

# ***Darwin Initiative for the Survival of Species***

## ***Final Report***

### **1. Darwin Project Information**

Project Reference No.	13/001
Project title	Conservation of Wetlands and Associated Biodiversity in Northern Zambia
Country	UK and Zambia
UK Contractor	University of Aberdeen
Partner Organisation (s)	Kasanka Trust Ltd. (KTL), Zambia; Holly Hill Trust (UK); ZAWA
Darwin Grant Value	131,669
Start/End date	1 <sup>st</sup> April 2005 to 31 <sup>st</sup> March 2008 (Revised end date)
Project website	<a href="http://www.kasanka.com">www.kasanka.com</a>
Author(s), date	Professors Paul Racey and Chris Soulsby Drs. Glenn Iason and Michael Kennedy Messrs. Edmund Farmer and Martin Stanley June 2008

### **2. Project Background/Rationale**

- Describe the location and circumstances of the project

The project took place in Kasanka National Park (KNP) in Northern Zambia. The park is one of two NGO-Government co-managed parks in Zambia.

Although this project was supported by three years of DEFRA funding, there was a delay in identifying and appointing a postdoctoral researcher with expertise in both hydrology and plant ecology. This meant that the inception of the main scientific part of the project was delayed by a year and permission was successfully sought from the Darwin office to extend the life of the project by that year. This involved no extra costs to DEFRA since the final year of the project was funded by the accumulated donations from the UK partner, The Holly Hill Trust.

- What was the problem that the project aimed to address?

The conservation concern was that despite seasonal inundation of grasslands during the rains, and the presence of perennial rivers flowing through the park, some of the distinctive habitats such as the papyrus swamp and the mushito evergreen swamp forest, may be susceptible to drying out under the impact of increased climatic variability, and their distinctive biodiversity (e.g. sitatunga antelope and straw coloured fruit bats respectively) threatened. There was also an established (over ca. 20 years)

management practice of extensive seasonal early burning to reduce combustible plant litter (and therefore reduce illegal or uncontrolled late, hot fires) towards the end of the late season. However, the implications of timing of burning in relation to habitat suitability for grazers, and possible interactions between the timing of burning and hydrological characteristics of the grasslands had not been fully considered. Therefore, the influence of long-term early burning on habitat dynamics and sustainability were not fully understood. There was a need to investigate hydrological flow pathways, and to attempt to understand the influence of timing of burning on various important habitat types within the park in order to support the development of a workable plan for the management of these aspects of the park's ecology (i.e. water and fire). Tourism in Zambia as a whole is an important part of the economy, and Kasanka is a well recognised and distinctive tourism destination. Now that internationally competitive tourist accommodation is available at KNP there was also a need to enhance the capacity of the park to attract tourists by training environmental educators and guides, and to make the fullest use of the distinctive niche occupied by KNP.

- Who identified the need for this project and what evidence is there for a demand for this work and a commitment from the local partner?

The need for the project was identified during a visit by the project leader, Professor Paul Racey, to KNP in 2004, at the invitation of and sponsored by the HHT. This was to assess the research and tourism potential of an aggregation of ca. 8 million straw coloured fruit bats, *Eidolon helvum* which is established seasonally in the mushitu evergreen swamp forest. It became clear during the visit that both the conservation management in the park, particularly the management of wetlands, and the exploitation of natural resources in the surrounding area, lacked scientific underpinning and informed planning. Local educators and tourist guides lacked ecological and conservation knowledge, needed to influence communal resource management practices and make the most of the area's distinctive tourism attractions.

### 3. Project Summary

- What were the purpose and objectives (or outputs) of the project? Please include the project logical framework as an appendix if this formed part of the original project proposal/schedule and report against it. If the logframe has been changed in the meantime, please indicate against which version you are reporting and include it with your report.

The Logical Framework for Financial Year 2006/2007 (Included as Annex 1 in 2007 yearly report) can be found in Annex 1 of this final report.

The purpose of the project was, (i) to build capacity to conserve biodiversity of KNP by undertaking monitoring and experimental work in key habitats, in order to develop a hydrological and fire management plan for sensitive ecosystems; (ii) To uplift management of Kafinda Game Management Area (KGMA) resources through input into the development of a resource mapping exercise; (iii) To improve conservation education; and (iv) To alleviate poverty by uplifting livelihoods through sustainable tourism development.

The outputs were (i) the production of a fire management plan; (ii) to aid protection of hydrological flow pathways and water levels in key wetland habitats; (iii) to train two Zambian staff at M.Sc. degree level in Tourism and Conservation at DICE, University of Kent; (iv) to train local staff as educators and guides; (v) to aid the production of a resource database and resource mapping exercise for the KGMA; and (vi) to have direct involvement with local communities to promote conservation and environmental

education.

- Were the original objectives or operational plan modified during the project period? If significant changes were made, for what reason, and when were they approved by the Darwin Secretariat?

A single full time postdoctoral researcher with interests in both hydrology and ecology was appointed, rather than the two half-time appointments originally planned. This followed a park visit by the two project partners, Prof. Chris Soulsby and Dr. Glenn Iason at the outset of the project. There was a need for integrated hydrological and ecological research to be sustained for a period longer than two short term appointments would allow. This was agreed with the Darwin Secretariat.

So far as purpose (ii) and output (v) above are concerned (the production of a resource data base), this is the only part of the project in which the Zambian Wildlife Authority (ZAWA) have become actively involved, with an initiative to complete standardised land use management plans for GMAs. This has been coordinated by Ms Ronke Oke of ZAWA who convened a series of workshops and drafted a plan for the Kafinda GMA and has thus taken it out of control of Darwin project staff and local partners. However, Edmund Farmer (Park Manager), Mike Kennedy (Darwin postdoc), Frederick Mbulwe (Community Relations Coordinator) and Frank Willems (Park Ecologist, World Bank Consultant) have variously attended these workshops and/or provided significant comments on drafts. A recent draft plan is included in the outputs accompanying this report.

Poaching inside KNP was recognised as a problem and the GMA has been largely hunted out and the buffer zone ineffective. Frederick Mbulwe organised a visit by the KCRB to a successful GMA elsewhere to show the local community that it was possible to manage resources successfully and sustainability. Changing local people's mentality and practices on issues such as illegal hunting or unsustainable harvesting of wood is a long slow process.

- Which of the Articles under the Convention on Biological Diversity (CBD) best describe the project? Summaries of the most relevant Articles to Darwin Projects are presented in Appendix I.

Articles **7**: Identification and Monitoring (25%); **8**: *In-situ* conservation (25%); **11**: Incentive Measures (10%); **12**: Research and Training (25%); **13**: Public Education and awareness. (15%)

- Briefly discuss how successful the project was in terms of meeting its objectives. What objectives were not or only partly achieved, and have there been significant additional accomplishments?

With reference to the objectives listed in section 3, success has been:

- (i) The project has provided new data on hydrological conditions and water flow pathways within Kasanka National Park, and of key locations within its wider catchment. Potential threats to the hydrological integrity of the wetland habitats within the park have also been identified. An experimental investigation of the ecological effects of the timing of burning within key habitats has also enabled recommendations for future burning activities to be made which should allow protection of populations of grazers, which are

essential to tourism. A copy of the fire and water management plan is attached

- (ii) Ongoing input of expert knowledge into the production of a resource database and mapping exercise for the Kafinda GMA. This process is now led by Ms Ronke Oke of the Zambian Wildlife Authority (ZAWA), who is attempting to standardise land use management plans for GMAs. Dr. Mike Kennedy has made recommendations regarding the zoning and purpose of land use zones and other project partners Mr Edmund Farmer and Mr. Frederick Mbulwe have provided comments. A copy of the most recent draft of this document is provided.
- (iii) Two Zambian students have successfully undertaken the M.Sc. in Tourism and Conservation at DICE. Six guides and selected scouts have been trained by head guide Leslie Reynolds during the lifetime of the project in identification and guiding techniques. Leslie has also produced a guide training manual (a copy of the final version of this document is provided). Successful interaction with schools and community groups, including five talks by Mike Kennedy, has increased local interest in conservation, and has encouraged schools to undertake simple activities such as rainfall monitoring, and collection and propagation of native tree species. A presentation by Mike Kennedy to an environmental educators workshop is included in the outputs.
- (iv) The project has provided a means to better manage and conserve wetland habitats within the park through the monitoring and research activities outlined, thus helping to ensure conservation of key habitats and sustained tourism. Training of KNP staff in species identification and guiding will enhance the capacity of KNP to provide an excellent and viable tourism experience to visitors. The ongoing publicity for the large seasonal aggregation of bats arising largely through Aberdeen graduate Kieran Dodds' outstanding and award-winning portfolio of photographs (reported previously; [www.kierandodds.com](http://www.kierandodds.com)) has increased tourism in November and December when the bats are in residence. The park management acknowledge the extent to which Kasanka is now known as "the bat park". This was reinforced by an article about the park and its bats in the May 2007 issue of the British Airways inflight magazine Highlife, a copy of which is supplied.

Additionally, there has been significant third party interest in the project:

There have been two student expeditions undertaken (University of Glasgow, 2006; University of Aberdeen, 2007), which have both involved local students, and have generated five successful BSc honours research projects. Copies of the two honours projects completed by James Byng and Chloe Dennerly during the 2007 expedition are amongst the materials provided. A joint expedition between Aberdeen and Glasgow Universities is due to start in July 2008, and will involve five students from the University of Zambia, and Dr. Kennedy. A prospectus for this expedition is among the materials provided.

Four student placements (involving five students from Germany, Netherlands and the UK) have been associated with the project. All students were advised by Mike Kennedy and accompanied him on field work. A ten month placement by Victoria Paterson (M.Sci., University of Glasgow) on the aversive effect of chilli peppers on browsers resulted in a thesis assessed as first class. Victoria's work was also mentioned in the recent 4<sup>th</sup> 2007 edition of the Bradt Guide to Zambia. A copy of the relevant section is amongst the materials provided. Victoria has recently been invited to present the results

of her work to a conference in Singapore.

A British Council funded DeIPHE project began in 2007 in partnership between The Universities of Aberdeen, Glasgow and Zambia, and coordinated by Dr Henry Sichingabula in Zambia. The most significant outcome during the early stages of this project was the recent visit of Dr Sichingabula of the University of Zambia (UNZA) and Mr Frederick Mbulwe (KTL Community Relations Coordinator, based at the Kasanka Conservation Centre at Mulaushi, adjacent to KNP) to Scotland. The latter addressed members of the Scottish Parliament, including Minister for the Environment Mike Russell and MSPs Billy Wilson (an Aberdeen graduate), and Linda Fabiani, some of whom plan to visit community projects at Kasanka and elsewhere in Serenje province later this year.

Conservation threats to the Bangweulu wetlands (an important RAMSAR site, 40 km from KNP) have been identified during the current project and preliminary baseline monitoring of hydrochemical conditions in key habitats for the rare and endangered shoebill stork and wattled crane carried out. Partnerships are being formed and discussions undertaken with a view to developing a future Darwin project.

#### **4. Scientific, Training, and Technical Assessment**

- Please provide a full account of the project's research, training, and/or technical work.
- **Research** - this should include details of staff, methodology, findings and the extent to which research findings have been subject to peer review. A full account of the research carried out by Mike Kennedy and the research assistant he recruited, Lackson Chama, is attached as a free standing document.
- **Training and Capacity Building Activities – this should include information on selection criteria, content, assessment and accreditation**

The following were funded directly by Darwin/HHT :

##### MSc training

Approaches to ZAWA at the inaugural workshop to identify a candidate for the MSc course in Tourism and Conservation at DICE met with no response and the Park Manager, Edmund Farmer, identified Patricia Mupeta, an UNZA graduate who had worked for WCS in Lusaka. At the second workshop, ZAWA were again asked to identify a candidate and Gryton Kasamu, the ZAWA ranger (with a Diploma) who attended the workshop, asked his superiors to nominate him. Both students were accepted by The University of Kent and both passed the course, Gryton with distinction. A copy of his thesis is included among the project inputs.

##### Research assistant

When Mike Kennedy took up residence in KNP, he advertised in the *Zambian National Press* for a research assistant. Four candidates were interviewed, and the best of these, Lackson Chama, who holds a Diploma in Forestry was appointed. He was trained by Mike Kennedy in water sampling and management of the burning plots, and continued sampling when Mike was in the UK on home leave. He was also taught to drive and obtained a driving licence.

##### Guide training

The following guides and Scouts were selected for training by the Park management:

Damson Chola, Male Katinta, Clifford Kandonga, Kenneth Changwe Yotam, Friday Bwanga and Christopher Miselo, and they were trained initially by Bob Stjernstedt, one of Zambia's leading ornithologists and more recently by Leslie Reynolds who compiled the Manual for Guides and Environmental Educators, a copy of which is provided. Leslie also conducted regular assessments of progress. Three staff, Leslie Reynolds, Clifford Kandonga and Kenneth Changwe Yotam also visited South Luanga for further experience and training respectively, where Clifford passed the final test. He intends to take the final accreditation exam at a later date. He is an outstanding birding guide.

The following activities were not funded by the Darwin grant, but were closely related to the aims and objectives of the project:

### Education

HHT funded the Park's education officer Leigh Chaloner for the last year of her three year employment. She coordinated sponsorship of school fees for selected children, schools visits to the park and later to the Kasanka Conservation Centre at Mulaushi, as well as assembling a comprehensive conservation interpretation facility at the Centre. A brief report of these activities is provided with the materials submitted.

### Expeditions

Although expeditions from Aberdeen and Glasgow were suggested to students by Paul Racey and Kevin Murphy (Senior Lecturer, Glasgow) respectively, they were primarily student initiatives.

### Darwin fellowship

Dolly Chanda, Community Relations Assistant for the Kasanka Trust, was unsuccessfully nominated for a Darwin fellowship by Paul Racey in 2006. She now works for WWF in Samfya.

## **5. Project Impacts**

- What evidence is there that project achievements have led to the accomplishment of the project purpose? Has achievement of objectives/outputs resulted in other, unexpected impacts?

(i) There is now a detailed understanding of the hydrology of the important wetland areas in KNP that was not available before the project started. This has enabled identification of potential threats and has resulted in management recommendations.

(ii) The resource mapping exercise for the KGMA (led by ZAWA, using their land use classes) is well underway, with a draft document being produced (and provided in the accompanying materials). following consultation exercises involving Darwin personnel.

(iii) Two Zambians have obtained University of Kent's MSc degree in Tourism and Conservation.

Six guides and scouts have received guide training in Kasanka, and three of these

received additional training in South Luangwa.

In addition, the guide instructor, Leslie Reynolds, provided a 5-day guide training programme at the Kasanka Conservation Centre for aspiring guides from outside KNP.

As the Beit Trust-funded Centre became fully functional during the lifetime of the project, Darwin partners and personnel became involved in the educational and Community activities based there, including the design of wall posters etc.

The HHT provided separate funding for an education officer, Leigh Chaloner, recently succeeded by Jonas Kunda, who have provided a focus for Chongololo Wildlife Clubs as well as organising outreach activities for schools up to 100 km away. These included four talks by Mike Kennedy to local schools. He also led a workshop on aquatic biodiversity during an Environmental Educators course at the Kasanka Conservation Centre for local teachers who run Chongololo clubs, and a copy of his powerpoint presentation is included among the materials provided.

Lackson Chama established a Youth Development Initiative at The Kasanka Conservation Centre which will empower local youths to bid for Zambian government funds to aid development. The constitution is included among the materials provided.

(iv) The uplifting of the guide training and the preparation of a guiding manual which will also be used by future generations of guides will enhance visitors' experience of the park and together with the international publicity already referred to will hopefully maintain tourist revenues, a percentage of which are passed to the local community. KNP continues to be the largest single employer in Serenje district. However KNP's goal of financial self-sufficiency, to which the Darwin project aimed to contribute, remains elusive due to government-directed increase in staff salaries, and increasing fuel costs and strengthening local currency. The impact of the recently imposed £75 entry visa charge for tourists entering Zambia has yet to be evaluated.

- To what extent has the project achieved its purpose, i.e. how has it helped the host country to meet its obligations under the Biodiversity Convention (CBD), or what indication is there that it is likely to do so in the future? Information should be provided on plans, actions or policies by the host institution and government resulting directly from the project that building on new skills and research findings.

Kasanka Trust Ltd (KTL), in partnership with ZAWA, will eventually be required to produce a management plan for Kasanka National Park. The park is characterised by its wetland habitats and unique assemblages of wetland biota. Burning has historically played a major role in management, therefore a hydrology and burning management plan will go a long way to fulfilling the long term obligations of KTL. It is also expected that the data collected in Kasanka and resulting recommendations will be useful to guide the management of similar ecosystems such as those at Lavushi Manda National Park for which KTL has recently entered another co-management agreement with ZAWA.

- Please complete the table in Appendix I to show the contribution made by different components of the project to the measures for biodiversity conservation defined in the CBD Articles.

Please see Appendix 1

- If there were training or capacity building elements to the project, to what extent has this improved local capacity to further biodiversity work in the host country and

what is the evidence for this? Where possible, please provide information on what each student / trainee is now doing (or what they expect to be doing in the longer term).

The following were directly funded by the Darwin grant:

1. Patricia Mupeta: PhD in Gainesville with fieldwork in Namibia, Botswana and Zambia on how democratic governance affects community-based natural resource management.
2. Gryton Kasamu: now promoted to Acting Warden for the Luapula Area Management Unit responsible, *inter alia* for elephant translocation from Sabie Sands Nature Reserve, RSA to Lusenga NP in North West Zambia.
3. Lackson Chama: trained in hydrological techniques and vegetation productivity assessment, Hopes for a career in environmental science. Recently awarded a Canon Collins/Chevening Scholarship to enable him to enrol in the MSc in Conservation and Biodiversity at the University of Exeter in Cornwall.
4. Clifford Kandonga and Kenneth Changwe Yokam, originally employed as Scouts have now been training as tourist guides.

- Discuss the impact of the project in terms of collaboration to date between UK and local partner. What impact has the project made on local collaboration such as improved links between Governmental and civil society groups?

The project was possible only because of the close collaboration between the University of Aberdeen, The Macaulay Land Use Research Institute, The Holly Hill Trust and the KNP Management who provided full access and, where required, logistic support. For example, visiting scientists were flown between Lusaka and KNP by the Park Manager in his plane, which made for more efficient use of their time in KNP.

The Hydrology and Burning Management plan that has resulted from this collaboration can now be implemented in KNP. Those recommendations relating to rivers before they reach the park will be more difficult or impossible to implement since there have been persistent rumours throughout the project about Zambian government plans to lease farming blocks in the river catchments adjacent to KNP, first to Libyan then to Chinese agricultural interests. Large-scale farming will involve water abstraction which may threaten the hydrology and sustainability of the park. Having a hydrology plan prepared by independent experts will assist KTL when it presents its case to the Zambian government not to allow commercial projects which may threaten the integrity of a national park. The plan can also be used by ZAWA to inform management practices in other NPs in Zambia. However, apart from the presence of senior ZAWA staff at the inaugural workshop, flown in by the Kasanka Trust, such senior staff have been conspicuous by the absence from subsequent workshops. This may reflect shortage of resources for travel or indifference towards a park outside the main tourist attraction of South Luangwa.

Although it was not a primary purpose of the project to directly support the Kafinda community Relations Board, there was also effective collaboration and synergy between project staff and community staff aided by their co-location at the Kasanka Conservation Centre. This provided project staff with insights into the working of civil society groups in an impoverished part of rural Zambia. The project has also provided improved links with researchers at UNZA, latterly with the aid of a DelPHE project whose coordinator Dr

Henry Sichingabula visited the Kasanka Conservation Centre for discussions with Mike Kennedy in November 2007. Dr. Sichingabula made preliminary visits to river sites where gauging stations will be installed during July and August 2008 to begin long term data collection. He also gave a talk to the CCRB on biodiversity conservation

An important aspect of the project was the presence of Martin Stanley, a trustee of the HHT, during all visits to KNP by the project coordinator. He chaired the Stakeholders' Workshops and because his interests extend beyond the purpose and objectives of the project, his presence was important in linking the project to community development.

- In terms of social impact, who has benefited from the project? Has the project had (or is likely to result in) an unexpected positive or negative impact on individuals or local communities? What are the indicators for this and how were they measured?

KTL is the largest employer in Serenje district, where there are few other opportunities for formal employment. The ability of KNP to remain in this position relies upon its ability to continue to attract tourists which it can only achieve by conserving its wetland habitats. Management recommendations will help to achieve this, and this will be measurable in terms of sustained employment.

Several local school students who are being sponsored by private donors (typically foreign tourists) have been attached to the project during school breaks and have gained experience of ecological and hydrological sampling techniques.

There has been a high level of interest in the project amongst local communities since its inception, and Darwin personnel (Dr. Mike Kennedy and Lackson Chama) have engaged in outreach activities with local communities. Four local schools have been provided with rain gauges, and school children have been taking an active part in data collection. Further tree planting exercises (from trees grown by children from the local Kafinda school) been carried out at several schools within the KGMA.

Dr. Kennedy has given talks on aquatic biodiversity to various groups during 2007, and 2008. These have included the Chitambo Community Resource Board (CCRB). The CCRB consists of democratically elected members of local communities who act as an interface between KTL and local communities, and receive a proportion of the tourism income generated by KTL. Dr Kennedy also led a workshop on aquatic biodiversity during an Environmental Educators Course for local teachers who run Chongololo clubs in schools (these clubs being the national Zambian conservation network for schools). The workshop (organised by Leigh Chaloner, former KTL Education Officer), was aimed at giving teachers ideas for ongoing environmental education. During the workshop Dr. Kennedy discussed ideas for establishing freshwater biomonitoring projects in schools, which was well received by the teachers.

## **6. Project Outputs**

- Quantify all project outputs in the table in Appendix II using the coding and format of the Darwin Initiative Standard Output Measures.

Please see Appendix II

- Explain differences in actual outputs against those in the agreed schedule, i.e. what outputs were not achieved or only partly achieved? Were additional outputs achieved? Give details in the table in Appendix II.
- Provide full details in Appendix III of all publications and material that can be publicly accessed, e.g. title, name of publisher, contact details, cost. Details will be

recorded on the Darwin Monitoring Website database.

One paper resulting from the 2007 Aberdeen University Expedition has been submitted, and another is about to be submitted to the African Journal of Ecology. Further papers resulting from Mike Kennedy's work are in preparation.

- How has information relating to project outputs and outcomes been disseminated, and who was/is the target audience? Will this continue or develop after project completion and, if so, who will be responsible and bear the cost of further information dissemination?

Papers on the hydrology and vegetation monitoring will be submitted to international journals.

## 7. Project Expenditure

- Tabulate grant expenditure using the categories in the original application/schedule.

**Table 1** Project expenditure during the previous reporting period (Defra Financial Year 01 April to 31 March). What appears below is taken from the previous annual report. During the current reporting period all expenditure has been from Holly Hill Trust Donations.

Item	Budget (please indicate which document you refer to if other than your project schedule)	Expenditure	Balance
Rent, rates, heating, overheads etc			
Office costs (eg postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment			
Others			
Salaries (specify)			
TOTAL			

- Highlight agreed changes to the budget.
- Explain any variation in expenditure where this is +/- 10% of the budget.

## 8. Project Operation and Partnerships

- How many local partners worked on project activities and how does this differ from initial plans for partnerships? Who were the main partners and the most active

partners, and what is their role in biodiversity issues? How were partners involved in project planning and implementation? Were plans modified significantly in response to local consultation?

The main local partner KTL, and the staff of KNP were actively involved in day to day issues throughout. The Park Manager, Edmund Farmer, co-wrote the original proposal with Paul Racey.

- During the project lifetime, what collaboration existed with similar projects (Darwin or other) elsewhere in the host country? Was there consultation with the host country Biodiversity Strategy (BS) Office?

This was the first Darwin Initiative project to be based solely in Zambia, and to date remains the only one.

- How many international partners participated in project activities? Provide names of main international partners.

Three: University of Aberdeen (UK); Hollyhill Trust (UK); Macaulay Land Use Research Institute (UK).

- To your knowledge, have the local partnerships been active after the end of the Darwin Project and what is the level of their participation with the local biodiversity strategy process and other local Government activities? Is more community participation needed and is there a role for the private sector?

KTL has recruited a Dutch couple (Frank Willems and Inge Akerboom) who will continue to coordinate ongoing aspects of Mike Kennedy's work on water sampling/vegetation plot management and the education project respectively.

Monitoring of sampling networks established during the course of the project is continuing at a reduced level, calling upon the skills of local people who worked on the main project when needed. The vegetation plots are also being maintained by a local team.

## 9. Monitoring and Evaluation, Lesson learning

- Please explain your strategy for monitoring and evaluation (M&E) and give an outline of results. How does this **demonstrate** the value of the project? E.g. what baseline information was collected (e.g. scientific, social, economic), milestones in the project design, and indicators to identify your achievements (at purpose and goal level).

Regular meetings were held between Paul Racey, Chris Soulsby and Glenn Iason at Aberdeen (including Mike Kennedy when he was in the UK), and Mike Kennedy provided monthly updates to UK partners by email.

- What were the main problems and what steps were taken to overcome them?

Finding the right person to undertake a prolonged period of fieldwork in rural Zambia. We were successful in identifying and appointing Mike Kennedy

- During the project period, has there been an internal or external evaluation of the work or are there any plans for this?

Since an overall aim of the project was to assist KNP towards financial self sufficiency, HHT commissioned an external consultant to review progress in that aspect. The consultant visited KNP and reviewed all activities in progress including the Darwin Project. The consultant's report remains confidential to HHT.

- What are the key lessons to be drawn from the experience of this project? We would welcome your comments on any broader lessons for Darwin Initiative as a programme or practical lessons that could be valuable to other projects, as we would like to present this information on a website page.

The main practical lesson learned by the Project Coordinator was that the project was initially under-budgeted, particularly in the provision of airfares, for project collaborators (Soulsby and Iason) to visit the study area, a reconnaissance visit by Mike Kennedy, and MSc students to undertake their research projects in Zambia. This was exacerbated by the DEFRA prohibition on inflators in the initial application, by increases in University fees and living costs for MSc students in the UK, and fuel costs in Zambia.

Compared with a series of Darwin projects for which the project co-ordinator has been responsible in Madagascar, where raising additional funds for species conservation has been comparatively easy, it has proved difficult to raise additional funds for the project in Zambia where the research has focussed on process rather than on species. Repeated attempts by Soulsby and Iason to raise additional funds have not been successful and without the additional injection of funds by HHT, the project would have closed with a substantial deficit, and some of the work planned would not have been undertaken.

#### **10. Actions taken in response to annual report reviews (if applicable)**

- Have you responded to issues raised in the reviews of your annual reports? Have you discussed the reviews with your collaborators? Briefly summarise what actions have been taken over the lifetime of the project as a result of recommendations from previous reviews (if applicable).

N/A

#### **11. Darwin Identity**

- What effort has the project made to publicise the Darwin Initiative, e.g. where did the project use the Darwin Initiative logo, promote Darwin funding opportunities or projects? Was there evidence that Darwin Fellows or Darwin Scholars/Students used these titles?

The Darwin project featured on the Kasanka website: [www.kasanka.com](http://www.kasanka.com)

The Darwin logo was used on title slides of international talks.

The Darwin logo was used on approximately thirty t-shirts, which were given to staff who participated in long-term data collection (rainfall etc.)

- What is the understanding of Darwin Identity in the host country? Who, within the host country, is likely to be familiar with the Darwin Initiative and what evidence is there to show that people are aware of this project and the aims of the Darwin Initiative?

Locally, communities have been made well aware of the aims of the project and the Darwin program, and were generally supportive of these aims. Members of these communities attended stakeholders' workshops and the park manager referred to the Darwin project at the well attended opening of the Kasanka Conservation Centre (See DVD commissioned by HHT, included among the supporting materials).

Despite this being the first Darwin project in Zambia the Initiative is recognised nationally by members of conservation groups such as the Environmental Council of Zambia (ECZ), by the Zambian Wildlife Authority, conservation bodies such as WWF, and by partners within Zambia.

The British High Commissioner holidaying in KNP in 2006 was only vaguely aware of the Darwin Initiative when the Project Coordinator raised it with him.

- Considering the project in the context of biodiversity conservation in the host country, did it form part of a larger programme or was it recognised as a distinct project with a clear identity?

The project had a distinctive aim of providing information that would assist protection of fragile wetland habitats within KNP, and their distinctive biota. The hydrological monitoring techniques developed during the course of the project will be applicable to other wetland areas in order to understand hydrological processes and potential threats to biodiversity.

## **12. Leverage**

- During the lifetime of the project, what additional funds were attracted to biodiversity work associated with the project, including additional investment by partners?

In addition to the £75K pledged by HHT at the start of the project, the Trust has provided a series of additional grants to Aberdeen University bringing the total donated directly to the Darwin project to £98.5k. In addition HHT funded the education officer and the production of Jenny Sharman's video and DVDs (which are included in the materials provided). University expeditions raised their own funds (ca £10-15k per expedition). Professor Soulsby and Dr. Iason donated pH and conductivity meters and probes, tensiometers and scales – the equivalent of ca £4k. HHT has also separately funded KTL core costs.

- What efforts were made by UK project staff to strengthen the capacity of partners to secure further funds for similar work in the host country and were attempts made to capture funds from international donors?

Professor Soulsby and Dr. Iason applied to National Geographic and to the Ralph Brown Fund of The Royal Geographic Society for grants, and to The Aberdeen Centre for Environmental Sustainability for a studentship. All were unsuccessful.

The KNP Manager Edmund Farmer has secured funds from the World Bank for a feasibility study for the rehabilitation of the nearest NP – Lavushi Manda which is in the same poached-out state as Kasanka was 35 years ago. This study has recently started. Paul Racey, Martin Stanley and Mike Kennedy visited this park in June 2008.

## **13. Sustainability and Legacy**

- What project achievements are most likely to endure? What will happen to project staff and resources after the project ends? Are partners likely to keep in touch?

The project's achievements most likely to endure are

(i) the training of two Zambians to MSc level and their aspirations towards PhD's, which, if successful, will allow them to contribute further to biodiversity conservation in Zambia.

(ii) the training of guides, and while individual guides might change jobs and work in other parks, they have new skills. The guiding manual will be a useful reference for new staff as KNP has a distinctive fauna and flora not covered by standard guide books which are focussed on large national parks with different habitats, climate and biota.

(iii) Whether the Hydrology and Burning Management plan will endure will depend on the extent to which its recommendations are implemented in the short term.

(iv) Conservation education, which has already coped with one staff change successfully.

#### Project Staff

Mike Kennedy is actively seeking University employment in the UK. He has already drafted a proposal to the Darwin Initiative to apply his skills to the Ramsar Site of Bangweulu, 40 kms from KNP, where eutrophication and dramatically increased seasonal and uncontrolled fishing is threatening the habitat of the shoebill and poaching is threatening herds of black lechwe and tsessebe.

Lackson Chama is seeking to uplift his academic qualifications from diploma to degree level in order to obtain employment in environmental science. He remains as coordinator of the Youth Development Programme he established. Details of this programme are included in the materials provided.. He has recently been awarded a Cannon Collins /Chevening Award and will enroll on the MSc in Biodiversity and Conservation at the University of Kent in Cornwall in September 2008.

#### Project vehicle

The Landrover has been donated to KNP, with the option of regaining its use if further funds are forthcoming.

The partners are likely to keep in touch not least because of Racey's continuing interest in the seasonal aggregation of straw coloured fruit bats at KNP. The British Council's DeLPHE project also involves maintaining the link between Aberdeen University and KTL.

- Have the project's conclusions and outputs been widely applied? How could legacy have been improved?

The project's conclusions and outputs were presented to KNP in June 2008, so it is too early for them to have been applied. Burning and water management has been in the control of Mr. David Lloyd, who negotiated the original management agreement for KNP with ZAWA, recruited Edmund Farmer as Park Manager, and now (in "retirement" in his sixties) funds a team of assistants which he directs. He has been very interested in the Darwin Project and has cooperated fully, in, for example, providing long term rainfall data for KNP; he has also been responsible for digging channels to direct seasonal rain water into Wasa Lake and implementation of the early burning regime. However, this project raises the issue that certain current management activities may not be entirely appropriate, so that diversion of water may introduce suspended solids into Lake Wasa which will accelerate the natural ecological progression leading to silting of a hydrosere. The current early burning and hydrological management regimes in KNP both carry significant inertia within the current management structure of the park. It would therefore require significant changes in attitude within KTL and KNP management in order to embrace and implement any radical changes in these sensitive management techniques.

- Are additional funds being sought to continue aspects of the project (funds from where and for which aspects)?

No further funds are being sought for the research on hydrology and burning at KNP although funds will be sought from The Darwin Initiative to apply the approaches used at

Kasanka to the nearby RAMSAR Wetland at Bangweulu. Paul Racey applied for a Royal Society grant for satellite telemetry of fruit bats at KNP, but learned recently that his application had been unsuccessful. Martin Stanley will continue to support the Education Project at the Kasanka Conservation Centre.

#### **14. Value for money**

- Considering the costs and benefits of the project, how do you rate the project in terms of value for money and what evidence do you have to support these conclusions?

Three senior scientists and an experienced Park Manager contributed their expertise to the project at no extra cost to the British tax payer and Darwin funding was matched on an almost 1:1 basis by a private charity. So the tax payer secured the services of an experienced postdoc who was totally committed for three years, trained two Zambians to MSc level, trained another in aspects of hydrology and plant ecology (so he has now been awarded a scholarship), trained six tourist guides and donated a landrover and field and lab equipment to a national park in Zambia - all for £131K – unrepeatabe VFM!

**On the following pages a selection of photographs from the lifetime of the project give a flavour of the management issues in KNP, the project approach to the production of a fire and management plan, and the involvement in additional activities in the local communities of the KGMA.**



**Miombo savannah woodland:** it is estimated that Zambia is covered in at least 80% of this vegetation type

**Kasanka National park** has a woodland cover (including miombo) of no more than 70%, and an abundance of freshwater wetland habitats

Fragments of evergreen wet **mushito woodland** are important islands of biodiversity in KNP



Mushito provides important roosting sites for annual influxes of **straw coloured fruitbats** (*Eidolon helvum*).



Nearby **papyrus swamp** provides habitat for **sitatunga antelope** (*Tregelaphus spekei*)



**Puku antelope** (*Kobus vardonii*) are also present in KNP in huge numbers in areas of open and woodland edge grassland

**Burning** has been used as a management tool since the mid 1980's in KNP (The burning shown here is controlled burning of firebreaks for treatment plots in Wasa 1 dambo)



**Illegal burning** by poachers however is an issue in KNP, and the effects of a late dry season fire during 2005 in an area of swamp inhabited by sitatunga can be seen, with a large area of peat and vegetation burned out. This followed a series of below average rainfall years



**Furrows** have been installed in an attempt to maintain water levels in Lake Wasa 1 by draining water from roads and other dambos during the wet season. There is a concern that this might be increasing sediment loading into the lake and speeding up succession from wetland to terrestrial habitat



Another hydrological intervention is a **weir** on the Musola stream. At its current size, it is beneficial in maintaining moisture in the papyrus swamp during dryer years

In addition to hourly **temperature** and **rainfall** recording at Kasanka Research Centre, soil moisture (using tensiometers) and evaporation (from a pan) were also measured, along with routine river, groundwater and lake monitoring



Leonard Nkandu and Granson Chola water sampling on the **Mulembo River**



**Experimental plots** were established. (Plots shown are in termitaria grassland, with firebreak to foreground)

Lackson Chama (**Darwin research assistant**) and Mishek Malata (volunteer) biomass sampling in Wasa 1 dambo seasonally flooded grassland (February 2007)

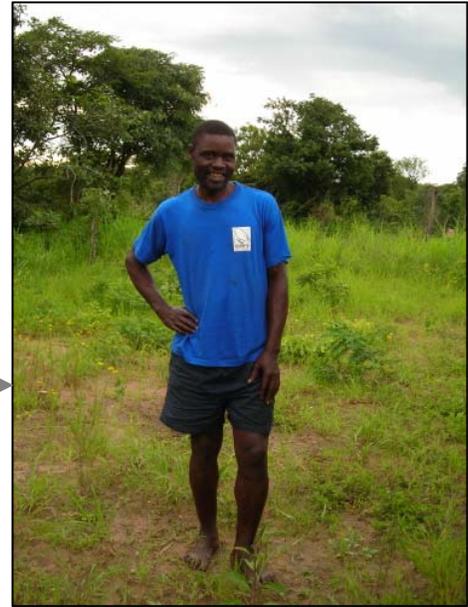


Plant samples being identified at **Zambian National Herbarium, Kitwe**. L-R: Frederick Museka (volunteer), Clifford Kandonga (Darwin-trained guide) and Lackson Chama



Members of Glasgow University expedition (2006) examining freshwater invertebrates sampled from Mulaushi Stream

Kingford, a watchman at Kasanka Research Centre wearing his Darwin t-shirt. Various people helped in the collection of temperature and rainfall data across KNP, and in nearby schools



The Darwin staff were also involved in education and community work. Left: school children from Kafinda Community School establishing a tree nursery at Kasanka Research Centre

Lackson Chama demonstrating chilli fence used to prevent elephants from crop raiding close to KNP

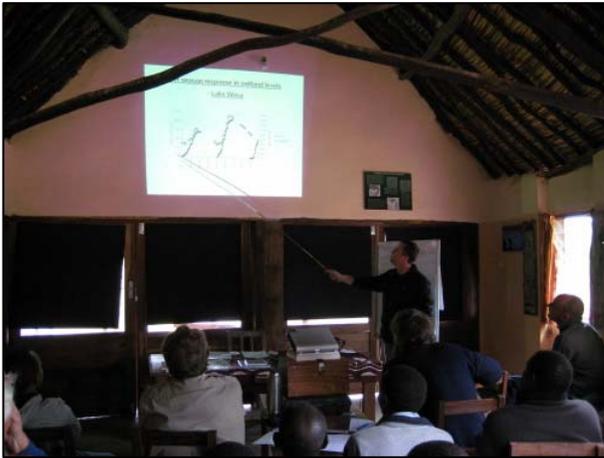


Jonas Kunda (KTL Education Officer) and Martin Stanley (Hollyhill trust) in completed Interpretation Centre at Kasanka research Centre, June 2008.



Chitambo Youth Development Association members: the group was supported in its foundation by Lackson Chama

A local community football team wearing their new football strip donated by Glasgow Rangers, and secured by Adam Hastie, a member of the Glasgow University 2006 expedition



The final stakeholder workshop held at the Kasanka Research Centre, with Mike Kennedy presenting the findings of the scientific research

15. **Annex 1** Report of progress and achievements against Logical Framework for Financial Year: 2006/2007 (Included as Annex 1 in 2007 yearly report)

Project summary	Measurable Indicators	Progress and Achievements April 2006-Mar 2007	Actions required/planned for next period
<p>Goal: 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> <p>The conservation of biological diversity,</p> <p>The sustainable use of its components, and</p> <p>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</p>			
<p>Purpose</p> <p>To build capacity to conserve biodiversity of KNP by developing hydrological and fire management plan for sensitive ecosystems.</p> <p>To uplift management of KGMA resources.</p> <p>To improve conservation education.</p> <p>To alleviate poverty.</p>	<p>New knowledge of hydrological relations between rivers, lakes, swamps and grassland in KNP. New knowledge of distribution and behaviour of a large grazer (sitatunga) in relation to habitat.</p> <p>Cross sectoral cooperation in the planning of KGMA resource utilisation.</p> <p>Improved conservation experience for visitors.</p>	<p>Water sampling and vegetation sampling ongoing in KNP and Kafinda GMA.</p> <p>Input made into Kafinda GMA resource mapping exercise.</p> <p>Continuation and expansion of involvement and education of park staff and local communities (including school children) in DI project.</p> <p>Wider promotion of project amongst tourists and other Zambian institutes.</p>	<p><i>CONTINUATION OF SAMPLING.</i></p> <p><i>CONTINUATION OF INPUT INTO RESOURCE MAPPING EXERCISE.</i></p>
<p>Outputs</p>			
<p>Production of fire management plan and manual</p>	<p>Data generation from baseline monitoring of waterbodies and experimental plots.</p>	<p>Baseline data collection ongoing. Sampling protocol supplied to Darwin.</p>	<p>Expansion of rainfall monitoring activities to include sites outside of KNP but within KGMA</p>
<p>Protection of water levels and hydrological flow pathways in key</p>	<p>Data generation from baseline monitoring.</p>	<p>Data collection and collation ongoing.</p>	<p>Maintain monitoring and undertake detailed analysis of data.</p>

wetland habitats.			
Two Zambian staff trained in tourism and conservation at DICE.	Second candidate, Gryton Kasamu, identified for training and commenced course in September 2006  Dolly Chanda accepted by DICE pending funds being secured.	Gryton Kasamu currently at DICE; application made for Dolly Chanda for Darwin Fellowship to attend DICE from September 2007. Completed MSc thesis (Patricia Mupeta) supplied to ECTF.	Application preparation for masters funding for Lackson Chama.
Local staff trained as environmental educators and guides	Training work by Leslie Reynolds ongoing.  Field based training and examination of trainees undertaken; further training ongoing.	Ongoing development of guide training manuals.	Selection and training of remaining staff
Resource database for KGMA.	Training of local survey staff in monitoring techniques and production of resource map.  Generation of maps detailing land use zones within Kafinda GMA	Community sensitisation and Village Action Group (VAG) representative involvement in identification of land use zones Direct ZAWA involvement in mapping exercise. Involvement of Mike Kennedy in ongoing workshops.	Development and finalisation of techniques for mapping and staff training.  Continued involvement of Mike Kennedy in overall exercise
Direct Involvement with local communities	Input by Darwin staff into workshops and other activities	Course co-run with Kasanka Education and Community projects for conservation club teachers. Conservation and natural resource management activity workshops held at Kasanka Research Centre.	Work to be continued and further activities to be identified where appropriate.

Note: Please do NOT expand rows to include activities since their completion and outcomes should be reported under the column on progress and achievements at output and purpose levels.

## 16. Appendix I: Project Contribution to Articles under the Convention on Biological Diversity (CBD)

Please complete the table below to show the extent of project contribution to the different measures for biodiversity conservation defined in the CBD Articles. This will enable us to tie Darwin projects more directly into CBD areas and to see if the underlying objective of the Darwin Initiative has been met. We have focused on CBD Articles that are most relevant to biodiversity conservation initiatives by small projects in developing countries. However, certain Articles have been omitted where they apply across the board. Where there is overlap between measures described by two different Articles, allocate the % to the most appropriate one.

<b>Project Contribution to Articles under the Convention on Biological Diversity</b>		
<b>Article No./Title</b>	<b>Project %</b>	<b>Article Description</b>
<b>6. General Measures for Conservation &amp; Sustainable Use</b>		Develop national strategies that integrate conservation and sustainable use.
<b>7. Identification and Monitoring</b>	25	<u>Identify and monitor components of biological diversity, particularly those requiring urgent conservation</u> ; identify processes and activities that have adverse effects; maintain and organise relevant data.
<b>8. In-situ Conservation</b>	25	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, <u>promote protection of habitats; manage areas adjacent to protected areas</u> ; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
<b>9. Ex-situ Conservation</b>		Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
<b>10. Sustainable Use of Components of Biological Diversity</b>		Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
<b>11. Incentive Measures</b>	10	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.

<b>12. Research and Training</b>	25	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
<b>13. Public Education and Awareness</b>	15	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
<b>14. Impact Assessment and Minimizing Adverse Impacts</b>		Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
<b>15. Access to Genetic Resources</b>		Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.
<b>16. Access to and Transfer of Technology</b>		Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
<b>17. Exchange of Information</b>		Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
<b>19. Bio-safety Protocol</b>		Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
<b>Total %</b>	<b>100%</b>	<b>Check % = total 100</b>

## 17. Appendix II Outputs

Please quantify and briefly describe all project outputs using the coding and format of the Darwin Initiative Standard Output Measures.

Code	Total to date (reduce box)	Detail (←expand box)
<b>Training Outputs</b>		
1a	Number of people to submit PhD thesis	
1b	Number of PhD qualifications obtained	
2	Number of Masters qualifications obtained	2
3	Number of other qualifications obtained	4
4a	Number of undergraduate students receiving training	
4b	Number of training weeks provided to undergraduate students	
4c	Number of postgraduate students receiving training (not 1-3 above)	
4d	Number of training weeks for postgraduate students	110
5	Number of people receiving other forms of <b>long-term</b> (>1yr) training not leading to formal qualification( i.e not categories 1-4 above)	7
6a	Number of people receiving other forms of <b>short-term</b> education/training (i.e not categories 1-5 above)	8
6b	Number of training weeks not leading to formal qualification	90
7	Number of types of training materials produced for use by host country(s)	1
<b>Research Outputs</b>		
8	Number of weeks spent by UK project staff on project work in host country(s)	109 by Mike Kennedy 14 by Racey, Iason, Soulsby & Stanley
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	1
10	Number of formal documents produced to assist work related to species identification, classification and recording.	1
11a	Number of papers published or accepted for publication in peer reviewed journals	
11b	Number of papers published or accepted for publication elsewhere	
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	
13a	Number of species reference collections established and handed over to host country(s)	
13b	Number of species reference collections enhanced and handed over to host country(s)	

<b>Dissemination Outputs</b>		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	4
14b	Number of conferences/seminars/ workshops <b>attended</b> at which findings from Darwin project work will be presented/ disseminated.	5
15a	Number of national press releases or publicity articles in host country(s)	1
15b	Number of local press releases or publicity articles in host country(s)	
15c	Number of national press releases or publicity articles in UK	
15d	Number of local press releases or publicity articles in UK	
16a	Number of issues of newsletters produced in the host country(s)	3 (web-based)
16b	Estimated circulation of each newsletter in the host country(s)	
16c	Estimated circulation of each newsletter in the UK	
17a	Number of dissemination networks established	
17b	Number of dissemination networks enhanced or extended	
18a	Number of national TV programmes/features in host country(s)	2
18b	Number of national TV programme/features in the UK	
18c	Number of local TV programme/features in host country	
18d	Number of local TV programme features in the UK	
19a	Number of national radio interviews/features in host country(s)	
19b	Number of national radio interviews/features in the UK	
19c	Number of local radio interviews/features in host country (s)	
19d	Number of local radio interviews/features in the UK	
<b>Physical Outputs</b>		
20	Estimated value (£s) of physical assets handed over to host country(s)	£13k
21	Number of permanent educational/training/research facilities or organisation established	1
22	Number of permanent field plots established	50
23	Value of additional resources raised for project	£98.5k

## 18. Appendix III: Publications

Provide full details of all publications and material that can be publicly accessed, e.g. title, name of publisher, contact details, cost. Details will be recorded on the Darwin Monitoring Website Publications Database that is currently being compiled.

Mark (\*) all publications and other material that you have included with this report

<b>Type *</b> (e.g. journals, manual, CDs)	<b>Detail</b> (title, author, year)	<b>Publishers</b> (name, city)	<b>Available from</b> (e.g. contact address, website)	<b>Cost £</b>

## 19. Appendix IV: Darwin Contacts

To assist us with future evaluation work and feedback on your report, please provide contact details below.

<b>Project Title</b>	Conservation of Wetlands and Associated Biodiversity in Northern Zambia
<b>Ref. No.</b>	13/001
<b>UK Leader Details</b>	
Name	Professor P.A. Racey
Role within Darwin Project	Project coordinator
Address	School of Biological Sciences, University of Aberdeen, Aberdeen.AB24 2TZ
Phone	
Fax	
Email	
<b>Other UK Contact (if relevant)</b>	
Name	(i) Prof. C. Soulsby (ii) Dr G. Iason
Role within Darwin Project	Overseeing (i) Hydrology (ii) Burning vegetation
Address	School of Geosciences, UA; Macaulay Land Use Research Institute
Phone	
Fax	
Email	
<b>Partner 1</b>	
Name	Kasanka National Park
Organisation	
Role within Darwin Project	Host
Address	P.O. Box 850073, Serenje, Central Province, Zambia
Fax	-
Email	
<b>Partner 2 (if relevant)</b>	
Name	Zambian Wildlife Authority
Organisation	
Role within Darwin Project	Attended initial workshop, nominated Gryton Kasamu
Address	Private bag 1 , Chilanga,, Zambia
Fax	
Email	

## Appendix VI Outputs accompanying final report

### **13/001: Conservation of Wetlands and Associated Biodiversity in Northern Zambia**

Leslie Reynolds: Manual for Guides and Environmental Educators

M.P. Kennedy, C. Soulsby, P.A. Racey & G. Iason. Ecohydrological approaches to managing water and land use for wetland conservation in Kasanka National Park. Abstract of a paper presented to European Geosciences Union, Vienna, April 2007

Gryton Kasamu: Trophy hunting and Socio-Economic Development of local people in Lupande Game Management Area, Zambia. MSc thesis (awarded a distinction) DICE, University of Kent.

Patricia Mupeta: Achieving Ecotourism Goals through Educational Tourism and Conservation Education.. MSc thesis, DICE, University of Kent. (a copy of which also accompanied a previous annual report)

Aberdeen University Expedition 2007:

1. Expedition Report
2. James Byng: The Ecological Impacts of a Migratory bat population on its seasonal roost in Kasanka National Park, Zambia. BSc Honours Thesis. (awarded 1<sup>st</sup> class).
3. James Byng, Paul Racey and Mike Swaine (submitted). The ecological impacts of a migratory bat aggregation on its seasonal roost in Kasanka National Park, Zambia. Africa Journal of Ecology.
4. J.W. Byng. 2007. Common tree species of the Mushitu 'swamp' forest in Kasanka National Park.
5. Chloe Denerley: Behaviour and Ecology of Sitatunga *Tragelaphus spekei* BSc Honours thesis (awarded 1<sup>st</sup> class).

Aberdeen University Expedition 2008: Prospectus: Expedition Zambia 2008: the biodiversity habitat preference and parasite burden of the bats of Kasanka National Park.

Victoria Patterson: 2007: The use of Chillies (*Capsicum frutescens*) to deter puku (*Kobus vardon*) and for mitigating crop raiding by African Elephants (*Loxodonta africana*) in Zambia: a case study within Kasanka National Park and the Kafinda Game Management Area. MSc thesis, University of Glasgow (awarded 1<sup>st</sup> class). Field advisers Dr. Mike Kennedy and Frederick Mbulwe

DVDs: True Nature Films: Kasanka: Grass Fire and Water – the Conservation of Wetlands and Biodiversity in Northern Zambia. Financed by The Holly Hill Trust.

True Nature Films: An Elephant's Chilli Reception – How to prevent crop-raiding in Zambia. In Bemba, with English subtitles.

Edmund Farmer and others: Kafinda GMA Land Use Plan

Minutes of Final Stakeholders Workshop. 15 June 2008-06-23

Mike Kennedy: Powerpoint presentation to Environmental Educators' Workshop ("Biodiversity: what is it and why conserve it").

The Constitution of the Chitambo Youth Development Association, established by Lackson Chama.

Summary : Education Project for Darwin 2005-2008

Popular articles

Mike Kennedy: 2008. The Darwin Initiative Evolves. The Lowdown. **14.** (1): 3-4.

Charlie Norton: 2008. Batty for Safari. British Airways Highlife, April 2008.

Chris McIntyre: 2008. Chilli fences in Zambia – the Bradt Travel Guide. p.318.