

Darwin Initiative for the Survival of Species

Annual Report

1. Darwin Project Information

Project title	Conservation of Critically Endangered <i>Gyps</i> spp. Vultures in India
Country(ies)	India
Contractor	Institute of Zoology, Zoological Society of London
Project Reference No.	162/10/013
Grant Value	£148,411
Start/Finishing dates	01-Apr-01 to 31-Mar-04
Reporting period	01-Apr-02 to 31-Mar-03

2. Project Background

Indian white-backed (*Gyps bengalensis*) and long-billed (*G. indicus*) vultures, common and widespread in the 1980s, are now classified as critically endangered by the IUCN, having declined by > 95% over the past decade throughout their ranges in India. The declines are due to abnormally high mortality rates of all age classes and abnormally low reproductive success rates. Work by the Bombay Natural History Society (BNHS), the in-country project partner, has shown that the declines are not related to food shortage, habitat loss or persecution, and toxicological examinations indicate that pesticide poisoning is unlikely. Birds exhibit evidence of disease prior to death; namely progressively increasing lethargy with periods of abnormal neck-drooping behaviour. Vultures with similar illness have been seen throughout India and, in recent years, the high mortality and concurrent marked population declines have spread across at least two international borders, into Nepal and Pakistan. The situation was reviewed by Indian and international experts at an 'International Meeting on the Vulture Situation in India' held in Delhi, 18-20 September 2000, organised by BNHS and supported by RSPB and the Ministry of Environment and Forests, Government of India. The participants produced a statement expressing concern about the problem and calling for support to establish the cause of the declines and to develop a vulture recovery plan. Determining the cause of the vulture declines and producing a recovery plan are major aims of this project.

3. Project Objectives

Overall Purpose:

To produce a Recovery Plan for the critically endangered *Gyps* spp. vultures (*Gyps bengalensis* and *Gyps indicus*) in India and to develop the capacity within India to implement the plan.

Outputs:

- (i) Cause of vulture decline identified.
- (ii) Geographical extent and rate of vulture decline confirmed.
- (iii) Options for remedial measures identified and evaluated.
- (iv) Capacity to implement and monitor species recovery plan developed.
- (v) Constituency in support of vulture conservation in India developed in India and internationally.

The objectives of this project have not been modified over the last year. The proposed operational plan has been slightly modified to (i) increase the amount and degree of monitoring and surveillance of vultures at breeding and roosting colonies across their ranges in India and (ii) to increase the capacity of veterinary care and diagnostics for vultures in India. These changes were approved by the Darwin Secretariat. The increased monitoring and surveillance will provide data on the spread and impact of the declines on vulture populations to a finer resolution than had been anticipated as being necessary prior to the start of this project. These data will be incorporated into the drafting of the Recovery Plan, providing valuable information on the necessary extent and form of the remedial measures required to counter the likely extinction of *Gyps* spp. in India. The increased in-country veterinary capacity for vultures is required for the care and diagnostic work-up of the vultures held in the project's Vulture Care Centre, and will be accomplished via the recruitment and training of a project veterinarian within India.

4. Progress

During the first year of the project, research activities focussed on diagnostic work to identify the cause of the vulture declines in India. This work mainly involved the collection of fresh vulture carcasses for post mortem examination and follow-up pathological examinations (in India at the PDRC). A large amount of work, such as histopathology, bacteriology, parasitology, attempted virus culture in tissue culture and in embryonated hens' eggs, and electron microscopy was conducted on the tissues collected. Significant post mortem findings included visceral gout, enteritis, vasculitis and gliosis, all of which are most consistent with an infectious, probably viral, aetiology. A Vulture Disease Investigation Laboratory was established at the PDRC for this work and the initial phase of a Vulture Care Centre (aviaries and associated field laboratory) was built in Pinjore, Haryana. Training in wildlife disease investigations and pathology was given to PDRC staff in India by Andrew Cunningham, and Dr Prakash received training in vulture captive care and husbandry in the UK. In addition, a highly successful workshop in vulture monitoring and surveillance techniques was conducted in India, with training being given by Andrew Cunningham (IoZ), Debbie Pain (RSPB) Paul Donald (RSPB) and Richard Gregory (RSPB).

During the second year of the project, a major focus has continued to be diagnostic work on dead and sick vultures. The Vulture Care Centre (VCC) was completed, being inaugurated by Mr Elliot Morley, Parliamentary Under Secretary of State, DEFRA, on 7th February 2003. The VCC now holds 13 vultures, with a capacity for 35, and contains a well-equipped laboratory. In addition to the equipment purchased with Darwin Initiative funds, Synermed Europe Ltd. donated a wet biochemistry analyser (worth) to the VCC, the National Birds of Prey Trust funded (£) the construction of an additional eight hospital aviaries at the Centre and the British High Commission, New Delhi funded (£) a three-phase electricity connection to the Centre. Prior to stocking the VCC, a workshop was held in India (in May 2002) on the care, husbandry and management of captive vultures by Jemima Parry-Jones, Director,

National Birds of Prey Centre, UK. Five BNHS staff and two Forest Guards from the Haryana State Forest Department attended the course, which included both theory and practical work. Two of the BNHS staff who attended the course are now employed by the project full-time to care for vultures at the Centre, while the other attendees provide additional assistance and cover as required. In addition to helping to build extra in-country capacity, the attendance of Forest Guards helped to foster good relations between the Darwin Project and the Haryana State Government, with the Haryana Government increasing their provision of logistical, administrative and political support for the project.

Training in vulture diagnostics continued to be provided to two veterinary and one molecular biologist staff members at the PDRC and to four BNHS staff through Dr Andrew Cunningham's visits (and Dr Pizzi's visit – see below) to India, including a one week workshop. Each of three training visits was of 7-10 days duration. These visits were in April, May & January. A planned visit by Dr Cunningham had to be cancelled due to ill health, but his place was taken by Dr Romain Pizzi (an MSc veterinary graduate in Wild Animal Health) from the Institute of Zoology. Training focussed on the collection and examination of sick and dead vultures, interpretation of histological sections and the interpretation of the results from diagnostic tests, such as histopathology, bacteriology, virology and toxicology. Dr Pizzi spent three months (Nov 2002-Feb 2003) at the Vulture Care Centre and this visit included the additional training of four BNHS staff (for at least 5 weeks over the three-month period) in setting up a diagnostic laboratory, diagnostic laboratory techniques and in the care of sick vultures. Originally, it had been anticipated that ten Indian nationals would be given this training, but no further individuals other than those working on the project for the BNHS & PDRC could be identified for this training. We were able to provide more-advanced and detailed training than anticipated, however, to the BNHS staff through the prolonged visit by Dr Pizzi.

During 2002, advances were made in the diagnostic capabilities of the project. Firstly, a Research Agreement was signed by the BNHS, PDRC and the Australian Government's CSIRO Australian Animal Health Laboratory (AAHL). This Research Agreement has been approved by the Indian Central Government, allowing a limited number of diagnostic samples to be exported to AAHL, one of the top veterinary diagnostic laboratories in the world. Secondly, the establishment of the VCC has enabled the collection of sequential clinical samples from sick birds and the (much-needed) access to fresh post-mortem samples from dead birds. The requirement for regular veterinary observation, treatment and sampling of captive vultures has led to the need to further develop the veterinary capacity of the project in India by employing a dedicated veterinarian for the VCC. This appointment will be made for the third year of the project.

Another major activity in the second year of the project has been nation-wide surveillance and monitoring of vulture populations and colonies. Annual nation-wide surveys have been an integral part of the project since its inception, as without the data provided by these observations, it is impossible to know the extent or spatio-temporal variations of the declines in India. The survey conducted in 2002 has provided valuable data on the degree and geographical extent of the declines, showing that populations of three species of Gyps vulture (*Gyps bengalensis*, *G. indicus* and *G. tenuirostris*) continue to decline precipitously, with *G. bengalensis* declining at the catastrophic rate of approximately 25% per year. (*G. tenuirostris* used to be classified as a subspecies of *G. indicus*, but in 2000 it was shown by other researchers clearly to be a separate species.)

During the first year of the project it became clear that regular monitoring of several vulture colonies of each affected species was required in order to find out more about

the effects of the agent killing the birds, the likely long-term effects of this on colonies and the likely rate and route of spread of mortality. It had originally been anticipated that the information required would be provided by volunteers, principally those who attended the monitoring workshop held in January 2002 (see first annual report). During the course of the project, however, it became clear that the volunteers alone were not able to collect sufficient information in as consistent and reliable a manner as required, and as a result a greater amount of this work than had been originally anticipated would need to be conducted by project staff. Therefore, in the second year of the project, colonies of *G. indicus* and *G. bengalensis* have been monitored on a regular basis by BNHS staff. (No colonies of *G. tenuirostris* have been located.) In addition to providing valuable demographic and epidemiological data, such monitoring has allowed the recognition and capture of sick vultures and the collection of vulture carcasses for diagnostic work.

Identifying the cause(s) of the population declines of *Gyps* spp. vultures in India is one of the most urgent priorities facing the conservation research community today and this is one of the main aims of the current project. This work is being conducted via veterinary and epidemiological investigations within India. During the life-span of this project, epidemiological studies, including nation-wide population surveys and colony monitoring, have gained in importance for determining the course and likely outcome of the declines as the causative agent(s) continue(s) to remain elusive. The potential impacts of vulture extinctions within India, and potentially across Asia, Europe and Africa, should the disease spread, would severely disrupt ecosystems in which vultures are the main scavengers and could have devastating effects on associated human populations. Such effects are already being seen in India.

It had originally been planned that Dr Vibhu Prakash, Principle Scientist, BNHS would visit the UK for three months (as in year 1) for training purposes. Work demands of the project in India and the ability to provide much of the necessary training in India (through Dr Pizzi's three-month visit) curtailed the period of this visit to three weeks (in February 2002). During this period, Dr Prakash spent most of his time working on the collaborative analysis of data collected from the first half of the project. These analyses were conducted at the IoZ and at the RSPB. At the RSPB, this work included training in statistical analyses and data management. While in the UK, Dr Prakash was presented with an international award (the Marsh Award) for bird conservation, primarily for his work on vulture declines in India.

During the first year of the project, we became increasingly concerned about the possibility of disease spread from India to *Gyps* spp. in other range states via the movements of migratory *Gyps* spp. This led to the award of £15,000 from the British High Commission, New Delhi to the Darwin project partners (IoZ, RSPB & BNHS) to set up a pilot project to monitor the migration routes of these birds using satellite telemetry. The RSPB provided an additional £10,000 funding for this project and obtained the services of a volunteer raptor biologist to assist with the satellite tagging. In March 2003, two *Gyps fulvus* and two *Gyps himalayensis* vultures were trapped and satellite-tagged in northern India. Further to this work, the RSPB (in partnership with the IoZ, Birdlife Middle East and Natural Research UK) obtained a grant from the Darwin Initiative in 2003 to set up surveillance and monitoring of *Gyps* spp. in additional range states in order to predict the routes and rates of disease spread and to mitigate against the effects of further vulture declines.

In addition to the further grants raised in the second year of this project, the ZSL, RSPB & BNHS signed a collaborative agreement to formalise their vulture conservation partnership. This formal collaboration now goes under the name of "Vulture Rescue" and this will enable the participatory organisations to directly fundraise for vulture conservation activities. As part of this commitment, the IoZ and

RSPB are jointly funding a post-doctoral biologist to manage, and participate in, vulture conservation programmes within India and other Gyps range states. Within India, the Chief Conservator of Forests, Government of Haryana has agreed to collaborate with the BNHS and the other project partners to develop a proposal to the Indian Central Government to set up “Project Vulture” in India. If this goes ahead, it will facilitate the work of the project in India both politically and, to some extent, financially.

Timetable (workplan) for the Next Reporting Period.

July - 2003 nation-wide surveys of *Gyps* spp. vulture populations completed.

October – It is hoped that by this time the cause of the declines will have been identified. During the first two years of the project substantial progress was made in substantiating the cause as most likely to be an infectious disease, in collecting samples for advanced diagnostic work, and in setting up infrastructure and collaborations to conduct such diagnostic work. Since then, an American group of researchers has announced the possibility that the cause of the vulture declines in Pakistan may be due to exposure (via food) of the birds to a veterinary drug (diclofenac) which is commonly-used in the Indian subcontinent. The role of diclofenac in vulture declines in India is unknown, but efforts have now been directed to examining this possibility with some urgency, including the conducting of tests on vulture and cattle tissues for diclofenac residues. These, and other, analyses should be completed by October. Also by October, the results of current infectious disease studies should be known.

November – Three months training of BNHS veterinarian (Note: BNHS veterinarian in place of BNHS senior scientists, as originally proposed) in the UK in laboratory diagnostic techniques and to gain experience in wildlife disease investigations. Techniques learned will be passed on to BNHS field staff and to assistants at the Vulture Care Centre.

February – Training of staff at the Vulture Care Centre by a staff member of the National Birds of Prey Centre. (Note: We are proposing to reduce the time-period of this from three weeks (as in the original proposal) to one week, following advice from Jemima Parry-Jones on the levels of skill already attained and the requirements for further training. Monies saved will be spent on other activities within India.)

February – Workshop held in India, involving key Indian Governmental and NGO personnel and international experts, to devise a recovery plan for *Gyps* spp. vultures in India.

February – Recovery plan for *Gyps* spp. vultures in India produced.

March – Project newsletter produced.

March – Two papers submitted to peer-reviewed journals.

March – Media outputs achieved: At least two press releases produced. At least three articles published in newsletters/magazines.

5. Partnerships

The close and mutually-beneficial link established with the Department of Forest and Wildlife, Government of Haryana during the first year of the project has continued to strengthen. Mr Jakati, the Chief Conservator of Forests and Chief Wildlife Warden, Government of Haryana, has continued to provide logistical, political and (limited)

financial support to the project. The opening of the Vulture Care Centre by Mr Elliot Morley of the DEFRA in February 2003 further strengthened the relationship between the project and the Government of Haryana and the latter has recently showcased its work with the vulture project at State and National meetings. Most recently, during a visit by the Indian President to Haryana, the vulture project was presented as an important aspect of the State's conservation activities and this work was praised and encouraged by the President. More recently, the association between the project and the Haryana Government has been further developed to submit an application to the Indian Central Government to form "Project Vulture" as a recognised nation-wide collaboration. If "Project Vulture" is recognised, it will be a project officially supported by the Indian Central Government, which will facilitate the work of the project in India both politically and, to some extent, financially.

Links with other State Governments in India continue, albeit less close than with Haryana. These other links are primarily with the Forest and Wildlife Departments in Himachel Pradesh, Maharashtra, Madhya Pradesh, Delhi, Rajasthan & Punjab.

During the second year of the project, collaborative links have continued to develop with organisations outwith India, namely: Bird Conservation Nepal, the Royal Society for the Protection of Nature, Bhutan, and the National Wildlife Research Centre, Saudi Arabia. In addition, a constituency of organisations (governmental and non-governmental) is being developed for the conservation of *Gyps* vultures in other range states. The collaborative relationship developed with the CSIRO Australian Animal Health Laboratory during the first year of the project has continued to develop with the submission of diagnostic samples to this laboratory from India. Grant proposals have since been submitted with the AAHL in order to raise funds for some of the more-expensive diagnostic research required.

One of the most important findings from this Darwin Project so far has been that the rate and distribution of the vulture declines is so great that at least three species of vulture face extinction within the foreseeable future unless something dramatic happens to alter these declines. Therefore, it has become obvious during the course of this work that captive breeding of these species is a priority. A grant proposal has recently been submitted to the UK Foreign and Commonwealth Office (via a joint approach through the British High Commission, New Delhi and the British Embassy, Kathmandu) to establish and run four captive breeding centres (three in India and one in Nepal). If this proposal is successful, further links will be established and strengthened between the project partners and in-country organisations, including Indian Central and State Governments and the Nepalese Government.

6. Impact and Sustainability

The project has a high public profile within India as it has been the subject of numerous media reports and there is widespread concern about the demise of the vultures. As in the first year of the project, the profile of the project amongst the scientific and conservation communities within India is high. During the second year of the project, the profile has increased quite markedly amongst both State and Central Government politicians, with the President of India discussing the project recently at a Haryana State Government function. The Government of Haryana is now very proud of its relationship with the project (the project office is based there at the VCC) and other State Governments are now keen to be associated with the project. Much of the increased political profile is a direct result of the opening of the Vulture Care Centre by Mr Elliot Morley, Parliamentary Under Secretary, DEFRA. The attendance at a project workshop inauguration in 2002 by Mr Tom McCann, British Deputy High Commissioner, New Delhi, also brought the project to political attention in India.

The Haryana State Government has undertaken to continue running the Vulture Captive Care Centre in partnership with the BNHS, should other funding for BNHS staff at the Centre not be forthcoming following the end of the period of funding by the Darwin Initiative. Should this happen, however, it is likely that much of the diagnostic work on sick and dead vultures will be markedly reduced and that the Centre will become a holding site only for captive birds. This is, therefore, currently a poor version of an exit strategy for the Centre, and although the IoZ, RSPB & BNHS are committed to continued input into vulture conservation in India, further funds are required to provide for a satisfactory exit strategy for this Darwin Initiative project. The joint ZSL, RSPB, BNHS fundraising strategy, “Vulture Rescue” is planned to provide such a strategy. We had hoped to launch this during the course of the second year of the project, but bureaucracy finalising the terms of the agreement has delayed a launch to being during the course of the third year of the project. In addition to “Vulture Rescue”, if successful, a submission to the Indian Central Government to recognise a joint project-Haryana Government partnership, termed “Project Vulture” should ensure political and logistical (and limited financial) sustainability for the project in India. The outcome of this submission should be known before the end of the current Darwin Initiative grant.

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

Continuation of veterinary work at the VCC is extremely important if the causative agent of the declines is to be found (and confirmed). Also, with continued declines, follow-up nation-wide surveillance and monitoring are essential for tracking the extent of the declines and obtaining evidence of spread or possible resistance/recovery. These activities are core to the Darwin Project and we are actively working on fund-raising initiatives (through Vulture Rescue) for their continuation. The host country has a strong commitment to the project, with the Haryana State Government providing logistical, administrative and political support, and limited financial support. In addition, the Central Government has provided political support and may eventually provide financial assistance through “Project Vulture”. If this initiative is successful, it is likely that funds will become available for some of the surveillance and monitoring required.

In addition to finance for the continuation of population monitoring and veterinary work, funds are required for the establishment of a project office. During this project, our office has been based in a Haryana Government Forest Complex, for payment of a commercial rent. The establishment of a dedicated project office will ensure the existence of this office beyond the current Darwin Initiative, building capacity for BNHS as a station for conservation work in Northern India and providing a base for visiting scientists working with BNHS and with Vulture Rescue.

As is apparent from this report, we have been successful in obtaining host country support and in securing substantial additional funding for this project. However, this is not currently at the required level for sustaining the continuation of the project beyond the current lifetime of the Darwin funding. An extended period of funding will allow the establishment of the “Vulture Rescue” fundraising initiative and ensure an effective exit strategy for this highly successful Darwin project.

8. Outputs, Outcomes and Dissemination

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

Code No.	Quantity	Description
6A	10	5 BNHS staff and 2 forest guards trained in vulture captive care, husbandry and management; 4 BNHS staff given basic training in vulture diagnostics and training in setting up a diagnostic laboratory, diagnostic laboratory techniques and in the care of sick vultures; 3 PDRC staff given consultative training in vulture diagnostics; 1 BNHS staff member given training in data management and analysis in the U.K.
6B	12	1 week workshop in vulture captive care, husbandry and management; 3 weeks training in the UK (at IoZ and RSPB) for BNHS staff member; 3 weeks training in vulture diagnostics; 5 weeks training (over as 3 month period) in setting up a diagnostic laboratory, diagnostic laboratory techniques and in the care of sick vultures.
8	21	2 x 1 week for workshops on vulture husbandry and diagnostic techniques; 1 x 2 weeks for consultative training; 1 x 12 weeks for veterinary work and training; 1 x 3 weeks plus 1 x 2 weeks for satellite tagging (BHC-funded addition to this project).
11A	3	Paper published in Biological Conservation; Paper accepted by Conservation Biology; Paper accepted by Animal Conservation.
12A	3	Vulture pathology database; Vulture populations database
14B	7	North American Ornithological Conference; Cambridge Conservation Forum; RSPB Members' weekend; World Working Group on Birds of Prey; Zoological Society of London Scientific Meeting; Academy of Sciences of Belarus; 23 rd International Ornithological Conference.
15A	1 (45 articles)	Press release issued announcing the inauguration of Vulture Care Centre. However, throughout the year, at least 39 newspaper, 2 newsletter/magazine and 4 on-line articles were published in-country.
15C	1 (12 articles)	Press release issued announcing the inauguration of Vulture Care Centre. However, throughout the year, at least 3 newspaper, 3 newsletter/magazine and 6 on-line articles were published in the UK. In addition, media outputs occurred in third countries, including China, New Zealand and South Africa.
16A	1	Annual project newsletter produced
16B	200	Circulation 200 plus website
17B	1	Dissemination of IBCN enhanced
18A	2	Two national TV broadcasts in India on the opening of the Vulture Care Centre.
18B	1	International television documentary filmed (joint

		venture by the Discovery and National Geographic channels).
19A	1	One national radio broadcast in India on the opening of the Vulture Care Centre.
19B		
20		Vulture Care Centre; scientific equipment and books; biochemistry analyser
21	1	Vulture Care Centre
22	20	17 vulture colony study sites; 3 carcass dump study sites

6A & 6B - Originally, it had been anticipated that ten Indian nationals would be given this training, but no further individuals other than those working on the project for the BNHS & PDRC could be identified for this training. We were able to provide more-advanced and detailed training than anticipated, however, to the BNHS staff through the prolonged visit by Dr Pizzi.

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)	
Newsletter article	Cunningham, A.A., Pain, D., & Prakash, V. 2002. Catastrophic declines of griffon vultures in India. <i>Falco</i> 20 :10-11.	Middle East Falcon Research Group		
Newsletter article	Prakash, V., Pain, D.J., Cunningham, A.A. 2002. No respite for India's vultures. <i>World Birdwatch</i> 24(1) : 14-15.	Birdlife International		
Conference proceedings	Pain, D.J., Cunningham, A.A., Prakash, V. & Ghalsasi, G.R. 2002. Vulture declines in India: patterns, causes and spread. In: <i>Proceedings of a workshop on Asian vulture declines at the NAO, New Orleans, September 2002.</i>			
Journal paper	Prakash, V., Pain, D.J.,	Biological		

	Cunningham, A.A., Donald, P.F., Prakash, N., Verma, A., Gargi, R., Sivakumar, S., Rahmani, A. R. 2003. Catastrophic collapse of Indian white-backed Gyps bengalensis and long-billed Gyps indicus vulture populations. <i>Biological Conservation</i> 109(3) :381-390.	Conservation, Elsevier
Journal paper	Pain, D.J., Cunningham, A.A., Donald, P. F., Duckworth, J. W., Houston, D. C., Katzner, T., Parry-Jones, J., Poole, C., Prakash, V., Round, P., Timmins, R. 2003. Gyps vulture declines in Asia; temporospatial trends, causes and impacts. <i>Conservation Biology</i> in press.	Conservation Biology, Blackwell Publishing Inc.
Project Newsletter	Jatayu, the newsletter of the project: Conservation of Critically Endangered Gyps species Vultures in India.	Bombay Natural History Society
Journal paper	Cunningham, A.A., V. Prakash, D. Pain, G. R. Ghalsasi, G. A. H. Well, G. N. Kolte, P. Nighot, M.S. Goudar, S. Kshirsagar and A. Rahmani. 2003. Indian vultures: victims of an infectious disease epidemic? <i>Animal Conservation</i> in press.	Animal Conservation, Cambridge University Press

Dissemination activities in the host country have primarily been through the distribution of the project newsletter (200 hard copies plus widespread email distribution), and via press releases and media reports of the project activities (e.g. at least 45 articles in the popular press within India).

9. Project Expenditure

Table 3: Project expenditure during the reporting period

Item	Budget	Expenditure
Salaries (specify)		
Rent ,rates heating lighting etc		
Office administration costs		

Capital items/equipment

Others

Total

Agreed changes to the budget are as follows:

- Monies saved from the UK spend (primarily saved through a fore-shortened visit by Dr Vibhu Prakash to the UK and decreased UK costs of the vulture care and management workshop, through more-expedient use of travel plans and personnel than had been anticipated), were transferred to the BNHS in India for the purchase of equipment (e.g. centrifuge, electricity stabilising equipment) for the Vulture Care Centre.

10. Monitoring, Evaluation and Lessons

The establishment of a collaborative relationship between the IoZ, RSPB, BNHS & PDRC is evidenced by an MoU between these organisations, which is kept on file by each organisation. In addition, a collaborative research agreement has been drawn up between the BNHS, the PDRC and the AAHL to enable more-advanced pathological investigations to proceed.

Diagnostic work at the PDRC has been closely monitored and evaluated throughout the year by visits to the PDRC laboratory by Andrew Cunningham. In addition to these visits and to interim email and telephone reports, the PDRC has produced a detailed annual report, in which materials, methods and results have been presented for all of the vulture-related work conducted during the first two years of the project. A computer database of the results of the pathological and clinical investigations conducted so far has been established. This database is maintained by the IoZ, with additional copies held by the BNHS. Copies of the interim and annual reports of the PDRC are kept on file at the IoZ, PDRC & BNHS. In addition to evaluation of the diagnostic work by the project partners, the results of this work are presented to our peers at scientific meetings and conferences and are/will be published in peer-reviewed journals.

The success of the training workshop in captive care, husbandry and management of vultures has been continuously evaluated by on-going supervision of the trainees who are now employed at the Vulture Care Centre. Further evaluation will be conducted throughout the course of the third year of the project.

As discussed in the annual report for the first year of the project, monitoring and surveillance reports have been received from the monitoring and surveillance workshop attendees for their local vulture populations. Unfortunately, although the monitoring workshop attendees have largely proved to be extremely competent and enthusiastic in their role, the volunteer effort for the collection of vulture population monitoring and surveillance data has proved to be less sufficient than had originally been anticipated for the requirements of this project. This has resulted in the need for project staff time to be directed towards the collection of such data, in addition to the reports received from volunteers. Despite this, the volunteers continue to contribute significantly to the purpose of the project, to the development of a database of vulture populations in India and to building up a grass-roots constituency in India for vulture conservation. The results of the nation-wide surveillance and colony monitoring are regularly evaluated throughout the year by the project partners, and the results of this work are presented to our peers at scientific meetings and conferences and are/will be published in peer-reviewed journals.

In addition to regular visits throughout the year, frequent email and telephone conversations between Andrew Cunningham and Dr Vibhu Prakash (BNHS) have been held throughout the year, usually on a weekly basis.

Finally, the outputs of the project so far have produced a great deal of public and media interest and this has been used to develop a constituency within India, and internationally, for vulture conservation. It has been difficult to keep track of the large number of the media outputs relating to the project, but a file of the media reports we are aware of is maintained by the BNHS, IoZ and RSPB. Similarly, the BNHS maintains a file of project-related correspondence with State and Central governments and other organisations.

11. Author(s) / Date

Andrew A. Cunningham 3rd June 2003

Appendix – Logical Framework for Project

19. Logical framework. Please enter the details of your project onto the matrix using the note at Annex B of the Guidance Note.

Project summary	Measurable indicators	Means of verification	Important assumptions
<p>Goal</p> <p>To assist countries rich in biodiversity but poor in resources with the conservation of biological diversity and implementation of the Biodiversity Convention.</p>	<p>Gyps vulture populations removed from the Red Data Book</p> <p>Indian government and other agencies adopt this model of consensus building and recovery-planning for implementation of the NBSAP</p>	<p>Long term monitoring (post-project) and status review by IUCN/BirdLife</p> <p>Indian National reports to the CBD</p>	
<p>Purpose</p> <p>Recovery Plan for the critically endangered Gyps spp. vultures (Gyps indicus and Gyps bengalensis) in India produced and capacity to implement it developed.</p>	<p>PP1: Recovery Plan produced and endorsed by government and key Indian institutions</p> <p>PP2: Implementation of lab work, captive population management and field research judged to be self-supporting by the end of the project</p>	<p>PP1: Recovery Plan document and correspondence</p> <p>PP2: End of project report</p>	
<p>Outputs</p> <p>1. Cause of vulture decline identified</p> <p>2. Geographical extent and rate of vulture decline confirmed</p> <p>3. Options for remedial measures identified and evaluated.</p> <p>4. Capacity to implement and monitor species</p>	<p>1. International scientific community endorses the results of the project investigation</p> <p>2. Three years of comparable data available from 50% of Indian Gyps range states</p> <p>3. Consensus amongst key experts on possible remedial measures</p> <p>4. Training needs fulfilled and facilities operational</p>	<p>1. Publication of results in peer-reviewed international scientific journals.</p> <p>2. Annual survey reports and publication of results in peer-reviewed international scientific journals.</p> <p>3. Meeting reports</p> <p>4. Pre-project training needs assessment and analysis of equipment needs, annual</p>	<p>Continued State and Federal government support for the collection of vulture samples.*</p> <p>It is possible to identify the cause of the decline before vultures become extinct.*</p> <p>That remedial measures are possible.*</p>

<p><i>recovery plan developed.</i></p> <p>5. Constituency in support of vulture conservation in India developed in India and Internationally</p>	<p>5. Media and government interest in the issue sustained</p>	<p>reports and training reports</p> <p>5. Media reports file at BNHS, correspondence with state and national governments and international bodies</p>	
<p>Activities</p> <p>1.1 Establish collaborative relationships with appropriate institutions within and outside India</p> <p>1.2 Provide training in sample collection</p> <p>1.3 Provide specialist consultations in disease investigations at PDRC.</p> <p>1.4 Collect vulture carcasses from at least 3 states</p> <p>1.5 Conduct pathological investigations including: post mortem, bacteriology, histopathology, virology, etc.</p> <p>1.6 Establish pathology database</p> <p>2.1 Run training workshops for vulture surveyors (IBCN partners and BNHS staff)</p> <p>2.2 Monitor vulture numbers, adult/juvenile ratios, and proportions of sick birds annually</p> <p>2.3 Establish vulture population database</p>	<p>1.1 MoU between BNHS, IoZ, RSPB, PDRC and other relevant institutions</p> <p>1.2 20 BNHS staff trained (1 week)</p> <p>1.3 3 PDRC staff trained (10 weeks)</p> <p>1.4 at least 30 carcasses received by PDRC from at least three states in west, central and east India</p> <p>1.5 results of each p.m. and investigations included in weekly work reports</p> <p>1.6 database with records of all known analysis of vulture carcasses established at BNHS</p> <p>2.1 20 IBCN partners/BNHS staff trained to act as focal points for census and survey</p> <p>2.2 information on vulture populations, food availability, signs of sickness etc. collected using standard repeatable methods</p> <p>2.3 database with records of all available vulture counts</p>	<p>1.1 MoU on file at BNHS</p> <p>1.2 training reports</p> <p>1.3 PDRC Lab reports</p> <p>1.4 PDRC Lab reports</p> <p>1.5 Weekly PDRC work reports, reports from other labs</p> <p>1.6 electronic and hard copy versions of database at BNHS</p> <p>2.1 training reports, correspondence with focal points</p> <p>2.2 annual survey reports, website and database</p> <p>2.3 electronic and hard copy records, maps, at BNHS</p>	<p>Land available from government for captive holding facility/laboratory*</p>

<p>3.1 Carry out literature review and consultations with experts inside and outside India</p> <p>3.2 Run recovery planning workshop with appropriate Indian and international expertise</p> <p>3.3 Write species recovery plan</p>	<p>3.1 relevant experiences with other wild populations evaluated</p> <p>3.2 Recovery plan approach agreed and all necessary information available to write it</p> <p>3.3 Plan produced under auspices of BNHS and Govt of India</p>	<p>3.1 review papers and discussion document</p> <p>3.2 workshop document and communiqué</p> <p>3.3 Plan document</p>	
<p>Activities (continued)</p> <p>4.1 Wildlife laboratory established and equipped at Bharatpur</p> <p>4.2 Establish Vulture aviaries at Bharatpur.</p> <p>4.3 One BNHS scientist trained in the UK to a high level in captive care techniques, and diagnostic and health monitoring techniques</p> <p>5.1 Produce annual newsletter for participating/interested organisations</p> <p>5.2 provide up-dated information to the public through mass-media and popular scientific articles</p> <p>5.3 up-date BNHS and RSPB website</p> <p>5.4 submit five papers to peer-reviewed journals</p> <p>5.5 submit articles to journals of other key</p>	<p>4.1 Lab equipped to carry out analyses including haematology, veterinary care, etc.</p> <p>4.2 Facility for the maintenance of 20 captive vultures established</p> <p>4.3 One BNHS scientist spends 9 months over 3 years in UK at IoZ, NBPC and other specialist institutions</p> <p>5.1 4 newsletters produced and 200 hard copies circulated in India, 50 UK/other, email circulation</p> <p>5.2 6 press releases in India, 4 national and 4 local in UK</p> <p>5.3 newsletters available on BNHS and RSPB websites</p> <p>5.4 at least 5 submitted of which 3 accepted for publication by the end of project</p> <p>5.5 at least 10 articles published in relevant journals/newsletters/magazines</p>	<p>4.1 Final report</p> <p>4.2 Final report</p> <p>4.3 Final report</p> <p>5.1 newsletters, distribution lists</p> <p>5.2 newspaper clipping files at BNHS</p> <p>5.3 website</p> <p>5.4 journal reprints, correspondence with</p>	

<p><i>institutions</i></p> <p><i>5.6 present results/lessons of the project at seminars/conferences/workshops</i></p>	<p><i>5.6 presentations at 9 gatherings during the project</i></p>	<p><i>publishers</i></p> <p><i>5.5 copies of articles in BNHS files</i></p> <p><i>5.6 Conference proceedings, workshops reports</i></p>	
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****Notes on Assumptions:***

- (1) Continued State and Federal government support for the collection of vulture samples. Permission has already been granted for vulture collection and this is unlikely to be rescinded.*
- (2) It is possible to identify the cause of the decline before vultures become extinct. It is anticipated that the cause of the decline will be identified within the first year of the project, and unlikely that these species will become extinct within this period.*
- (3) That remedial measures are possible. The type of remedial measures possible will depend upon the origin and nature of any disease, or other factors, identified. However, remedial measures of some type will be possible. These may include taking measures to prevent the spread of disease to other vulture populations, taking measures to limit the ecological and human impacts that reduced vulture populations are likely to have, captive breeding of disease free birds, development of vaccines or identification of immune individuals etc.*
- (4) Land available from government for captive holding facility. Land has already been promised for the captive holding facility.*