

## 7DARWIN INITIATIVE FOR THE SURVIVAL OF SPECIES : APPLICATION FOR GRANT FOR ROUND 9 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 attached at the end of this form. Although you may reproduce this sheet in a reasonable font, you should not expand it beyond an A4 sheet (leaving the allocated space for DETR comments to be made) as additional information will not be taken into account.

### 1. Name and address of organisation

This is a joint application between :

DURRELL WILDLIFE CONSERVATION TRUST (JERSEY)/ and the WILDLIFE CONSERVATION RESEARCH UNIT (WildCRU), ZOOLOGY DEPARTMENT, OXFORD UNIVERSITY

### 2. Principals in project

Details	Project leader	Other UK personnel (if working more than 50% on project) Coordinating project in Oxford	Main project partner or co-ordinator in host country
Surname	Fa	Macdonald	Olsen
Forename(s)	John	David	Kristin
Post held	Head of International Training Centre	Director	Currently Survey and database support officer, DFID mount Cameroon project
Institution (if different to the above)	Durrell Wildlife Conservation Trust	Zoology Department, Oxford University	
Department	International Training Centre	Wildlife Conservation Research Unit (WildCRU),	
Telephone			
Fax			
Email			

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

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

Devising solutions to bushmeat exploitation in the Sanaga-Cross region, W. Africa (Cameroon, Equatorial Guinea, Nigeria)

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

The loss of tropical forest wildlife through the bushmeat trade, is in some areas a greater threat even than deforestation. The problem is multi-disciplinary, since there are linkages between the socio-economics of consumers and hunters, and the ecology of the hunted species. Our project will investigate bushmeat extraction in a biodiversity 'hot-spot' in tropical Africa. The area chosen has threatened endemic species. We will document levels of extraction, status of hunted species and importance of bushmeat to the different social sectors in the region. The study is novel because we will simultaneously deploy a number of key personnel throughout the region, to gather data in the same manner for 2 years. From this information, we will elaborate an accurate and spatially explicit picture of the problem in a short space of time, and suggest corrective actions to be taken.

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

October 2001 for two years.

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 Durrell Wildlife Conservation Trust is to save animals from extinction. We establish Species Recovery Programmes to save some of the world's most endangered animals:

Aims: The mission of the WildCRU is to achieve practical solutions to conservation problems by undertaking original research by undertaking original research on aspects of fundamental biology relevant to wildlife conservation and environmental management.

### **The Durrell Wildlife Conservation Trust**

Gerald Durrell founded Jersey Zoo in 1959 and The Durrell Wildlife Conservation Trust in 1963. He also founded, in 1971, Wildlife Preservation Trust International in the USA and, in 1985, Wildlife Preservation Trust Canada. The trust's activities include :

#### Species Management

We start with a breeding programme for gravely threatened species. Breeding buys time while we try to put right the problems in the wild.

#### Research

We discover all we can from the animals themselves. How many are left, what are their needs, why they are in trouble, what has to be done.

#### Re-introduction

We return zoo-bred animals to the wild when the conservation of a wild population is not enough to save the species.

#### Wild population & habitat management

We aim to restore the species, with growing numbers, in a secure natural environment.

#### Professional training

We secure the future of endangered species in their home habitats by training conservationists from around the world.

#### Public Education

We show adults and children the benefits of co-existing with nature and the value of conservation breeding programmes

#### Time and money

We invest in the needs of each target species until, without our assistance, its survival in the wild is re-assured.

### **WildCRU**

Activities: All of the WildCRU's areas of activity are aimed at effecting changes in environmental policy and fostering conservation based on the high quality science that we strive to accomplish. We are thus heavily involved in community and conflict resolution issues. In the course of these activities we train a large number of people, including an international group of post-graduates, and seek to disseminate our results and conclusions through educational outreach to a wider public. Our core activity is research, and this focuses largely on mammalian behaviour and ecology. About half of this is outside the UK, generally in developing countries where we require each project to embrace the components of our conservation quartet (Research, Education, Community, Implementation). Because we strive to influence policy, we have, in addition to an abundance of material in peer reviewed journals, a DTP unit producing outreach literature on our work. We also have a substantial involvement with popular writing, and with radio and television.

Our DTP unit is developing skills in producing community education materials directly relevant to this proposal.

#### Achievements

### **The Durrell Wildlife Conservation Trust**

Since its inception Durrell Wildlife has been effective in conservation projects worldwide. Currently, the Trust has species recovery programmes in 16 countries with a budget of close to 2 million. The work of the trust has assisted the conservation of

1,000 species in 100 countries worldwide. Notable success stories include that of the Mauritius kestrel, rescued from the brink of extinction.

## WildCRU

The research output of the WildCRU demonstrates how a variety of research methods, from extensive field surveys, to sophisticated mathematical modelling can bring a rigorous scientific background to conservation problems.

The department of zoology in Oxford is one of the foremost in the world. Within it, the last decade has seen the WildCRU publish over 300 refereed papers, and successfully train 30 students to doctoral level (this human resource extends the achievements of the WildCRU; many of these have secured influential posts, frequently concerned with international biodiversity projects).

As well as producing hundreds of research articles and other publications, and training at least 30 graduate students, the work of the WildCRU has had a significant practical impact on numerous specific problems. Since 1992, we have successfully completed more than 50 international projects (a full account of which is given in the WildCRU review of 1996, available on request), and we have substantial influence on policy in places ranging from Ethiopia to Mexico and Sulawesi to Brazil. We are particularly pleased to publish species action plans (for the Ethiopian Wolf and the Wild dog). Other current projects include work on the conflict between conservation and agriculture in Namibia (Cheetahs), Zimbabwe and Botswana (lions). We also have a new project in Zimbabwe investigating lions and their interactions with tourism of various forms (under the Darwin umbrella).

In the UK, another achievement has been to produce a scoping study for the DETR, designing the MaMoNet, - a national network scheme for monitoring British mammals for the twenty-first century. The WildCRU also recently carried out research for the government Inquiry into fox-hunting, chaired by Lord Burns. Professor Macdonald was scientific advisor for this inquiry, and also to the Select Committee on the Environment for its inquiry into biodiversity.

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

Yes

- i) Project No 162/4/072: Aquatic carnivores in Eastern Europe.
- ii) Project No 162/7/137: Planning and establishment of European island sanctuaries in Estonia and Belarus
- iii) Project No : Big cat conservation and sustainable development in Southern Africa

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

There are important conservation actions being undertaken by NGOs (Pandrillus, Cercopan, Limbe Gardens, WWF, Amigos de Doñana, University of Pennsylvania) in the study region. The Project Coordinators have links with all of these, as well as with regional conservation and sustainable development organisations, such as the USA's Central African Regional Program for the Environment (CARPE) and the European Union's Conservation et Utilisation Rationnelle des Ecosystemes Forestiers d'Afrique Centrale programme (ECOFAC). We have also strong associations with the Wildlife Departments in Cameroon and Nigeria, and with the Government of Equatorial Guinea, and with personnel working within them. Durrell Wildlife has trained a number of Cameroonian and Nigerian colleagues currently working in Wildlife Departments (Nigeria and Cameroon) and NGOs (Pandrillus, Limbe Gardens, Yaounde Zoo).

## PROJECT DETAILS

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

Bushmeat is utilised by a wide range of rural and urban communities throughout Africa. Peoples of a wide range of socio-economic backgrounds and levels of access to wildlife are involved. Although the extent of use differs according to communities and countries, a clear trend exists in that demand is high and increasing. Bushmeat is crucial as a source of cheap protein for malnourished people throughout the continent. Inadequate diets and lack of purchasing power has resulted in malnourished peoples that are relying further on what naturally occurs to supplement their agricultural or livestock livelihoods. Human populations are increasing and standards of living are generally falling, thus pushing the demand for bushmeat to rise. Depletion of wildlife valued as a source of meat will have a negative impact not only on many species, but also importantly on food security. As such, this currently represents the most serious challenge in conservation in Africa. As this resource declines not only are a larger and more diverse range of species being targeted, but commercial trade is now an important supply mechanism that is gradually replacing subsistence hunting.

There is an urgent need to integrate wildlife studies with understanding the critical socio-economic and cultural role that bushmeat plays to many people in Africa. The bushmeat crisis epitomises the need to balance protection against such factors as

poverty, health, and food security. Key issues such as nutritional status of the human populations, standards of living, stakeholder interrelationships, provision of alternative sources of protein, as well as biological questions such as the viability of hunted species populations and their habitats, are pivotal to deciphering the dynamics and parameters of the bushmeat crisis.

The few studies on bushmeat hunting in Africa are scattered throughout the region, are generally not spatially explicit and have focussed primarily on biological questions. There is an urgent need for an integrated approach. Our project will undertake this by concentrating on a region that is a significant biodiversity “hot spot” in tropical Africa - the Sanaga-Cross Rivers region (Cameroon and Nigeria), and including Bioko Island (Equatorial Guinea). Our study will gather spatially explicit baseline information (using a GIS platform) and generate solutions, based on biological, and socio-economic data collected during a relatively short time period. The results of our study will field test a methodology that can be applied elsewhere in West and Central Africa.

#### 1.) Landscape Ecology

This project differs from previous initiatives, not just in its wider regional focus, but in its innovative “high-intensity short time-period” approach to data collection. We will deploy a significant number of key personnel spread throughout the region, to gather data simultaneously, in the same manner, for a period of 2 years. Inventories of the extent and condition of forest areas will be obtained from satellite imagery and cartography, and data on deforestation rates will be calculated using historical images. Distribution and abundance of selected prey species within region; a) Assessment of potential human impact on habitats; b) Risk assessment of high-priority prey species.

#### 2.) Understanding Supply and Demand Issues

a. Assessment of value and limitations of using bushmeat markets as hunting barometers. b. Understanding stakeholders in the bushmeat trade in the study region

3.) Seeking Alternatives a. Assessment of the protein deficiency issue in the region b. Food production alternatives

#### 4.) Consensus Building

a. Identification of technological inputs and know-how required to better contribute to biodiversity planning in successive phases of the project.

These data will be overlaid onto thematic maps (vegetation, river systems, road networks, human settlements, protected areas) generated by GIS, and used to prioritise areas of importance for conservation planning. Satellite imagery and GIS maps are available via a number of organisations.

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

This is a new project.

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?

The need for this work arises from the accumulating evidence that the exploitation of bushmeat is increasing, and that the level of exploitation of many species is not sustainable.

There is no agreement on how best to address the issue, at least partly because the dynamics and interrelationships of the crucial processes are not well understood. We believe that studies of the bushmeat crisis within the entire Congo Basin and West African tropical forest areas are urgently needed. However, we also believe that rather than dilute efforts and engage in studies within studies over the entire tropical forest region, with the likelihood of interruptions due to unstable politics, we should concentrate on a stable and geographically important area that might sever a model for the wider region.

With this in mind, we have chosen an important biodiversity ‘hot-spot’ in tropical Africa: the Sanaga-Cross rivers region (Cameroon and Nigeria), and including Bioko island (Equatorial Guinea).

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

The study region (an area of approximately 40,000 km<sup>2</sup>) has fauna of major international conservation importance, currently threatened by the bushmeat trade. In particular, endemic primate taxa such as the drill (*Mandrillus leucophaeus*), Preuss's guenon (*Cercopithecus preussi*) and duikers (for example the Ogilby's duiker, *Cephalophus ogilbyi*) are affected; the drill and Preuss's guenon are among the most critically endangered species in Africa. The region has also threatened populations of the Cross River gorilla (*Gorilla gorilla diehli*), the Nigeria chimpanzee (*Pan troglodytes vellerosus*), elephants (*Loxodonta africana cyclotis*) and buffalo (*Syncerus caffer nanus*). This project is therefore aimed at an area of central importance for these countries.

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

The host countries, Cameroon, Equatorial Guinea and Nigeria, are all party to the convention on biological diversity (signing in 1992). The outputs from this project will assist considerably with their efforts to fulfil obligations under the Biodiversity Convention. The proposed work relates particularly to the following articles: 6 (developing national strategies), 7 (identification and monitoring of biodiversity), 8 (on *in situ* conservation) 10 (on sustainable use of biodiversity) and 11 (on incentive measures). Employment of local assistants will raise the profile of the subject with important stakeholders. Better understanding of the dynamics of bushmeat exploitation, and of the populations of vulnerable species will enable the policy makers to target their limited resources towards biodiversity preservation goals.

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?

This project sits very well with the philosophy behind the Darwin Initiative for the following reasons:

- The host countries are generally poor in resources (though the situation is more complex in Nigeria), and rich in biodiversity
- A central aim of the project is to work towards sustainable solutions to the current conflict between the needs of the human population and the preservation of biodiversity
- The project will make use of a range of British expertise in key fields, with proven track records in these fields, and will therefore produce high-quality science.
- The recruitment and training of local field assistants will maximise the catalytic effect of the project in ensuring that stakeholders are aware of the background and aims of the project. Where necessary we will make use of DTP skills in producing community education material.

The Darwin logo will feature conspicuously in these materials, and in other project outputs.

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

October 2001: PI, PO and GIS specialist in place  
GIS specialist, statistician, PVA expert in UK  
PCICs and six field assistants in place  
Official contacts with government authorities to be made in Nigeria, Cameroon and Equatorial Guinea.  
Initial visit by PI and PO to region for briefing meeting with field assistants and PCICs  
Start of GIS work.

November 2001:  
Start of work by field assistants in region, market surveys and collation of published data  
Continuation of GIS work.

December 2001:  
Completion of GIS work  
Continuation of market surveys – local assistants  
Plan faunal sampling in consultation with statistician  
PI visit to oversee progress & plan faunal surveys

January 2002:  
Start of faunal surveys by field assistants  
Continuation of market surveys by local assistants  
Start of PVA surveys

WORKSHOP in Oxford or Jersey

February 2002 - April 2003

Continuation of faunal surveys by field assistants  
End June 2002 – Report re progress against work programme  
Possible WORKSHOP end September 2002.  
Continuation of market surveys by field surveys  
Continuation of PVA studies

May-August 2003:

Analysis of results and presentation of preliminary report (end June 2003).  
Re-appraisal of research methods

September 2003:

Return to region for meeting with local, regional and national authorities.

Measurable outputs

1. Training of locally recruited field assistants (beginning of project and ongoing ,codes 4d, 5). Comprising non-formal training of recruits to wildlife departments in monitoring of markets, and in survey techniques generally
2. Production of training literature in collaboration with the wildlife departments (throughout project, code 7, 10)
3. UK project staff coordinating fieldwork full time (code 8)
4. Action plans for the conservation of species urgently threatened by the bushmeat trade (code 9)
5. Database concerning the daily bushmeat trade in surveyed markets to be supplied to host countries (code 12)
6. Academic manuscripts for refereed journals (end of project, code 11)
7. Workshop (5 months after project start and after 1 year code 14., with associated press releases where appropriate, code 15) for project monitoring and assessment) and the dissemination of material advertising the importance of the work (codes 16). Possible radio.TV coverage in host countries and the UK (codes 18,19).
8. Physical assets (vehicles, computers, surplus literature) to be donated to local wildlife department at the end of the project (code 20)

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

DETR funded project on “Bushmeat – A Pilot Study”. This project is being undertaken by a consortium made up of the Natural Resources Institute (NRI) at the University of Greenwich, Fauna and Flora International (FFI) and Overseas Development Institute (ODI). This project focuses also on the bushmeat trade in Africa but aims at analysing the current situation at a continental scale. This project is a one-year project, revolving around a review of the existing biological, development and agricultural literature (both published and grey literature) and the formulation of possible options to mitigate the bushmeat trade. The consortium proposes to test the ideas emerging from the review in Cameroon. We have had several consultations with the leaders of this project, and consider that our project would complement their efforts.

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.

The locally recruited field assistants are a crucial element in the project. These individuals would be recruited from the national wildlife departments and would remain part of these departments throughout the study period. Under the supervision of the co-ordinator in the host country, as well as with collaborating organisations, they will receive training in the necessary methodologies. They will also participate in the development of educational materials, with a view to maximising their ability to pass on any acquired expertise. Training will take place early in the project.

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

By the end of the project, the field assistants will have had two years of experience in the application of wildlife monitoring techniques. This experience will be invaluable to their respective departments.

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 legacy of this work will be multiple: firstly in the tactical action plans for the most vulnerable species affected by the bushmeat trade. At a more strategic level, we hope that a better understanding of the various processes involved will inform policy at a higher level. For this reason the involvement of government in our workshops will be a priority. We hope to persuade policy makers to exploit the continuity of skills acquired by our fieldworkers during this work.

**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?

A series of extended workshops will be used to monitor progress. For these we will recruit experts in the necessary areas of expertise (GIS, market theory, Population Viability Analysis, sociology). Feedback from these experts will be used to ensure future fieldwork is efficiently focused on achieving our stated goals.

Internal monitoring will also occur continuously, and the principal investigators will visit the sites and meet all key personnel. Results will be disseminated by several means: peer-reviewed journal manuscripts (a requirement in the department of zoology), training and technical manuals, environmental education materials, popular articles in magazines and newspapers.

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

	<b>Verifiable indicators of Success:</b>	<b>Means of verification:</b>	<b>Assumptions:</b>
<p><b>Goals</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><b>Purpose</b></p> <p>For the study are to provide a model of the bushmeat problem in general. To develop an integrated solution to the over-exploitation of wildlife in lowland forest areas in Africa</p> <p><b>Outputs</b></p> <p><b>1) Landscape Ecology</b></p> <p>a. Inventories of extent and condition of forest areas in the Sanaga-Cross region. (12A)</p>	<p>Multi-layered databases assembled that describe succinctly the current situation of habitats and hunted species in a region, the level of over-exploitation and assesses the critical socio-economic role that bushmeat plays in Africa.</p> <p>Habitat classification system established. Protected areas, forestry concessions, industrial areas, extent of urbanisation mapped. Deforestation extent and trends determined.</p>	<p>Publications in the form of immediately available working documents for decision-makers and papers in peer-reviewed journals.</p> <p>Vegetation maps and other cartographic data (e.g. loss of forests) will be produced. Forest loss to be determined from historical remote sensing imagery. Deforestation information to be used in conjunction with hunting data below.</p>	<p>The provision of written materials and electronic databases is pivotal to understanding the dynamics and parameters of the bushmeat crisis, and will be crucial to the resolution of the problem.</p> <p>Political support for the use of currently available cartography. Support from relevant institutions in Cameroon, Nigeria and Bioko Island. Full GIS support implemented.</p>

<p>b. Distribution and abundance of main hunted species within region. (12A)</p> <p>c. Assessment of actual and potential human impact on habitats. (12A)</p> <p>d. Risk assessment of high-priority prey species. (11A)</p>	<p>Knowledge of condition of prey populations throughout the study region. Possibility of identifying source or sink areas of bushmeat species.</p> <p>Information available on human population densities and socio-economic conditions in the study region. Models developed to predict likely demand of meat. Spatial predictions of hunting impact on prey populations.</p> <p>Predictions of the risk of extinction of chimpanzee, gorilla, drill, Preuss's guenon, russet-eared guenon, Ogilby's duiker, buffalo and elephant within the study region.</p>	<p>Published habitat suitability and abundance maps for prey species. Publication of sustainability maps. Determination of cost-effective, scientifically sound survey design to determine current population status of species in all habitat types within the region.</p> <p>Database of human population status and extent of impact on environment in the region. Spatial extrapolation maps of potential demand for bushmeat based on accessibility to areas, and human population densities.</p> <p>Published information on linkages between landscape data and population viability analyses of the target species. Sensitivity analyses using VORTEX or RAMAS/GIS models. Detection of lacunae in data necessary for current and future predictions of species viability.</p>	<p>Availability of sufficient and realistic baseline information to predict distribution, abundance and hunting sustainability of prey species.</p> <p>Access to topographic, road and fluvial maps for the region, and population census data. Development of realistic model assumptions on decline in prey densities relative to distance from hunter aggregations.</p> <p>Availability of extraction rates for target species or understanding of realistic hunting scenarios to incorporate in a metapopulation modelling approach to assess risk.</p>
<p><b>2.) Understanding Supply and Demand Issues</b></p>			
<p>a. Assessment of value and limitations of using bushmeat markets as hunting barometers. (11A)</p> <p>b. Understanding stakeholders in the bushmeat trade in the study region. (11A,12A)</p>	<p>Ethnological and socio-economic understanding of function and workings of markets in west Africa, particularly in the study region. Statistical analyses of bushmeat market dynamics.</p> <p>Gross definitions of stakeholders in the bushmeat issue for the region: community stakeholders, external stakeholders, institutions etc.</p>	<p>Published information on how markets perform by using empirical data collected in Bioko Island and Rio Muni in 1996-1997 (NB: although Rio Muni is not within the study region, it will serve as an example of a continental market site).</p> <p>Published review of stakeholders in the bushmeat trade within the study area.</p>	<p>Data for Bioko Island and Rio Muni is representative of other market sites in the study area.</p> <p>There is enough information on stakeholder groups and their activities for the region.</p>
<p><b>3.) Seeking Alternatives</b></p>			
<p>a. Assessment of the protein deficiency issue in the region. (11A, 12A)</p> <p>b. Food production alternatives</p>	<p>Advancement of understanding whether bushmeat is largely motivated by protein needs of low-income sectors of the population or whether it is a commodity product for high-income ones. Study of health and nutritional status of human population in the study region. Analyses of supply and demand of food and commodity products for the human population in the region.</p> <p>Understanding of current agricultural production within the region.</p>	<p>Published review of household consumption patterns, dependency on bushmeat as a source of protein.</p> <p>Published analyses of agricultural production and potential for the study area.</p>	<p>Public health studies carried out by non-biologists may be available for analyses.</p> <p>Existing statistics of current agricultural practices and production are available and accessible.</p>
<p><b>4.) Consensus Building</b></p>			
<p>a. Identification of technological inputs and know-how required to better contribute to biodiversity planning in successive phases of the project.</p>	<p>Desk study and debriefing discussions with project team members and relevant organisations.</p>	<p>Final reports on inventory data, socio-economic conditions in the region circulated to relevant authorities for discussion.</p>	<p>Links with Cameroonian, Nigerian and Equato-Guinean authorities established.</p>