

12-003

Defra Ref: 21



DARWIN INITIATIVE

DEFRA
Department for
Environment,
Food & Rural Affairs

APPLICATION FOR GRANT FOR ROUND 11 COMPETITION: STAGE 2

Please read the Guidance Notes before completing this form. Give a full answer to each section; applications will be considered on the basis of information submitted on this form. Please do not cross-refer to information in separate documents except where invited on the form. The space provided indicates the level of detail required but you may provide additional information on a separate A4 sheet if necessary. Do not reduce the font size below 10pt or the paragraph spacing.

Submit by 13 January 2003

1. Name and address of organisation

Earthwatch Institute (Europe)

2. Project title (not exceeding 10 words)

Flamingo Conservation, and Ramsar Site Management at Lake Bogoria, Kenya

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

Details	Project leader	Other UK personnel (if working more than 50% of their time on project)	Main project partner or co-ordinator in host country
Surname	Harper	Childress	Kimosop
Forename(s)	David	Brooks	William
Post held	Senior Lecturer	a) Honorary Visting Fellow b) Research Fellow c) Honorary Research Fellow	Senior Game Warden
Institution (if different to above)	University of Leicester	a) University of Leicester b) Wildfowl and Wetlands Trust c) National Museums of Kenya	Lake Bogoria National Reserve
Department	Department of Biology	a) Department of Biology b) Endangered Species Dept c) Ornithology Dept	Baringo and Koibatek County Council
Telephone			
Fax			
Email			

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

Aims

Earthwatch supports scientific field research and environmental education in order to generate the information, understanding and motivation necessary for sustainable conservation of our natural resources and cultural heritage. Earthwatch has supported David Harper and his team of European-Kenyan partner scientists continuously since 1987 for research on the lakes of the Rift Valley.

Activities

Earthwatch provides field assistants and funds to scientific field research projects; delivers conservation education through first-hand experience of scientific field research to individuals and through public lectures and publications; delivers capacity building of conservation professionals; and directly supports conservation by providing objective research data for practical conservation use and by establishing strategic international partnerships.

Achievements

Since 2001 Earthwatch Institute (Europe) has placed over 2500 volunteers and fellows on 130 projects in 40 countries; contributed over £1.2m to field research projects; supported over 350 individuals to start conservation projects in their local communities in the UK, and supported capacity building of 90 African conservationists. Recent publications include 'African Forest Biodiversity: a field survey manual for vertebrates' and a number of publications on the theme of Business and Biodiversity produced in partnership with DEFRA. A recent published achievement of David Harper and his team is a volume of 18 peer-reviewed scientific papers in the journal *Hydrobiologia*, part of almost 70 papers and reports published since his project started.

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

Yes - four times. The projects were entitled: Biodiversity Research Training for African Park Staff; Capacity Building through the Wildlife Society of Zimbabwe; Capacity Building Fellowships in Southern Africa; and Conservation of the African Penguin.

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

The proposed Darwin project is an excellent example of research, conservation and local communities working collaboratively together to achieve sustainable conservation and community benefits for Lake Bogoria. The project will bring Kenyan local and government agencies together with conservation and development NGOs who can contribute to the overall goals of the project. The current Earthwatch-supported project, comprising three Earthwatch teams per annum at Lake Bogoria, will be directed by David Harper and Brooks Childress, in partnership with UofN, NMK, KWS and LBNR (see below). The additional monthly monitoring programme of the three 'flamingo lakes' (Lakes Bogoria, Nakuru and Elementeita) will be undertaken by a group of four Kenyans drawn from the partnership, using the Earthwatch project's staff leadership, equipment (eg 4-WD vehicles and camping equipment) and logistics. Partners include:

- **The University of Nairobi Zoology Department (UofN)** – scientific partner of the Earthwatch project led by David Harper since 1987. A UofN staff member submitted his PhD on lesser flamingo (*Phoenicopterus minor*) dynamics at Lake Nakuru in 2002, and is still actively involved with the research being undertaken at Lake Bogoria.
- **The National Museums of Kenya Ornithology Department (NMK)**– scientific partner of the Earthwatch project led by David Harper since 1987. NMK have conducted the Kenyan annual waterfowl censuses since 1991 and are currently working with Brooks Childress on a pilot *P. minor* satellite-tracking programme.
- **Kenya Wildlife Services (KWS) and the Delamere Estates (DE)** own Lakes Nakuru and Elementeita respectively. Both KWS and DE are committed to the sustainable future of their lakes; the former through the state National Park system, the latter through private initiatives guided by Lord Delamere and his son.
- **Lake Bogoria National Reserve (LBNR)** – scientific and community partner of Earthwatch project led by David Harper since 2000. LBNR have provided facilities, logistical support and manpower for all Earthwatch field research teams since February 2000.

In addition, **Shell Global Solutions**, based in the Netherlands, are providing a mobile laboratory to support the development of this conservation research programme, with scientific and computing facilities donated by the University of Leicester, located and wired-up at LBNR. Letters of support from the various project partners are attached.

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

The support letters from the five partner organisations come from managerial level, thus ensuring full commitment from these partners for the duration of the project. However, the fieldwork participants will be drawn from all levels and rotated in order to spread the practical experience and cover for staff turnover. The Earthwatch project has two staff (Nicodemus Nalianya and Nickson Otieno) from the NMK who have been employed for the past three years and trained for this work by David Harper and Brooks Childress. They will continue to be fully involved in the activities for the duration of the Darwin funded project.

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

By delivering the project in partnership with the Lake Bogoria National Reserve (the local council), through William Kimosop, the local communities are fully involved in the consultation process and project delivery. LBNR brings together the communities around the lake in discussions about its management, which means it is an important partner for this project. In addition, Earthwatch teams have developed contacts with four local schools involving pupil visits to the field site, donation of basic educational sundries, and scientific equipment surplus to the University of Leicester (e.g. basic microscopes). The educational materials and outreach experience will be shared with the Delamere Estates (see support letter) and will extend the environmental education and community outreach of the project to a 10-mile radius around the LBNR. The project is also directly linked to Moi and Egerton universities of Kenya where ex-PhD students of David Harper are now in academic posts. To be able to undertake the field research, the project has been granted a research permit and CITES export permission for *P. minor* blood (and an application for UK-import of *P. minor* blood was submitted to DEFRA in January 2003).

PROJECT DETAILS

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

This project will identify the essential lake ecosystem properties of Lake Bogoria that sustain populations of flamingos and other waterbird species, and collect the baseline data needed to understand the birds' response to changes in these properties. Vitality, it will hope to explain the reasons for their mass movements to and from this lake and neighbouring lakes by concurrent monthly monitoring of the three lakes and by satellite tracking of seven individual flamingos. It will also explain the irregular events of mass mortality in recent years by building up a flamingo health database. The project will play a central role in the process of developing an effective and well-informed management plan for Lake Bogoria, a critical site for the lesser flamingo, in three key areas, by;

- (1) Investigating the effects of changes in environmental factors on the abundance, species composition and distribution of phytoplankton with particular reference to the health of *Spirulina platensis*, their only food source, in the lakes
- (2) Investigating changes in the number, distribution and status of cape teal and black-necked grebes in relation to flamingo numbers, limnological factors and the life history changes in density/abundance of benthic chironomids.
- (3) Establishing a health-monitoring programme for the lesser flamingo by recording morphological details, blood sampling, and leg banding.

This project complements, and expands upon, an Earthwatch project which supports three field research teams each year at Lake Bogoria. These Earthwatch teams will continue to play a central role in the Darwin-funded project, which will also involve more regular monthly monitoring at three lakes in the Rift Valley - Lakes Bogoria, Nakuru and Elementeita, which are important feeding sites for the lesser flamingo (*P. minor*).

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

This is a significant expansion of an existing Earthwatch-supported project at LBNR, to all 3 alkaline lakes in Kenya's Rift Valley which support *P. minor* and a scaling up of the satellite-tracking programme.

11. How will the project assist the host country in its implementation of the Convention on Biological Diversity? Please make reference to the relevant article(s) of the CBD, thematic programmes and/or crosscutting themes. Is any liaison proposed with the CBD national focal point in the host country? Further information about the CBD can be found on the Darwin website or CBD website.

Kenya recognises the importance of Lake Bogoria in the first National Report to the COP in which it states "The alkaline lakes of the Great Rift Valley such as Turkana, Bogoria and Nakuru are important tourist attractions. The biodiversity values of Kenya's inland waters are based on their capacity to support fisheries and wildlife, particularly birds". Lake Bogoria is too alkaline for any fish species to survive and its main attraction is its bird populations, particularly flamingos. It is therefore critical that the lake ecosystem properties, in relation to waterbirds, is well understood and monitored and applied to conservation management plans. The project therefore links directly into Kenya's efforts to meet its obligations under the Convention on Biological Diversity.

The project specifically focuses on articles 7,8,12,13 and 17 of the CBD which deal with the need for research, training, public education and accessibility of data. The project addresses article

- 7 - environmental monitoring and sampling of the Lake as well as attempting to identify the processes which have significant impacts on its flamingo populations;
- 8 - developing a conservation management plan for Lake Bogoria (a Ramsar site);
- 12 - programme of workshops and the local conservation education programmes which will identify and train Kenyans in the measures for the identification, monitoring and conservation of alkaline lake biodiversity, and in particular that of Lake Bogoria;
- 13 - involvement of volunteer field assistants, the production of conservation education programmes and through Earthwatch's education network, the project will promote and encourage understanding of the importance of the conservation of Lake Bogoria and the alkaline lakes of the Rift Valley;
- 17 - all the data collected on this project will be placed in the public arena, and will feed into Lake Bogoria's conservation management plan.

The CBD focal point in Kenya, N.K. Rotich of the Kenya Permanent Mission to the UNEP, is in regular communication with the University of Nairobi and National Museums of Kenya, two of the project partners. He will be invited to join the formal steering group of the project at start up.

12. How does the work meet a clearly identifiable biodiversity need or priority within the host country?

Kenya has four Ramsar sites, all lakes in the Rift Valley, two of which are freshwater, and two of which are saline – Lakes Nakuru and Bogoria. Lake Nakuru, the first Ramsar site, is limnologically well understood as a consequence of WWF involvement since the 1960s. However, Lake Bogoria, the another alkaline lake, which was declared a Ramsar site in 2000, has no prior scientific knowledge base. A Ramsar site is required to develop a wetland management plan within five years of gaining its status, which means there is urgent need for additional support to increase data collection. LBNR is not only the most important feeding site for *P. minor*, it is also nationally important for black-necked grebe and cape teal. The project will thus fully underpin the Ramsar management plan being written by LBNR staff.

P. minor is classified as 'near-threatened' by IUCN because of its dependence upon a single site for breeding and a handful of lakes for feeding. The three Kenyan lakes, which account for over 90% of the East African flamingo population at times, are Elementeita, Nakuru and Bogoria. The environmental factors which initiate inter-lake movements have never been convincingly demonstrated because the three lakes have never before been concurrently studied and individual birds not tracked. Moreover the species has suffered at least four major mortalities (tens of thousands of birds over several months) since 1975 which have not been convincingly investigated or explained. Without these two pieces of information, the ability to conserve the biodiversity value of both the lakes and their dominant species is compromised.

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

Water from alkaline lakes is not usable for agriculture; only the inflowing freshwater springs and streams are of agricultural value. The major commercial value of Lakes Bogoria, Nakuru and Elementeita is the ecotourist value of the biodiversity, supported by associated activities such as sales of *Acacia* honey, and papyrus matting to tourists. The effective conservation of the worldwide renowned congregation of flamingos, a globally recognised bird with wide public sympathy, will preserve the economic value of the lakes for tourism in the long-term.

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

For the first time the dynamics of the key processes of the three lakes will be concurrently quantified at monthly intervals over three years (details in section 21) so that interpretation of lake health can guide sustainable lake management leading to an understanding of *P. minor* health status and fatalities. This project's outputs will be disseminated at local level by the training workshops, at national level by the end-of-project workshop, and at international level by communication in groups such as the Meeting of the Parties (MOP2) of the African-Eurasian Migratory Waterbird Agreement (AEWA) under the Bonn Convention and ultimately the publication of scientific papers in high-impact peer-reviewed journals.

A comprehensive understanding of flamingo population dynamics at inter-lake level will be supported by an understanding of the regional movements of birds by satellite tracking at a statistically valid level. Currently a pilot study, initiated by Brooks Childress on the Earthwatch team in October 2002, is being carried out and whose data are openly disseminated on Wildfowl and Wetlands Trust website. The project's outcomes thus feed directly into Kenya's efforts to meet its obligations under the CBD with global dissemination through both the Ramsar secretariat and WWT.

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

Ramsar site status is important for conservation of lakes, but a management plan is needed to retain this status. A key output of this project will be the development of a long-term management plan for the Lake Bogoria ecosystem. This will be produced in collaboration with the Kenyan partners, and will provide guidance and inform an action plan for the conservation of this ecosystem long after the project is over; this three-year project will produce vital baseline data on the state of Lake Bogoria's biodiversity.

Through the programme of workshops and on-site training of up to 120 Kenyans in biodiversity monitoring techniques this project will enhance the capacity of institutions to both continue the research/monitoring programme and extend to other riparian ecosystems in Kenya.

The mobile laboratory, donated by Shell Global Solutions, and filled by Shell and the University of Leicester with equipment for a field laboratory in a part of Kenya where none exist, will be handed over to the University of Nairobi and LBNR who will use it for monitoring biodiversity of the lake into the future. It will also provide a resource for training undergraduate and postgraduate Kenyan scientists in biodiversity monitoring and research techniques.

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

Full consultation with key partners has been held to identify and find solutions to potential problems, such as importing the mobile laboratory, the long-term use of the laboratory after the three-year project, and the effectiveness of the proposed research methods. Preliminary contact has been made with the key civil servants in the Kenya Treasury for remission of import duty; achieving this would ensure safe transportation of the laboratory from Mombasa docks to the field research site. With the new government in Kenya, following recent elections, the process of importation of the mobile laboratory should be substantially easier. All methods proposed here have been tried and tested on the Earthwatch teams (except for the post-mortem protocols) and are proven to be appropriate techniques to collect sufficient data to meet the project's aims.

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

All previous studies have been focussed on a single-lake - Lake Nakuru. Innovation will thus be achieved by

- a) all three lakes being concurrently studied for key parameters monthly over three years,
- b) LBNR limnology being understood in depth with its lake and riparian biodiversity inventoried, and
- c) *P. minor* movements being comprehensively quantified.

All studies will lead to highly comprehensive management plans for alkaline lakes, and for a species listed on CITES Appendix II (*P. minor*). In particular this project will provide the data needed to develop a management plan for Lake Bogoria to allow it to retain its Ramsar status.

It is anticipated that as the flamingo has global recognition and wide public sympathy, this project would generate substantial publicity and press coverage in Kenya, the UK and in international publications. For example, during the 1999-2000 mass mortality incident of the flamingo, articles on David Harper's project and LBNR were featured in the *Guardian*, *Sunday Telegraph*, *Washington Post*, and *New Scientist*. The project would be promoted as a Darwin project in all Earthwatch publications, and on the Earthwatch website. All promotional and educational material will feature the Darwin logo, and in Kenya the Darwin Initiative would be prominently displayed on:

- a) one of the key scientific field laboratories in northern Kenya
- b) the only boat on three alkaline lakes
- c) the two Land Cruisers belonging to the Earthwatch project.

The Darwin Initiative will also be promoted at the international conference to be held at the end of the three-year project at the Bogoria Hotel, which is likely to attract substantial international press and scientific interest.

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

David Harper and Brooks Childress are in contact with all individuals and groups working with flamingos worldwide. They are specifically liaising with groups in Germany, Scotland and Eire who might be involved and with groups in five other African countries over relevant information exchange. Two Darwin awards in 2002 to the WWT and the RSPB are complementary but do not overlap, because of the scale differences. WWT involves wetlands in nine countries, RSPB involves all globally threatened birds on the African continent. Both WWT and RSPB initiatives focus on capacity building without this project's emphasis on both scientific research and training. This project focuses specifically on *P. minor* and three lakes important to this species in Kenya, ensuring that monitoring can continue in the long term.

19. Will the project include training and development? Please indicate who the trainees will be and criteria for selection. How many will be involved, and from which countries? How will you measure the effectiveness of the training and will those trained then be able to train others? Where appropriate give the length and dates (if known) of any training course. How will trainee outcomes be monitored after the end of the training?

Yes, this project has a strong emphasis on training and development. The project will –

- Train up to 120 Kenyans drawn from the project partners or nominated by other relevant organisations (e.g. Nature Kenya, African Wildlife Foundation) through a programme of six workshops (three subjects, each given twice; detail provided in section 21) held for one week at the end of six of the nine Earthwatch teams.
- Train nine nominated Kenyan students in general ecology, and the importance of biodiversity by participation of each on one of the nine Earthwatch teams.
- Train Reuben Ngete, currently Earthwatch project assistant with school-leaver education, to University of Leicester undergraduate Certificate (1st year) level in Global Ecology and Wildlife Conservation through Distance Learning under David Harper's supervision.
- Train Nicodemus Naliyanya, a non-graduate employee of NMK as bird ringing group coordinator, to University of Leicester BSc degree, by combining KWS Diploma with University of Leicester Certificate under David Harper's supervision.
- Train Nickson Otieno, a graduate intern of NMK, to University of Leicester MSc (Research) by combining course elements in NMK internship with field research in LBNR under David Harper's supervision.
- Train William Kimasop, a Diploma-level Warden of LBNR, to University of Leicester MSc (Risk and Security Management) through Distance Learning using laboratory computer link and with David Harper's guidance.
- Throughout the project, the senior Earthwatch staff member, James Njoroge, will obtain enhanced field training through his direction of the monthly monitoring campaigns under David Harper's supervision and through this full-time allocation of his work schedule for three years.

In addition to the training and development delivered through this project, there will also be a strong local community education element, including:

- raising awareness of tens of thousands of LBNR visitors (many Kenyan nationals) by production of simple informative leaflets linking key features of lake ecology with flamingos and their globally unique biodiversity.
- training circa 2000 children by visiting all schools within a 10-mile radius of LBNR once a year during Earthwatch teams, by teaching them about the ecology of alkaline lakes and the importance of biodiversity conservation.

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

The project will deliver sufficient data and information to LBNR so that it is able to deliver a comprehensive management plan for the lake, and through this Lake Bogoria will retain its Ramsar status. In addition, LBNR will have educational materials for visitors about the biodiversity of the lake, and thus the Reserve is a beneficiary of the project in the long term through the heightened awareness and education of visitors.

National and global conservation NGOs and relevant governments will benefit from substantially advanced knowledge of a) movement patterns and b) ecological health of *P. minor* such that international conventions and agreements to conserve the species in all parts of its range will be strengthened and its long-term management secured.

Earthwatch's unique model of volunteer funding has proven to be a highly sustainable means of supporting important long term monitoring programmes. Therefore, following the initial set-up and establishment of the project, the monitoring will be sustained fully via the volunteer funding mechanism for many years. The formal training of two Kenyans at postgraduate level, and two at undergraduate level, together with staff in other partners participating in this project, provides a cadre of Kenyans capable of becoming Earthwatch Project leaders in future years (David Harper has already brought on two Kenyan project scientists, in 2000 and 2001 as part of his Earthwatch project development).

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

Project implementation timetable	
Date	Key milestones
April 2003	Paperwork in Kenya Treasury for remission of duty completed Memorandum of Understanding signed by all partners Purchase of inflatable boat and outboard in Kenya, transmitters in USA Preparation of educational material for schools and Reserve visitors
May 2003	First monthly sampling campaign initiated with David Harper, and teething problems ironed out
June 2003	Second monthly sampling by Kenyans only
July 2003	Earthwatch team, finalisations of workshop subjects. At end of Earthwatch team, meeting of all partners, final revision of monthly sample techniques and workshop syllabuses.
August 2003	Monthly sampling continues from here to March 06 on agreed pattern.
September 2003	Arrival of laboratory. Installation of laboratory and gauging stations at LBNR.
October 2003	Earthwatch team. First workshop at end of team.
January 2004	Planning starts, provisional worldwide publicity, for international conference held at Lake Bogoria Hotel.
February 2004	Completion of educational materials, printing in Kenya. First visits to all LBNR schools during Earthwatch team
2004 – 2006 Feb, July, Oct	Seven Earthwatch teams, five of them followed by workshops.
February 2006	Final partner meeting
April 2006	End of project international conference
May 2006	Final report to LBNR and Darwin. Five papers submitted to peer-review journals.
Ongoing	<p>Details of monthly monitoring programme at each lake, (two days per lake, overnight camping) are –</p> <ul style="list-style-type: none"> • <u>Physical</u>: Rainfall (data from owner/manager), inflow and lake levels, lake transparency • <u>Chemical</u>: pH, conductivity, alkalinity • <u>Limnological</u>: chlorophyll concentration, phytoplankton species composition, benthic invertebrate density (by Ekman grab) • <u>Ornithological</u>: flamingo and key water bird indicator species density per lake <p>Details of workshop subject areas are –</p> <ul style="list-style-type: none"> • Measuring and monitoring lake health (chemical and limnological techniques used on monthly campaigns, taxonomy of phytoplankton and invertebrate species) • Measuring and monitoring bird population health by non-destructive field methods (morphological parameters, evaluation of haemopathological indicators) • Maximising usable information from avian post-mortems

22. How will the most significant outputs contribute towards achieving the purpose of the project? (This should be summarised in the Log Frame as Indicators at Purpose level)

The research findings on the lake ecosystem and waterbird species will be submitted to the management committees and to relevant NGO and government bodies (e.g Nature Kenya, National Council for Science and Technology) each year of the project. By the end of the project a synthesis report will be submitted to each partner organisation and the above bodies on the conservation management strategies, and conservation management recommendations will be adopted into the LBNR Ramsar management plans and implementation of these recommendations initiated. Attendance of the Kenyan trainees on Earthwatch teams, workshops, and the end of the project workshop (numbered in section 19) will have been reached, and the formal qualifications of the four named Kenyans achieved.

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

PROJECT OUTPUTS		
Year/Month (starting April)	Standard Output Number (see standard output list)	Description (include numbers of people involved, publications produced, days/weeks etc)
September 2006	2	2 Kenyans to attain MSc – Nickson Otieno and William Kimosop. Distance learning from University of Leicester
September 2006	3	2 Kenyans to attain undergraduate certificates - Reuben Ngete and Nicodemus Naliyanya.
Continuous	5	2 Kenyans working full time on the project and receiving 24 weeks training each during the project. Two Kenyans working part time and receiving 24 weeks training.
6 times during project	6A	Up to 120 Kenyans attending 6 1-week workshops - where 3 topics are repeated twice each during the 3-year project (topics given in box 21)
6 times during project	6B	6 1-week workshops - where 3 topics are repeated twice each during the 3 year project. Topics given in box 21.
December 05	7	Educational leaflets will be produced for primary and secondary schools, local communities and tourists, including workbooks based on the concept of biodiversity value, a simple A5 leaflet on biodiversity and sustainable livelihoods, and leaflets on flamingos and their conservation and the importance of alkaline lake health.
July 03	8	3 UK staff for 2 weeks
August 03	8	3 UK staff for 2 weeks
October 03	8	2 UK staff for 2 weeks
February 04	8	2 UK staff for 2 weeks
July 04	8	3 UK staff for 2 weeks
August 04	8	3 UK staff for 2 weeks
October 04	8	2 UK staff for 2 weeks
February 05	8	3 UK staff for 2 weeks
July 05	8	3 UK staff for 2 weeks
August 05	8	2 UK staff for 2 weeks
October 05	8	2 UK staff for 2 weeks
February 06	8	3 UK staff for 2 weeks Total = 31 weeks
July 04, 05 March 06	9	Ecosystem management plan recommendations provided to LBNR management - minimum of 3 annual reports. Reports placed on a Lake Bogoria website maintained at University of Leicester.
March 06	11B	Minimum of 5 papers submitted to peer-reviewed journals by end of project
March 06	12A	One computer database of reserve habitat established for LBNR, to be given to host country by end of project.
April 06	14A	International conference organised in Kenya to present/disseminate findings in the context of saline lakes and published as a volume in a peer reviewed journal.
March 06	14B	Attendance at three national conferences at which interim findings are presented by the end of the project.
June, Sept 03, Feb 06	15A	Minimum of three national press releases in host Kenya
May, June 03, June 05	15C	Minimum of three national press releases in UK
March 06	20	3 lake level gauges established - £6000
September 03	21	Field laboratory established at Lake Bogoria - donated by Shell Global Solutions
Continuous	23	Value of resources raised from other sources: cash £189,494, in kind £81,000 (value of mobile laboratory and donated equipment)

LOGICAL FRAMEWORK

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

Project summary	Measurable indicators	Means of verification	Important assumptions
<p>Goal:</p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources 			
<p>Purpose</p> <ul style="list-style-type: none"> To identify the essential lake ecosystem properties that sustain key populations of water bird species and thereby ensure LBNR's management plan completion. To explain the mass movements of <i>P. minor</i> between Lake Bogoria and neighbouring lakes, and causes of unpredictable mortality of <i>P. minor</i>. To advise on measures to minimise the risk to the species. 	<ul style="list-style-type: none"> Research findings on lake ecosystems/water bird species submitted to LBNR management committee and KWS each year of project. Flamingo and lake data incorporated into global accessible websites, and local databases Recommendations adopted into reserve and trans-national species management plans; implementation started by EOP. Species (flamingo) and ecosystem (alkaline lakes) health concepts incorporated into management plans. 	<ul style="list-style-type: none"> Annual reports and recommendations from project to lake authorities and national agencies. Databases available on the worldwide web. Project final report and evaluation. Reserve and species management plans incorporating project findings. Adoption of flamingo health protocol as guide for other wild bird species. 	<ul style="list-style-type: none"> Current national political and economic conditions do not deteriorate to the extent that it is unsafe to work in Kenya. Reserve authorities remain receptive to cooperation and support. New government (Jan 2003) allows laboratory to be imported to Kenya free of import duty.
<p>Outputs</p> <ul style="list-style-type: none"> Coherent explanation of effects of changes in external factors on the abundance of <i>P. minor</i>, cape teal and black-necked grebe populations at LBNR formulated, in the context of alkaline lakes' limnology. Causes of movements of <i>P. minor</i> between lakes and mass-mortality understood. Species health monitoring leg banding and tracking programmes established 	<ul style="list-style-type: none"> Physical infrastructure which has underpinned the fieldwork in place – stream gauges, mobile laboratory on-site with its computer worldwide web connections operational. 300+ flamingos banded, 300+ blood samples taken and analysed for health parameters Three years tracking data from seven birds recorded and interpreted Scientific quality output by evaluated by peer-review of publications 	<ul style="list-style-type: none"> Three workshop protocols published as NMK occasional publications Over five scientific publications. Full <i>P. minor</i> health database, and report Banding records Articles and photographs published in magazines and websites available to the general public Specialised websites for <i>P. minor</i> tracking data and alkaline lake ecology. 	<ul style="list-style-type: none"> Extreme climatic events do not occur to extent that data interpretation is limited and longer term monitoring is required before recommendations can be made New flamingo capture method functions effectively. Earthwatch volunteers can sustain funding and workforce for long term monitoring beyond three-year grant.

Activities	Activity Milestones (Summary of Project Implementation Timetable)
Field Research (Earthwatch teams)	Three teams at LBNR per annum, each with 12 volunteers and four scientists (max size) for two weeks - Trap, band, record morphometrics and take blood samples of 100 lesser flamingos per annum and census whole-lake population. Measure photosynthesis of phytoplankton and relate to <i>P. minor</i> abundance. Establish chironomid life histories and emergence patterns and relate to cape teal, black-necked grebe and hirundine dynamics. Build up biodiversity inventory of LBNR (plants, birds, invertebrates). Evaluate flamingo health through field morphometrics and blood cell analysis. Place satellite transmitters on 7 individual flamingos.
Field Research (Darwin)	Monthly field sampling of the three alkaline lakes, to ensure 90% coverage of the <i>P. minor</i> population in Kenya, (detail Box 21). Analysis in UK of heavy metal concentrations and toxic cyanobacteria concentrations in a) water and b) <i>P. minor</i> blood. LBNR new laboratory computer downloads satellite-tracking data at 2-day intervals.
Capacity building and Education and publicity	Up to 120 Kenya attendees at workshops, Nine Kenya students on Earthwatch teams, four Kenyans achieve formal qualifications, up to 100 volunteers receive basic field monitoring training. Material disseminated - (primary school, drawing; secondary school workbook), take-home (biodiversity and sustainable livelihoods), tourist leaflet (flamingos and lake health).

FINANCIAL ASPECTS

29. Please state costs by financial year (April to March). Use current prices - do not include any allowance for assumed future inflation. For programmes of less than 3 years' duration, enter 'nil' as appropriate for future years. Show Darwin funded items separately from those funded from other sources.

Table A: Staff time. List each member of the team, their role in the project rate and the percentage of time each would spend on the project each year.

	2003/2004	2004/2005	2005/2006
	%	%	%
United Kingdom project team members and role			
Julian Laird, Earthwatch, project direction	3	3	3
Robert Llewellyn-Smith, Earthwatch, project management	15	15	15
Claudia Eckhardt, Earthwatch, volunteer recruitment	3	3	3
Sandra Winnick, Earthwatch, field management and logistics	3	3	3
Dr. Pamela Mackney, Earthwatch, scientific coordination	3	3	3
Miranda Handscomb, Earthwatch, accounts management	5	5	5
Dr. David Harper, University of Leicester, project leader	33	33	33
Dr. Brooks Childress, University of Leicester, co project leader	50	50	50
Dr. Frank Clark, Co-project leader	5	5	5
Professor John Cooper, Co-project leader	5	5	5
Host country/ies project team members and role			
William Kimosop, Warden, Lake Bogoria National Reserve	10	10	10
Professor K Mavuti, University of Nairobi	10	10	10
Mr J Githaiga, University of Nairobi	10	10	10
Stephen Lekateiya, Lake Bogoria Conservation Education Centre	15	15	15
Ruben Ndolo, University of Nairobi, Field Assistant	100	100	100
James Njoroge, University of Nairobi, Field Assistant	100	100	100
Nicodemus Nalinya, National Museums of Kenya, project researcher	50	50	50
Nickson Otieno, National Museums of Kenya, project researcher	50	50	50
To be recruited, project researcher	50	50	50
9 Kenyan students – to be recruited – one on each Earthwatch team	12	12	12

Table B: Salary costs. List the project team members and show their salary costs for the project, separating those costs to be funded by the Darwin Initiative from those to be funded from other sources.

Project team member	2003/2004		2004/2005		2005/2006	
	£		£		£	
	Darwin	Other	Darwin	Other	Darwin	Other
Julian Laird						
Robert Llewellyn-Smith						
Claudia Eckhardt						
Sandra Winnick						
Dr. Pamela Mackney						
Miranda Handscomb						
Dr. David Harper						
Dr. Brooks Childress						
Dr. Frank Clark						
Professor John Cooper						

William Kimosop					
Professor K Mavuti					
Mr J Githaiga					
Stephen Lekateiya					
Ruben Ndolo,					
James Njoroge					
Nicodemus Nalianya					
Nickson Otieno					
To be recruited, project researcher					
9 Kenyan students to be recruited					
TOTAL COST OF SALARIES					

Table C. Total costs. Please separate Darwin funding from other funding sources for every budget line.

	2003/2004	2004/2005	2005/2006	TOTAL
Rents, rates, heating, lighting, cleaning, overheads				
• Darwin funding				
• other funding				
Office costs e.g. postage, telephone, stationery				
• Darwin funding				
• other funding				
Travel and subsistence				
• Darwin funding				
• other funding				
Printing				
• Darwin funding				
• other funding				
Conferences, seminars etc				
• Darwin funding				
• other funding				
Capital items/equipment (please break down)				
• Darwin funding 14'inflatable boat and engine Mobile lab shipping, transport, siting 2 satellite transmitters and assoc running costs Installation of 3 gauging weirs				
• other funding Mobile laboratory Mobile lab shipping, transport, siting Contents of mobile lab 2 satellite transmitters and assoc running costs				

Other costs (please specify and break down)				
<ul style="list-style-type: none"> Darwin funding Consumables for analysis in the UK Consumables and equipment maintenance (chemicals, traps, sampling devices) Formal education of Kenyan students (2MSc, 2 undergraduate)				
<ul style="list-style-type: none"> other funding Consumables and equipment maintenance (chemicals, traps, sampling devices)				
Salaries (from previous table)				
<ul style="list-style-type: none"> Darwin funding 	15,330	15,330	15,330	45,990
<ul style="list-style-type: none"> other funding 				
TOTAL PROJECT COSTS				85
TOTAL DARWIN COSTS				
TOTAL COSTS FUNDED FROM OTHER SOURCES				

30. How is your organisation currently funded?

Members of the Public	24%
Corporate sector	54%
Institutional Grants	21%
Other (eg interest)	1%

31. Provide details of all other funding sources identified in Question 29 that will be put towards the costs of the project, including any income from other public bodies, private sponsorship, donations, trusts, fees or trading activity. Please include any additional funding the project will lever in to carry out additional work during or beyond the project lifetime. Indicate those funding sources which are confirmed.

Earthwatch's unique model means that the support from Darwin will leverage additional funding from volunteers who contribute to their participation on the field project in Lake Bogoria. The project will achieve value for money as the requested from the Darwin Initiative will unlock a further in cash or kind from individuals, Earthwatch, the University of Leicester and the corporate sector, during the three years of the project. Moreover, all this investment will have an impact on the area for many years after the life of the project.

The estimated co-funding for the Darwin funding from **Earthwatch**, including **volunteer contributions** is approximately (confirmed)

The funding through the Darwin project will unlock an additional in kind from **Shell Global Solutions** by enabling their donation of the mobile laboratory to be realised by its establishment at LBNR (confirmed)

University of Leicester is co-funding the three year programme to the value of (confirmed)

Other sources of income, and in kind support (eg from other research institutions and foundations) is approximately confirmed)

32. Please give details of any further resources sought from the host country partner institution(s) or others for this project that are not already detailed in Questions 29 and 31. This will include donations in kind and un-costed support e.g. accommodation.

No further resources sought from host county partner institutions.

33. Please separately indicate in Table D the amounts of grant requested under the Darwin Initiative and any confirmed funding/income from elsewhere (where these may be costed). Add together to show total project costs.

Table D Darwin funding request

	2003/2004	2004/2005	2005/2006
Amount of Darwin Initiative funding requested	66,256	50,682	58,853
+ Funding/Income from other sources	149,004	60,230	61,259
= Total project cost	215,260	110,912	120,112

34. FCO NOTIFICATION

Please check the box if you think that there are sensitivities that the Foreign and Commonwealth Office will need to be aware of should they want to publicise the project's success in the Darwin competition in the host country

CERTIFICATION 2003/04

On behalf of the trustees/~~company~~ (delete as appropriate) _____

I apply for a grant of **£66,256** in respect of expenditure to be incurred in the financial year ending 31 March 2004 on the activities specified in paragraphs 21 and 23.

I certify that, to the best of our knowledge and belief, the statements made by us in this application are true and the information provided is correct. I am aware that this application form will form the basis of the project schedule should this application be successful.

I enclose a copy of the organisation's most recent audited accounts and annual report, CVs for project principals and letters of support.

Name (block capitals)	Julian Laird
Position in the organisation	Acting Chief Executive

Signed

Date:

Please return completed form to Defra by **13 January 2003** by e-mail to darwin@defra.gsi.gov.uk or in paper form to Zone 4/A2 Ashdown House, 123 Victoria Street London SW1E 6DE.