



DARWIN INITIATIVE



APPLICATION FOR GRANT FOR ROUND 12 COMPETITION: STAGE 2

Please read the Guidance Notes before completing this form. Give a full answer to each section; applications will be considered on the basis of information submitted on this form. Please do not cross-refer to information in separate documents except where invited on the form. The space provided indicates the level of detail required but you may provide additional information on a separate A4 sheet if necessary. Do not reduce the font size below 12pt or alter the paragraph spacing.

Submit by 19 January 2004

Ref (*Defra only*):

1. Name and address of organisation

Department of Animal & Plant Sciences, University of Sheffield, Sheffield, S10 2TN

2. Project title (not exceeding 10 words)

Building Genetic Forensic Capacity to Reduce South Africa's Illegal Trade

3. Principals in project. Please provide a one page CV for each of these named individuals.

Details	Project leader	Other UK personnel (if working more than 50% of their time on project)	Main project partner or co-ordinator in host country
Surname	Burke		Perrin
Forename(s)	Terence Anthony		Michael
Post held	Professor of Molecular Ecology		Professor of Zoology, Head of Discipline
Institution (if different to above)	(as above)		University of KwaZulu Natal
Department	(as above)		Dept of Zoology
Telephone			
Fax			
Email			

4. Describe briefly the aims, activities and achievements of your organisation. (Large institutions please note that this should describe your unit or department)

Aims

To maintain the highest standards of excellence as a research-led department, whose staff work at the frontiers of academic enquiry and educate students in a research environment.

Activities

The Animal and Plant Sciences Department at the University of Sheffield is one of the largest in the UK devoted to the study of whole organism biology. It has a teaching staff of 35, and offers four degree courses and collaborates on two others. The Department has modern research and teaching facilities; the research facilities were recently refurbished at a cost of ca £10M.

The Quality Assurance Agency for higher education (QAA) conducts reviews of teaching quality in English Universities. Biology was reviewed during the period 1999 - 2001. The Department of Animal and Plant Sciences was reviewed in November 1999 and the outcome was the maximum score of 24 points out of 24 for teaching quality. This means that all aspects of teaching were judged by the QAA to be excellent.

Achievements

The Department has a large Research School, with ca 80 research students and post-doctoral fellows. It has a top Grade 5* research rating. The Department publishes >140 research papers per annum. There are particular research strengths in molecular and behavioural ecology, biodiversity and conservation, plant physiology and global change biology. Research is sponsored by a wide range of research councils, government departments, the European Union, charities and industry.

The Molecular Ecology laboratory, where this project would be based, is an international leader in the development and application of polymorphic DNA markers to the study of wild populations (see TAB's CV for example publications, of >150 from the laboratory). TAB has participated in wildlife forensics using DNA profiling and is currently developing this area in collaboration with Dr Martin Evison, who leads a new EPSRC-funded Centre in the University (ICARIS) that aims to develop identification science. The laboratory hosts the NERC-sponsored Sheffield Molecular Genetics Facility that primarily develops microsatellite markers in collaboration with visiting graduate students; microsatellite marker systems have been developed at the Facility for a very wide range of species, including many birds.

5. Has your organisation received funding under the Initiative before? If so, please give details.

The University of Sheffield has received funding for the following projects: Round 5: Bogs of Tomsk Province: inventory, assessment and Biodiversity Action Plan; Round 6: Conserving the Rare and Endemic Flora of Iran; Round 7: Conserving the Rare Flora of Central Argentina; Round 7: Invertebrate Diversity and Endemism at Gough Island; Round 10: Cross-border conservation strategies in the Altai Mountains.

6. Please list the overseas partners that will be involved in the project and explain their role and responsibilities in the project. The extent of their involvement at all stages in the project should be detailed, including in project development. Please provide written evidence of this partnership.

University of KwaZulu Natal has identified Conservation as one of five strategic research initiatives. Legal aspects of biodiversity conservation are a key area of focus, and a project such as this would mesh well with the broader university activities. The University will be involved throughout the course of the project provide office and laboratory space for the project, appropriate students and staff will receive training.

Professor Michael Perrin (at UKZN) has worked with the Cape Parrot for many years and more recently with South African Cranes. He set up and was the chairman of the Cape Parrot Working Group, he has a large network of contacts in the relevant conservation and government organisations as well as with aviculturalists. MP will be involved at all stages of the project as a joint supervisor of the 2 MSc students funded by this grant.

Dr Tiawanna Taylor (at UKZN) is based at UKZN. Originating from the UK where she developed microsatellites for parrots at Nottingham University for her PhD. She has experience in the use of forensic DNA fingerprinting. She will transfer these skills, providing general supervision and specific forensic training to MSc students and staff at UKZN. Currently this line of work is in its infancy in SA, therefore she will liaise with SA authorities (assistance is also available from the FSS). She will develop guidelines and protocols appropriate to the needs of the South African legal system. These will cover laboratory techniques, collection of DNA evidence by the authorities and provision of workshops to field officers.

Molecular Biology Unit UKZN has a well-equipped molecular facility including an automated sequencer. However this is currently under-utilised due to the lack of technical expertise. The project will collaborate with this unit throughout the project. Initially genetic (microsatellite) markers

will be developed by the SA MSc students at the University of Sheffield (who will provide technical expertise, access to equipment, and molecular biological training). The students will then return to the University of KwaZulu Natal (final optimisation, analysis and implementation). Work in South Africa will be supervised by Dr Tiawanna Taylor who is experienced in the techniques required, having developed microsatellite and minisatellite markers for forensic use in parrots in the UK. Once the microsatellites have been optimised, permanent staff (in addition to the students) employed at the MBU will be trained in the methods required for forensic genetic analysis, including chain-of-evidence requirements and evidence statement writing (methods to be developed in collaboration with SA and UK authorities). At the close of the project students will have completed their MSc's and would have the skills to develop similar markers for additional species, increasing the scope of forensic analysis offered to the authorities. The training of permanent staff employed in the MBU will assist the self-sustaining nature of the forensic facility.

Cape Parrot Working Group originally set up by Mike Perrin, recently (due to the expansion of the work of the group) its co-ordination switched to Birdlife South Africa. One of the aims of this group is to develop effective law enforcement system for protecting this species. The Action Plan for this species notes that many experts believe illegal trade has the most significant impact on this species.

South African Crane Working Group This group has been investigating ways to use forensic DNA fingerprinting to address the illegal trade. Their guidelines for captive birds already include that a relevant authority can ask for DNA to be taken from chicks and parents for microsatellite analysis. They have previously provided funding towards examination of other genetic markers.

The University of KwaZulu Natal and the two working groups collaborate closely with the relevant authorities of South Africa to protect these birds. Close collaboration with these groups and the authorities is anticipated.

Government Authorities through the local RA (Tiawanna Taylor) this project will collaborate closely with the South African authorities in drawing up forensic laboratory techniques appropriate to the requirements of South African laws. Legislation of South Africa in this respect is similar to that of the UK, however, guidelines in respect of its use, especially with regard to wildlife, in SA are in their infancy. UK expertise will also be available to the project through contacts at the UK Forensic Science Service. Workshops will be undertaken in SA for officials involved in the collection of DNA samples. In forensic investigations it is important to protect all parties by following strict standard procedures such as ensuring chain of evidence, through witnessing of all procedures and recording all procedures and the secure storage of all materials.

7. **What steps have been taken to (a) engage at all appropriate levels within the host country partner organisations to ensure full support for the project and its outcomes; and (b) ensure the benefits of the project continue despite staff changes in these organisations?**

Discussion has been undertaken with the partner organisations and confirmation of support for this project gained where appropriate. Its outcomes are welcomed as they will provide a means to detect illegal trade, which is a serious threat to many of South Africa's wild species, and will provide capacity building to expand the University's profile. The working groups for both species have long-term aims to ensure effective legal protection for these species.

In the majority of cases staff changes in partner organisations will not influence the long-term aims of this project. Where this would potentially have an impact is in the provision of the long-term forensic facilities at the University of KwaZulu Natal. Here, in addition to training MSc students, emphasis in the later stages of the project will be to transfer these skills to full-time permanent staff employed at the University (MBU). This will ensure there is sufficient experience within the unit and will be of a level that new staff can be trained in the techniques. This project is intended to provide a catalyst, providing the skills and training to enable the Molecular Biology Unit to progress forward from this point - developing markers for additional species and providing a means through which the authorities can investigate illegal trade issues.

Detailed manuals and guidelines will be developed (by TT). These will provide reference material for the future and backup the training provided. They will cover all relevant aspects for the project work, i.e.: forensic laboratory protocols and analysis methods; requirements for provision of evidence statements to the authorities; and the collection of DNA samples to be used as evidence, maintaining DNA integrity and chain of evidence.

Due to the collaborative nature of the project links made during the project would enable personnel in the UK to be contacted in the future, should this be required.

- 8. What other consultation or co-operation will take place or has taken place already with other stakeholders such as local communities. Please include any contact with the government of the host country not already provided.**

The relevant government organisations have been active members of the CPWG and SACWG for some time. These include Ezemvelo KwaZulu Natal Wildlife, Eastern Cape Wildlife, South African Police Service, Dept. of Water and Affairs of Forestry, Dept. Environment Affairs and Tourism. These authorities are involved in conservation, policing, detection and prosecution of illegal trade. Links are already in place through the working groups and these will be used to discuss how forensic fingerprinting will be used. Collaboration with these groups will ensure that the guidelines provided to assist the authorities to follow the correct procedures in collecting evidence for genetic forensic investigations and are appropriate to law but also practical for use.

Aviculturalists: Have supplied blood from captive birds for DNA sampling and as a source for the markers to be developed. Discussions have already taken place towards fingerprinting captive birds so that unique genetic fingerprints can be collected on a database to assist the detection of illegal birds. This would also be of assistance to the breeders in case of theft, and could also assist in maintaining a healthy studbook population providing information on genetic similarity between individuals which would assist in preventing inbreeding depression.

PROJECT DETAILS

- 9. Define the purpose of the project in line with the logical framework.**

The purpose of the project is to assist the conservation of wildlife through institutional capacity building for wildlife forensic DNA analysis (fingerprinting and species identity). The project will initially concentrate on two species currently threatened by illegal trade (Cape Parrot and Blue Crane). South African MSc students will be trained to develop microsatellite markers (the marker of choice for forensic work) and undertake the investigative research required in characterising the genetic markers for forensic use. Permanent staff of the Molecular Biology Unit and the students will be trained in the techniques required in genetic forensic analysis, chain of evidence, producing forensic profiles, analysis and writing evidence statements for the authorities. Procedures will be drawn up in collaboration with appropriate authorities in South Africa (with the assistance of UK expertise) to provide protocols and guidelines. The presence of such a high profile technique will raise awareness of the illegal trade and as seen elsewhere (United Kingdom and Australia) should prove a deterrent, reducing such activities.

- 10. Is this a new initiative or a development of existing work (funded through any source)?**

This is mainly a new initiative with regard to the specific techniques to be used. Some basic genetic work has been undertaken in the past using techniques unsuited to forensics. Lack of the necessary expertise and sufficient funding have prevented the correct techniques from being developed. All the relevant people are keen to see this project succeed; the links and contacts are present for it to progress.

- 11. How will the project assist the host country in its implementation of the Convention on Biological Diversity? Please make reference to the relevant article(s) of the CBD, thematic programmes and/or cross-cutting themes (see Annex C for list and worked example) and rank the relevance of the project to these by indicating percentages. Is any liaison proposed with the CBD national focal point in the host country? Further information about the CBD can be found on the Darwin website or CBD website.**

South Africa became a signatory to CBD in 1993. The project will support the Government's implementation of the Convention on Biological Diversity through Articles 5, co-operation (8%); 6, general measures for conservation – developing strategies (5%); 12, research and training (25%); 13, public education and awareness (5%); 15, access to genetic resources (5%); 16, access to and transfer of technology (25%); 18, technical and scientific co-operation (10%); 19, handling of biotechnology and distribution of its benefits (10%) and the Global Taxonomy Initiative (7%).

It will provide capacity by training students and permanent staff in forensic techniques. It will assist the initiation of a self-sustaining forensic laboratory with staff able to provide evidence for legal investigations. The students will have the skills to go on to develop genetic markers to add additional species to those developed in the initial study.

12. How does the work meet a clearly identifiable biodiversity need or priority within the host country? Please indicate how this work will fit in with National Biodiversity Strategies or Environmental Action Plans if applicable.

South Africa's White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity states that the government is required to facilitate the development of legislation for the protection of threatened species and the regulation of trade of all CITES listed species (Objective 1.2.1c).

Cape Parrot and Blue Crane are listed under CITES, South Africa is a signatory (1993); trade in these species is regulated. South Africa's Department for Environmental Affairs and Tourism (DEAT) has determined that issues relating to CITES, biodiversity conservation and other environmental legislation be included in the National Environmental Management Act of 1998. DEAT is responsible for ensuring that the provisions of the Biodiversity Convention are implemented in South Africa.

Although relevant legislation is present through which illegal trade can be prosecuted the problem of providing evidence to enforce the law remains. Without a technique to confirm whether or not birds claimed, as captive bred, are legitimate it is difficult/impossible to conclusively prove.

13. If relevant, please explain how the work will contribute to sustainable livelihoods in the host country

n/a

14. What will be the impact of the work, and how will this be achieved? Please include details of how the project outputs will be disseminated and put into effect to achieve this impact.

Without conclusive evidence it is difficult to prosecute illegal trade in wildlife. Traders rely on being able to claim they have captive bred birds illegally removed from the wild in order to legitimise these birds for profitable sale. DNA fingerprinting provides this evidence and can conclusively prove whether birds have or have not been captive bred. Having a reliable method will provide authorities with the incentive and ability to investigate suspected thefts. Positive feedback from this will be in the increased awareness of these techniques reducing this trade, plus media interest in this type of work will provide wider attention to be drawn to wildlife trade in general.

15. How will the work leave a lasting legacy in the host country or region?

This project will leave a lasting legacy in the host country through its capacity building of forensic genetic techniques to detect illegal trade. Students coming out of University will have been trained in the techniques of forensic genetics. They will have the skills to develop further genetic markers for additional species, extending the legacy of the project further. Staff will be trained in forensic fingerprinting techniques, providing the authorities with expertise to assist when undertaking investigations which would otherwise likely fail due to insufficient evidence.

Publicity of these techniques should provide a wider ranging deterrent to illegal activities in this area, as has been observed in other countries. For example, in Australia DNA fingerprinting of cockatoos showed that of 36 birds, claimed to have been captive-bred by nine aviculturalists, only

one breeder's claims were true. In addition to detecting these thefts, the knowledge of the presence of the technique had the effect of a deterrent and the claimed success of 'captive' breeding of these species dropped immediately.

16. What steps have been taken to identify and address potential problems in achieving impact or legacy?

The identification of potential problems has been examined. Transfer of skills to permanent staff within the MBU will address the long-term legacy issue. Thorough technical laboratory protocols and guidelines for the forensic analysis will also provide reference and training material over the long term as staff changes occur.

The species selected for this project were chosen as they have working groups actively seeking legal protection for these species; the development of these markers will assist and encourage these efforts – a positive feedback assisting both parties. These groups also have appropriate connections in government authorities - links that can assist this project. Working groups are also involved in public awareness on behalf of these species and again this work will become part of this.

Wildlife investigations are undertaken at present, however the use of DNA evidence will be new to the investigators. Workshops will provide training to personnel of the authorities in how DNA evidence should be collected in order that it is suitable for:

Two South African MSc students trained in development, research and analysis will have the skills to continue in this field adding further species to those developed in this work. Illegal trade spans a wide biodiversity of species, from these birds to many other animals and plant life.

Dissemination of results is planned through publications, conferences, workshops and other media.

17. How will the project be advertised as a Darwin project and in what ways would the Darwin name and logo be used?

The Darwin logo will be printed on all stationery used in connection with the project. Manuals, guidelines and other media information produced as a part of the project will also contain the Darwin name and logo.

The contribution of the Darwin institute will be acknowledged in all publications.

18. Are you aware of any other individuals/organisations carrying out similar work? Are there completed or existing Darwin Initiative projects which are relevant to your work? Please give details, explaining the similarities and differences and how your work will be distinctive and innovative. Show how the outputs and outcomes of this work will be additional to any similar work, and what attempts have been/will be made to co-operate with such work for mutual benefits.

We are not aware of any other organisations in South Africa carrying out similar work, or of other Darwin Initiative projects relevant to this project.

Microsatellites have been developed for two other Crane species. Five of these loci (those thought most likely to be conserved) have been examined as part of a recent MSc study to determine if they might be useful in the Blue Crane. However only one of these was polymorphic. It appears likely that the use of conserved microsatellites will not be possible in this instance. A further 15 Crane microsatellites are part of a current MSc study. However, given the previous results it would be expected that at most three further might be polymorphic, insufficient for forensic purposes.

19. Will the project include training and development? Please indicate who the trainees will be and criteria for selection. How many will be involved, and from which countries? How will you measure the effectiveness of the training and will those trained then be able to train others? Where appropriate give the length and dates

(if known) of any training course. How will trainee outcomes be monitored after the end of the training?

The project includes training of South African citizens at a number of levels:

MSc students (2+) – the project will train MSc students (2 years) in the techniques of developing microsatellite markers, their analysis and examining their characteristics for use in forensic investigations. MSc theses will be written and then examined by external examiners. Following this these students will be encouraged to continue in this field. These skills would be highly desirable and could assist in the training of others.

MSc students and full-time permanent MBU staff (4-5+) – the project will provide thorough training (2 months+) to staff in order that they can undertake forensic fingerprinting and evidence statement writing to the appropriate standards for court evidence.

Workshops will be developed to teach relevant staff of government organisations that will be involved in collecting evidence for DNA investigations in the requirements with regard to the law, chain of evidence and ensuring evidence/DNA samples are collected and stored appropriately to maintain its integrity.

20. How are the benefits and/or work of the project expected to continue after the end of grant period? Please provide a clear exit strategy.

The basic platform, (molecular laboratory, automated sequencer, technicians etc.) are in place to provide a sustainable facility once the skills and initial research have been provided. By the end of the project the MBU will be in a position to provide a service to the authorities to detect illegal trade. At the end of this project the major costs in development of the markers will have been covered. Authorities will subsequently provide samples related to individual criminal investigations. These will be paid for in the same manner any expert service was requested in an investigation and would cover the costs of the work undertaken.

The availability of a facility such as this could be used to encourage the genetic profile of all birds in captivity to be obtained as part of their registration process, this would be encouraged by the working groups, which when publicised in the media would provide a very strong deterrent to trade. Throughout the course of the project matched funding will be sought to expand the footprint of this work. Training further students and adding new species providing a means and encouraging the authorities to utilise molecular methods to great potential in the detection of the illegal trade and wildlife crime.

21. Provide a project implementation timetable that shows the key milestones in project activities.

Project implementation timetable		
Date	Financial year:	Key milestones
May-2004	Apr-2005	<p>MSc students selected</p> <p>Legal requirements for forensic work within South Africa examined to determine where further information is required to draw up guidelines and techniques.</p> <p>Students travel to UK to develop microsatellites for the Cape Parrot and Blue Crane in collaboration with University of Sheffield.</p> <p>Consultation with UK experts on developing guidelines for forensic fingerprinting (FFS and wildlife bodies)</p> <p>Develop draft forensic guidelines to suit SA legislation, send to SA and UK collaborators for comments.</p> <p>Students optimise microsatellites prior to analysis.</p>
May-2005	Apr-2006	<p>MSc students analysing microsatellite characteristics and creating genetic database of individuals.</p>

May-2006	Apr-2007	<p>Talks and workshops with authorities and other stakeholders to disseminate information begin.</p> <p>Guidelines for the authorities and manuals for the field staff concerning collecting DNA evidence and its use in forensic investigations published and disseminated.</p> <p>Draft protocols for forensic laboratory techniques developed.</p> <p>Authorities asked to confirm techniques used and laboratory standards are appropriate for forensic analysis in South Africa.</p> <p>Workshops and talks given in the applications of DNA forensics to authorities and field staff.</p> <p>Training of MSc students and permanent staff manning the MBU undertaken in correct forensic procedures.</p> <p>MSc completed (2 years)</p> <p>MBU laboratories inspected by authorities and certified to forensic standards</p> <p>Genetic database of captive birds produced aligned with studbooks.</p> <p>Scientific papers in prep/press/published.</p> <p>Final guidelines on forensic fingerprinting protocols agreed and confirmed with the authorities and published.</p> <p>Guidelines for working groups.</p> <p>Facilities and staff fully trained and operational able to continue the facility.</p> <p>Agreements made with stakeholders regarding long-term commercial use of facilities.</p>
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22. How will the most significant outputs contribute towards achieving the purpose of the project? (This should be summarised in the Log Frame as Indicators at Purpose level)

The development of the microsatellite markers, will provide the means through which suspected cases of illegal trade can be confirmed and provide evidence for prosecutions.

Two MSc students will be trained in microsatellite development and forensic analysis, and theses produced. This will build South Africa's capacity, the techniques being applicable to a wide diversity of species, these individuals can continue to develop further markers in this field.

Permanent staff at the University will be trained in forensic fingerprinting techniques, analysis and evidence statement provision. Through these self-sustaining forensic laboratory facilities will be developed at the University of KwaZulu Natal. Increasing the country's capacity to investigate illegal trade in wildlife by providing a laboratory specialising in these techniques.

Through collaboration with the relevant authorities and bodies in SA and the UK, detailed protocols, specific to the requirements of SA laws and forensic evidence provision will be compiled. These guidelines will provide technicians, investigators and legal representatives reference material to assist with casework and in training.

Workshops will also be provided to field investigators to provide knowledge in the requirements of collecting DNA evidence for forensic investigations and issues, such as illegal trade, in which it is applicable.

The dissemination of results in scientific publications will provide peer review of the methods. Dissemination of the results and applications in other media such as local and specialist press will increase the awareness of the availability of these techniques to a wider audience such as the

authorities (encouraging them to utilise the methods), aviculturalists (deterring them from becoming involved in illegal trade) and the public increasing their awareness of illegal trade in general and one way in which biodiversity is threatened.

23. Set out the project's measurable outputs using the separate list of output measures

PROJECT OUTPUTS		
Year/Month (starting April)	Standard Output Number (see standard output list)	Description (include numbers of people involved, publications produced, days/weeks etc)
2006	2	MSc awarded. 2+ South African students 2+ theses published
2006	6A	Permanent staff (South African) of the MBU trained in forensic laboratory techniques, chain of evidence requirements, writing evidence statements. No accredited course currently recognised accreditation will be sought.
2006	6B	Training will last at least 4 weeks.
2005 & 2006	6A	1 or 2 day workshops throughout the year 50+ South African investigating officers, related to wildlife trade, trained in techniques appropriate to collecting DNA samples for forensic analysis.
2005/2006	7	Laboratory technical manual – Forensic Protocols Guidelines for Investigating Wildlife Officers collecting DNA evidence Field Officer Workshop Presentation Reports to Working Groups on further potentials for DNA fingerprinting in captive populations to prevent inbreeding
2004	8	TAB in South Africa 1 week
2005	8	TAB in South Africa 1 week
2006	8	TAB in South Africa 1 week
2005/6	9	Report on recommendations for use of DNA evidence for the wildlife trade to government departments.
2005/6	11A	Development of microsatellites (x2), Application of microsatellites (x2)
2006	11B	Further publications will be in press regarding the use of microsatellite fingerprinting in the two species in respect of prosecuting illegal trade in wildlife and studbook analysis of captive bred populations.
2006	12A	2 databases containing genetic information on birds of both species will be established for the respective working groups.
2005	13A	2 reference collections of blood and DNA samples will be established and maintained at the MBU for future reference.
2005 & 2006	14A	10+ workshops will be provided to staff of the authorities

2003-2006	14B	MSc and/or UK staff in SA will attend conferences to present findings (n=4+)
2005/6	15A	MSc and/or UK staff will also attend workshops for the 2 species working groups (n= 4+)If prosecutions occur during the course of the project this will be highly attractive to the media. Both species of high public interest and often in the media. Even without this 2 press releases would be expected. National but specific (wildlife/aviculture) interest publications (10+) Local press releases 4+
2005/6	15B	The work of this project would be of interest to several organisation in the UK (10+ press releases)
2005/6	15D	
2006/	18	As above both species produce high media interest. A documentary has previously been shown of national TV on the Cape Parrot in which the potential for forensic fingerprinting to address the illegal trade has been discussed.
2006	20	Amount in value to be handed over at end = equipment of value ca £11,000, part-used consumable and stocks and minor equipment items @ ca £20,000 Forensic laboratory set up and authorised to provide DNA fingerprinting service to assist illegal trade prosecutions
2006	21	Amount in value to be funded from other sources included in-kind which must be quantified > £135k
2004-	23	
2006		

MONITORING AND EVALUATION

24. Describe how the progress of the project, including towards delivery of outputs, will be monitored and evaluated in terms of achieving its overall purpose. This should be both during the lifetime of the project and at its conclusion. Please make reference to the indicators described in the Logical Framework.

The development of the microsatellite markers will be undertaken in the UK and progress monitored. Successful isolation of 15+ loci would indicate progression to the next stage. Loci would then be examined for polymorphism, once sufficient polymorphic loci have been identified this section of the project would be complete. Students would return to South Africa to analyse the microsatellites in a range of individual birds, monthly reports to TAB & MP to detail progress. Papers in scientific journals written detailing the markers isolated. MSc theses will be examined by external examiners.

Compilation of forensic technical protocols and investigator guidelines; progress will be monitored through quarterly reports. These will be accredited as appropriate for SA legal system by the South African authorities.

In a similar manner the laboratory will be accredited for use in forensic investigations, with regard to equipment, storage facilities and staff training by the authorities.

Details of the number of workshops provided and number of investigators attending will be submitted to the Darwin Initiative.

Wider awareness of the illegal trade to the public, authorities and aviculturalists – information on the specific media will be provided to the Darwin Initiative.

Copies of the final reports will be forwarded to the Darwin Initiative.

25. How will host country partners be involved in monitoring and evaluation of the project?

MSc students will be registered at UKZN and jointly supervised by TAB

The MBU forensic laboratory will be examined and accredited to ensure the standard of forensic work is appropriate to the South African authorities.

The South African authorities will be involved at all stages of the construction of laboratory protocols and guidelines.

26. How will you ensure that the project achieves value for money?

All personnel actively involved in producing outputs will provide regular reports of their progress towards their objectives on a regular monthly or quarterly basis. Members of the project will be encouraged to discuss their work and any problems they may be encountering.

Should the project be successful all stakeholders will be made aware of the project commencement in the early stages and asked to contribute where appropriate throughout its course.

27. Reporting Requirements. All projects must submit six monthly reports (by 31 October each year) and annual reports (by 30 April each year). Please check the box for all reports that you will be submitting, dependent on the term of your project. You must ensure that you cover the full term of your project.

Report type	Period covered	Due date	REQUIRED?
Six month report	1 April 2004 – 30 September 2004	31 October 2004	Yes
Annual report	1 April 2004 – 31 March 2005	30 April 2005	Yes
Six month report	1 April 2005 – 30 September 2005	31 October 2005	Yes
Annual report	1 April 2005 – 31 March 2006	30 April 2006	Yes
Six month report	1 April 2006 – 30 September 2006	31 October 2006	Yes

Annual report	1 April 2006– 31 March 2007	30 April 2007	Yes
Six month report	1 April 2007 – 30 September 2007	31 October 2007	Yes
Final report	1 April 2004 – project end date	3 months after project completion	Yes

LOGICAL FRAMEWORK

28. Please enter the details of your project onto the matrix using the note at Annex B of the Guidance Note. This should not have substantially changed from the Logical Framework submitted with your Stage 1 application. Please highlight any changes.

Project summary	Measurable indicators	Means of verification	Important assumptions
<p>Goal:</p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> • the conservation of biological diversity, • the sustainable use of its components, and • the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources 			
<p>Purpose</p> <p>Endangered Cape Parrot and Blue Crane protected through institutional capacity building at the University of Natal, with wildlife genetic forensic techniques developed to enable claims of captive breeding to be confirmed or refuted in order to detect illegally caught wild birds</p>	<p>Microsatellites developed</p> <p>MSc students trained</p> <p>Forensic methods developed</p> <p>Illegal trapping reduced</p> <p>Number of captive birds processed for database</p> <p>Successful prosecutions</p>	<p>Reports, scientific papers</p> <p>MSc theses</p> <p>Guidelines manuals created</p> <p>Wildlife authority records</p> <p>Genetic database records</p> <p>Authorities records</p>	<p>Microsatellites are obtained</p> <p>Students complete studies</p> <p>Access to SA legal systems</p> <p>Traders deterred</p> <p>Authorities and working groups submit samples</p> <p>Crimes committed & genetic profiling successful</p>
<p>Outputs</p> <p>Microsatellite markers</p> <p>Protocols and Guidelines for forensic analysis</p> <p>Wider awareness of methods to detect illegal trade (public/authorities)</p> <p>Two MSc students trained in research and analysis</p> <p>Dissemination of results</p>	<p>Number of microsatellites</p> <p>Manuals produced for laboratory and authorities</p> <p>Number of talks, publications posters and media presentations</p> <p>MSc theses and scientific papers produced</p> <p>Interim reports, scientific and popular papers</p>	<p>Reports, scientific papers</p> <p>Details/copies to Darwin Initiative</p> <p>Details/copies to Darwin Initiative</p> <p>MSc's awarded. Copies of theses to Darwin Initiative</p> <p>Copies to Darwin Initiative</p>	<p>Microsatellites obtained</p> <p>Collaboration with authorities in development</p> <p>Interest in subject from authorities/public/media</p> <p>MSc students complete course</p>
Activities	Activity Milestones (Summary of Project Implementation Timetable)		

Microsatellites	Yr1/2: Microsatellites developed, MSc students optimise and characterise microsatellites for forensic use. Yr2/3: Genetic database of captive birds developed, 2 MSc awarded and theses published. Scientific publications underway.
Forensic Protocols	Yr1: Collaboration with forensic services and authorities in SA and UK to determine the most appropriate laboratory procedures for forensic work and DNA collection procedures for authorities to maintain chain of evidence. Yr2: Draft procedures developed. Build ties between authorities and laboratory. Yr3: Forensic Protocols and Guidelines produced. Increased awareness.
Capacity building	Yr2/3: MSc students, staff and technicians skilled in forensic techniques. Links made with working groups and authorities to utilise and develop further capacity of the unit. Stakeholders plan to put all captive held birds on genetic database
Awareness and dissemination of results	Yr1: Contact with all stakeholders providing details of project and collaboration to ensure needs of authorities met. Encourage discussions to require profiles of all registered birds and future offspring on the genetic database. Yr2: Draft procedures and forensic guidelines produced for comments. Media coverage as work progresses. Yr3: Final protocols and guidelines produced. Scientific and popular publications produced and media attention.