

Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders
(<http://darwin.defra.gov.uk/resources/reporting/>) -

it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Darwin project information

Project Reference	14-039
Project Title	Large-scale habitat mapping and local conservation initiatives for Jerdon's courser, India
Host country(ies)	India
UK Contract Holder Institution	CAER, University of Reading
UK Partner Institution(s)	University of Cambridge, RSPB
Host Country Partner Institution(s)	Bombay Natural History Society, India
Darwin Grant Value	£163,443
Start/End dates of Project	1 st July 2005 to 30 th June 2008
Project Leader Name	Prof. Ken Norris
Project Website	n/a
Report Author(s) and date	Prof. Ken Norris, January 2009

1 Project Background

Jerdon's courser (*Rhinoptilus bitorquatus*) is one of the 13 most endangered of India's 170 globally threatened or near-threatened bird species. As a result, it is of global conservation importance. Jerdon's courser is listed under Schedule 1 of the Indian Wildlife Protection Act, and is, therefore, given high conservation priority by the Indian Central and State Governments. This resulted in the establishment of protected areas in areas where the birds have been or were formerly recorded by the Andhra Pradesh Forestry Department. Today, the major threat to the persistence of Jerdon's courser is the loss and degradation of scrub forest within which it lives, due to development pressure (e.g. irrigation schemes), habitat conversion to agriculture, and the inappropriate use/management of remaining scrub forest. Jerdon's courser is considered as a priority species under the National Wildlife Action Plan (2002-2016) of the Government of India. The plan states that it will "identify suitable alternative homes for single isolated populations such as Jerdon's courser [and several other species], and manage the same as protected areas effectively".

This project is a development of a previous Darwin funded project (162/9/018). The original project focused on ecological studies relating to habitat selection and population monitoring. Our present project builds on this work and it focuses on developing the analytical tools to identify and map suitable habitats over large-scales and use this information to underpin local conservation initiatives.

2 Project support to the Convention on Biological Diversity (CBD)

The project has assisted India in its implementation of the CBD in a number of ways. Various aspects of the project have involved developing, maintaining and utilizing co-operative links (Article 5); the project had clearly defined research and monitoring objectives that related directly to in-situ conservation (Articles 7 & 8); there were a number of aspects of research and training within the project, and clear links between the two (Article 12); a key component of the project included public education and awareness initiatives (Article 13); the long-term aim of the project was to minimize adverse future impacts on Jerdon's courser habitats (Article 14); a fundamental part of the project was to facilitate the efficient exchange of information over the longer-term, and technical and scientific co-operation (Articles 17 & 18).

Our project also relates to a number of themes within the CBD. Although our project contains no specific elements focused on tourism, the local area is visited by birdwatchers wishing to see Jerdon's courser, and one potential benefit for the future is the potential to generate local tourism (Biodiversity & Tourism); the project clearly relates to the biodiversity of forest in India (Forest Biodiversity); it assessed the extent of suitable habitat for Jerdon's courser, examined its management and attempted to redress past (at least recent past) habitat damage (Impact Assessment, Liability & Redress); the project has involved the management of protected areas for Jerdon's courser, specifically areas managed by APFD (Protected Areas); and it has included initiatives aimed at the local community (Public Education & Awareness).

We have involved the CBD national focal point in our dissemination workshops.

3 Project Partnerships

The main project partnership is between University of Reading, University of Cambridge/RSPB, and Bombay Natural History Society (BNHS). This partnership has been extremely effective and has worked well over the project. Within the partnership, the University of Reading's role has been overall project co-ordination and management, plus technical input into field research and its application; Cambridge/RSPB's role has been to provide similar technical input, plus staff and other support to field and dissemination activities; BNHS' has been the lead project partner in India, and has undertaken a range of activities including conducting ecological research in the field, developing local conservation initiatives with Andhra Pradesh Forestry Department (APFD), as well as consultation and dissemination involving a range of stakeholders, user groups and the public (particularly via the media). This partnership has continued to build capacity within BNHS through technical research training, plus support and guidance in applying research findings. This capacity building relates to a wide range of issues relevant to CBD implementation as outlined in Section 11 of our original proposal.

The other main partnership within the project has been between BNHS and Andhra Pradesh Forestry Department (APFD) – the Forestry Dept. is the statutory body responsible for the designation and management of protected areas for wildlife. APFD play an important role in the implementation of practical conservation measures that flow from the research, including the identification and designation of protected areas. Importantly, this has included an active role in ongoing discussions concerning the Telugu-Ganga canal; and land management activities. Although the relationship between BNHS and APFD could potentially be difficult, particularly because of the conflicts caused by the Telugu-Ganga canal, BNHS have considerable influence with APFD in terms of land management and conservation issues, and the project has built significant capacity within BNHS through research and its application to be a credible partner with APFD in this regard.

4 Project Achievements

4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

It is probably no exaggeration to state that without this project there is a very real possibility that Jerdon's courser would be extinct due to the continuing loss and degradation of the scrub forest in which it lives. The project has significantly reduced the habitat damage that would have occurred due to an ongoing irrigation project, and has ensured that the basic information necessary to protect Jerdon's courser habitat is now in place. It has also provided the mapping tools necessary to begin searching for Jerdon's courser beyond its known range. All of this work has fed into the production of a draft Species Recovery Plan (SRP) for Jerdon's courser that has had considerable input by and support from all stakeholders in India. Whether these efforts are ultimately successful or not is still in the balance, but the project has bought the species time in which action can be taken to save it. What happens next depends largely on how the various stakeholders in India respond to the actions outlined in the SRP.

4.2 Outcomes: achievement of the project purpose and outcomes

The project purpose was *to build the information-base, supporting tools and capacity among researchers, local Government officials and local communities to identify and protect sites important for the critically endangered Jerdon's courser in Andhra Pradesh, India.*

Achievement of the project purpose was assessed against a series of measurable indicators outlined in our original log-frame:

New knowledge on the spatial location of potentially suitable habitats, threats to the remaining habitat and the locations of new sites supporting birds used for the identification, designation and management of key sites.

Specific details are given below, but our project successfully developed new knowledge that allowed us to map potentially suitable habitat for Jerdon's courser within the existing protected area in which it is known to occur. Threats both inside (due to habitat mis-management) and outside (due to the irrigation project and scrub clearance) this protected area were identified, and actions taken to address these. The locations of both new sites supporting birds and suitable habitat have been used for the identification, designation and management of key sites in and around the protected area in which Jerdon's courser occurs.

Effective management of existing areas.

This has been achieved in various ways. First, the loss and degradation of scrub forest due to the construction of an irrigation canal and associated land clearance was reduced through project activities that used knowledge generated by the project to highlight the importance of areas planned for clearance for Jerdon's courser. Second, knowledge created by the project has been used to work with APFD to identify damaging management activities within the sanctuary. Lastly, the SRP is being supported by APFD as the organisation with the primary role of implementing management activities, so the project has also produced an action plan within which effective management can be done.

Establishment of new protected areas.

Although the project has not led to the establishment of new protected areas because Jerdon's courser has yet to be found outside the area immediately surrounding the Srilankamalleswara Wildlife Sanctuary in which it is known to occur. Nevertheless, the project has led to the expansion of the sanctuary boundaries into neighbouring scrub forest that we identified as suitable for Jerdon's courser and in which Jerdon's courser was shown to occur.

On the basis of the above, we conclude that the project purpose has been achieved.

4.3 Outputs (and activities)

Details are given elsewhere in this report (particularly Annex 1), and in the annual reports (particularly 2008). Briefly, all outputs and associated activities were completed as originally planned with the following exceptions:

- Due to issues associated with the Telugu-Ganga irrigation project we abandoned plans to develop Community Conservation Areas (CCAs).
- Community-based activities were replaced by a new output relating to the development of a sustainable plan for the irrigation project (see Annex 2 for details), which has been achieved and advocacy work relating to this is ongoing.
- Our original plans to produce a monitoring and management manual were incorporated into a plan to produce a species recovery plan (SRP) for Jerdon's courser. Details about the SRP are given elsewhere in this report.

4.4 Project standard measures and publications

Quantified standard measures are given in Annex 4 and in the relevant annual reports. No additional details are given here.

Publications:

Jeganathan, P. (2005). Jerdon's Courser - A Conservation Approach. *Defending Wild India*. Vol. 2.(Jan-Mar). Bombay Natural History Society. Mumbai. Pp.21-.

Jeganathan, P. (2005). Saving the Stars-A star tortoise rescue story. *Sanctuary Asia* (Cub). May.Pp. 4-5.

Jeganathan, P. (2005). Radio-tagging the Jerdon's Courser- "Pity-not-to-do-it". *Mistnet*. April-June. Vol.6. No.2.

Jeganathan, P. (2005). Call of the Jerdon's Courser. *Hornbill*. January-March. Pp.14-19.

Jeganathan, P., Rahmani, A.R., & Green, R.E. (2005) Construction of Telugu-Ganga Canal in and around two protected areas in Cuddapah District, Andhra Pradesh, India. Immediate threat to the world population of the critically endangered Jerdon's Courser *Rhinoptilus bitorquatus*. *Survey Report*. Bombay Natural History Society, Mumbai, India. Pp.19.

Jeganathan, P., (2005). Telugu-Ganga Canal construction in Jerdon's Courser habitat. *Mistnet*. Oct-Dec. Vol.6. No.4.

Jeganathan, P., (2005). The Canal and the Courser. *Hornbill*. Oct-Dec. Pp.4-11.

Jeganathan, P., (2006). Jerdon's Courser Habitat Under Threat. *Pitta*. Bulletin of the Birdwatcher's Society of Andhra Pradesh. Vol.3.No.2. February 2006.

Jeganathan, P. (2006). 'Hornbill House to Courser's Cubicle' A Story of a struggle. *Samvardhan- BNHS internal newsletter*. Jan-Feb 2006 Vol:1 (1)

Jeganathan, P & Rahmani, A.R. (2006). Suggest alternate routes for Telugu-Ganga Canal and management implications to protect the suitable habitat of the Jerdon's Courser *Rhinoptilus bitorquatus* around the two protected areas in Cuddapah district, Andhra Pradesh. *Report submitted to Central Empowered Committee constituted by The Hon'ble Supreme Court of India*. Bombay Natural History Society. Pp.16.

Jeganathan, P & Rahmani, A.R.(2006). Digging a grave for the Jerdon's Courser. *Sanctuary Asia*. vol.XXVI No.2. Pp.34-37.

Jeganathan, P & Rahmani, A.R.(2006). Are Jerdon's Courser's less important than Tigers? *Green Governance*. April-October (10-11).Pp.24-27.

Jeganathan, P., Green, R.E., Norris, K., Wotton, S.R., Bowden, C.G.R., Pain, D., and Rahmani, A.R. (2006). Conservation of the critically endangered Jerdon's Courser *Rhinoptilus Bitorquatus* In India. Centenary Journal Proceedings, *J. Bombay Nat. Hist. Soc.*, 103 (2-3): 227-230.

Senapathi, D., Vogiatzakis, I.N., Jeganathan, P., Jill, J.A., Green, R.E., Bowden, C.G.R., Rahmani, A.R., Pain, D & Norris, K. (2007). Use of remote sensing to measure change in the extent of habitat for the critically endangered Jerdon's Courser *Rhinoptilus bitorquatus* in India. *Ibis* (2007), 149, 328–337.

Jeganathan, P & Rahmani, A.R. (2008). Report on lands required to be transferred to the Forest Department for the conservation of the critically endangered Jerdon's Courser *Rhinoptilus bitorquatus* around the Sri Lankamalaeswara Wildlife Sanctuary, Cuddapah district, Andhra Pradesh. *Report submitted to Central Empowered Committee constituted by The Hon'ble Supreme Court of India. Bombay Natural History Society*. Pp.40.

Jeganathan, P., Rahmani, A.R., Green, R.E., Norris, K., Vogiatzakis, I.N., Bowden, C.G.R., & Pain, D. (*In Press*). Quantification of threats and suggested ameliorative measures for the conservation of the critically endangered Jerdon's courser *Rhinoptilus bitorquatus* and its habitat. *J. Bombay Nat. Hist. Soc.*, 105 (1).

4.5 Technical and Scientific achievements and co-operation

Technical and scientific achievements

There have been two primary achievements within the project. First, we have developed a new mapping tool that allows us to map potentially suitable habitat for Jerdon's courser from remote sensing data. This includes a new algorithm to generate smoothed map images of suitable habitat. The tools are now available to produce large-scale maps of potentially suitable habitat, providing a basis to explore new areas for the presence of Jerdon's courser. This is an important objective for our post-project research. Second, we have applied a novel method based on animal tracks to estimate, for the first time, the number of Jerdon's courser present within its known range (i.e. the known world population). This now provides our partners in India with a method to monitor population trends, and so assess conservation status in the future.

Co-operation

There have been two areas in which the project has promoted co-operation. First, the advocacy work undertaken by BNHS surrounding the Telugu-Ganga canal. Advocacy work was incredibly important in bringing this issue before the Indian Supreme Court, and forcing the Irrigation Department to re-route the canal to reduce its impact on key Jerdon's courser habitat. This advocacy work was based on new knowledge generated by the project on the locations of Jerdon's courser and its habitat. Second, the project has promoted the development of a species recovery plan (SRP) for Jerdon's courser through a fully participatory process that provides, for the first time, a framework to manage conservation planning and action.

4.6 Capacity building

Our project has made a significant contribution to capacity in India in three main ways. First, it has developed the capacity of a number of individuals, in particular Jeganathan who has led the project on behalf of BNHS. He joined our original Darwin project (i.e. prior to the current one) in 2000 as an inexperienced MSc student, and has developed into a mature conservation scientist, gaining a PhD in the process. He has now been employed by another Indian NGO, and is developing his own career in conservation. Nevertheless, he is maintaining an advisory role within the Jerdon's courser network, so that his knowledge and experience will support individuals that join conservation activities in the future. Second, significant capacity has been developed in Indian institutions particularly BNHS and APFD. This has been based on the new knowledge acquired during the project, a range of dissemination and communication activities, and ultimately the SRP. Lastly, the project has developed a conservation network supporting Jerdon's courser conservation that includes a number of Indian and UK individuals and organisations. This provides the capacity to support future conservation planning and action within the SRP.

4.7 Sustainability and Legacy

The sustainability and legacy of the project is strong, being built around a range of activities. First, there is no doubt that the project has been incredibly successful in enhancing the profile of Jerdon's courser and improving protection for it. The project has generated significant new information without which conservation action, particularly relating to the canal and habitat management by APFD, would not have been possible. Indian NGOs and Government officials are much more aware of the issues now, and the profile of Jerdon's courser has also been raised among local people. Second, the SRP provides, for the first, a co-ordinated framework for conservation planning and action going forward, and involves all the key stakeholders in India supported by the UK project partners. Once finished, the SRP will become a Government document representing their conservation commitments, so it promises to be a very powerful project legacy. Third, as mentioned in the previous section, the project leaves a fully functional conservation network linking the UK and Indian partners that will continue to support conservation actions in the future. Four, we have already secured some limited post-project funding from the RSPB, which we plan to use to maintain a BNHS presence in the local area, and support some basic research. We also have contacts with UK-based funding organisations who are interested in supporting some of our plans for Jerdon's courser work. There is also a push through Birdlife International to generate support for Jerdon's courser conservation. Lastly, conservationists in Andhra Pradesh, led by BNHS, are pressing to have Jerdon's courser made the state bird, thereby elevating its societal profile significantly, and making it more likely that conservation actions will be implemented in the future.

5 Lessons learned, dissemination and communication

Lessons learned

There have been no obviously new lessons learned during our project. The UK partners have now worked in India since 2000, and the project team has learnt how to develop and maintain the collaborative relationships necessary to sustain effective conservation work. Collaboration has been the key to the current project and will strongly affect its legacy, and this is currently working very well. We understand the need to maintain existing relationships through participation and effective communication, and this is illustrated by the participatory process we used to develop a draft species recovery plan (SRP).

Dissemination and communication

This has taken place in a number of broad ways. First, the SRP provides both a dissemination and communication function in the sense that in one place it provides an overview of current knowledge, planned conservation actions and responsibilities. Second, we have held two workshops during the project, in June 2008, which first disseminated our existing knowledge, then developed the SRP (details in 4.3 and Annex 1). Third, the project has generated a wide range of publications, including reports, articles and papers (see section 4.4). Four, the project has generated a wide range of publicity material, including an extensive engagement with the media, particularly in India (see Annex 4).

5.1 Darwin identity

One of the goals of the Darwin Initiative is, *“to achieve the conservation of biological diversity”*. Our project has contributed significantly to this goal by saving Jerdon’s courser from extinction (at least in the short-term). It is highly likely that without the project this species would now be extinct. This is a critically endangered species and one of the rarest and least known birds in the World.

6 Monitoring and evaluation

We monitored project progress by reference to the project implementation timetable and associated milestones set out in our original proposal. Monitoring was supported by regular project management meetings in the UK, involving predominantly the UK partners; and periodic project management meetings of all partners in India including field visits. Contact was maintained via email in between formal meetings and in-country visits by the UK partners, which maintained a relatively dynamic project support network. Progress was evaluated against the milestones in the timetable, and regularly cross-referenced back to the project outputs, outcomes and purpose.

6.1 Actions taken in response to annual report reviews

We were asked by the reviewer of our 2006 annual report to comment on the impact of the irrigation canal issue on overall project outputs. We responded to this in our 2007 annual report, by pointing out that the main consequence was to undermine the feasibility of community-based conservation work. We have amended our log-frame at the time (see 2007 annual report).

7 Finance and administration

7.1 Project expenditure

The annual expenditure is shown in our annual reports for 2006, 2007 and 2008. Overall, project expenditure followed that outlined in our original proposal, with the exception that we agreed a revised budget for 07/08 with the Secretariat in early 2008. Details are given in our 2008 annual report.

7.2 Additional funds or in-kind contributions secured

These follow the details given in our original proposal and amount to £94,465 of funding over the lifetime of the project. In addition, we have subsequently secured £20k from the RSPB to support post-project work over the next 2 years, and are in discussions with other potential funders about additional work.

7.3 Value of DI funding

£161,325 in total.

Annex 1 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/planned for next period
<p>Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</p> <ul style="list-style-type: none"> • The conservation of biological diversity, • The sustainable use of its components, and • The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources 		(report on any contribution towards positive impact on biodiversity or positive changes in the conditions of human communities associated with biodiversity eg steps towards sustainable use or equitable sharing of costs or benefits)	(do not fill not applicable)
<p>Purpose (insert original project purpose statement)</p> <p>To build the information-base, supporting tools and capacity among researchers, local Government officials and local communities to identify and protect sites important for the critically endangered Jerdon's courser in Andhra Pradesh, India.</p>	<p>(insert original purpose level indicators)</p> <p>New knowledge on the spatial location of potentially suitable habitats, threats to the remaining habitat and the locations of new sites supporting birds used for the identification, designation and management of key sites.</p> <p>Effective management of existing areas.</p> <p>Establishment of new protected areas.</p>	<p>(report on progress towards achieving the project purpose, ie the sum of the outputs and assumptions)</p> <p>Briefly, we believe the project purpose has been achieved. New knowledge has be acquired and used for site identification, designation and management. This information has also been used to promote the effective management of existing areas. Lastly, new areas of habitat have been incorporated into an existing protected area. Further details are given in Section 4.2).</p>	<p>(Highlight key actions planned for next period)</p> <p>The project has finished, but activities do continue (see section 4.7).</p>
<p>Output 1. (insert original outputs with activities relevant to that outputs in lines below. Activities relevant to more than one output should be cross-referenced rather than repeated)</p> <p>Imagery analysis completed giving estimates of habitat loss, threats</p>	<p>(insert original output level indicators)</p> <p>Report on new areas drafted. Minimum of 1 Indian student trained in satellite imagery analysis.</p>	<p>(report general progress and appropriateness of indicator)</p> <p>An up-to-date report on progress under this output was given in our annual report for 2008. The Indian researcher, Jeganathan, has a basic working knowledge of imagery analysis. The output was completed as planned, and the indicators were appropriate.</p>	

and potentially new areas supporting birds.		
Activity 1.1 insert activities relevant to this out put Satellite imagery analysis		(report completed or progress on activities that contribute toward achieving this output), and what will be carried out in the next period All of the stages outlined in our original project implementation timetable were completed. We now have a habitat monitoring tool that can be used with Landsat 7 imagery data collected prior to 2003 to map suitable habitat. As pointed out in our annual report for 2008, the Landsat 7 sensor developed a fault in 2003 that made subsequent data unusable. We have only recently managed to acquire Landsat 5 data to recalibrate our mapping tool for different imagery data. This was due to difficulties in acquiring imagery until the USGS made images available later last year. We also collected a new set of habitat data in May/June 2007, which will enable us to calibrate recent imagery data with up-to-date ground-truth data. We will then be able to use our mapping tools to monitor habitat change, and develop up-to-date large-scale maps of potentially suitable habitat for Jerdon's courser. We plan to do this post-project, hopefully with new funding.
Activity 1.2 Field research programme		All of the stages outlined in our original project implementation timetable were completed. We have monitored the known Jerdon's courser sites using soil tracking strips, but worryingly encountered no birds, even though sporadic sightings of birds at night continued. Due to scrub loss and encroachment by local people close to the sanctuary boundary, it is possible that birds have moved deeper into the scrub forest into areas we have yet to search. This is a priority for post-project work, and the RSPB plans to trial new night vision equipment to search new areas in February 2009. New areas identified by the satellite imagery analysis were searched for Jerdon's courser without success. Initial visits further afield were also made, but no new sites were found. The field programme supported the satellite imagery analysis through the collection of new ground-truthing data in 2006 and 2007.
Output 2. (insert original output) Partner organisations able to assess and monitor the long-term status of Jerdon's courser and its	(insert original output level indicators) Minimum of 1 BNHS staff member and 1 APFD staff member trained in	(report general progress and appropriateness of indicator) We gave details in the 2008 annual report. Briefly, the BNHS researcher, Jeganathan, has been awarded a PhD based on work conducted in the previous and current Darwin projects. Basic training in imagery analysis

habitat.	monitoring and management methods.	for the BNHS researcher has been done; training to use tools was done in 07/08, and mapping tools used in the field. As explained previously, it is unlikely that one single staff member in APFD will be trained. This need has now been largely superceded by the SRP that details future actions and responsibilities. Once a final version is agreed, this will dictate the need for APFD training to support implementation, and our India partners will lead on this post-project. The indicator is appropriate since it is clearly related to the project purpose.
Activity 2.1. Satellite imagery analysis		See Activity 1.1
Activity 2.2. Field research programme		See Activity 1.2
Output 3. (insert original output) Plans for site designation in place for appropriate areas.	(insert original output level indicators) Discussions on new sites for designation initiated.	(report general progress and appropriateness of indicator) As we stated in our 2008 annual report, discussions concerning the existing APFD sanctuary boundaries have been ongoing as part of the Telugu-Ganga canal debate, and have resulted in the sanctuary boundaries being expanded to protect key Jerdon's courser habitat. The indicator is appropriate because it shows new sites have been located and that plans are progressing to protect them.
Activity 3.1. Site designation		The stages outlined in our original project implementation timetable were completed. The new knowledge created by the project, particularly through the imagery analysis and fieldwork, were fundamental to convincing APFD that they needed to extend the sanctuary boundary to protect important Jerdon's courser habitat.
Output 4. (insert original output) Community Conservation Areas in place.	(insert original output level indicators) CCAs developed in at least 2 areas not covered by existing protected areas.	(report general progress and appropriateness of indicator) As explained in our 2007 annual report, this output was abandoned because of the Telugu-Ganga canal issue, and replaced with an output relating to sustainable land-use planning (see Annex 2).
Activity 4.1. CCA Programme		No longer applicable.

<p>Output 5. (insert original output) Monitoring and management manual published and distributed.</p>	<p>(insert original output level indicators) Manual drafted and reviewed, publication date established, 50 copies produced/distributed.</p>	<p>(report general progress and appropriateness of indicator) As explained in our 2008 annual report, this activity was subsumed by the SRP, a draft of which was produced in the summer of 2008 and is now in the consultation and revision phase.</p>
<p>Activity 5.1. Development of habitat and bird monitoring and management manual.</p>		<p>As explained in our 2008 annual report, as part of the irrigation canal discussions it was agreed that a Species Recovery Plan (SRP) should be drafted for Jerdon's courser and adopted by APFD. Development of this plan has been led by BNHS with significant input from Birdlife/RSPB and UK project partners, and developed through a participatory workshop involving stakeholders in June 2008. The SRP includes a description of monitoring methods and habitat management requirements, so a distinct manual is now no longer necessary. A draft SRP is currently in the consultation phase, and will be completed post-project.</p>
<p>Output 6. (insert original output) Dissemination workshops.</p>	<p>(insert original output level indicators) Three workshops planned, timetabled and conducted.</p>	<p>(report general progress and appropriateness of indicator) This output was successfully completed, although the implementation timetable changed slightly from our original plan (see Activity 6.1). The indicator is appropriate and directly related to the output.</p>
<p>Activity 6.1. Workshops</p>		<p>We held three workshops during the project. One, in late 2005, was field demonstration workshop relating to radio-tracking work and the canal issue. Further details are given in our 2006 annual report. We held two workshops back-to-back in June 2008 in Hyderabad, the first was a dissemination workshop that was designed to present the current state of knowledge to stakeholders, the second was a participatory workshop for stakeholders that designed the species recovery plan, which BNHS subsequently turned into a draft document.</p>
<p>Output 7. (insert original output) Publications and presentations.</p>	<p>(insert original output level indicators) Six seminars, 3 press releases, 3 popular articles, 3 papers.</p>	<p>(report general progress and appropriateness of indicator) As stated in our 2008 annual report, all indicators had been achieved with the exception of paper production. Two papers are planned for 08/09 on</p>

		habitat mapping and population estimates for Jerdon's courser. The indicators are still appropriate because they reflect dissemination activities.
Activity 7.1. Publicity material		Details are given in Annex 4, and also in Section 4.4.

Annex 2 Project's final logframe, including criteria and indicators

This is the same log-frame that was included in our 2008 annual report.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <p>the conservation of biological diversity,</p> <p>the sustainable use of its components, and</p> <p>the fair and equitable sharing of benefits arising out of the utilisation of genetic resources</p>			
<p>Purpose</p> <p>To build the information-base, supporting tools and capacity among researchers, local Government officials and local communities to identify and protect sites important for the critically endangered Jerdon's courser in Andhra Pradesh, India.</p>	<p>New knowledge on the spatial location of potentially suitable habitats, threats to the remaining habitat and the locations of new sites supporting birds used for the identification, designation and management of key sites.</p> <p>Effective management of existing areas.</p> <p>Establishment of new protected areas.</p>	<p>Reports on the research programme and publications by partner organisations.</p> <p>Participation by Indian partners in dissemination and training initiatives.</p> <p>Records of site designation and community conservation areas meetings.</p>	<p>APFD officials incorporate new knowledge, tools and capacity into future management programmes.</p> <p>Effective collaboration between BNHS, APFD and local communities maintained and developed</p>
<p>Outputs</p> <p>(1) Imagery analysis completed giving estimates of habitat loss, threats and potentially new areas supporting birds.</p> <p>(2) Partner organisations</p>	<p>(1) Report on new areas drafted. Minimum of 1 Indian student trained in satellite imagery analysis.</p> <p>(2) Minimum of 1 BNHS staff member and 1 APFD staff member</p>	<p>(1) & (2) Assessment via exchange visits between UK & India, research reports, records of participation, correspondence records, data collected.</p> <p>(3) Site designation meeting reports.</p> <p>(4) Meeting reports for the canal; land</p>	<p>(1) None. Methodologies already partially developed and applied.</p> <p>(2) APFD maintains its positive support for the project.</p> <p>(3) & (4) Co-operation between BNHS, APFD, other Governmental Agencies and</p>

<p>able to assess and monitor the long-term status of Jerdon's courser and its habitat.</p> <p>(3) Plans for site designation in place for appropriate areas.</p> <p>(4) Sustainable plans for Telugu-Ganga canal and APFD land in place.</p> <p>(5) Draft species recovery plan (SRP) produced and distributed.</p> <p>(6) Dissemination workshops.</p> <p>(7) Publications and presentations.</p>	<p>trained in monitoring and management methods.</p> <p>(3) Discussions on new sites for designation initiated.</p> <p>(4) An agreed plan for the canal route and management plan for APFD land.</p> <p>(5) SRP drafted and distributed for comments.</p> <p>(6) Two workshops planned, timetabled and conducted.</p> <p>(7) Six seminars, 3 press releases, 3 popular articles, 3 papers.</p>	<p>management on the ground by APFD.</p> <p>(5) Feedback on SRP, 2 copies of final SRP sent to Darwin.</p> <p>(6) Direct involvement from participants, press releases associated with workshops.</p> <p>(7) Copies of publications sent to Darwin Initiative.</p>	<p>local communities maintained.</p> <p>(5) Publisher and distribution method identified.</p>
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Activities	Activity Milestones (Summary of Project Implementation Timetable)
(1) Satellite imagery analysis.	(1) Image capture and preliminary analysis (Jul-Dec 05). Collection of additional ground-truthing data (Jan-June 06). Model validation, refinement and site identification Jul-Dec 06). Additional validation and analysis (Jan-June 07). Development of habitat monitoring tools (Jul 07-Jun 08).
(2) Field research programme.	(2) Monitoring known sites (Jul 05-Apr 06). Support ground-truthing data collection (June 06). Surveys of new areas identified by image analysis (Oct 06-Apr 07; Oct 07-Apr 08).
(3) Site designation.	(3) Identify potentially new areas for site designation and provide support to APFD during any subsequent designation process (reactive: Oct 06-June 08).
(4) Sustainable land-use planning.	(4) Continue discussions concerning the Telugu-Ganga canal (reactive: May 07-June 08). Continue discussions with APFD about forestry management practices (reactive: May 07-June 08).
(5) Development of Species Recovery Plan (SRP)	(5) Collation of information from imagery analysis and fieldwork (by Oct 07). Draft SRP produced by BNHS (June 2008).
(6) Workshops.	(6) Dissemination workshop for local, state and national Government officials, NGOS and interested individuals (Hyderabad, June 08). Field-based workshop on habitat requirements, management and monitoring methods for local APFD officials and local communities (June 08).
(7) Publicity material.	(7) Two seminars per year, two press releases associated with workshops (Mar 07, 08) plus one other (reactive). One popular science article per year, two draft papers by June 08.

Annex 3 Project contribution to Articles under the CBD

Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use		Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	35	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	25	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation		Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity		Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures		Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	15	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	15	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts	5	Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources		Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.

Article No./Title	Project %	Article Description
16. Access to and Transfer of Technology		Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information	5	Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol		Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Other Contribution		Smaller contributions (eg of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

Annex 4 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
1a	Number of people to submit PhD thesis	
1b	Number of PhD qualifications obtained	1
2	Number of Masters qualifications obtained	
3	Number of other qualifications obtained	
4a	Number of undergraduate students receiving training	
4b	Number of training weeks provided to undergraduate students	
4c	Number of postgraduate students receiving training (not 1-3 above)	1
4d	Number of training weeks for postgraduate students	
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification(ie not categories 1-4 above)	
6a	Number of people receiving other forms of short-term education/training (ie not categories 1-5 above)	
6b	Number of training weeks not leading to formal qualification	6
7	Number of types of training materials produced for use by host country(s)	
Research Measures		
8	Number of weeks spent by UK project staff on project work in host country(s)	23
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	1
10	Number of formal documents produced to assist work related to species identification, classification and recording.	
11a	Number of papers published or accepted for publication in peer reviewed journals	1
11b	Number of papers published or accepted for publication elsewhere	
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	
12b	Number of computer-based databases enhanced (containing species/genetic	

Code	Description	Totals (plus additional detail as required)
	information) and handed over to host country	
13a	Number of species reference collections established and handed over to host country(s)	
13b	Number of species reference collections enhanced and handed over to host country(s)	
Dissemination Measures		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	3
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	>10
15a	Number of national press releases or publicity articles in host country(s)	>5
15b	Number of local press releases or publicity articles in host country(s)	>5
15c	Number of national press releases or publicity articles in UK	2
15d	Number of local press releases or publicity articles in UK	
16a	Number of issues of newsletters produced in the host country(s)	
16b	Estimated circulation of each newsletter in the host country(s)	
16c	Estimated circulation of each newsletter in the UK	
17a	Number of dissemination networks established	1
17b	Number of dissemination networks enhanced or extended	
18a	Number of national TV programmes/features in host country(s)	
18b	Number of national TV programme/features in the UK	
18c	Number of local TV programme/features in host country	2
18d	Number of local TV programme features in the UK	
19a	Number of national radio interviews/features in host country(s)	
19b	Number of national radio interviews/features in the UK	
19c	Number of local radio interviews/features in host country (s)	
19d	Number of local radio interviews/features in the	

Code	Description	Totals (plus additional detail as required)
	UK	
Physical Measures		
20	Estimated value (£s) of physical assets handed over to host country(s)	n/a
21	Number of permanent educational/training/research facilities or organisation established	n/a
22	Number of permanent field plots established	n/a
23	Value of additional resources raised for project	£115k
Other Measures used by the project and not currently including in DI standard measures		

Annex 5 Publications

Type *	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Article	Jeganathan, P. (2005). Jerdon's Courser - A Conservation Approach. <i>Defending Wild India</i> . Vol. 2.(Jan- Mar). Bombay Natural History Society. Mumbai. Pp.21-.		All publications are available from the Bombay Natural History Society for free.	
Article	Jeganathan, P. (2005). Saving the Stars-A star tortoise rescue story. <i>Sanctuary Asia</i> (Cub). May.Pp. 4-5.			
Article	Jeganathan, P. (2005). Radio-tagging the Jerdon's Courser- "Pity- not-to-do-it". <i>Mistnet</i> . April-June. Vol.6. No.2.			
Article	Jeganathan, P. (2005). Call of the Jerdon's Courser. <i>Hornbill</i> . January-March. Pp.14- 19.			
Report	Jeganathan, P., Rahmani, A.R., & Green, R.E. (2005) Construction of Telugu- Ganga Canal in and around two protected areas in Cuddapah District, Andhra Pradesh, India. Immediate threat to the world population of the critically endangered Jerdon's Courser <i>Rhinoptilus</i> <i>bitorquatus</i> . <i>Survey</i> <i>Report</i> . Bombay Natural History Society, Mumbai, India. Pp.19.			
Article	Jeganathan, P., (2005). Telugu-Ganga Canal construction in Jerdon's Courser habitat. <i>Mistnet</i> . Oct-Dec. Vol.6. No.4.			
Article	Jeganathan, P., (2005). The Canal and the Courser. <i>Hornbill</i> . Oct- Dec. Pp.4-11.			

Article	Jeganathan, P., (2006). Jerdon's Courser Habitat Under Threat. <i>Pitta</i> . Bulletin of the Birdwatcher's Society of Andhra Pradesh. Vol.3.No.2. February 2006.			
Newsletter	Jeganathan, P. (2006). 'Hornbill House to Courser's Cubicle' A Story of a struggle. <i>Samvardhan- BNHS internal newsletter</i> . Jan-Feb 2006 Vol:1 (1)			
Report	Jeganathan, P & Rahmani, A.R. (2006). Suggest alternate routes for Telugu-Ganga Canal and management implications to protect the suitable habitat of the Jerdon's Courser <i>Rhinoptilus bitorquatus</i> around the two protected areas in Cuddapah district, Andhra Pradesh. <i>Report submitted to Central Empowered Committee constituted by The Hon'ble Supreme Court of India. Bombay Natural History Society</i> . Pp.16.			
Article	Jeganathan, P & Rahmani, A.R.(2006). Digging a grave for the Jerdon's Courser. <i>Sanctuary Asia</i> . vol.XXVI No.2. Pp.34-37.			
Article	Jeganathan, P & Rahmani, A.R.(2006). Are Jerdon's Courser's less important than Tigers? <i>Green Governance</i> . April-October (10-11).Pp.24-27. Jeganathan, P., Green, R.E., Norris, K., Wotton, S.R., Bowden,C.G.R., Pain,D., and Rahmani, A.R. (2006). Conservation of the critically endangered Jerdon's Courser <i>Rhinoptilus Bitorquatus</i> In India. Centenary Journal Proceedings, <i>J. Bombay Nat. Hist. Soc.</i> , 103 (2-3): 227-230.			

Journal Article	Senapathi, D., Vogiatzakis, I.N., Jeganathan, P., Jill, J.A., Green, R.E., Bowden, C.G.R., Rahmani, A.R., Pain, D & Norris, K. (2007). Use of remote sensing to measure change in the extent of habitat for the critically endangered Jerdon's Courser <i>Rhinoptilus bitorquatus</i> in India. <i>Ibis</i> (2007), 149, 328–337.			
Report	Jeganathan, P & Rahmani, A.R. (2008). Report on lands required to be transferred to the Forest Department for the conservation of the critically endangered Jerdon's Courser <i>Rhinoptilus bitorquatus</i> around the Sri Lankamalaeswara Wildlife Sanctuary, Cuddapah district, Andhra Pradesh. <i>Report submitted to Central Empowered Committee constituted by The Hon'ble Supreme Court of India. Bombay Natural History Society</i> . Pp.40.			
Article	Jeganathan, P., Rahmani, A.R., Green, R.E., Norris, K., Vogiatzakis, I.N., Bowden, C.G.R., & Pain, D. (<i>In Press</i>). Quantification of threats and suggested ameliorative measures for the conservation of the critically endangered Jerdon's courser <i>Rhinoptilus bitorquatus</i> and its habitat. <i>J. Bombay Nat. Hist. Soc.</i> , 105 (1).			

Annex 6 Darwin Contacts

Ref No	14-039
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