

Darwin Initiative for the Survival of Species

Annual Report

1. Darwin Project Information

Project title	<i>Conservation of the endangered Jerdon's courser in India</i>
Country(ies)	<i>India</i>
Contractor	<i>University of Reading</i>
Project Reference No.	<i>162/9/018</i>
Grant Value	<i>£70,261</i>
Start/Finishing dates	<i>August 2000 for 3 years</i>
Reporting period	<i>1st April 2002 to 31st March 2003</i>

2. Project Background

Jerdon's courser 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. This importance is reflected in the fact that this species 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 is reflected in the establishment of protected areas (2 designated and 1 planned) in areas where the birds have been or were formerly recorded. Furthermore, recent development proposals have been revised in the light of the bird's rediscovery.

Jerdon's courser (Rhinoptilus bitorquatus) is a nocturnal bird known from a handful of records prior to 1900. However, it was considered extinct as no sightings were documented between 1900 and 1986, when it was rediscovered in the Pennar valley (Eastern Ghats) in Andhra Pradesh, east-central India by the Bombay Natural History Society (BNHS). As a consequence, the area in which the birds were rediscovered was designated as the Sri Lankamalleswara Wildlife Sanctuary. An ornithological survey in the southern region of the Eastern Ghats, including this area, in 1994/95 sighted 5 individuals in the sanctuary. Subsequently birds have been observed regularly (c. monthly) at a few sites within the sanctuary.

Jerdon's courser is listed by IUCN as endangered. However, there are no data on current population size or geographical distribution, which would allow a more quantitative assessment of the species' current endangerment. Furthermore, very little information is available on the habitats required by these birds, which, combined with a lack of population and range data, makes it very difficult to assess current threats to the population. Birds are captured by local trappers and the region they occupy is under development pressure (e.g. irrigation schemes), so basic ecological data are essential to determine whether development proposals are sustainable in terms of bird conservation objectives.

3. Project Objectives

The Darwin project is designed to assist with India's obligations under the Biodiversity Convention by (1) research and monitoring to determine the current status and distribution of the population, and assess threats to its persistence (Article 7); (2) use the results of the research work to produce a management plan for this species (Article 6); (3) provide training to key staff in India concerning the collection, storage and analysis of important ecological data (e.g. bird census data) (Article 12); and (4) use the management plan as a framework to institute in-situ conservation action in India (Article 8), and raise the profile of Jerdon's courser, and other important species within the area, at various levels (e.g. local, governmental) using public education and awareness campaigns (Article 13).

The project has four specific objectives:

(1) Undertake research and monitoring work

The overall objective of this aspect of the project is to undertake ecological research on Jerdon's courser to determine current population size and distribution, and identify current threats to the populations' persistence. This involves 2 specific objectives: (i) to estimate current population size and geographical range, and (ii) to examine habitat use to determine habitat requirements.

(2) Develop management plan

The management plan will be based on the research and monitoring work, and will include details of required conservation action, and a long-term monitoring programme.

(3) Training

Training will be given to BNHS and Forestry Department staff in the collection, storage and analysis of key ecological information with respect to conserving Jerdon's courser. This is designed to ensure the transfer of important skills necessary for long-term monitoring following on from the proposed project.

(4) Public awareness

This is a crucial objective, both at local and governmental levels, to raise the profile of conservation efforts for Jerdon's courser. It will include a range of measures targeted at specific groups.

The project's objectives remain the same as those detailed in the original application.

4. Progress

- Please provide a brief history of the project to the beginning of this reporting period. (1 para.)

The project started in August 2000 on a species whose ecology was virtually unknown. No methods for censusing the birds were available, so establishing geographical range, population size or habitat requirements were not immediately possible. The main objective of our fieldwork since starting the project has been to develop censusing methods, which we have now largely completed. The census methods have been used subsequently to search new areas for the birds with some success – new sites 10-15 km from known areas have been shown to contain birds. The majority of these areas are within the Srilankamalleswara Wildlife Sanctuary.

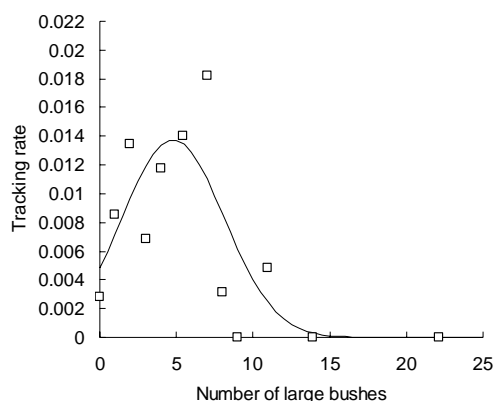
- Summarise progress over the last year against the agreed baseline timetable for the period. Explain differences including any slippage or additional outputs and activities.

Progress over the last year has been good. Our research and monitoring work has centred on searching for new areas holding Jerdon's courser using the census methods developed during the earlier parts of the project. Our training work has involved two main facets: (1) a workshop held in Hyderabad in early 2003, and (2) a visit to the UK by the Darwin Research Fellow in August/September 2002. Our efforts to raise public awareness of the project have mainly been linked to the workshop, although the project also received considerable publicity associated with sabbatical work conducted within the project by a member of staff from the RSPB. We have produced an article in World Bird Watch magazine, and included the project within an article for Reading University's alumni. Finally, we have drafted a paper for submission to Journal of Applied Ecology on habitat selection by Jerdon's courser.

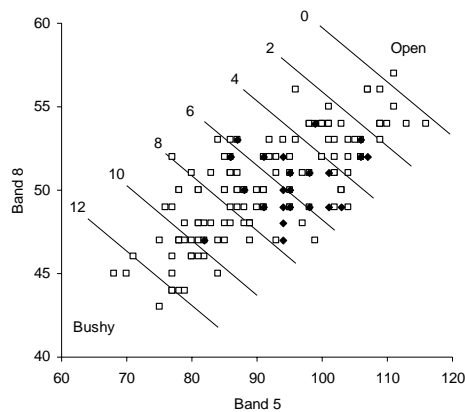
- Provide an account of the project's research, training, and/or technical work during the last year. This should include discussion on selection criteria for participants, research and training methodologies as well as results. Please **summarise** techniques and results and, if necessary, provide more detailed information in appendices (this may include cross-references to attached publications).

Research and monitoring

The main time for our fieldwork is after the rainy season ends in around September/early October through to its resumption the following May/June. Prior to the start of fieldwork in 2002, we put together a detailed plan that was designed to search for new areas holding Jerdon's courser that were not previously known. This work had a number of steps. Firstly, we needed to identify areas that had potentially suitable habitat. Since it is far too time consuming to map potentially suitable areas of habitat on the ground, we used satellite imagery data. Previously we acquired a Landsat 7 image of our study area and the surrounding river valley. This image had previously been processed by our collaborators in the Department of Geography in Reading to produce a coloured map that we had used to identify potentially suitable habitat for the birds by eye. Whilst useful this is inevitably subjective and we wanted to produce a more quantitative way of interpreting the image data. To do this, we firstly produced a statistical model that described the distribution of Jerdon's courser in relation to specific features of the scrub jungle habitat in which it lives. The data we used for this exercise came from our soil tracking strips – we modelled the tracking rate on each strip in relation to the habitat surrounding the strip. One of the main correlates of the birds' distribution was the density of large bushes (see below figure).



Next, we modelled the density of large bushes as a function of the reflectance data from the satellite image (see below figure).



The figure shows two reflectance bands from the image (Band 5 & 8). These reflect a gradient in habitat structure from 'bushy' to 'open' habitat shown along the diagonal of the graph. Each point is a tracking strip, and the filled symbols refer to strips that had tracks of Jerdon's courser. The numbered lines show the predicted density of bushes from statistical models of the reflectance data in relation to bush density. From this analysis, we assumed that suitable habitat must have a bush density of 2-8, which can then be identified using the Band 5 and 8 reflectance data as shown above. We used this approach to classify each pixel on the image as suitable habitat or not, then used a clustering algorithm to identify areas in which the majority of the pixels contained suitable habitat. From this analysis, we produced a habitat suitability map of the area covered by the image.

We then searched this map visually to identify areas that looked as though they had reasonably large areas of potentially suitable habitat. Next we put together a work programme for fieldwork that visited some of these areas and searched them for birds using a combination of the soil tracking strips and tape playback census methods. By May 2003 we had searched 7 new sites for birds outside their current known range without finding any, but continued to locate birds within the previous range we had identified last year. This work was assisted by a member of RSPB staff who joined the project on sabbatical during November and December.

The habitat selection work, including the satellite imagery analysis described briefly above has been drafted for publication in *Journal of Applied Ecology*, a copy of which will be emailed with this report.

Training

During August/September 2002 the Darwin Research Fellow based at BNHS and who is involved in the day-to-day running of the field project visited the UK. The main objectives of this visit were threefold: (1) to analyse existing data and use it to plan fieldwork for the 2002/03 season with input from UK staff involved in the project; (2) to visit the UK partner institutions and experience their working environments; and (3) to experience more widely UK culture. The Fellow was primarily based with Dr Rhys Green, who is a member of RSPB staff working at the University of Cambridge, and with myself at the University of Reading. Most of the work relating to objective (1) has been described in the previous section of this report. Objective (2) had various facets. The Fellow gave a series of seminars on the project to audiences both in Cambridge and at the RSPB to give him experience in presenting his work to a range of audiences. A number of posters on the project were produced by the Fellow at the

RSPB to develop his visual presentation skills. These are now being used for publicity purposes. In addition, the Fellow also spent time at RSPB and at Birdlife International in Cambridge being given a series of inductions into the conservation work undertaken by a number of different departments in order to gain experience in how these organisations work. Finally, objective (3) simply involved a number of short visits to sites of historic interest in Oxford, Cambridge and London. Overall, the visit was extremely successful both in terms of what it contributed to the development of the project, but equally importantly how it contributed to the wider skills development of the Fellow.

The second major training initiative we undertook during the last reporting period was a 1-day workshop held in Hyderabad in January 2003. This meeting was organised by BNHS and the Andhra Pradesh Bird Watching Society in order to disseminate to a wide audience the findings of the Darwin project and to discuss its implications. The meeting was attended by both national and state government officials involved in wildlife conservation, forestry department staff and representatives from NGOs. The meeting involved a series of talks given by the Jerdon's courser project team reviewing the progress of the project. The talks were very well received and generated much interest and discussion. The main products from the meeting were (1) general proposals to consider training local forestry department staff in field methods used to census Jerdon's courser, and (2) a proposal to develop radio-tracking studies on Jerdon's courser.

Public Awareness

This is an ongoing part of the project in which we attempt to take advantage of any opportunity to gain wider publicity for the project. Over the reporting period, this occurred in various ways. The Darwin Research Fellow was asked to write a short article for World Bird Watch magazine on the Jerdon's courser project, which appeared in early 2003. Details of the project were also included in an article drafted in the alumni magazine of Reading University, which appeared in Spring 2003.

The project has also received press coverage, both in the UK and in India. The sabbatical visit by the RSPB staff member generated press coverage in the UK, both in local and national newspapers. The Jerdon's courser project team were interviewed after the workshop in Hyderabad, and a story on Jerdon's courser appeared in the Hyderabad version of an Indian national newspaper.

- Discuss any significant difficulties encountered during the year.

None.

- Has the design of the project been enhanced over the last year, e.g. refining methods, indicators for measuring achievements, exit strategies?

Yes in two main areas. Firstly, we have made considerable progress in refining census methods, which combined with satellite imagery analysis now provide us with a method that could be employed on a large scale. Secondly, we have developed a longer-term plan to generate support for the project for a two-year period from August 2003. This plan includes (1) redirecting the remaining funds from Darwin to cover fieldwork and training up to the end of July 2004 (I am about to email DEFRA to discuss this), and (2) to seek funds from a consortium of organisations (Darwin, RSPB, British High Commission in India) to support research and training from August 2004-July 2005. I have further outlined these plans in Section 7.

- Present a timetable (workplan) for the next reporting period.

The current Darwin grant is due to end on 31st July 2003. The current grant for the next reporting period is £13,094. A large fraction of this consists of £8k due to be given to BNHS to support workshops, and £3k to support the participation of UK staff in the project (both research and training). We are going to request that this £11k sum be reallocated as follows. Firstly, we want to extend the fieldwork undertaken in India by BNHS staff for a further 12 months from 1st August 2003 to 31st July 2004. This is for two reasons: (1) to continue searching for new Jerdon's courser areas using the methods described above, and (2) undertake a radio-tracking trial on a related bird species in order to secure government permission to capture and radio-track Jerdon's courser. As a result of our workshop earlier this year, the Andhra Pradesh government have given permission for us to radio-track Jerdon's courser provided we first undertake a demonstration trial for them on a related species so they can be convinced that our proposed methods are safe. In our original project proposal we wanted to undertake radio-tracking work but have been denied permission until now due to the endangered status of Jerdon's courser. Radio-tracking would provide us with an opportunity to rapidly develop our ecological knowledge, and assist the larger-scale census work. We estimate that the continued fieldwork and radio-tracking trial will cost £8.5k. Secondly, we want to undertake a training workshop for local forestry department staff in the census methods used to find Jerdon's courser. We are aiming to hold this workshop in October/November 2003. Forestry department staff attending this would receive practical instruction in the field in the use of our censusing methods, and then be allocated census areas that they would census for the birds using our methodologies. This would very much parallel but significantly extend the work being undertaken by our own field team. It would also for the first time in the project involve the local forestry department in the direct collection of data on Jerdon's courser. This we see as extremely important since the forestry department manage the habitat within all the known Jerdon's courser areas. We would allocate £2.5k from the current Darwin grant to this workshop, and co-fund it with the RSPB. If these plans are approved by DEFRA then they will form our plan for the next reporting period.

5. Partnerships

- Describe collaboration between UK and host country partner(s) over the last year. Are there difficulties or unforeseen problems or advantages of these relationships?

The collaboration between UK partners and BNHS is excellent. As you will see from previous reports, there were some difficulties at the start of the project with particular local forestry department officials. These are now not a problem, and the workshop held in Hyderabad represented a huge step forward in bringing the Darwin project into close contact with government and NGOs in the conservation sector. The simple fact that many people in India now know the UK people involved as well as BNHS staff is, in my view, really important. We need to build further on this workshop to contribute to the legacy of the project.

- Has the project been able to collaborate with similar projects in the host country or establish new links with / between local or international organisations involved in biodiversity conservation?

Not formally, but certainly informally. The Bird Watching Society of Andhra Pradesh has a very important role in conservation within the state, and contains a number of influential people. Their direct involvement in hosting the workshop, and the fact that the UK people were able to meet these people, should be very important to the project in the longer-term. After the workshop in Hyderabad, the UK people were invited to attend a meeting discussing captive breeding and release of Indian bustards, and actively input views and their experience to this meeting. The greater exposure UK partners get in India the more similar opportunities will arise.

6. Impact and Sustainability

- Discuss the profile of the project within the country and what efforts have been made during the year to promote the work. What evidence is there for increasing interest and capacity for biodiversity resulting from the project? Are satisfactory exit strategies for the project in place?

The profile of the project within India has always been high because Jerdon's courser is widely regarded as such an important part of India's biodiversity. However, this year really significant progress has been made in this respect. The key was the Hyderabad workshop. This established the project at the forefront of efforts to conserve Jerdon's courser with the government (state and national) and NGOs. This generated considerable interest from the workshop's participants, proposals for further research and training and interest from the press. The extent to which this interest translates directly into increased capacity depends now on the how well the project transfers key skills to forestry department staff. We have given this careful consideration and our proposal for a no-cost extension to the project (see section 4), and for post-project follow up activities (see section 7) is in our view an effective exit strategy that is designed to put in place a sustainable legacy for the project.

7. Post-Project Follow up Activities (max 300 words)

This section should be completed ONLY if your project is nearing completion (penultimate or final year) and you wish to be considered for Post Project Funding. Each year, a small number of Darwin projects will be invited to apply for funding. Selection of these projects will be based on promising project work, reviews to date, and your comments within this section. Further information on this scheme is available from the DEFRA website.

- From project progress so far, what follow-up activities would help to embed or consolidate the results of your Darwin project and why would you consider these as suitable for Darwin Post Project Funding?

There are two areas that would allow us to consolidate what we have achieved so far in the project, and build a more sustainable legacy. Firstly, our original project proposal aimed to undertake radio-tracking studies, but we have been unable to undertake radio-tracking within the current because the state government would not grant permission on the grounds that the bird is protected by law and there may be uncertainties in the safety (from the viewpoint) of capturing and radio-tracking birds. We have now been told that provided we undertake a satisfactory demonstration permission will be granted, but we lack the longer-term support necessary to undertake the subsequent radio-tracking work. Secondly, the long-term legacy of the project hinges on the extent to which the state forestry department becomes more directly involved in monitoring work. We are proposing a training workshop for

forestry staff as part of our no-cost extension to the existing project (see section 4), but again we would require longer-term support to aid forestry department staff in the use of their training in the field.

We feel that Darwin would be a logical partner for this work as it clearly involves capacity building, and it is explicitly aimed at securing a sustainable legacy for the project. For this to happen, it is essential in our view that (1) the research work reaches a point at which we can adequately interpret large-scale census data collected by our field team and forestry department staff, and (2) the field skills developed by the project become resident in forestry department staff that have the long-term responsibility for managing the habitat occupied by Jerdon's courser.

The above work would take place from August 2004-July 2005 inclusive. Our estimate of the total cost is c£30k (not including in-kind costs from UK partners), which we would seek to co-fund between Darwin, the RSPB and the British High Commission in India. We would anticipate asking Darwin for a contribution of about £15k.

- What evidence is there of strong commitment and capacity by host country partners to enable them to play a major role in follow-up activities?

BNHS has made a huge contribution to the project so far. It is the Birdlife International partner in India, and so is extremely well placed to play a major role in follow-up activities. The key is to get research, monitoring and training to the point that it can be run in-country with only minimal input from the UK partners.

8. Outputs, Outcomes and Dissemination

- Please expand and complete Table 1. **Quantify** project outputs over the last year using the coding and format from the Darwin Initiative Standard Output Measures (see website for details) and give a brief description. Please list and report on appropriate Code Nos. only. The level of detail required is specified in the Guidance notes on Output Definitions, which accompanies the List of Standard Output Measures.

Table 1. Project Outputs (According to Standard Output Measures)

Code No.	Quantity	Description
8	6	UK staff spent a total of 12 weeks in India during the reporting period.
6A/B	15	This included a 6-week stay by the Darwin Research Fellow in the UK, and a dissemination workshop in India.
11B	2	Articles that featured the project appeared in World Bird Watch and in Reading: reading.
14B	2	Details of the project were presented at 2 seminars in the UK, and at the workshop in India in January 2003.
15A	1	The media in India were invited to cover the Hyderabad workshop, and this resulted in a story on the Jerdon's courser project.
15C	1	Press releases were made in conjunction with the sabbatical project of the RSPB staff member, which resulted in stories in the UK national and local press.

18A	2	These haven't been possible as yet.
19A	1	None were undertaken within the reporting period.

- Explain differences in actual outputs against those agreed in the initial 'Project Implementation Timetable' and the 'Project Outputs Schedule', i.e. what outputs were not achieved or only partly achieved? Were additional outputs achieved?

Additional outputs include the articles. We haven't achieved the radio or TV outputs within the reporting period, although we do intend to try to encourage this kind of media interest within the remaining project.

- In Table 2, provide full details of all publications and material produced over the last year that can be publicly accessed. Details will be recorded on the Darwin Monitoring Website Publications Database. Mark (*) all publications and other material that you have included with this report.

Table 2: Publications

Type *	Detail	Publishers	Available from	Cost £
(e.g. journal paper, book, manual, CD)	(e.g. title, authors, journal, year, pages)	(name, city)	(e.g. contact address, email address, website)	
Magazine article	P. Jeganathan. Red data bird revisited: Jerdon's courser. World Bird Watch.			
Magazine article	K. Norris. Footprints in the sand. Reading: reading.		Alumni Office. Reading University.	

- Provide details of dissemination activities in the host country during the year. Will these activities be continued by the host country when the project finishes, and how will this be funded and implemented?

Dissemination activities during the reporting period centred on the workshop held in Hyderabad in January 2003, and described above. I have described elsewhere in this report how we would like to further develop training arising from this. More widely, we plan to continue to attempt to gain press interest in the project, particularly surrounding events such as the workshop or visits to India by the UK partners.

9. Project Expenditure

- Please expand and complete Table 3.

Table 3: Project expenditure during the reporting period

Item	Budget	Expenditure

-
- Highlight any recently agreed changes to the budget and explain any variation in expenditure where this is +/- 10% of the budget

The only change from the original budget is that £2k was transferred from the 2002/03 budget into the 2001/02 budget for the purpose of running a workshop in India. This change was agreed with DEFRA.

10. Monitoring, Evaluation and Lessons

- Discuss methods employed to monitor and evaluate the project this year. How can you demonstrate that the outputs and outcomes of the project actually contribute to the project purpose? i.e. what are the indicators of achievements (both qualitative and quantitative) and how are you measuring these?

Research – the main way this is done is by visits to India involving the UK partners. When this is done progress is reviewed against previously agreed work plans, and a new work plan put in place for a specified future time period. Project planning meetings involving the UK partners are also held when necessary to plan the longer-term future of the project. All participants are in regular email contact to deal with day-to-day issues. The outputs and outcomes clearly contribute to the project's purpose since our main aims were to examine habitat selection, develop census methods and estimate geographical range, which are all being achieved. This is evidenced by the production of publishable papers.

Training – with respect to BNHS staff involved in the fieldwork, this is done as described above. More widely, the contribution to outputs and outcomes of events such as the workshop we held depend on our success in getting forestry staff into the field to contribute to monitoring. It is still too early to say how successful this will be, although we do have a clear vision for how best to achieve this.

- Are there lessons that you learned from this years work and can you build this learning into future plans?

Yes. The most important lesson we learned was that we need to have a clear idea of how to build a sustainable legacy from this project, which involves the project team remaining actively involved in the project until research and training reaches a point that responsibilities can then be taken over in India. We have put together a plan to achieve this, and have detailed this in other sections of this report.

11. Author(s) / Date

Dr Ken Norris.

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20th May, 2003.