



***Darwin Initiative for the Survival of Species
Final Report***

Wildlife & People: Conflict & Conservation in Masai Mara, Kenya

Durrell Institute of Conservation & Ecology,
University of Kent

Darwin Project Information

Project title:	<i>Wildlife and People: Conflict and Conservation in Masai Mara, Kenya</i>
Country(ies):	<i>Kenya</i>
Contractor:	<i>DICE, University of Kent</i>
Project Reference No.:	<i>162/6/131</i>
Grant Value:	<i>£122,854</i>
Start/Finishing dates:	<i>July 1997 - September 2001</i>

Project Background/Rationale

The project was based in the Serengeti-Mara ecosystem, in and around the Masai Mara National Reserve in south-west Kenya, on the border with Tanzania. It was a collaboration between DICE, Moi University, WWF, Kenya Wildlife Service, the Department of Resource Surveys and Remote Sensing, and the two local county councils of Narok and Trans Mara that administer the Reserve and surrounding areas.

The project focused on human-wildlife conflict in the Serengeti-Mara ecosystem. In an area where pastoralism and wildlife coincide, but where human population growth and agricultural expansion are rapidly occurring, the interests of wildlife and people often conflict. This project aimed to tackle various aspects of human-wildlife conflict from the perspectives of both people and wildlife.

It has been clear for many years that human-wildlife conflict and unregulated tourism impacts have been constraining conservation progress in the Kenyan portion of the Serengeti-Mara ecosystem. Many observers have commented on this in the popular and conservation press, but no coherent research into the problem, or capacity building to identify and deal with it, has taken place. DICE, with its reputation for training conservation professionals in developing countries, its focus on research-based solutions at the interface between people and wildlife, and its wide network of contacts in Kenya, was viewed by our major partners, Moi University and WWF, as an ideal organisation to provide the technical assistance to tackle this problem.

The project was developed in collaboration with several of the local partners from the outset. During meetings in Kenya, Moi University and Narok County Council identified training needs, whilst WWF and Kenya Wildlife Service identified conservation and conflict research priorities. These strands were then woven into a coherent proposal by DICE staff.

Throughout the project there has been solid commitment from project partners to the success of the project and the application of identified solutions. This is evinced in the material, financial and technical support supplied by partners throughout the lifetime of the project, the involvement of all stakeholders in final dissemination and planning workshops, and the leverage of additional funds from project partners for further work. These linkages and outcomes are reported in more detail in other parts of this report and in the proceedings of the stakeholder workshops attached to this report as an appendix.

Project summary

The original proposal had no statement of overall aim or logical framework, but the overall aim can be summarised as:

To train Kenyans at all levels to undertake monitoring and research into various forms of human-wildlife conflict in the Serengeti-Mara ecosystem, and to use the results of such research to advise the relevant authorities on the management and mitigation of human-wildlife conflict for the benefit of both people and wildlife.

The specific objectives of the project listed in the original proposal were to:

- 1. Quantify the scale and impact of two contrasting forms of human-animal conflict, and identify ways of resolving these conflicts to the benefit of wildlife, local Maasai and tourists.*
- 2. Investigate the perceptions of local Maasai towards these human-animal conflicts and integrate local attitudes and perspectives into long-term solutions for conservation.*
- 3. Identify ecological factors affecting the recovery of endangered large mammal populations that are so attractive to tourists.*
- 4. Train Maasai rangers and Kenyan research students in relevant ground-based survey and research techniques, and establish a methodology for ongoing monitoring of human-animal conflicts.*
- 5. Use the research results to build a model and prepare a management plan for large mammal conservation that will provide a lasting benefit for local Maasai.*

Objective 5, regarding the development of a management plan, was modified with the approval of the Darwin Secretariat to instead focus on participatory planning and the development of management recommendations through a series of stakeholder workshops, eventually held in August 2001.

The Convention on Biological Diversity was addressed by this project in a number of ways. The project principally addressed Article 12, Research and Training. Other Articles addressed include Article 7, Identification and monitoring (of an endangered

black rhinoceros population), Article 10, Sustainable use of components of biological diversity (management of protected and adjacent areas), and Article 6, General measures for conservation and sustainable use (contribution to development of national strategies). See Appendix 1 for a breakdown of the extent of the project's contribution to each of these articles.

The five listed objectives of the project were all completed successfully, on time according to an approved but revised timetable, and on budget. Field research and training was completed in August 2000, and analysis and local dissemination of results was completed by August 2001. Moreover, significant additional outputs were achieved, including completion of two MSc research projects and receipt of significant additional partner funding (see below). Although final research dissertations by the two PhD students on the project have yet to be submitted, we are confident that this will be achieved early in 2002. As a result the project is deemed by all participants and partners to have been a resounding success.

Scientific, Training and Technical Assessment

The project began, somewhat delayed, in January 1998, with fieldwork commencing in May 1998. Two PhD students, Geoffrey Karanja and Noah Sitati, were recruited in July 1998. The project officer, Dr Matt Walpole, worked alongside these students undertaking both training and research activities over the following two years. Two MSc students, Alex Obara and Moriaso Nabaala, not included in the original planned outputs, also worked alongside the Darwin Initiative staff and students during this period.

The following three major research topics were conducted. Methodology and findings are briefly presented, with more detail included in the workshop proceedings attached.

1. Human-elephant conflict:

Human elephant conflict is an increasing problem in TransMara district adjacent to Masai Mara National Reserve in Kenya. This stems from increasing human population, both through reproduction and immigration, coupled with increasing land conversion and forest loss to farming. Concurrently, elephant populations in the ecosystem are growing, and elephants are becoming constrained to smaller areas of forest fragment within the district.

Conflict incidents were recorded using GPS and a standard report form compiled by local enumerators. A joint questionnaire/field survey of raided and non-raided farms was implemented to assess the effects of a variety of variables including methods of crop protection on the likelihood of raiding. Monthly records of rainfall, grass biomass and elephant diet (from dung analysis) were performed to assess seasonal trends. Dung count transects were conducted to measure elephant density. Remote sensing using satellite imagery and aerial photography, with ground-truthing, was used to assess land use and habitat change. GIS analysis was used, together with field

data, map and predict patterns of conflict. Both structured questionnaires and rapid rural appraisal techniques were used to investigate local perceptions and mitigation methods.

Results suggest that elephant conflict is more significant than other forms of wildlife conflict and is more frequently reported. Human and elephant deaths and injuries have increased in the 1990s, the former due in part to drunkenness amongst victims. Elephants raided a variety of crops seasonally in two harvesting periods. The spatial distribution of crop raiding was determined mainly by the density and distribution of farming and human settlement. Communities used a variety of methods to combat crop raiding, of which fire and noise appeared to be most successful for scaring away elephants. However, KWS contribution and response to incidents was low. A hidden cost for communities of living with elephants was found to be a negative impact on children's education, due to disturbance of children travelling to school.

The results of this study were presented to an audience of elephant experts at a KWS elephant research symposium, and were well received. The study will be submitted for PhD examination in 2002, after which several articles will be submitted to peer reviewed journals.

2. Tourism impacts: PhD study by Geoffrey Karanja.

Tourism is the world's largest industry, and nature-based tourism is an increasingly significant proportion of global tourism. It provides an economic rationale for protected areas and has the potential to generate significant benefits for conservation, local communities and national governments. However, tourism is not cost-free, and uncontrolled and ill-managed tourism can have significant negative impacts on wildlife and the environment in protected areas. This study examined tourism impacts in MMNR, in particular the nature, causes and consequences of impacts on habitat and wildlife, the role of law enforcement, and knowledge and adherence to reserve regulations.

Roads and tracks were mapped and measured using GPS, whilst tour drivers were given GPS units to map their routes around the Reserve. Aerial photography was used to map tracks from an earlier period. Wildlife distribution data from aerial counts was obtained from DRSRS. Flight distance experiments were conducted on a number of herbivore species to assess the effects of vehicle speed, approach angle and habituation. A vehicle was driven towards individuals, and the distance at which they responded to the approach was measured using a laser range-finder. Behavioural observations of tourists at cheetah and lion viewing opportunities were made. Visitor and driver questionnaires were used to assess knowledge and understanding of reserve regulations, as well as basic visitation characteristics. Data on visitation were collected from lodges and ranger posts.

The major tourism impact is uncontrolled off-road driving that occurs in accessible areas where vehicle pressure is greatest. This has damaged or destroyed several square kilometres of grassland, although its aesthetic significance may be greater than any ecological concern. Impacts on wildlife appeared limited to short term

disturbance by vehicles passing, which was increased with increasing vehicle speed. Wildlife was not displaced permanently by tourism, and habituation in heavily visited areas served to limit the amount of disturbance. Drivers and visitors were generally aware of the Reserve regulations, but regulations were broken in over 90% of lion and cheetah viewing events. The presence of the Reserve anti-harassment patrol vehicle limited some infringements but not others.

This work has been presented to stakeholders, but has not yet been subject to peer review. It will be submitted for a PhD examination in 2002, after which several articles will be submitted for publication in peer reviewed journals.

3. Black Rhino recovery and habitat change: Post-doctoral study by Dr Matt Walpole (Project Officer), and MSc studies by Alex Obara and Moriaso Nabaala.

The black rhino population in the Masai Mara National Reserve (MMNR) in Kenya is recovering after a major decline due to poaching. However, changes in MMNR may affect the capacity for recovery. This study aimed to assess the recovery of the population, resource utilisation and the effects of woodland decline, cattle encroachment and tourism on habitat suitability for black rhinos and population recovery in MMNR.

Daily patrols were conducted with MMNR staff to locate rhinos, and positions were recorded using GPS. Equally, cattle locations within MMNR were recorded using GPS, and data on tourism distribution from the tourism study were also used. Long term woody vegetation plots were remeasured and used to determine temporal trends in habitat change. Over 300 browse vegetation plots of 20*30m were surveyed for evidence of rhino feeding. Each plant was identified to species, its height and phenology recorded, along with evidence of rhino feeding and damage by other browsers. These were located first in a grid pattern covering the whole of MMNR, and then on focused transects in areas of bushy vegetation and areas of known rhino presence. Multivariate analysis and GIS technology were used to predict the growth and expansion of the population.

Findings suggest that a long-term woodland decline has reduced the quality of food resources for black rhinos in MMNR, and that rhinos are dispersing to potentially more favourable, but unprotected, areas outside of MMNR, resulting in poor population recovery within MMNR. Equally, the presence of cattle inside the Reserve has constrained rhino distribution and carrying capacity. Strategies for maximising the recovery of the population and the 'carrying capacity' of MMNR for black rhinos were identified. These include; (1) collaborating with Tanzanian authorities on cross-border rhino monitoring so as to secure areas in northern Tanzania where rhinos may be dispersing to; (2) undertake foot patrols within MMNR to increase sighting rates; (3) collaborating with monitoring groups outside MMNR on the Kenyan side of the border in areas where rhinos are known to reside, and that may be dispersing from MMNR, and; (4) preventing cattle and other livestock from entering the Reserve.

To date, this study has yielded five articles in peer reviewed journals, with several more pending. The results have also been presented at a national rhino planning

workshop attended by national and international rhino experts, where it was well received.

4. Training:

The formal training component of the project consisted of the two PhD and two MSc students, who were selected, assessed and accredited using standard university procedures for admitting and training postgraduate students. All were chosen on merit, but taking into account their background, position and future potential.

Informal training of community scouts and rhino rangers was also implemented. The latter were an existing team selected by the Senior Warden of MMNR. They worked with the Project Officer over the course of the first year of the project, learning the use of GPS and data recording sheets for monitoring rhinos. No accreditation was given, however KWS has recently computerised the entire national rhino monitoring system, such that the experience received under this project has been formalised and expanded upon.

The ten community scouts assisting Noah Sitati with the elephant conflict project were selected on the basis of location (so that a thorough geographic spread could be achieved), literacy, and enthusiasm. They were trained to record various details of each conflict incident reported by farmers in their area on a standard reporting form. They were visited each month by Noah Sitati to make their reports and be debriefed. They underwent continual assessment and retraining to ensure a high quality and consistency of monitoring output. They received no formal accreditation, but have been retained for the follow on WWF funded project and are now being trained in the use of GPS.

Project Impacts

The overall purposes of the project were capacity building and development of research-based management. There is clear evidence that these purposes have been accomplished. Four students and ten community scouts continue to work in a heightened capacity in conservation and wildlife management as a result of their training (see below). Moreover the results of field research have informed management at local and national levels through strategic and stakeholder planning workshops, and in the case of black rhinos has influenced a new five year strategic plan.

A further impact was the successful development of an exit strategy for the project. In a three-year research and training project such as this it is rarely possible to implement findings, for both time and financial reasons. In such a scenario it is necessary to develop follow-on proposals for implementation projects that will use the findings of the original project and put them into practice. In our case, we have been successful in securing two significant grants, one from the Darwin Initiative and one from WWF, to implement community-based tourism and human-elephant conflict

mitigation, respectively. These very practical projects have arisen directly from the outcomes of the original Darwin Initiative project being reported on here.

The contributions of the project to the Convention on Biological Diversity have been reported briefly above and further in Appendix 1. Direct contributions through project partners to help Kenya meet its obligations include the following:

Article 6: Influencing strategic objectives in the KWS black rhinoceros national conservation and management plan.

Article 7: A better understanding of black rhino population dynamics and improved monitoring capacity of the Masai Mara black rhinoceros population by Narok county Council. A better understanding and improved monitoring of human elephant conflict by KWS and local communities.

Article 10: Greater capacity for local communities and KWS to mitigate human elephant conflict, and for park authorities to mitigate tourism impacts.

Article 12: Increased capacity of Moi University's Department of Wildlife Management to conduct research and train students. Increased capacity of park authorities, local communities and KWS to monitor wildlife and human-wildlife conflicts. Establishment of follow-on research and training project adopted and funded by WWF.

The training work has greatly improved local and national capacity to further biodiversity work in Kenya, and all trainees are currently pursuing conservation-related activities. Of the two PhD students, one, Geoffrey Karanja, has been promoted to a lectureship in the Department of Wildlife Management at Moi University where he is training undergraduate and graduate students in wildlife research and management. The other, Noah Sitati, is working for DICE and WWF on a continuation project on human-elephant conflict in Trans Mara District where he is continuing field research and using his Darwin training to implement mitigation strategies and to train others. Noah has also recently been appointed a member of the IUCN/SSC African Elephant Specialist Group on the strength of his training during this Darwin Initiative Project, and will now be advising on international elephant conservation in Africa. He is likely to take up a senior role in KWS once his current work is complete.

Of the two MSc students affiliated to this project, one, Alex Obara, is a freelance consultant focusing on forest conservation, whilst the other, Moriaso Nabaala, a local Maasai community member, has returned to a senior advisory role in the Koyiaki-Lemek Wildlife Trust, the largest and most advanced community wildlife association in the Mara ecosystem. Moriaso is also an advisor to the Mara Management Committee. The ten community scouts trained to monitor human-wildlife conflict have been retained on the DICE/WWF continuation project and are using technologically advanced methods to monitor and report on conflict throughout Trans Mara District. Their involvement has increased local awareness and understanding of

elephant conservation issues in the community, and support for further research and mitigation activities, as evinced at stakeholder workshops.

The project involved six local partner organisations, all of which contributed greatly to the operation and success of the project. DICE was able to develop its links with WWF and KWS to initiate two new practical projects in the Mara ecosystem following this Darwin project. Moreover the project facilitated greater collaboration between host country partners in terms of cooperation and skills transfer. DRSRS provided facilities and training for Darwin students from Moi University to analyse spatial data. WWF continued and built upon a successful training collaboration with Moi University by supporting Darwin Students from Moi University. WWF and KWS have worked more closely together on human-elephant conflict issues as a result of this project and with DICE have initiated a collaborative continuation project. Finally, the stakeholder workshops brought all these groups, and particularly local and national government departments, into contact with local communities to discuss human wildlife conflict and its mitigation, and this has served to forge greater trust between the two and a commitment to further collaboration.

The social beneficiaries of the project are widespread. Foremost are the four postgraduate students and ten community members trained during the project, who have gained skills, experience and continued employment as a result of the project. Equally, local communities surrounding the Masai Mara have benefited from a greater institutional and government understanding of the wildlife conflict problems that they face, and a commitment through new projects to address these issues with effective mitigation and benefit generation schemes. Through a successful exit strategy to the project, an unexpected benefit has been the promise of training and employment in small scale tourism for community members in a wildlife area to the east of the Masai Mara as part of a follow-on Darwin Initiative project (162-10-003).

Project Outputs

Project outputs are listed in Appendix 2 using standard output measures.

The project generally achieved many more outputs than originally planned. Additional training outputs not originally planned were the completion of Masters qualifications by two Kenyan students under the supervision of Darwin staff in the field and in UK, and three years of on the job training by a Maasai research assistant. Equally, the number of Maasai field staff receiving short term training was doubled by working with both park rangers and community members on the rhino and elephant projects, respectively.

Regarding research results, the project officer spent longer than expected in Kenya, and has already produced six papers and press releases in peer reviewed journals. More research outputs are expected (see below). There has been wider dissemination than expected. Five individual workshops/seminars have been organised to disseminate findings, and three workshops/seminars/conferences have been attended to disseminate findings, and more are planned.

Originally greater press coverage was planned, but a decision was made to keep the project fairly low key because of the political sensitivity of the area and to some extent the subject matter. However, the project was well known locally, and this was evinced by the approach made to the project officer by one local community for assistance with the development of sustainable wildlife management and conservation which resulted in a successful application to Darwin in the last round, and the approach by WWF to develop a follow-on elephant project that has also been successful.

The project has also attracted considerably more matching funding than originally expected, totaling over £106,000 in funds and £20,000 in equipment contributions.

Besides the formal published dissemination and public presentations already achieved, there will be considerable further dissemination. Two major conferences will be organised and attended in 2002 to disseminate findings, namely the Society for Conservation Biology 2002 meeting in July, and a conference on human wildlife conflict to be held at the Zoological Society of London in December. Up to ten further research papers will be published over the next two years. This is the principal responsibility of the Project Officer and Project Leader, both of whom continue to be employed at DICE and for whom research publication is part of their job description.

Moreover, the proceedings of the stakeholder workshops should be formally published in a wildlife and development series this year, using the remainder of funds in the Darwin Initiative grant. This has recently been approved. These proceedings will be widely disseminated in Kenya and internationally.

Project Expenditure

<i>Item</i>	<i>Budget</i>	<i>Expenditure £</i>
<i>Salaries (M.J.Walpole)</i>		
<i>Students stipends</i>		
<i>Rent ,rates heating lighting etc</i>		
<i>Postage, telephone, stationery</i>		
<i>Travel and subsistence</i>		
<i>Capital items/equipment</i>		
<i>Conferences, seminars</i>		
<i>Printing</i>		
<i>Visas, miscellaneous</i>		
<i>Total</i>	122,854.00	121,666.30

Project Operation and Partnerships

Under difficult political circumstances the project achieved good local collaboration with six local partners, more than the originally planned five, due to the addition of the Department of Resource Surveys and Remote Sensing in September 1998. All of these partners contributed greatly to the success of the project, as outlined in the workshop proceedings attached. Moi University, WWF, KWS and the local county councils all contributed to the design of the project by highlighting different research and training needs during visits to Kenya by the Project Leader early in the planning process. All six partners provided technical and material support during project implementation. In addition, during interim local consultation some methodological modifications were made to the research projects on the basis of partner recommendations, which improved research outputs.

Our most active partner in Kenya was WWF, an international conservation NGO that supports biodiversity conservation and institutional capacity building. WWF has been very supportive throughout the project, particularly with regard to their part funding of the PhD students and provision of project vehicles and office space. In addition, WWF's Senior Conservation Advisor has been the principal academic supervisor to the project within Kenya.

The other particularly active partners in the project were the two local councils, Trans Mara and Narok County Councils who are responsible for the management and administration of the Masai Mara National Reserve and surrounding areas. Both provided support and assistance on a daily basis to all of the research staff and students working within this Darwin Initiative project.

An unexpected additional partner was Dream Travel Africa, an ecotourism company that operates an environmentally and culturally sensitive tourism camp on the edge of Masai Mara National Reserve. Dream Travel assisted with the organisation and hosting of the stakeholder workshops, and hosted DICE and Darwin Initiative staff, including those from HQ, on many occasions. Dream Travel are also a partner in the follow-on Darwin project.

This Darwin project was quite unique in both its training and multidisciplinary research focus, and as such few similar projects existed within Kenya. However, some links were made. The project officer participated in a rhino planning workshop in September 2000. Through this participation, several links were made to other rhino projects in Kenya on private ranches, including a project using Earthwatch volunteers. Some collaborative work is planned for the future. Through one such link, a connection was made with a community-based tourism and conservation initiative in northern Kenya, which offers promising comparison with our efforts on the follow-on Darwin Initiative project. A scoping visit to this initiative is planned. One of the PhD students, Noah Sitati, made contact with other elephant projects in Kenya through KWS, and attended a training workshop held in Amboseli National Park by one such contact. We had no consultation with the Kenyan Biodiversity Strategy Office, if indeed such an office exists and is active within Kenya.

With regard to international partners, the WWF East Africa Regional Program Office, one of our major partners, could be considered both local and international, since it operates throughout East Africa and is part of a wider global WWF family.

Local partnerships have continued since this project has ended. WWF, KWS and one local community are collaborating on a continuation human-elephant conflict project in which DICE is also involved. Another local community is working with Dream Travel, our private sector partner, and both KWS and Narok County Council in the follow-on Darwin project to develop small-scale tourism. Thus both community participation and private sector involvement in biodiversity conservation have been strengthened on the basis of this project. These collaborations fall within the terms of reference of both WWF and KWS in terms of their priorities for biodiversity conservation in Kenya, namely conflict resolution, capacity building and community conservation, in the Mara ecosystem.

Monitoring and Evaluation, Lesson learning

The project has been continually overseen by the project officer, who continued to work on the project beyond the end of his contract in July 2000. Although this project did not have a logical framework from which to work, there were clear objectives which, although the timetable has slipped, have been constantly referred to throughout the project to ensure that it meets its objectives.

The indicators of achievement are the successful completion of project objectives and milestones within the original budget. Although some of these objectives have slipped from the original timetable, all the original objectives and milestones have been or will be reached, and some additional ones have also been achieved. A successful exit strategy with two follow-on projects already funded has also been achieved, and all trainees continue to work in conservation-related activities. On this basis we judge the project to have been a success.

Academic evaluation of the research and training aspects of the project have been conducted both internally and externally. Internally, the project leader has reviewed two drafts of each of the PhD theses, and awarded merit and pass grades to two MSc students on the basis of their work with the project. Externally, six publications have been peer reviewed and are either published or in press.

The major lesson to be learned from our experiences is that complex multidisciplinary projects dealing with politically sensitive issues and locations take a long time to establish. As a result, timetables for such projects may slip. However, we have demonstrated that with patience and understanding a very successful project can emerge from difficult beginnings, and we are grateful to the Darwin Initiative for their patience in allowing us to reschedule our timetable. Two other lessons are also salient. First, widespread local collaboration strengthens a project. With six or seven different partners, at national and local levels, all providing different experiences, perspectives and resources, we were able to achieve much more than if we had had only limited local partnerships with one or two organisations. Second, local

community participation is vital where both conservation and development issues are intertwined in a project. We were fortunate to have local cooperation and collaboration both during the field element of the project and during stakeholder dissemination workshops. Their involvement improved the performance of both the project and its lasting legacy.

Darwin Identity

The project used Darwin Initiative logos on a project vehicle and on project equipment (GPS units and binoculars) that were used by both the project staff and students and partners. Quarterly progress reports sent to each local partner also displayed the Darwin Initiative name and logo.

The Darwin identity became very well linked to the project, to the extent that DICE, the executive partner, was often mistakenly referred to as the Darwin Institute rather than the Durrell Institute!! One of the key features that people recognised about this Darwin project was the high level of local involvement, especially in training. Many externally funded research projects, particularly in Masai Mara and elsewhere in Kenya, fail to engage either local communities or local professionals or students, and hence have little lasting legacy. There was a widespread appreciation of our efforts to buck this trend by only training Kenyan nationals and focussing wherever possible on Maasai students and community members. Our interaction with a wide range of national partners both formally and informally has improved the exposure of the Darwin initiative within the Kenyan conservation community as a whole. A planned future press release in a popular wildlife magazine locally will increase Darwin exposure in terms of both this project and the follow-on project.

This project was a uniquely Darwin project with its own aims, objectives and identity, and was led by a Darwin fellow. All local partners contributed to the project as a distinct entity rather than subsuming it into a wider agenda of their own. It was recognised as such from the outset.

Leverage

A total of £106,800 in additional funds were obtained during the life of the project to support project activities. These were as follows. WWF (£30,000), KWS (£20,000), Wellcome Trust (£34,000), National Geographic Society (£7,800), The Wingate Trust (£7,800), Moi University (£6,200) and the Mammal Conservation Trust (£1,000). Vehicles to the value of £20,000 were loaned to the project by WWF.

As part of the exit strategy for the project, two additional grants were obtained in collaboration with host country partners. One is a WWF/KWS project, funded by WWF International, on human-elephant conflict mitigation, with a value of £72,382. A second is a Darwin Initiative grant with a local community organisation and private sector partner to the value of £136,566. The former involved much liaison with the

local WWF office staff in the development of the proposal, and as such their capacity was strengthened.

Sustainability and Legacy

The training outputs of the project will leave the most lasting local legacy. As detailed elsewhere in this report, all the trainees remain in conservation-related activities and are using the skills and experiences gained during the Darwin Initiative project. In addition, the partnerships developed during the project are likely to remain intact. Several of the partners are working together on the follow-on projects.

Dissemination of the project findings is ongoing, and will improve the reach of the project in terms of its lasting legacy, as will the activities of the follow-on projects that are taking findings to the level of implementation.

As reported, additional funds have been obtained to continue aspects of the project, both from the Darwin Initiative and WWF International.

Value for money

The project represents considerable value for money. Almost 100% matching funding was obtained during the lifetime of the project, even without counting staff time put into the project by DICE and other partners. In addition over 150% follow-on funding for new projects was obtained. Furthermore, the Project Officer continued to work on the project for ten months without salary once his contract expired in July 2000.

Author(s) / Date

M.J.Walpole
N.Leader-Williams

29th January 2002

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.

Project Contribution to Articles under the Convention on Biological Diversity		
Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use	5%	Develop national strategies, which integrate conservation and sustainable use.
7. Identification and Monitoring	20%	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities, which have adverse effects; maintain and organise relevant data.
8. In-situ Conservation		Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; 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.
9. Ex-situ Conservation		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.
10. Sustainable Use of Components of Biological Diversity	15%	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.
11. Incentive Measures		Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	60%	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).
13. Public Education and Awareness		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.
14. Impact Assessment and Minimizing Adverse Impacts		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.
15. Access to Genetic Resources		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.
16. Access to and Transfer of Technology		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.
17. Exchange of Information		Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol		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.
Total %	100%	Check % = total 100

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)
Training Outputs		
1b	Number of PhD qualifications obtained	2 expected in 2002
2b	Number of Masters qualifications	2 additional to original planned outputs
3b	Number of other qualifications obtained	-
4a	Number of undergraduate students receiving training	-
4b	Number of person weeks of training provided to undergraduate students	-
4c	Number of postgraduate students receiving training (not 1-3 above)	-
4d	Number of person weeks of training for postgraduate students	-
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification(i.e not categories 1-4 above)	1 Maasai research assistant over three years
6a	Number of people receiving other forms of short-term education/training (i.e not categories 1-5 above)	20 (10 Maasai rangers and 10 Maasai scouts)
6b	Number of person weeks of training not leading to formal qualification	160 (eight weeks each informal on the job training)
7	Number of types of training materials produced for use by host country(s)	-
Research Outputs		
8	Number of weeks spent by UK project staff on project work in host country(s)	9 weeks (ai) Project Leader 110 weeks (aii) Project Officer
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	-
10	Number of formal documents produced to assist work related to species	-

Code	Total to date (reduce box)	Detail (←expand box)
	identification, classification and recording.	
11a	Number of papers published or accepted for publication in peer reviewed journals	4 (plus two additional reports in peer reviewed popular journals that are listed here under 15a and 15c as press releases)
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	-
Dissemination Outputs		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work in host country	5 (1 interim research seminar, June 2000, and 4 stakeholder dissemination workshops, August 2001)
14c	Numbers of conferences/seminars/workshops attended at which finding from Darwin project work have been presented/disseminated in the host country	3 (KWS elephant research forum, February 2000, KWS rhino management workshop, September 2000, Moi University tourism conference, February 2002)
15a	Number of national press releases or publicity articles in host country(s)	1 (Pachyderm short report highlighting project aims, January 2000)
15b	Number of local press releases or publicity articles in host country(s)	-
15c	Number of national press releases or publicity articles in UK	1 (letter to Nature highlighting stakeholder workshops, October 2001)
15d	Number of local press releases or publicity articles in UK	-
16a	Number of issues of newsletters produced in the host country(s)	-
16b	Estimated circulation of each newsletter in the host country(s)	-

Code	Total to date (reduce box)	Detail (←expand box)
16c	Estimated circulation of each newsletter in the UK	-
17a	Number of dissemination networks established in host country	-
17c	Number of dissemination networks enhanced/extended in host country	-
18a	Number of national TV programmes/features in host country(s)	-
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	-
Physical Outputs		
20	Estimated value (£s) of physical assets handed over to host country(s)	£10,000 (computers and peripherals, gps units, binoculars, solar panel, vehicle)
21	Number of permanent educational/training/research facilities or organisation established	-
22	Number of permanent field plots established	-
23	Value of additional resources raised for project	£126,800 (£106,800 in funds, £20,000 in donated equipment)

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 which is currently being compiled.

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

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)
Journal*	Walpole, M.J. and Bett, P. (1999) The need for cross-border monitoring of the Mara rhinos. <i>Pachyderm</i> 27 :74.	IUCN, Nairobi
Journal*	Walpole, M.J. and Bett, P. (1999) An apparent decline in the Masai Mara black rhino population. <i>Pachyderm</i> 26 :123.	IUCN, Nairobi
Journal*	Walpole, M.J. (2000) GIS as a tool for rhino conservation. <i>Pachyderm</i> 28 :65-72.	IUCN, Nairobi
Journal*	Walpole, M.J., Morgan-Davies, M., Milledge, S., Bett, P. & Leader-Williams, N. (2001) Population dynamics and future conservation of a free-ranging black rhinoceros population in Kenya. <i>Biological Conservation</i> 99 (2):237-243.	Elsevier Science
Journal*	Walpole, M.J. & Leader-Williams, N. (2001) Masai Mara reveals partnership benefits. <i>Nature</i> 413 :771.	Nature Publishing Group, Basingstoke
Journal*	Walpole, M.J. (2002, in press) Factors affecting black rhino monitoring in Masai Mara National Reserve, Kenya. <i>African Journal of Ecology</i> 40 .	Blackwell Science, Oxford

Appendix IV: Darwin Contacts

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

Project Title	Wildlife & People: Conflict & Conservation in Masai Mara, Kenya
Ref. No.	162/6/131
UK Leader Details	
Name	Professor Nigel Leader-Williams
Role within Darwin Project	Project Leader
Address	DICE, University of Kent, Canterbury, Kent CT2 7NS
Phone	
Fax	
Email	
Other UK Contact (if relevant)	
Name	Dr Matt Walpole
Role within Darwin Project	Project Officer/Darwin Initiative Fellow
Address	DICE, University of Kent, Canterbury, Kent CT2 7NS
Phone	
Fax	
Email	
Partner 1	
Name	Dr Holly Dublin
Organisation	WWF-EARPO
Role within Darwin Project	Partner and steering committee member
Address	WWF-EARPO, P.O.Box 62440, Nairobi, Kenya
Fax	
Email	
Partner 2 (if relevant)	
Name	Dr Jethro Odanga
Organisation	Department of Wildlife management, Moi University
Role within Darwin Project	Partner and steering committee member
Address	Moi University, P.O.Box 1125, Eldoret, Kenya
Fax	
Email	