

# DARWIN INITIATIVE FOR THE SURVIVAL OF SPECIES: APPLICATION FOR GRANT FOR ROUND 10 COMPETITION

Please read the accompanying Guidance Note before completing this form. Give a full answer to each section; applications will be considered on the basis of information submitted on this form. Applicants are asked not to use the form supplied to cross-refer to information in separate documents except where this is invited on the form. The space provided indicates the level of detail required but you may provide additional information on a separate sheet if necessary. Copies of this form are available on disk or by e-mail on request. You are asked also to complete the summary sheet. Although you may reproduce this sheet in a reasonable font, you should not expand it beyond an A4 sheet (leaving the allocated space for DEFRA comments to be made) as additional information will not be taken into account.

## 1. Name and address of organisation

**Institute of Zoology, Zoological Society of London, Regent's Park, London NW1 4RY**

## 2. Principals in project

| 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 |
|--|-----------------------------------|--|--|
| <b>Surname</b>                             | Durant                            |  | Mlingwa  |
| <b>Forename(s)</b>                         | Sarah                             |  | Charles  |
| <b>Post held</b>                           | Research Fellow                   |  | Director General                                     |
| <b>Institution (if different to above)</b> |                                   |  | Tanzania Wildlife Research Institute                 |
| <b>Department</b>                          | Behavioural Ecology and Evolution |  |  |
| <b>Telephone</b>                           |                                   |  |  |
| <b>Fax</b>                                 |                                   |  |  |
| <b>Email</b>                               |                                   |  |  |

Please provide a one page CV for each of these named individuals.

## 3. Project title (not exceeding 10 words)

**A national plan for carnivore conservation in Tanzania**

**4. Abstract of study (in no more than 750 characters)**

The estimation of carnivore population sizes and range is problematic, since many species are well camouflaged and are seldom seen. Nonetheless estimation of population size is of fundamental importance to park managers, who need to know the viability of populations within protected areas under their responsibility, and to governments, who need to plan for the conservation of threatened species within their countries. Tanzania currently has a total of 138,170km<sup>2</sup> of land under protection, the highest national total of such protected land in sub-Saharan Africa. Tanzania also ranks 12<sup>th</sup> in global and 5<sup>th</sup> in sub-Saharan African mammalian biodiversity, however our knowledge of species distribution and numbers is extremely poor. This project aims to address these gaps in our knowledge of carnivores by using local expertise to construct distribution maps of all carnivore species, using a system similar to the Atlas project for birds, as well as building an identification system for those large, and easily individually identifiable carnivores which are threatened and occur at low densities. This will be achieved through a centralised Carnivore Conservation Centre at the Tanzania Wildlife Research Institute in Arusha (TAWIRI). This centre will serve several functions: 1) collate data on carnivores gathered across Tanzania; 2) train Tanzanian wildlife professionals in carnivore monitoring and identification techniques; 3) act as a centre where students and wildlife professionals can spend a few days or weeks learning carnivore study techniques; 4) help TAWIRI fulfil its mandate to build capacity for wildlife research. The ultimate objective is to build an action plan for carnivore conservation in Tanzania. This project will help Tanzania in fulfilling its obligations under articles 7, 8, 10, 11, 12, 13 and 16 of the Biodiversity Convention and will act as a model framework for other taxa and countries.

**5. Timing. Give the proposed starting date and duration of the project.**

1st April 2002 until 31st March 2005

**6. Describe briefly the aims, activities and achievements of your organisation. (Please note that this should describe your unit, institute or department within a university.)**

**Aims**

The mission of the Institute of Zoology is, 'To identify, undertake, and communicate high-quality biological research which benefits the conservation of animal species and their habitats'. This mission is pursued by three objectives: 1) To undertake relevant, high-quality biological research; 2) To respond to research priorities identified by conservation practitioners, and 3) To communicate significant outcomes and results to the scientists, conservation practitioners and the wider community.

The Institute of Zoology is the research arm of the Zoological Society of London (registered charity number: 208728) which has a mission to 'To achieve and promote the world-wide conservation of animals and their habitats'.

**Activities**

The Institute of Zoology is funded through the Higher Education Funding Council for England (HEFCE). The University of Cambridge is our academic partner and the activities of the Institute are managed through a joint committee from the University of Cambridge and the Zoological Society of London. Our activities are as follows: 1) Research on fundamental and applied aspects of whole organism biology, emphasising topics in: Animal health & welfare, Reproductive biology, Genetic variation, fitness and adaptability, Behavioural ecology, Population dynamics and community ecology, Wildlife epidemiology, Biodiversity and macro ecology; 2) Regular programme of research seminars, and training and technology transfer through MSc and PhD training programmes.

**Achievements**

The Institute of Zoology has become recognised as a leading international centre for conservation biology science and action. In the last two years significant achievements have included (1) contributions to the understanding of processes that generate and maintain biodiversity, including the roles of speciation and population differentiation and their significance of genetic diversification for threatened population management, 2) methods for priority-setting for conservation in both area and species-based analyses, 3) contributions to understanding complex population dynamics and their implications for population management for conservation, including individual-based behavioural models, population viability analyses and analyses of population synchrony in taxa ranging from invertebrates to elephants, 4) elucidation of the role of infectious diseases in biodiversity conservation, and 5) novel techniques for non-invasive monitoring of fertility and inbreeding effects in threatened species. This work has been published in leading international journals (including Nature, Proceedings of the Royal Society of London, Science, Proceedings of the National Academy of Science, Ecology and Conservation Biology).

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

1) Patterns of diversity in Ugandan forests (Dr A. Balmford, 1994), 2) Vicuna and guanaco conservation and genetic resource management (Dr H. Stanley, 1997), 3) Development of a research and monitoring unit at Garamba, D.R. Congo (Dr G. Cowlshaw, 2000) ,4) Conservation of critically endangered Gyps species (Dr A Cunningham, 2001)

**8. Which overseas institutions, if any, will be involved in the project? Please explain the responsibilities of these institutions.**

**Tanzania Wildlife Research Institute (TAWIRI)**

TAWIRI is a governmental institution which is in charge of all wildlife research in Tanzania and is the main project partner in this proposal. TAWIRI is mandated by the Ministry of Wildlife and Tourism of Tanzania to supply wildlife research relevant to management issues within the wildlife sector. However at present it does not have the resources or capacity to fulfil this objective. Instead TAWIRI currently relies almost entirely on foreign research projects, whose objectives are often outside its control. Nonetheless, the Director General, Dr. Charles Mlingwa, a Darwin Fellow, is eager to expand the capacity of the institute. This project, by providing capacity in the form of buildings, equipment, personnel and training, will enable TAWIRI to fulfil its mandate in respect of carnivore research. Carnivores, because of their importance for attracting wildlife tourism, are viewed as a priority taxa within the wildlife sector. In turn, TAWIRI will be responsible for providing land for the centre's offices, help with finding suitable personnel to work in the centre, administering salaries and personnel, and assisting with permits for short term expatriate personnel associated with the project.

**Tanzania Wildlife Conservation Monitoring (TWCM)**

The TWCM unit, under TAWIRI, organises and collates information from aerial censuses of large herbivores in priority wildlife areas in Tanzania. It will assist this project by supplying data on herbivore numbers and satellite imagery for GIS analyses. Dr. Simon Mduma, the director of TWCM, and a highly capable senior scientist, will be on the project team, and will assist with data collection and analysis.

**Tanzania National Parks (TANAPA)**

TANAPA is a governmental parastatal organisation in charge of the management of all national parks in Tanzania. It will be responsible for facilitating access to national parks by the project team, and the distribution of leaflets and newsletters to park gates and relevant personnel. TANAPA have already been extremely helpful with these activities in the Serengeti Cheetah Watch Campaign, which solicited tourist photographs to monitor cheetahs in the Serengeti National Park during 2001. Dr. Emmanuel Gereta, the chief ecologist, oversees and advises on research activities within the national parks. He is an accomplished scientist and will be on the project team. He will help organise leaflet distribution and assist with data collection and analysis. His input in the final action plan will be crucial.

**WCS Tanzania**

WCS Tanzania is a registered Tanzanian NGO, who have an on-going research project assessing the distribution of carnivores in southern Tanzania, and will help organise the distributional survey and oversee the collating and analysis of this data. This NGO will also organise a tax exemption for the importation of project equipment. Dr. Daniela de Luca, research scientist, will assist with the carnivore distribution survey and David Moyer, head of the organisation, will give logistical assistance. Both will be on the project team.

**WCS International**

WCS International support WCS Tanzania, and are an American NGO at the forefront of international conservation. Their specialist GIS staff will assist the project in reaching its GIS training objectives. They will also help plan the distributional survey, using their experience from similar surveys on tigers and jaguars.

**University of Dar es Salaam**

The University of Dar es Salaam will help train two Tanzanian masters students who will conduct the research for their dissertations at the centre. These students will undergo courses on the masters program at the university, which will also award their degrees.

The project leader has ten years of experience in working with all these organisations, and has held discussions about this project with all governmental institutions, all of which have been highly supportive of the scheme. Formal endorsement has been sought,

**PROJECT DETAILS**

**9. Define the purpose (main objective) of the project in line with the logical framework.**

The project will assist Tanzania in meeting its obligations to the Biodiversity Convention by providing the capacity to monitor and conserve carnivore diversity. It will do this through four means: 1) establish a Carnivore Conservation Centre at TAWIRI which will act as catalyst for attracting future funding, assist long term capacity building within Tanzania and provide specialist training in carnivore monitoring for wildlife professionals; 2) determine current distribution patterns for carnivore species in Tanzania; 3) produce estimates of numbers of individuals for particular threatened species of rare carnivores, namely cheetahs and wild dogs; 4) produce a Carnivore Conservation Action Plan for Tanzania which will identify priorities for conservation for species where information is sufficient, and identify problem species and areas where data is deficient. The project will serve as a model for other taxa and other countries.

## 10. Is this a new project or the continuation of an existing one?

This project is new, but builds on two existing projects in Tanzania: 1) a distributional survey of carnivores in southern Tanzania; 2) a photo tourism survey which has successfully used tourist photos to monitor cheetahs in the Serengeti National Park (the Serengeti Cheetah Watch Campaign). It will expand these two small local projects into a national plan.

## 11. What is the evidence for a demand or need for the work? How is the project related to conservation priorities in the host country(ies)? How would the project assist the host country with its obligations under the Biodiversity Convention?

### How was the work identified?

A crucial challenge facing conservationists world-wide is the paucity of information on the distribution and status of many species that are potentially in need of protection. Gathering this information and incorporating it into routine long term monitoring plans, is a necessary first step before conservation action can be taken, be it through direct management or through pressure on governments to alter protective legislation. Without data on distribution we do not know where species occur, without data on density we cannot prioritise areas for conservation and without data on status we remain ignorant when populations fall into decline. This is particularly true for carnivores in Africa. Because of their predominantly cryptic nature, carnivores are difficult to find, and their status within all but the most developed countries in Africa is largely unknown. Nonetheless, many carnivores are landscape species, and as such are important for attracting visitors and hence foreign revenue to African countries. Furthermore, Tanzania has been identified as a priority country for carnivore conservation since it has both high numbers of African endemics and a high percentage of protected land (Mills et al. 2001). Tourism is Tanzania's second largest foreign currency earner, and so the visible presence of carnivores within the country is vital to the economy. Wild dogs and cheetahs, which are in chronic global decline, are regarded as priority species for conservation, and Tanzania has globally significant populations of both these species. As potential carnivore habitat continues to become degraded and lost to conservation, establishing the status of the remaining carnivores in Tanzania becomes an increasingly urgent priority.

### How is the project related to conservation priorities in the host country?

Conservation of wildlife was prioritised in Tanzania soon after independence by the first president, Julius Nyerere, in the Arusha declaration. This declaration was instrumental in attaining protection for the extensive wilderness areas that still survive in the country, such that today, Tanzania has the largest total area under protection in sub-Saharan Africa. Three major governmental institutions oversee wildlife conservation in Tanzania: Wildlife Division, responsible for hunting and game reserves; TANAPA, responsible for the national parks; TAWIRI, responsible for wildlife research. This project will work closely with all three organisations, and will fall directly under TAWIRI, which has a mandate to supply wildlife research relevant to management issues within the wildlife sector. The project directly addresses three of five priorities for wildlife research identified by TAWIRI at a workshop in October 1999: 1) Ecological interactions - to gain a better understanding of the ecology and ecological processes for more effective conservation of biodiversity; 2) Biodiversity Inventory - to gain a better understanding of the status, trend and the value of biodiversity resources; 3) Database - to continually provide updated information to researchers and resource managers.

### How will the project assist the host country meet its obligations under the Biodiversity Convention?

In order to assist Tanzania in meeting its obligations under the Biodiversity Convention the project will:

- monitor carnivore diversity in Tanzania and maintain and collate all data into a central database (Article 7, Identification and Monitoring).
- identify areas and carnivore species which may be in need of further protection or management, and devise a management plan to ensure their long term conservation (Article 8, In-situ Conservation).
- identify areas which are deficient in particular carnivore species, and support local people in reinstating populations where possible. This will be particularly important when the carnivore species has economic significance, and there are potential benefits from wildlife tourism (Article 10, Sustainable use of components of biological diversity).
- explore possible incentives to enhance carnivore conservation in the action plan (Article 11, Incentive measures).
- establish training programs in carnivore monitoring and promote research through the analysis of data collected on the program (Article 12, Research and Training).
- promote the understanding of the importance of the conservation of carnivore biodiversity both within the wildlife sector, with which the project will work closely, and among the public through newsletters and press releases (Article 13, Public Education and Awareness).
- ensure that there is a transfer of expertise and technological advances in carnivore monitoring techniques from developed countries to Tanzania (Article 16, Access to and Transfer of Technology).

**12. In what ways can this project be considered a Darwin project? How does the project relate to the Darwin principles? How would the project be advertised as a Darwin project and in what ways would the Darwin name and logo be used?**

The project is in line with all the principles of Darwin projects:

1. Assistance for countries rich in biodiversity but poor in resources: Tanzania ranks 5<sup>th</sup> highest in mammalian biodiversity in sub-Saharan Africa, yet with a per capita Gross National Income of \$280 in 2000, ranks globally as having the 21<sup>st</sup> lowest average income. Tanzania therefore has limited resources to monitor or maintain its biodiversity without external assistance. Tanzania's dependence on wildlife tourism as a key source of foreign exchange means that the maintenance of biodiversity has major economic implications, as wildlife tourism can catalyse local economic development in some of the most socio-economically disadvantaged communities in the country, and thus can be an aid to the elimination of poverty.
2. The initiative draws on UK expertise through its close association with the Institute of Zoology (IoZ) and its formal affiliation with the University of Cambridge, as well as through the Tropical Biology Association (TBA). The close involvement of these UK institutions will enable the project to draw on additional advice and support.
3. The project is collaborative, and will make use of strong connections established with all the relevant Tanzanian institutions resulting from the project leader's ten years of experience in wildlife research in Tanzania. The project will fall directly under the auspices of TAWIRI, but will also work closely with Tanzania National Parks, Wildlife Division and the University of Dar es Salaam.
4. The project will have a real and lasting impact on the capacity of Tanzania to meet its obligations under the Biodiversity Convention as it will provide information on the distribution and status for an entire taxa – the carnivora (see 11) - and will produce a Carnivore Conservation Action Plan, with endorsement from all institutions within the wildlife sector, to address conservation priorities for Tanzania.
5. The project will produce research of high quality. Substantial amounts of information will be generated during the course of the project, which will be used to produce scientific publications of high quality for leading peer reviewed international journals.
6. The project will act as a catalyst to lever additional funding. Various organisations have already expressed an interest in the centre, and it is anticipated that once the centre is established and is active it will generate more interest, acting as a catalyst for the funding of supplementary projects, such as surveys in remote areas, and studies focussing on particular species. Furthermore, the training objectives of the project will also act as a catalyst for developing specialist training programs in carnivore research in association with TBA, which should also attract further funding. TAWIRI will provide land and support, whilst the time of many of the principal Tanzanian and UK scientists involved in the project will be donated.
7. All outputs and outcomes from the project are additional to work already taking place.
8. The project is distinctive and innovative, and will establish the first carnivore centre in Africa and produce the first national carnivore action plan. It will form a model for other taxa and countries, and its conception has already generated interest elsewhere.
9. The project demonstrates good value for money, in that it draws on existing expertise and knowledge in the UK and from key carnivore experts on the African continent. It will draw on the public's fascination with carnivores through the network of resident experts and photographs from visiting tourists. The total human effort behind the project goes far beyond the financial value of the project.

The project will generate extensive opportunities for advertising:

1. The centre can be named 'the Darwin Tanzania Carnivore Conservation Centre'. This would leave a permanent reminder of Darwin's contribution to Tanzania.
2. The project vehicle will carry the Darwin logo. The vehicle will be seen frequently in Arusha, but will also appear in publicity material.
3. The substantial publicity material generated by the project (leaflets to tourists, resident experts, posters, newsletters etc.) will all credit Darwin as the donor to the project. This material will reach a substantial number of residents and visitors during the course of the project (probably in excess of 300 000, as judged by annual leaflet uptake from the Serengeti Cheetah Watch Campaign). It is perhaps worth noting that this type of material is in short supply in Tanzania, and any information is extremely popular with visitors.
4. The Tanzania Carnivore Conservation Action Plan will show the Darwin logo in a prominent position on its cover, and will explicitly credit the Darwin Initiative.
5. All scientific publications and reports arising from this work will credit the Darwin Initiative.
6. All press releases will acknowledge the Darwin Initiative.
7. ~~All possible effort will be made to ensure that the Darwin Initiative is credited in any radio or TV coverage~~

**13. Set out the proposed timetable for the work, including the programme's measurable outputs using the attached list of output measures.**

| <b>PROJECT OUTPUTS</b>         |   |  |
|--------------------------------|---|--|
| Year/Month<br>(starting April) | Output Number<br>(see standard output measures) | Description<br>(include numbers of people involved, numbers of publications printed or produced and days/weeks where applicable)   |
| April 2002                     | 21  | Establish temporary office at TWCM in Arusha and draw up tenders for building new offices at TAWIRI headquarters.  |
| May 2002                       | ?   | Lex Hiby to write software to computerise the matching of cheetahs and wild dogs.  |
| May 2002                       | 5   | Compile shortlist and interview Tanzanian nationals for the post of Project manager. The successful candidate should preferably have a PhD, however given the limited availability of qualified people in Tanzania, the candidate will have a minimum of a first degree.                               |
| June 2002                      | 20  | Set up initial computer facilities in temporary office.  |
| June 2002                      | 6A, 6B  | Lex Hiby to train field project manager and project leader in the use of matching software.  |
| June 2002                      | 2   | Identify a minimum of one, but preferably two Tanzanian masters students to begin research for a two year dissertation at the centre.  |
| June 2002                      | 21  | Complete plans for office construction and begin building.   |
| July 2002                      | 7   | Finalise, print and begin distribution of leaflets and posters to request information from:<br>1: tourists, for photographs of a) wild dogs and b) cheetahs<br>2: Interested resident experts (e.g. researchers, safari operators, lodge managers etc.), for distributional surveys of all carnivores. |
| September 2002                 | 6A, 6B  | Demonstrate monitoring techniques and the potential of the facility to interested individuals from Kenya Wildlife Service (KWS). KWS have already expressed interest in the idea of the centre as a model for Kenya.   |
| December 2002                  | 21  | Complete construction of the Tanzania Carnivore Conservation Centre.   |
| January 2003                   | 5   | Compile shortlist and interview two additional Tanzanian nationals for the post of project assistant.  |
| January 2003                   | 20  | Move existing facilities from TWCM into the new office facilities.   |
| February 2003                  | 18A, 19A  | Opening ceremony for the Carnivore Conservation Centre.  |
| February 2003                  | 6A, 6B  | Tanzanian research assistants to undertake a two month training period in the use of matching software, database management and statistical analysis from Marcella Kelly.  |
| March 2003                     | 7   | Complete a Tanzania carnivore identification guide for distribution to individuals participating closely with the scheme.  |
| April 2003                     | 20  | Purchase additional computer equipment.  |
| June 2003                      | 12A, 12B  | First year of databases completed:<br>1. Individually identified wild dogs<br>2. Individually identified cheetahs<br>3. Preliminary carnivore distribution maps  |
| August 2003                    | 4A, 4B  | Provide a three week training course for interested second year undergraduates from universities of Dar and Sokoine in carnivore field monitoring techniques and data analysis.  |
| September 2003                 | 6A, 6B  | Demonstrate office and facilities to KWS, set up links for future collaboration and use Arusha office to act as a model for a similar system in Kenya.   |
| September 2003                 | 14A   | First workshop, largely internal with a few external experts, to discuss and quantify progress to date, establish and prioritise data deficient areas for field work, and assess monitoring techniques available.  |
| December 2003                  | 6A, 6B  | One month training program in GIS provided by WCS for all staff at centre  |

|   |                                   |   |
|---|-----------------------------------|---|
| April 2004  | 11B                               | Paper evaluating the use of tourist photographs in monitoring cheetahs through a comparison between data obtained from tourist photos with that obtained from a long term study in the Serengeti.   |
| August 2004   | 12A, 12B                          | Provide a second three week training course for interested second year undergraduates from universities of Dar and Sokoine in carnivore field monitoring techniques and data analysis.  |
| August 2004   | 4A, 4B, 9                         | Second year of database completed:<br>1. Individually identified wild dogs<br>2. Individually identified cheetahs<br>3. Carnivore distribution maps<br>Use this data to construct a first draft of report on carnivore distributions and estimates. Identify priorities for conservation.   |
| September 2004                                      | 2                                 | Completion of masters dissertation by resident masters students.  |
| September 2004                                      | 11B                               | Circulate preliminary report throughout project team and to stakeholders and interested parties for feedback.   |
| October 2004  | 11B                               | Paper outlining information gathered on cheetahs across Tanzania.   |
| December 2004                                       | 11B                               | Paper outlining information gathered on wild dogs across Tanzania.  |
| January 2005  | 14A                               | Workshop to disseminate findings of the centre and to identify priorities for conservation of carnivores within the country.  |
| February 2005                                       | 11B                               | Paper outlining distributional information on small carnivores, identifying priorities for conservation.  |
| March 2005  | 11B                               | Paper outlining distributional information on large carnivores identifying priorities for conservation  |
| March 2005  | 12A, 12B                          | Finalise database   |
| March 2005  | 17A                               | Establish email network for the dissemination of all future information generated at the centre, as well as for obtaining advice for future monitoring, data analysis and fundraising.  |
| March 2005  | 9                                 | Finalise report and distribute to all stakeholders and interested parties.  |
| Outputs ongoing throughout the project              |                                   |   |
| From July 2002, and at monthly intervals throughout | 16A, 16B                          | Monthly A4 newsletter to inform participants of the progress of the project and to encourage future participation distributed to:<br>1. Tourists and local staff associated with tourism development (5000 copies per month).<br>2. Local resident experts targeted for contributions of distributional data (500 copies per month).  |
| Throughout  | 17A, 18A, 18B, 19A, 19B, 19C, 19D | Because of the high profile nature of carnivores it is likely that there will be considerable media interest in the centre. The project leader's experience from a ten year study on cheetahs suggests that media interest is likely to be sufficient to ensure coverage of the project throughout its duration. Wherever sufficient time allows then this media interest will be actively encouraged through press releases and the ZSL press office. Particular efforts will be made to encourage broadcasts within country, however TV is limited in Tanzania – there is only one station. |

| <b>Key Milestones</b>                  |  |
|--|--|
| <b>Year/Month<br/>(starting April)</b> | <b>Description<br/>(include travel dates, drafts and other processes that support the delivery of outputs)</b>   |
| June 2002                              | The establishment of a computer matching facility and personnel trained in its use in Arusha. This facility will enable the fast processing of photographic information collected on cheetahs, and is fundamental to the success of the national cheetah monitoring program. Wild dogs, because they live in packs, and are more distinctively marked, may be more easily matched by eye.  |
| July 2002                              | Printing and distribution of leaflets and information packages to solicit information from visitors and residents to Tanzania. This information gathering campaign will depend on the support of key institutions within Tanzania, particularly the governmental institutions of TANAPA, NCAA, Wildlife Division and TAWIRI, but also that of local safari operators who will be asked to encourage their clients to respond to the campaign, and key expert guides and wildlife professionals who will be asked to contribute information on carnivore species seen. A preliminary network of suitable individuals is already established in the north through the Cheetah Watch Campaign, whilst a national network has been established for birds (the Atlas project). These existing networks will form the basis for the network for this project.  |
| February 2003                          | Opening ceremony for the Carnivore Conservation Centre in Arusha. This will mark the opening and the transition to full operation for the centre. The centre will contain six offices (project leader, project manager, project assistants, students, visitors and administration) together with one small meeting room. The centre will serve a number of functions: 1) It will collate data on carnivore distributions from resident experts across the country and compile a distributional database; 2) It will individually match, collate and analyse photographic data from wild dogs and cheetahs. A fundamental part of this process will be to respond to all people sending in photographs, by providing information on the individual animals they have seen. This will allow participants to feel involved with the program, and encourage further involvement. Contributors will also be encouraged to post their information on to a web site for the project hosted by WCS International ( <a href="http://www.wcs.org/cheetah">www.wcs.org/cheetah</a> ); 3) It will compile monthly newsletters targeted at safari operators and their clients, wildlife professionals and guides to further encourage national involvement; 4) It will organise specialist training in carnivore monitoring techniques. |
| September 2003                         | First carnivore monitoring workshop. This workshop will be held in Arusha and will summarise data collection so far, discuss operations to date and devise strategies to attract further funding in order to target field data collection in areas where data is scarce. The workshop will be largely internal, but it will draw on expertise from outside, particularly from within the African continent (e.g. Dr. Gus Mills from South Africa National Parks and Dr. Philip Stander from the Ministry of Environment and Tourism, Namibia).   |
| August 2004                            | First draft of final report. This draft will be judged as extremely preliminary, and will be produced at this early stage in order to get feedback and suggestions for additional material for inclusion. Feedback will be solicited from all national institutions within the wildlife sector as well as interested experts. This feedback will be used to devise strategy for the final 6 months of the project and finalise the structure of the report.  |
| September 2004                         | Completion of dissertations by resident masters students. The students will submit their theses to the university of Dar es Salaam.  |
| March 2005                             | Publication and distribution of final report. This report will summarise information collected to date, prioritise remaining data deficient areas and identify carnivore species threatened within the country. It will identify priority areas for conservation for those species already known to be threatened; wild dogs and cheetahs.   |

**14. Do you know of any other individual/organisation carrying out similar work? Give the details of the work, explaining the similarities and differences.**

|  |
|--|
| <p>There are four clear links between this project and other work:</p> <ol style="list-style-type: none"> <li>1) South African National Parks conducted a photographic survey of wild dogs and cheetahs in Kruger Park in 1995, targeting tourists for photographs. This project was successful in its aim at estimating population size within this park.</li> <li>2) The Tanzanian Atlas project uses a network of interested amateur ornithologists to contribute information on the presence of bird species in 50km grid squares throughout the country. This project forms the basis of the idea behind the carnivore distribution survey.</li> <li>3) The Namibian Carnivore Atlas project in Namibia which is successfully using the bird Atlas protocol to monitor carnivores across Namibia.</li> <li>4) The WCS Tz carnivore program in southern Tanzania, which uses the protocol developed by the Tanzanian Atlas project. This project will adapt and extend the methodologies used in these studies in order to encompass as much of the country as possible, gathering information on all carnivore species at a national level and prioritising rare and low density species for more detailed information. The organisers of the programs in Namibia and South Africa will be on the project's team (Drs. Philip Stander and Gus Mills). The project will provide the first national carnivore monitoring centre in Africa and will produce the first national carnivore action plan. In this it will form a model system for carnivore conservation elsewhere.</li> </ol> |
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**15. Will the project include training and development? Please indicate how many trainees will be involved, from which countries and what will be the criteria for selection. How will you measure the effectiveness of the training and will those trained then be able to train others? Where appropriate give the length of any training course.**

| Training Activity  | Dates                 | Who will participate, how many will participate and for how long?  |
|--|-----------------------|--|
| Training in computer matching software (training will be open-ended, and will finish only when the trainees are proficient in the use of this software). | June 2002             | Lex Hiby, from Conservation Research Ltd. (UK), will conduct the course, the project leader (UK) and the project manager (Tz) will be trainees.  |
| Training in computer matching software and database management.  | Feb-Mar 2003          | Marcella Kelly (UK), already experienced in the use of matching software and GIS, will conduct this course which will be targeted at training two new project assistants (Tz).   |
| At least one trip to IoZ by all Tanzanian scientific staff.  | Annual                | Each member of the staff will travel to the UK to visit IoZ and the University of Cambridge and attend relevant conferences and give presentations on the centre's work.   |
| Research for masters dissertation.   | Sep 2002- Aug 2004    | At least one, and preferably two students (Tz) will complete their masters dissertations under the supervision of the project leader and manager using data generated by the project. Students will be selected from interviews from a shortlist compiled by TAWIRI and TBA. Degrees will be awarded by the University of Dar es Salaam. |
| Three week training course in carnivore monitoring techniques  | Aug 2003 and Aug 2004 | Project staff will supervise the training of up to 10 undergraduate students from courses on Zoology at the University of Dar es Salaam and Wildlife Management at the University of Sokoine (these are the only universities in Tanzania). Students will be selected for this course according to interest and ability.                 |
| One month training course in GIS.  | Dec 2003              | All project staff will be trained in GIS techniques by a GIS expert from WCS International.  |
| Educational visits lasting from one day to a week for interested wildlife professionals.   | Throughout            | All interested African wildlife professionals.   |
| * see 16 for monitoring effectiveness of training  |                       |  |

**16. How will trainee outcomes/destinations be monitored after the end of the training?**

|   |
|---|
| <p>Trainee outcomes will be monitored by following career paths after the end of training. TBA, who have a database of wildlife professionals who have undergone training on their own courses, will assist with monitoring the career paths of people undergoing training in this project.</p> <p>The outcome of training of the centre's staff will be monitored by following the success of their career paths through TAWIRI and TBA for 5 years after the end of the project.</p> <p>The career paths of students completing their masters dissertations at the centre will be monitored through the University of Dar es Salaam. The success of this training can be assessed by whether students attain their degrees at the end of the project and by their ability to obtain jobs or further training within the wildlife sector. The career paths of these students will be followed through TAWIRI and TBA for 5 years after they attain their degrees.</p> <p>Where possible the career paths of students on short term training programs will be followed through TBA for 5 years after each course.</p> |
|---|

**17. How is the work of the project expected to continue after the end of grant period? A clear exit strategy must be included.**

The project will culminate in the production of a Carnivore Conservation Action Plan which will identify priorities for carnivore conservation in Tanzania. This document will be used to attract further funding for these priorities from both external and internal sources. The Tanzania Carnivore Conservation Centre will function as a long term monitoring centre for carnivores beyond the end of the project and will act as a focus for carnivore related conservation activities. Funds will be raised from a number of sources:

1. The centre will act as a catalyst for further funding from conservation organisations as well as from private donations. The project leader has had considerable experience in attracting this sort of funding, and both she and TAWIRI are committed to the long term support of the centre.
2. The centre will attract other carnivore research projects which can be charged bench fees in order to use the facilities at the centre (one office will be used specifically to house visiting carnivore biologists).
3. The centre, using its national carnivore database, will provide consultancies to large projects funded by foreign aid, which, in return, can provide additional financial support.
4. The centre will work with TBA to adapt the specialist courses in carnivore monitoring techniques into fee based short training programs that can be marketed to students from across Africa, supported with fees paid by students from developed countries.
5. TANAPA and Wildlife Division may provide financial support should they find that the project generates information useful for their purposes.

Overall, it is anticipated that this project will be attractive to donors, and, given the continued commitment of the project leader, TAWIRI and project staff, further funding should be forthcoming.

## **MONITORING AND EVALUATION**

**18. Describe how progress on the project would be monitored and evaluated in terms of achieving its aims and objectives, both during the lifetime of the project and at its conclusion. How would you ensure that it achieves value for money? What arrangements will be made for disseminating results? If applicable, how would you seek the views of clients/customers?**

### **Monitoring and Evaluation**

Monitoring during the lifetime of the project will be carried out by visiting experts from the host country and from the UK. Monitoring will gather the information needed to measure the indicators detailed in the logframe, as well as highlighting lessons and problems. Monitoring information will be available in the form of project progress reports produced by IoZ, mission reports from visiting experts, and training course and workshop reports. Two major reports, the interim report produced in 2003 and the final report produced in 2005, will evaluate the success of the project in achieving its objectives. These reports will be circulated widely to wildlife professionals and experts both within country and in UK research institutions. The feedback obtained from these reports will form the basis of an informal evaluation. Periodic informal review meetings will be held between IoZ, TAWIRI, TANAPA, Wildlife Division and NCAA to review progress and to assess future priorities. These meetings will take place at a minimum 6 monthly intervals.

### **Value for money**

The financial management of the project will be overseen by the finance department at IoZ. Stringent reporting and auditing requirements will be agreed in line with the requirements of Darwin and IoZ. All capital equipment will be procured in UK or Tanzania after comparison of prices and technical specifications. The project leader's and TAWIRI's local experience will enable local expertise and traders to be used wherever possible. The project draws on existing expertise and knowledge in the UK and from key carnivore experts on the African continent. It also exploits the public's fascination with carnivores through the network of resident experts and photographs from visiting tourists. The total human effort behind the project goes far beyond the financial value of the project.

### **Disseminating results**

Dissemination outputs are specified in section 13. Capacity and mechanisms for dissemination are dealt with here.

- The Tanzania Carnivore Conservation Action plan will be printed and distributed to all governmental institutions and stakeholders. It will also be distributed to key individuals, who are in a position to initiate similar centres elsewhere, in other countries across Africa and elsewhere.
- scientific papers: will be co-authored, as appropriate by scientists at TAWIRI, IoZ and WCS Tanzania. Likely target journals are Conservation Biology, Animal Conservation and Journal of Animal Ecology.
- Leaflets, posters and newsletters will be printed through the Arusha printing press in Arusha, and distributed either through TANAPA at park gates (for the rare carnivore newsletter), through email and post (for the carnivore distribution newsletter) or through lodges and safari operators (for both newsletters). The project leader is familiar with such a distribution network. The education officer at TAWIRI can offer additional assistance.
- Tanzanian press releases will be handled through the TAWIRI education officer, who will use his contacts with local and national media to gain maximum coverage. UK press releases will be handled through the ZSL and University of Cambridge press offices, who will use their wide range of contacts with local and national media to gain maximum coverage.
- TV and radio coverage will be handled through the TAWIRI education office or through the ZSL and University of Cambridge press offices, depending on the country where coverage will be shown.
- Awareness in the international conservation community will be promoted through links with WCS international and through ZSL in the UK. The project leader is head of the Cheetah Census Working Group, which will serve as a conduit for dissemination and feedback of information about cheetahs. All other information about carnivores will be disseminated through the relevant IUCN specialist groups, academic institutions and NGOs. The project team have strong links with these

**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><b>Goal</b></p> <p><i>To assist countries rich in biodiversity but poor in resources with the conservation of biological diversity and implementation of the Biodiversity Convention</i></p>  | <p>Capacity to monitor and conserve biodiversity increased.</p>  | <p>Capacity of TAWIRI increased through buildings, staff, training and equipment.</p>   |  |
| <p><b>Purpose</b></p> <p>To establish a national Carnivore Conservation Centre that will conduct long term monitoring of carnivores and train wildlife professionals in carnivore monitoring techniques.</p> <p>The production of a Carnivore Conservation Action Plan for Tanzania, that will assess the degrees of threat for each species where sufficient information exists, and prioritise further research on data deficient species and areas.</p> | <p>Centre established and fully operational at TAWIRI headquarters in Arusha by Feb 2003.</p> <p>Three year database on carnivore distribution and status generated by March 2005.</p> <p>Increased expertise in carnivore monitoring skills within the Tanzanian wildlife professional community</p> <p>Carnivore Conservation Action Plan supported and endorsed by governmental wildlife agencies in Tanzania.</p> <p>Implementation of recommended priorities for conservation.</p> <p>Further research in data deficient areas activated.</p> | <p>Feedback about the centre and monitoring plan from visiting experts.</p> <p>Final report and scientific papers summarise data.</p> <p>1-2 masters degrees awarded in carnivore research and a higher awareness of carnivore issues among wildlife professionals</p> <p>Signed endorsement of the plan by all governmental wildlife agencies in Tanzania.</p> <p>Incorporation of recommended priorities into wildlife policy.</p> <p>Initiation of new research projects in Tanzania focussing on data deficient areas and species identified by plan.</p> | <p>Governmental will exists.</p> <p>Funding can be found for projects.</p> |

| <b>Outputs</b>   |  |  |  |
|--|--|--|--|
| 1. Carnivore Conservation Centre established at TAWIRI headquarters in Arusha, Tanzania. | 1. Buildings erected with six offices and one small meeting room.  | 1. Presence of building and centre confirmed by visiting experts.                                      | Permission to build granted <sup>1</sup> .   |
| 2. Capacity for carnivore monitoring within Tanzania established.                        | 2. Office equipped with appropriate facilities and suitable staff selected.  | 2. Presence of equipment and staff confirmed by visiting experts.                                      | There are sufficient qualified Tanzanian nationals to run the centre.                                |
| 3. Assessment of distributional range of all species of carnivore in Tanzania.           | 3. Maps of distributional ranges of large carnivores and GIS analysis produced by end of project.  | 3. Maps and analyses published in Carnivore Conservation Action Plan and scientific papers.            | Sufficient resident experts identified in country to provide distributional information <sup>2</sup> |
| 4. Assessment of status of cheetah and wild dog in Tanzania                              | 4. Estimates of cheetah and wild dog distribution, population size and demographic parameters by end of project.   | 4. Estimates published in Carnivore Conservation Action Plan and scientific papers.                    | Sufficient visitors to national parks to ensure enough photographs submitted <sup>3</sup> .          |
| 5. Carnivore Conservation Action plan for Tanzania.                                      | 5. Plan published in March 2005 and endorsed by government.  | 5. Reviews and feedback from scientists and conservationists and letters of endorsement by government. |  |
| 6. Submission of a minimum of four scientific papers in international journals.          | 6. Peer review and acceptance of these papers by March 2005.   | 6. Papers on file at TAWIRI and IoZ.   |  |
| 7. A core of wildlife professionals trained in carnivore monitoring techniques.          | 7. A minimum of three wildlife professionals trained and experienced in using these techniques and a minimum of ten students and wildlife professionals exposed to short courses in carnivore monitoring | 7. Training reports on file at TAWIRI and IoZ.   | There are enough qualified candidates for the posts and short courses.                               |

Notes on assumptions:

<sup>1</sup> Permission already given by the Director General at TAWIRI.

<sup>2</sup> Sufficient individuals have been identified by the bird Atlas project to ensure a wide national coverage of bird distributions

<sup>3</sup> A minimum of a 0.2% response rate was found to be necessary for monitoring of the entire cheetah population in the southern Serengeti, response rates necessary for complete monitoring elsewhere will depend on visitor numbers. However there is a higher proportion of respondents in more exclusive (i.e. more remote) camps and lodges than in larger and cheaper facilities. Mark-recapture analyses can be conducted on less intensively photographed populations.

| <b>Activities</b>  |   |  |  |
|--|---|--|--|
| 1.1 Establish collaborative links with appropriate institutions within and outside Tanzania.   | 1.1 Written MoUs between IoZ and TAWIRI, TANAPA, NCAA, Wildlife Division and University of Dar es Salaam June 2002.           | 1.1 MoU on file at TAWIRI and IoZ.   |  |
| 1.2 Plan construction of buildings.  | 1.2 Call for tender published and plans requested by June 2002.   | 1.2 Architectural plans produced and on file at TAWIRI.  |  |
| 1.3 Construct buildings  | 1.3 £30 000 building costs, building completed Dec 2002.  | 1.3 Presence of buildings verifiable by visitors to centre.  |  |
| 2.1 Develop computer matching software in order to individually identify cheetahs from photographs.  | 2.1 Additional £3600 for software development, to be completed May 2002.  | 2.1 Matching software written and installed on centre equipment  |  |
| 2.2 Supply office with computing equipment and software.   | 2.2 Total of £14 000 for computing equipment, to be completed Apr 2003.   | 2.2 Centre equipped with four desktop computers, two laptops, one scanner, one laser printer, and one photographic printer.      |  |
| 2.3 Provide training for staff in use of matching software.  | 2.3 Two courses in use of software: 2002 - total cost of £1900; 2003 - total cost of £1650, completed Apr 2003.               | 2.3 Staff proficient in use of matching software.  |  |
| 2.4 Provide training for staff in carnivore monitoring techniques and data analysis.   | 2.4 Training provided by project leader, Daniela de Luca and Sultana Bashir and Marcella Kelly, completed Jun 2003.           | 2.4 Staff proficient in monitoring techniques and data analysis.   |  |
| 2.5 Provide training in GIS and database management.   | 2.5 Training time donated in Dec 2003 by WCS GIS unit, airfare at £950.   | 2.5 Staff proficient in use of GIS and database management.  |  |
| 3.1 Network of interested participants for the carnivore survey identified from the wildlife and tourism sector as well as interested laypeople. | 3.1 Network already established for birds through the Atlas project, will be adapted and extended for carnivores by Jul 2002. | 3.1 Network established and list of participants kept on file at TAWIRI.   | Sufficient number of participants identified to ensure sufficient information. |
| 3.2 Leaflets distributed to participants and email network established.  | 3.2 £1200 used to fund printing costs of leaflets, printing ongoing from Jul 2002.  | 3.2 Copies of leaflets kept on file at TAWIRI and IoZ.   |  |
| 3.3 Carnivore identification guide produced and distributed for participants of scheme.  | 3.3 £800 for design, printing and distribution of guide in March 2003.  | 3.3 Copies of guidebook on file at TAWIRI.   |  |
| 3.4 Records entered on database, and letters responded to.   | 3.4 Records entered at centre by project staff. £1500 for correspondence, ongoing from Jul 2002.                              | 3.4 Database with records of all carnivore data established at TAWIRI.   |  |
| 3.5 Range maps produced.   | 3.5 Maps constructed and printed at centre, using GIS and centre equipment.   | 3.5 Copies of range maps kept on file at TAWIRI and published in interim and final reports.                                      |  |
| 3.6 Data analysed using GIS and important environmental variables impacting range identified   | 3.6 Analysis conducted by project staff at centre on project equipment.   | 3.6 Results of analyses published in final report and scientific papers.   | TWCM to provide information from satellite data and large herbivore counts.    |
| 4.1 Design, production and distribution of leaflets and posters to solicit photos of cheetah and wild dogs from visitors all across Tanzania.    | 4.1 Total of £13100 used to fund design, printing costs, and postage for distribution of leaflets and posters from Jul 2002.  | 4.1 Leaflets and posters evident at main gates to National Parks and through targeted lodges, tented camps and safari operators. |  |

| <b>Activities</b>   |   |  |  |
|---|---|--|--|
| 4.2 Photographs of cheetah and wild dogs matched, records entered on database, and letters responded to.                                      | 4.2 Matching and responses carried out from Jul 2002 by centre staff using centre equipment and software. £2850 for correspondence.   | 4.2 Computer database of individually identified cheetahs and wild dogs established, copies of letters kept on file.   |  |
| 4.3 Design, writing and printing monthly newsletter to sustain interest.  | 4.3 Total of £8160 spent on printing costs ongoing from Jul 2002.   | 4.3 Newsletter distributed to appropriate individuals, companies, institutions, main gates to National Parks and to targeted lodges, tented camps and mobile camp operators. |  |
| 4.4 Data collated and analysed to produce estimates of population size, distribution and demographic parameters of cheetahs and wild dogs.    | 4.4 Analysis conducted by centre staff and completed March 2005.  | 4.4 Results published in Carnivore Conservation Action Plan and scientific papers.   | Sufficient photographs received.   |
| 5.1 Two workshops organised to disseminate information collected and identify data deficient areas and priorities for carnivore conservation. | 5.1 £5000 for first workshop in Sep 2003. £10000 for final workshop in Jan 2005, which will include all stakeholders, and reach a consensus on conservation and research priorities.  | 5.1 Proceedings of workshop produced and distributed.  | Consensus can be reached   |
| 5.2 Draft plan written and circulated to a wide variety of experts for feedback.  | 5.2 £200 for distribution of draft plan in Jan 2005.  | 5.2 Feedback and informal reviews from relevant experts.   |  |
| 5.3 Meetings organised with all the governmental institutions in the wildlife sector.   | 5.3 Total of £2220 for two annual trips to Dar es Salaam for project leader and manager to visit Wildlife Division and University of Dar es Salaam. All other collaborating institutions are based in Arusha. Meetings will be frequent throughout project. | 5.3 Minutes from meetings produced and filed at TAWIRI.  |  |
| 5.4 Plan finalised and endorsed by all governmental institutions in the wildlife.   | 5.4 Writing and editing done by project leader and manager at centre. Drafts circulated for comments on email. Plan finalised in Mar 2005.  | 5.4 Plan printed and distributed and endorsement filed at TAWIRI.  | Sufficient political will exists to permit endorsement of final plan.          |
| 6.1 Four papers drafted based on data analyses from outputs 3 and 4 and distributed to co-authors and key colleagues for comments.            | 6.1 Writing and editing done at centre by project team. Drafts circulated for peer review before submission for publication by Mar 2005.  | 6.1 Feedback from colleagues.  |  |
| 6.2 Papers revised according to comments and submitted to journals.   | 6.2 Revisions done at centre by project team by Mar 2005.   | 6.2 Publication of papers.   | Papers are suitable for publication.   |
| 7.1 Selection of suitable personnel for employment at centre.   | 7.1 Shortlist drawn up with advice from TAWIRI and TBA, and £300 for interview costs. All staff selected by Feb 2003.   | 7.1 Personnel enter employment under TAWIRI.   | There are enough qualified candidates in the host country to fill these posts. |
| 7.2 Training of permanent staff at centre.  | 7.2 See 2.3 to 2.5.   | 7.2 Training reports and annual appraisals.  |  |
| 7.3 Training of one to two students for masters degrees.  | 7.3 Candidates selected in Jun 2002 with advice from TBA. £4800 to fund living allowance  | 7.3 Awarded degree by University.  | Students are able to complete course.  |
| 7.4 Two 3 week training courses for undergraduate students from Universities of Dar es Salaam and Sokoine.                                    | 7.4 Total of £4000 total cost of tuition, field trips and travel for courses in Aug 2003 and Aug 2004.  | 7.4 Training reports.  | Sufficient interest from undergraduates.                                       |