local partner that maybe in the future the Darwin Initiative could go further by developing mechanisms that would enable local partners to select UK partners rather than it only being vice versa. For this it was suggested that local partners would need much more information on UK partners, including their strengths and weaknesses.

11-020 Building capacity for biodiversity monitoring and assessment in Nepal (Apr 2002 - 2005)

This project was designed to improve the biodiversity assessment capacity, and therefore the management, of the largest protected area in Nepal, Annapurna Conservation Area (ACA) which covers 7,629 square kms. The project intended to do this through the development of tools for assessing biodiversity, increasing capacity to undertake biodiversity assessments, impact of community involvement on biodiversity conservation assessed and costs and benefits of participation in protected area management on local communities analysed. The leading organisation in the UK was the United Nations Environment Programme (UNEP), World Conservation Monitoring Centre and the leading Nepali organisation was the King Mahendra Trust for Nature Conservation (KMTNC), which has subsequently changed its name to the National Trust for Nature Conservation (NTNC). The NTNC manages the ACA, but the project had not attempted to assess how its work was affecting biodiversity or what really has been the impact of protected area on local people. The training conducted by the project included both trainings in the UK and in Nepal.

Project Purpose: Building capacity for biodiversity monitoring and assessment in Nepal

Relevance: The project had a mix of foci in its design with more conventional biodiversity surveys and survey-related trainings combined with an exploration of the economic impact of protected area management on local people. This breadth of cover of the project certainly seems to have been relevant to the range of expertise from biodiversity to socio-economic, needed to effectively manage Annapurna Conservation Area, where many of the biodiversity challenges are intertwined with the socio-economic conditions of local people. The focus in the proposal on looking at relationships between local people and biodiversity in protected areas is something relevant to conservation initiatives around the world as well as in Nepal.

Efficiency: The project seems to have been generally efficient and responsive: when costs were cut on UK staff visits to Nepal, they were redistributed to fund an additional UK visit by a Nepali staff and for the production of an additional report, although it must be noted that this additional report is not very clearly linked with project objectives. At the request of the local partners, the project changed the focus from producing a manual to producing a set of Guidelines. There were various changes in running costs during the project, some that could have been explained better at the time, but all are still within reason.

Effectiveness: Although there was a breadth of cover of the project at the design phase, it seems during implementation to have narrowed a bit towards focusing mainly on conventional biodiversity surveys and survey related trainings and less on the exploration of the impact of conservation on local people. The first objective of the project on developing tools for biodiversity assessment seems to have been generally met, with the publication 'Guidelines for Biodiversity Assessment and Monitoring for Protected Areas' designed, field tested and contextualised to Nepal. Likewise the second objective related to training was met. The training in the UK for 3 weeks for 6 Nepalese staff on biodiversity monitoring and assessment techniques at UNEP WCMC in Cambridge was seen as solid and inspirational, in that state of the art technologies and methods were shown. The hands-on field testing/training of techniques in Nepal was equally seen as effective. Also the UK experts were considered by the local partners met by the reviewer in Nepal, not only to have the knowledge, but very importantly skills in how to conduct effective training.

For objective number 3 and 4 of the project, regarding the exploration of the relationship between villagers and biodiversity – it was felt by a local partner that the work could have benefited from a more thorough economic analysis of impact on local people. The 4th objective was specifically related to the cost and benefit of conservation to local people.

A key barrier for the project was the Maoist insurgency which was active in the area where the field work was to be conducted. This curtailed activities and meant changing plans to other areas.

Impact: The majority of personnel who were trained in the UK have since left Nepal – attributed by project personnel to bleak opportunities at present in Nepal. Also the local partner institution seems to have undergone some major upheavals since the project, which may have made it more difficult to build on the achievements of this project. A key output of the project seems to have been the Guidelines which have been widely distributed and are well known among conservation related professionals in Nepal. However, whether they are being effectively used or not was not clear. If there is lack of use, rather than reflecting a lack of relevance, this could also be simply because field assessment research is often seen as a luxury, and thus poorly funded among Nepali institutions. There were two articles published in recognised international journals generated by the project work which partially explored the relationship between people and conservation.

Sustainability: Sustainability of the work started by this project depends to a large degree on the level of ownership and expressed need at an institutional level in Nepal combined with outside support. At present there is no outside support related specifically to this kind of work.

Conclusions and recommendations: It would seem that the training conducted was done well and it is clear that the Guidelines for Biodiversity Assessment and Monitoring for Protected Areas are of high quality, but the project didn't entirely achieve what it had planned to achieve – especially with regards to any people-centred research. In fact, the degree to which local people were involved in the research, beyond being asked questions in a survey, seems to have been limited. Recommendations from local partners, in hindsight, on how to improve the project included a better spatial distributional focus of the field survey to include more diverse ecological conditions and also that the trainings emphasised data collection with less emphasis on analysis, collation and how to write up findings, which are skills that are in great need by Nepali conservation practitioners. The focus on the training of individuals has meant that, as the individuals have left the country, those skills are no longer there to benefit the nation. In future it may be worth changing the focus from the delivery of training itself to the development of institutional capacity; to enable the host organizations to conceptualise and take control of their own forestry capacity development strategy.

Annex 1- Terms of Reference

Evaluation of Closed Darwin Initiative Projects located in India/Nepal						
Project No's.	10-013	EIDP05	12-027	6-052	11-020	12-030
UK Institution and Project Leader/Contact	IoZ Andrew Cunningham (direct forerunner to EIDP05)	IoZ Andrew Cunningham	RSPB Richard Cuthbert	NHM Bob Press (direct forerunner to 12-030)	UNEP-WCMS Philip Bubb	RBGE Stephen Blackmore
Partner Institution(s) / Contact(s) per project	BNHS (Main) Dr Vibhu Prakash Gov of Haryana Forest Dep Dr R D Jakati RSPB Debbie Pain Poultry Diagnostic Research Centre (India) ICBN (India) National Birds of Prey Trust (UK) CSIRO Australian Animal Health Lab	BNHS Dr Asad Raf Rahmani Gov of Haryana Forest Dep Dr R D Jakati RSPB Debbie Pain National Birds of Prey Trust (UK)	BNHS (Main) Dr Vibhu Prakash Bird Conservation Nepal Dr Hem Sagar Baral Indian Veterinary Research Institute (IVRI) Wildlife Institute of India (WII) ZSL; University of Aberdeen Plus partners in other countries – Georgia, Azerbaijan, Armenia, Indochina, Cambodia, South Africa, Myanmar, Namibia, Spain	Tribhuvan University Dr Krishna Shrestha	King Mahendra Trust for Nature Conservation (KMTNC) Siddhartha Bajracharya University of Edinburgh Peter Furley	Nepal Academy of Science and Technology Prof. Dayananda Bajracharya
Project Grant Values/project	£144,391	£74,210	£231,975	£126,413	£148,211	£112,150
Project's Start / End Date:	April 2001 – March 2004	July 2004 – June 2007	Oct 2003 – Sept 2006	Oct 1997 – Sep 1999	Apr 2002 – Mar 2005	July 2003 – Oct 2006
Reviewer	Peter O'Hara					

INTRODUCTION

The Darwin Initiative seeks to help the safeguard of the World's biodiversity by drawing on UK biodiversity expertise to work with local partners in countries that are rich in biodiversity but poor in financial resources. Particular emphasis is placed on:

- Conserving biological diversity within the context of the Convention on Biological Diversity, including sustainable use and the fair and equitable sharing of benefits arising out of the utilisation of genetic resources;
- Improving collaboration with host country/ies and strengthening their capacity to carry forward Darwin funded initiatives;
- Enhancing the overall legacy of Darwin projects.

The Darwin Initiative supports projects led by UK institutions, in partnership with host country institutions, which support biodiversity conservation over a range of ecosystems and locations. Five priority areas for Darwin funding include:

- Institutional capacity building.
- Training
- Research
- Work to implement the Convention on Biological Diversity
- Environmental education and awareness

In order to inform on the impact and legacy of the Darwin Initiative, the Darwin ECTF Monitoring and Evaluation component is commissioning evaluations of projects that previously received funding from the Darwin Initiative (ie "closed" Darwin projects). Issues of sustainability are also integral components in the analysis of impact and legacy.

The approach applied by the Darwin Initiative M&E component is to select *clusters* of "closed" projects based on either a country, theme or eco-region. Such missions shall be undertaken in close consultation with UK based and host country institutions, and involve relevant in-country beneficiaries and stakeholders.

Objectives for the Evaluation of Closed Darwin Initiative Projects

The Evaluation of Closed Projects (ECP) is primarily intended to provide an external perspective on the legacy and impact of Darwin Projects, and to draw out innovations, lessons learned and best practices that account for positive legacy and impact.

Legacy and impact shall be accessed at different levels:

- At the **project level** – in terms of host country institutions and local partners and beneficiaries, and in terms of conservation achievements.
- At the **national & eco-region level** – in terms of host country policies and programmes, and if relevant at cross-boundary and eco-region level.
- At the **international level** – in terms of emerging best practices, and the CBD itself.
- At the **UK level** – in terms of legacy and impact within UK institutions.

Within the context of the above, the evaluation shall comment on how the clusters of projects evaluated have contributed towards achieving Darwin Initiative objectives. Comments shall include how later projects have built on earlier projects or been mutually supportive of each other.

Background of Projects to be evaluated

India / Nepal has been the focus of a number of Darwin projects (including those below). These completed projects present an opportunity to evaluate the long-term impact and legacy of Darwin projects in India / Nepal.

Project No.	Title	Purpose
10-013	Conservation of Critically Endangered Gyps spp. Vultures in India	To assist Indian scientists to prevent the extinction of two critically endangered bird species by producing a Recovery Plan for the Gyps spp. vultures (<i>Gyps indicus</i> and <i>Gyps bengalensis</i>) in India and to develop the capacity to implement it.
EIDP05	Building capacity for the recovery of critically endangered Gyps spp. vultures in India	To build capacity within India for the recovery of Indian Gyps vultures.
12-027	Prediction and management of declines in Gyps species vultures	Strategies and capacity developed to minimise spread of the Gyps disease across the Middle East & Central Asia into Africa and to manage the impacts of Gyps declines.
6-052	Plant Information and Technology Transfer for Nepal	To transfer to Nepal vital information on vascular plants and bryophytes in Nepal.
11-020	Building capacity for biodiversity monitoring and assessment in Nepal	To improve the effectiveness of protected area management in Nepal by improving the capacity of managers of protected areas to assess status and trends in biodiversity
12-030	Building capacity for plant biodiversity inventory and conservation in Nepal	To strengthen the capacity of Nepal to conserve and use sustainably its rich plant resources by training Nepali botanists to collect plants and assess conservation status in field. To enhance the representation of species in the collections and to train staff in collections and information management in the herbarium. Enabling Nepalis to contribute to international taxonomic research on Nepal.

Issues to be evaluated

The Evaluation of Closed Projects (ECP) shall review outcomes of Darwin Initiative funded projects against the original logical framework and Darwin proposal, Project reports and products, and through the following evaluation criteria:

Relevance: The extent to which the project outcomes correctly addressed identified problems and needs at the time of design, and whether these problems and needs were addressed as a result of the project. Guiding issues include:

- Appropriateness of the project design to the identified problems and towards supporting the implementation of the CBD.
- Complementarity and coherence with other related programmes and activities at national or local levels.
- Overall design strengths and weakness as reflected in the original logical framework.
- Extent of participation by host country institution and beneficiaries in initial consultations, and identification of problems and needs.

Efficiency: An assessment of how well the projects transformed their available resources into intended outputs in terms of quantity, quality and timeliness. Guiding issues include:

- Appropriateness and suitability of the technical methodology applied by the project and overall delivery of the technical assistance
- Review of project costs and value for money.
- Level of Partner country contributions in the project
- Extent of monitoring systems to assess progress and impact.

- Extent of the project's ability to adapt its programme and approach in response to changing assumptions and risks.

Effectiveness: To what extent the project outputs were achieved and to what extent they contributed to achieving the project purpose. In other words what difference the project has made in practice with the intended beneficiaries. Guiding issues include

- Extent of the technical advances made by the project.
- Extent of institutional change within beneficiary institutions as a result of the project outputs and purpose.
- Validity of the assumptions and risks of the project at the purpose level, and how did these change during the course of the project
- Extent of the project's ability to adapt its programme and approach during the course of implementation in response to changing assumptions and risks.

Impact: To what extent the project purpose was achieved and thus contributed to the overall project goal (ie to work with local partners in countries rich in biodiversity but poor in resources to achieve 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.). Guiding issues include:

- To what extent has conservation of biological diversity benefited (or expected to benefit) from the achievements of the projects.
- Have there been unplanned impact resulting from the projects and what have been their consequences.
- Have there been gender-related or poverty related impacts arising from the project.
- Have there been impacts on host country ability to implement the Convention on Biological Diversity.

Sustainability: Extent to which the outcomes of the projects, at either output or purpose level, have continued on after the end of the project. Guiding issues include:

- Extent of the ownership of the project purpose and achievements, and means for ensuring this ownership.
- Extent of the policy environment being in support of the project purpose and achievements.
- Extent of the institution capacity of host country and beneficiary institutions to carry forward project outcomes post project support, at the level of scientific, technological and financial considerations
- Extent of the socio-cultural factors being in support of project outcomes, and whether the project outcomes are well grounded.

Methodology

The ECP shall be undertaken in close collaboration with Darwin Project Leaders and host country institutions, and engage with project stakeholders and beneficiaries. Wherever possible, ECP consultants should consult with National CBD focal points.

The ECP consultant shall ensure that the ECP is informed through consultative and participatory work sessions and semi-structured interviews with project team members, project beneficiaries and other project stakeholders. Use of participatory assessment tools should be used where ever possible (e.g. timelines, mapping, stakeholder analysis)

Timetable

The ECP in India-Nepal shall be undertaken according to the following schedule :

- Preparation and review of documentation – 1 day
- Field mission and travel - 6 days
- Report preparation – 3 day

Reporting and Feedback

No later than two weeks after the end of the field mission, the ECP consultant shall submit a **draft report** to the Team Leaders and the Darwin Programme Director. Thereafter, the Team Leader, host country institution(s) and the Darwin Programme Director shall have up to two weeks to submit comments to the ECP consultant. The ECP consultant shall finalise the ECP report no later than one week after receiving comments on the draft report. Within one week it shall be formally submitted to the Defra Secretariat who shall comment within a further two weeks (see timetable below).

As a guide, the ECP draft and final report should be no more than 15 pages (excluding annexes) and reflect the following outline.

- *Executive Summary*: A free-standing executive summary covering the key purpose and issues arising from the MTR; an outline of the main analytical points and the main conclusions, lessons learned, best practice and recommendations. It should be no more than two pages.
- *Main Text*: Should start with an introduction describing the projects being reviewed, collective context and the evaluation objectives. The body of the report should follow with a project by project description the review criteria described in the methodology describing the facts and interpreting them in accordance with key questions for the review.
- *Conclusions and Recommendations* according to partnerships, relevance, efficiency, effectiveness, impact and sustainability criteria.
- *Innovations, lessons learned and best practice* of the projects individually and collectively as well as the Darwin Initiative programme.
- *Advice on communications*: the MTR Consultant's views on how key messages about the project should be communicated and to which audience (eg press release in the UK or briefing to local FCO staff)
- Annexes should include:
 - the TORs for the MTR
 - the Logical Framework of the project indicating original intended purpose and outputs, actual achievements by the end of the project, and outcomes at the time of the ECP
 - A map of the project areas if relevant
 - A list of persons/organisation consulted
 - Documentation consulted (ie bibliography)
 - Other relevant annexes as appropriate.

The *Completion Summary* should be a one page checklist of key issues from the MTR, pulling together the recommendations, lessons learned, best practice and the advice on communications. A template will be provided by the Darwin Programme Director.

Current Projects

While you are not required to interact with current projects in the country/region, you might find it helpful to know that the following Darwin projects are currently active in India / Nepal since there may be an element of overlap of partners in particular.

Project Ref	Title	PL	Organisation	Partners	Dates
EIDPO27	Conservation actions to secure the recovery of the Gyps species vultures – (direct successor to 12-027)	Richard Cuthbert	RSPB	Bombay Natural History Society (BNHS); Bird Conservation Nepal (BCN); Indian Veterinary Research Institute (IVRI)	June 2007 – May 2009
13-029	Conserving Giant Clams Through Community Reserves in Lakshadweep Islands, India	Andrea Deri	LEAD International	Bombay Natural History Society	April 2005 – March 2008
14-039	Large-scale Habitat Mapping and Local Conservation Initiatives for Jerdon's Courser, India	Ken Norris	Centre for Agri-Environmental Research (CAER)	Bombay Natural History Society	July 2005 – June 2008
14-041	Strengthening the Indian Bird Conservation Network to Safeguard Key Sites	Ian Barber	RSPB	Bombay Natural History Society (BNHS)	April 2005 – Mar 2008
15-001	Bees, biodiversity and forest livelihoods in the Nilgiri Biosphere Reserve	Janet Seeley	ODG	Keystone Foundation (India) plus UK orgs	June 2006 – May 2009
15-017	Implementing a Recovery Plan for the Critically Endangered Pygmy Hog in Assam	John Fa	Durrell Wildlife Conservation Trust	Min of Env & Forests; Forest Dept of Assam; Pygmy Hog Conservation Programme Research and Breeding Centre	May 2006 – Apr 2009
15-018	Developing Land Snail Expertise in South and Southeast Asia	Fred Naggs	NHM	ATREE (India); CBCN (Nepal) plus others in other countries	May 2006 – Apr 2009
15-032	Conserving a Flagship Steppe Species: the Critically Endangered Sociable Lapwing	Rob Sheldon	RSPB	Bombay Natural History Society (BNHS) plus others in other countries	May 2006 – March 2009
16-007	Building capacities for mitigating human-elephant conflict in Assam	Alexandra Zimmerman	North of England Zoological Society	Pygmy Hog Conservation Programme (DI project); Centre for Environmental Education (previous DI project); Rashtriya Gram Vikas Midhi (RGVN)	June 2007 – May 2010
14-013	Community Management of NTFPs in Kangchenjunga Conservation Area, Nepal	Mark Wright	WWF	WWF Nepal	July 2005 – June 2008
15-014	Managing Wetlands for Sustainable Livelihoods at Koshi Tappu, Nepal	Seb Buckton	Wildfowl and Wetlands Trust	Stirling University of Aquaculture; CABI Bioscience; Bird Conservation Nepal; IUCN Nepal; Koshi Camp; Tribhuvan University Institute of Agriculture and Animal Science; Participatory Conservation Prog of the Dept of NPs and Wildlife Conservation	Oct 2006 – Sept 2009
16-009	Crisis to Biological Management: rhinoceros, grassland and public engagement	Richard Kock	ZSL	National Trust for Nature Conservation (NTNC); Department of National Parks and Wildlife Conservation (DNPWC); IUCN; WWF Nepal; CABI International Europe	May 2007 – April 2010

Annex 2: Schedule of reviewer in India and Nepal and people met and interviewed

Saturday 8 September: Arrive in Pinjore and visit Vulture Care Centre and hold meetings with partners of projects **10-013, EIDPO05** and **12-027**, Haryana, Northern India via Delhi and Chandigarh. Meetings with Dr Vibhu Prakash (BHNS) and Dr R D Jakati, Governor of Haryana Forestry department.

Sunday 9 September: Pinjore. Reading documents for projects **10-013, EIDPO05** and **12-027**.

Monday 10 September: Pinjore Vulture Care Centre – meeting with project personnel and local village representations. Meetings included Dr Vibhu Prakash and centre personnel, also Mr Diwanchand (village headman, Bhoriyan village, under whose jurisdiction the centre falls), Mr Harish (village headman, Jatwala village), Mr Subhash (butcher), Mr Hansraj (landlord) and Mr Hari Singh (landlord).

Tuesday 11 September: Meeting with Dr Vibhu Prakash. Travel to Delhi.

Wednesday 12 September: travel to Kathmandu. Meet with local partners of project **6-052** and **12-030**. Meetings with Dr Mahesh Kumar Adhikari of the Department of Plant Resources (DPR) and Professor Krishan Shrestha of Central Department of Botany, Tribhuvan University. Meeting with Dr Hem Sagar Baral of Birdlife Nepal to discuss **12-027**.

Thursday 13 September: Kathmandu with travel to Godavari to visit national herbarium. Meetings with people relevant to **12-030**. Dr Sushim Ranjan Baral, Chief National Herbarium and Plant Laboratories and 3 colleagues, Mr Vidya Manandhar (Darwin Scholar), Ms Sajjan Dhal (Darwin Scholar) and Ms Madhu Ghimire. Also meeting with **11-020** project local co-ordinator Dr Siddhartha Bajracharya, NTNC. The Darwin scholar on both projects **6-052** and **12-030** was interviewed, Ms Sangita Rajbhandary and two Darwin scholars, Ms Nirmala Pradhan, Dr Devendra Bajracharya on **12-030** were interviewed. All 3 work with the Ethnobotanical Society of Nepal.

Friday 14 September: Meeting with Professor Hom Nath Bhattaraj, Vice Chancellor, Nepal Academy of Science and Technology (NAST) to discuss project **12-030**.

Saturday 15 September: Meeting with Keshab Rajbhandari, retired from the DPR, about projects **6-052** and **12-030**. Meeting with Keshab Rajbhandari, Managing Director of Medivet, about project **12-027**.

Sunday 16 September: Meeting with Surya Bahadur Pandey, Dept of National Parks about project **11-020**. Leave Nepal.

UK project leaders who responded to questionnaire in October 2007

Richard Cuthbert. RSPB. Project **12-027**

Mark Watson. RBGE. Project **12-030**

Bob Press. NHM. Project **12-030**

Andrew Cunningham. IoZ **10-013, EIDPO5**

Annex 3: Questionnaire used for UK project leaders

To complement and validate the insights from my local interactions I wanted to ask you a few standard questions. It is essential to get your insights so would really appreciate it if you spend some time answering the questions below and if possible submit to me on or before Monday the 15th October. We realize there may be some overlap between your answers and the contents of your final and annual reports but also hope that the questionnaire can solicit some additional insights. We also realize that for some of you the project was completed quite some time ago so you will have to draw on your memories.

Your insights will help us improve the design of the Darwin initiative so that other projects will benefit in the future. Critical comments are very welcome – this is predominantly a lesson generation exercise and the report itself will be written in a constructive manner. A draft report incorporating your comments will be shared with you and local partners for comment before being finalized and shared with Darwin.

Key questions:

1. In your own words what was the initial purpose of the project?
2. To what extent did the actual achievements of the project match the goal (Think about relevance, effectiveness, impact and sustainability)? Please highlight where it did and where it did not, explain why and provide evidence/examples to support your statements.
3. What were the key strengths in the plan/approach/methodology of the project? Please provide evidence/examples to support your statements.
4. What were the key weaknesses in the plan/approach/methodology of the project? Please provide evidence/examples to support your statements.
5. Now having completed the project, in hindsight please give recommendations on how the project design could have been improved to make it more relevant, have a greater impact and be more sustainable.
6. Please list any other points about the project or Darwin that were not covered in this questionnaire that you think it is important for us to know.

Annex 4: Documentation consulted

Funding Application	All projects
Annual Reports	All Projects
Final Report	All Projects
Final Report Review	All projects
Miscellaneous project publications	All projects