13-019

Darwin Initiative for the Survival of Species
Final Report

The Greater Masai Mara Community Scout Programme

Durrell Institute of Conservation & Ecology,
University of Kent

1. Darwin Project Information

Project Reference No.	162/13/019
Project title	The Greater Masai Mara Community Scout Programme
Country	Kenya
UK Contractor	Durrell Institute of Conservation and Ecology (DICE), University of Kent
Partner Organisation (s)	Friends of Conservation-Kenya (FoC)
Darwin Grant Value	£115,830
Start/End date	1st April 2004-31st March 2006 (with an extension until 30th June)
Project website	www.kent.ac.uk/anthropology/dice/research/scout.html www.kent.ac.uk/anthropology/staff/linkie.html www.foc-uk.com/kenya_wild.asp
Author(s), date	Matthew Linkie and Nigel Leader-Williams, 8th March 2007

2. Project Background/Rationale

The location of the project and the problem it addressed

Much of Kenya's biodiversity lies outside protected areas and human-wildlife conflict threatens the viability of large mammal populations that range outside protected area boundaries. Equally, local communities adjacent to protected areas are seeking sustainable means to utilise their biodiversity resources, in ways that mitigate conflict between wildlife and people. This project focussed on the 10 group ranches surrounding the Masai Mara National Reserve (MMNR), comprising three group ranches in Transmara District and seven group ranches in Narok District, all lying within the so called 'Greater Mara Ecosystem' (GME). The project aimed to address problems associated with human-wildlife conflict and unsustainable natural resource use by local Maasai communities in areas surrounding the MMNR. Both of these problems are detrimental to wildlife populations within the GME, and to Maasai livelihoods. Nevertheless, the wildlife and particularly the large mammals, have the potential to attract significant revenue and other benefits to the Maasai through nature tourism, that could also offset some of the costs of living with wildlife.

Project identification and development

A previous Darwin Initiative project in the Masai Mara (162/6/131) showed that tourism in and around the Masai Mara was not benefiting local communities or wildlife in an area where human-wildlife conflict was prevalent (Walpole & Leader-Williams, 2001; Walpole et al. 2003). Despite being promoted as a sustainable way to use natural resources, tourism was not locally driven and did not fully engage local communities. These findings suggested the need for a new approach to resource use in communal areas with no formal protection status. Therefore, this project aimed to establish a working relationship between local tour operators and Maasai communities to identify and implement mutually beneficial wildlife revenue generating schemes.

After a series of community workshops conducted during a previous Darwin Initiative grant (162/6/131) in the GME and convened by DICE and FoC, the Maasai communities living within GME expressed a desire and willingness to develop their capacity to better manage and protect their natural resources and to engage more fully with the tourism industry. At the same time, responsible tour operators working in the Mara

expressed their desire to engage more fully with Maasai in the GME. However, they also voiced their reluctance to engage bilaterally, which suggested the need for some form of facilitation between these two stakeholder groups. To effectively respond to both community and tour operator needs, and to foster greater commitment to the Darwin project, a crucial part of the project design was wide participation by all partners. Thus, the project was developed with FoC staff from the level of Director to field staff. Those FoC staff most heavily involved in the project at the operational level were field staff, taken from the local community and trained by FoC and DICE. The same spread of support and involvement was developed among responsible tour operators (TOs), Kenya Wildlife Serve (KWS) and the local communities themselves. It was anticpated that the multi-stakeholder approach of the project would reduce its dependency on individuals, thereby increasing its chances of success. Subsequently, letters of support were forthcoming from all project partners for the Darwin Stage 2 application.

References cited:

Walpole, MJ, Karanja, GG, Sitati, NW, and Leader-Williams, N (2003).Wildlife and People: Conservation and Conflict in Masai Mara, Kenya. London: International Institute of Environment and Development. 59 pp.

Walpole, MJ and Leader-Williams, N (2001). Masai Mara tourism reveals partnership benefits. Nature, 413, 771.

3. Project Summary

Purpose and objectives of the project

The project followed a logical framework (Appendix V), and its purpose and outputs can be summarised as follows:

The project purpose was to empower Maasai communities throughout the GME to monitor and protect natural resources, and to manage human-wildlife conflict, in areas with no formal protection status, and thereby improve local livelihoods, through the development of a sustainably funded community wildlife scout association.

The project outputs focussed broadly on training and implementation, to improve and expand local capacity to monitor and protect biodiversity, and to develop a regional wildlife management and conflict mitigation manual to be used within a multiple-stakeholder regional community scout association. To achieve this, the project activities were to:

i) Hold workshops and meetings to define programme objectives, to select scout candidates, and to strengthen commitment between stakeholders;
ii) Develop field survey methods and implement wildlife and conflict management patrols across the GME;
iii) Train 70 Maasai scouts in security, discipline, and wildlife and conflict monitoring;
iv) Train 12 team leaders in conflict management and leadership;
v) Produce a wildlife management and conflict manual; and,
vi) Disseminate project results in local, national and international media.

Meeting the objectives

The proposed operational plan for the project changed in October 2004, when Dr Matt Walpole, the Project Officer whom we had originally intended would oversee this project, decided to leave DICE after 10 years, in the interests of developing his career. The project was fortunate in being able to recruit Dr Matt Linkie, who has considerable experience working with scouts in Sumatra, and with undertaking analyses using GIS, as the new Project Officer. This key change in personnel was fully discussed at all stages with the Darwin Secretariat. Drs Walpole and Linkie worked very closely together to ensure a smooth transition, which was effected seamlessly, and with Dr Walpole's continued willingness to offer advice to a programme that he did so much to develop.

All planned outputs from Activities (i), (ii), (iii), (v) and (vi) have been completed successfully, on time and within budget, with the following exceptions:

The 'multiple-stakeholder regional community scout association established' output planned for Project Year 1 was rescheduled to early in Project Year 2. The Darwin Initiative scout programme was initially intended to cover the two districts of Transmara and Narok. However, some community scouts had already been organised into the independent Transmara Scout Association, which operates voluntarily in the group ranches adjacent to the focal areas for this project in the Transmara district. Therefore, the Project Officer held an *impromptu* meeting with the Transmara scouts in March 2005 to clarify the position of this Darwin Initiative project, because some of these Transmara scouts incorrectly assumed that they would be directly employed through this Darwin Initiative project. Nevertheless, it was recognized that the Transmara scouts provide a valuable service in protecting biodiversity across the Transmara District. Therefore, to maintain good relations and on-going collaboration with the Transmara scouts, support was provided both through GIS and wildlife survey training, and through the donation of equipment such as a laptop. At the end of Project Year 1, we questioned whether it was necessary for this project to form a separate scout association, because this could create further confusion, and because the current structure of the scout programme then currently run by FOC was operating well. Therefore, two other options were discussed at the end of Project Year 1. The first was to establish a Narok Scout Association for those scouts working in the Narok District. The second feasible option considered was to encourage the Group Ranch Association into taking on responsibility for disbursing funds to the Narok Scout Association, as the Group Ranch Association was already responsible for the collection and distribution of tourism revenue for the Narok group ranches.

A stakeholder meeting was held in May 2005, at the beginning of Project Year 2, and this meeting decided that the most realistic and sensible option was to form and register an overarching scout association towards the end of the Darwin project. This would allow extra time to develop the infrastructure for the scout programme in the GME, thereby enabling it to become more independent, and to develop stronger links with the tour operators, who would have had more time to assess the scouts' performance and the associated benefits of their work. This proposal received strong support from the then FOC Director Mr Richard Hartley. However, the association was not eventually formed because a new FOC Director, Mr Asgar Patham, was appointed in February 2006, during the last two months of Project Year 2. Mr Patham, who also works for Care for the Wildlife-Kenya, was employed on a 20% contract with FOC. Instead of following agreements made with the previous FOC Director, Mr Patham changed the structure of the scout programme to base it on a Kenya Wildlife Service-community model that he had previously applied in Tsavo National Park. It was only during the last month of the project that the new FOC Programme Manager, Mr H. Ogli, with whom this Darwin Initiative project would have been working with more closely, took up his post.

Planned outputs from activity (iv) were managed flexibly during the project. Our proposal had originally planned an infrastructure comprising 12 team leaders, hereafter referred to as Scout Coordinators, one to represent each of the 11 group ranches within GME, and one to serve as an overall supervisor. In the event, this number of coordinators proved excessive, in part due to successful implementation of a previous Darwin Initiative grant. The strong infrastructure created during the previous Darwin Initiative project (162/10/003) in Naikarra and Olderkesi group ranches in Narok District only necessitated one coordinator to adequately cover both these areas. Furthermore, the geographic location of the three group ranches in the Transmara District, with a single central main road, meant that one coordinator could adequately cover all these areas. Similarly, the close proximity and relatively small size of two other pairs of group ranches in the Narok District enabled one coordinator to cover each pair of ranches. The other two group ranches in Narok remained, as originally planned, with one coordinator each. However, one of these coordinators

also supervised all the other coordinators. As a result, during project implementation, we reduced the originally planned 12 coordinators to six Scout Coordinators within the GME. If additional coordinators had been required as the project proceeded, then we could easily have flexibly managed the situation closer to that originally planned. In addition, a longer than anticipated recruitment process for the planned 70 scouts meant that scout training could not be completed within Project Year 1. Instead, this training activity was completed at the start of Project Year 2, once 74 scouts had been recruited.

In fully engaging local communities in natural resource monitoring, management and conflict mitigation around the Masai Mara, in order to support conservation, poverty alleviation and sustainable use through tourism, the project supported the implementation of Articles 7, 8, 10, 11, 12, 13 and 17 of the Convention on Biological Diversity.

All of the original outputs, except the registration of an overarching scout association, were delivered on schedule, unchanged and within budget. Numerous additional accomplishments were achieved throughout the grant, as a result of continuous collaboration both with formal project partners and with other related organisations. This approach has helped to generate and strengthen positive attitudes, perceptions and respect towards the Darwin Initiative project partners.

Objectives

i) Local capacity to monitor and protect biodiversity improved and expanded

Terms of reference (ToR) for community scouts were developed. From a previous Darwin Initiative project, 20 existing scouts in the southeast of the GME were retrained according to these new ToR, and were active throughout the project. The recruitment of an additional 54 scouts from the eight remaining group ranches across the GME continued up until January 2005, and these scouts remained active throughout the remainder of the project. These scouts all received basic field survey training before beginning their monthly patrols. The scouts had three main duties: i) wildlife monitoring; ii) threat monitoring; and, iii) community outreach, which they now perform across the GME. During October-November 2004 and March 2005, the Project Officer spent more time than originally planned in Kenya training the Scout Coordinators, and setting up a wildlife and threat monitoring system for the GME. This further increased the local capacity to monitor and protect biodiversity. In March 2006, a wildlife, threat, and human-wildlife conflict database was established, and Scout Coordinators were trained to operate the database in the field.

ii) Regional wildlife management and conflict mitigation manual developed and in use

The Project Officer, the then Director of FoC, Richard Hartley, and the lead Scout Coordinator, Stephen Kisotu, a previous Darwin Initiative MSc scholar on Project 162/6/131, completed a revised version of a human-wildlife conflict reporting form, which was distributed to all scouts for use in the field. The form is part of a regional wildlife management and conflict mitigation manual that was completed by the Project Officer and lead Scout Coordinator in May 2005, and which was then used to train all 74 scouts in July 2005.

iii) A multiple-stakeholder regional community scout association established. Sustainable funding strategy developed

As noted already, the overarching scout association was not established, due to an unforeseen change in the FoC Director. The Project Officer and the then FoC Director, Richard Hartley, invested considerable time in meeting the different tour operators (TOs) working in the GME, to discuss project progress, to foster good working relationships and to maintain their interest and involvement in the scout programme and post-Darwin funding strategies. A TO meeting was held in July 2005 to discuss the development of a viable partnership model that aimed to secure long-term funding for the scout programme. It was agreed that a sponsor-a-scout scheme was a novel, appealing and viable strategy in which the TOs would want to invest and, more importantly, get their clients to invest. In response, the Project Officer developed a

scout sponsorship pack that was sent to the TOs, and their feedback was subsequently incorporated into the pack. To capitalise on the uniqueness of the scout programme, the Project Officer developed a TO lodge pack that, for a proposed US$1000 annual subscription, the TOs would receive bimonthly reports and maps of key wildlife distributions and movements across the GME as collected from scout patrols. Furthermore, the scout database was modified to include report and map templates so that high quality reports and maps could be produced automatically by the lead Scout Coordinator. Of the five TOs approached, all five were excited by the reports and maps and said that this information was exactly what their clients were requesting from them, but to which they currently did not have access. Consequently, all five agreed to place an order for this service once operational. Although the service was handed over to FoC with information on other TOs to approach, the change in FoC Director during the last two months of the project meant that the sponsorship scheme was not followed up.

iv) Publications and presentations

The scout programme received wide exposure throughout the project. This was achieved through two articles in FoC-UK's half yearly newsletter, which has a readership of over 5000 members. The Project Officer presented the Darwin Initiative project at the annual Society for Conservation Biology international meeting held in Brazil, June 2005. Presentations of past DICE/FoC Darwin projects in the Mara and the current Darwin project was given at a TOs meeting held in Nairobi in July 2005. The Project Officer and lead Scout Coordinator, Stephen Kisotu, invested considerable time in consistently meeting all stakeholders throughout, including TOs, the Narok Group Ranch Association, local Maasai community leaders and villagers, conservation NGOs working in the Mara and KWS. The Standard, one of Kenya's leading English-speaking newspapers, ran a story on the successes of the scout programme in mitigating land clearance in September 2005. The project has produced numerous training manuals (Appendix III) that have been used to help build capacity in other projects, such as the Darwin Initiative project run by Dr Mika Peck, University of Sussex (14040), on 'Developing a sustainable conservation network for primates in Ecuador'.

Additional activities were conducted within the objective that aimed to increase the local capacity to monitor and protect biodiversity. The monitoring and protection of a highly threatened black rhino population inside the MMNR is under the jurisdiction of Narok County Council and was not part of this, but of an earlier, Darwin Initiative project (Walpole et al 2001). However, since the completion of that earlier project (162/6/131), a large volume of rhino data had been collected by the rhino rangers, who with new developments in GIS and the death of the Senior Ranger, lacked the capacity to manage these data. Hence, the Project Officer constructed a rhino database for the Narok County Council in February 2006, that allowed the global positioning system (GPS) coordinates of individual rhino sightings to be entered with their sighting dates and locations. Training was also provided to the rhino rangers during February 2006 to enable them to properly store their data, conduct basic, essential analyses, and produce clear and uncomplicated maps of rhino distribution and abundance in the MMNR.

A training workshop in field survey techniques was run by DICE and FoC during April 2005 for the six Scout Coordinators. This workshop also included two staff from the Transmara Scout Association and one staff from the Cheetah Conservation Fund, and all participants received a field survey manual produced especially for this workshop (Appendix III). The Scout Coordinators, in turn, provided field survey training to the 74 scouts, in four separate groups. At the request of various other conservation organisations working in the GME, several of these training sessions also included Transmara scouts, community wildlife association and KWS personnel. As noted already, further support was provided for the Transmara Scout Association through the provision of a laptop, field survey sheets and transport costs.

4. Scientific, Training, and Technical Assessment

Research

The project staff included 74 Maasai scouts, six Scout Coordinators, the Project Officer, Principal Investigator, Director of FoC and FoC administrative staff.

The project sought to promote community-based monitoring. Therefore, we used a simple encounter rate technique, based on monitoring changes in relative abundance, rather than a technically demanding method based on distance sampling to monitor changes in absolute abundance (Burnham & Anderson 1998, *Model Selection and Inference: A Practical Information-Theoretic Approach. Springer-Verlag, New York, NY.*). Hence, we sought to match our data collection protocol to the level of ability of the personnel involved, while still ensuring statistical rigor. Hence, the simpler encounter rate-based method that we followed allowed the scouts to be effectively trained in data collection techniques with which they felt comfortable, including the use of handheld GPS units and transect mapping.

Based on this protocol, the Project Officer produced wildlife field survey manual and data analysis tutorials using MS Excel and ArcView GIS, and these were used to train project staff in low-tech, but rigorous, wildlife monitoring techniques. The manual was improved during a training workshop by working with some of the Darwin Initiative scouts and all the Scout Coordinators in developing wildlife and threat field survey sheets. These sheets were then field tested during a training session and enhanced further to improve their usability. The output of a second training workshop resulted in a refined field survey method for collecting data on wildlife abundance and threat levels. To further assist with data management, six post-MSc level GIS volunteers, comprising three from the UK, one from Spain and two from South Africa, assisted the project by coming in two groups of three volunteers each, who worked in the Mara for successive three-month periods. These volunteers helped with creating the transect data inside the GIS and with constructing a spatially connected database between MS Access and ArcView, known as WIMS (Wildlife Information Monitoring System).

The 5257km^2 GME study area covered 10 group ranches that were subdivided into 37 administrative cluster areas, which the Darwin scouts used for their patrol activities. To then monitor wildlife across the GME, the data collection protocol sought to quantify encounter rates to determine changes in the relative abundances of focal species over time and within each cluster area. A total of 152 fixed transects were randomly placed using a stratified random sampling approach within the 37 cluster areas. The 152 transects had a mean length of 4.58 km, and a range of 1.72-8.15 km, and covered a total distance of 695.76 km. The location of each transect was recorded using a Garmin 12 GPS units (Garmin Corp., Ulathe, KA). To increase the amount of data collected, transects followed pre-existing animal or topographic trails, such as hill ridges that the focal species and humans would typically use. However, this method might have created a bias because transect direction was not determined randomly. Nevertheless, any bias would have been common across all transects and was not considered relevant to our monitoring programme, which sought only to measure temporal changes in wildlife abundance within each individual transect. Measuring temporal changes in abundance within transects controlled for potential biases associated with the different transects having varying levels of wildlife detections, or visibility. Finally, transect placements were made to follow as straight a line as feasibly possible, so as not to record the same individual animal more than once.

Transects were walked either in the early morning (from 0060 to 1000 hrs) or in the late afternoon (from 1500 to 1800 hrs), when the focal species were most likely to be active. The focal species that the scouts recorded comprised elephants, lions, wild dogs and zebras. The time, date and season (wet or dry) was recorded at the start of each transect. Scout pairs then followed the fixed route on foot and in silence, so as to not disturb the wildlife. Upon encountering a focal species, the number of adults and young were recorded. In order to quantify encounter rates expressed as

km per hour, each scout pair recorded their start and finish time, while the length of each transect was already known. The scouts worked in pairs, and remained unsupervised in the field, apart from any spot checks by the Scout Coordinators. Each scout pair patrolled transects within the cluster areas nearest to their village. The scouts were more familiar with these cluster areas. To make patrolling more effective, each scout pair plotted their wildlife monitoring transects and anti-threat patrol route onto 1:50,000 topographic maps that were then digitized within a GIS. In total, the scouts surveyed the 152 fixed transects over a combined total of 2158 times, and covered all the 37 cluster areas within the 10 group ranches during all seasons of the year.

Patrols to quantify threats to wildlife were also conducted between January 2004 and March 2006. These threat patrols differed from the monitoring patrols because the scouts were not restricted to their fixed transects, as this would have reduced their impact, given that patrol routes would have become predictable to poachers. A total of 1213 threat patrols were conducted with a combined patrol effort of 4645.79 hours with a mean walking time of 3.83 hours (± 2.20 hours, S.D.), and a range of 0.87-11.00 hours. From the scout records, the main threat types operating across the GME, which were predicted to most badly affect the focal species were i) poaching for bushmeat, ii) retribution killing of livestock predators, iii) retribution killing of crop pests, iv) charcoal burning, and v) other forms of habitat clearance.

A regression analysis was performed to determine which physical and threat factors, in combination or individually, explained key wildlife population trends along the 152 fixed transects between the: i) 2005 and 2006 wet season and ii) 2005 and 2006 dry season; and, explained wildlife presence along transects during the: iii) 2005 wet season and iv) 2005 dry season. To determine whether a linear or logistic regression analysis was more appropriate, population trend data at the transect level were tested for normality by plotting the frequency of their respective raw data. Neither of these datasets was normally distributed, making a binary logistic regression analysis more appropriate for the dataset. Population trend data were recoded into a binary code, with '1' denoting a decline on all transects and '0' denoting no decline. Binary logistic regression was used to analyse the wildlife presence data. The results from this analysis have all been peer-reviewed within DICE, through the production of two MSc theses that have been both internally and externally examined.

For the four sets of analyses, the addition and removal of independent variables from the regression model was controlled by the Wald statistic with respective *P*-values of 0.05 and 0.1. The performance of the model was evaluated by calculating the area under the curve (AUC) of the receiver operating characteristics plot (Manel et al. 1999, Pearce and Ferrier 2000, Osbourne et al. 2001). These values range from 0.5 to 1.0, and those above 0.7 indicate an accurate model fit, while those above 0.9 indicating a highly accurate model (Swets 1988). In the spatial analysis, it was necessary to test for non-independence caused by spatial auto-correlation because landscape features close to each other tend to have similar characteristics (Koenig 1999). The presence of spatial autocorrelation in the model was tested by calculating Moran's *I* statistic (Cliff and Ord 1981) using the Crime-Stat v1.1 software package (N Levine and Associates, Annadale, VA). This data analysis formed part of a DICE M.Sc. dissertation (Richmond-Coggan, 2006). These data are currently being analysed in more detail by the Project Officer in preparation for submission to a scientific peer-reviewed journal, such as Biodiversity and Conservation. A second M.Sc. dissertation on elephant conservation within Naikarra group ranch, eastern side of the GME, was completed within this Darwin Initiative. Both dissertations are outlined here:

i) Assessing wildlife distribution and population trends in the Greater Mara Ecosystem, Kenya: the synergistic effects of physical factors and threats: Louisa Richmond-Coggan (2006).

This MSc dissertation focused on four focal species, wild dog (*Lycaon pictus*), lion (*Panthera leo*), elephant (*Loxondata africana*) and zebra (*Equus burchelli*), each of

which responds differently to the different threat types across the GME. This study aimed to understand the variables affecting vulnerable species to enable future conservation programmes to the target key areas and reduce the decline of wildlife across the GME. The study also aimed to contribute to a wider understanding of patterns and causes of species decline across similar bioregions. Fixed transect surveys were conducted to record focal species encounter rates, thereby determining the population trends between 2004 and 2006. Non-fixed transects were also conducted to record encounter rates of threat types. Binary logistic regression analyses were performed to investigate the spatio-temporal physical variables and threat variables influencing focal species population trends and presence. The final models identified population trend and abundance patterns for elephant and lion populations, and abundance patterns only for wild dogs. Declines in elephant abundance were located in areas with lower retribution killings of crop pests and medium levels of bushmeat poaching. Declines in lion abundance were located in areas with medium threat levels in retribution of livestock predators and in areas closer to the MMNR border. Finally, wild dogs, which have suffered large scale declines across the GME over the past 30 years, were present in the wet and dry season in areas with high elevation and only the wet season in areas closer to rivers. There was some positive news from the scouts' patrols as they record the return of wild dogs to areas outside MMNR.
ii) Using a Geographic Information System (GIS) to investigate the factors that determine elephant pathways in Naikarra and Olderkesi group ranches, Kenya: Scott Millard (2005).

This MSc dissertation focussed on using a geographic information system (GIS) to spatially analyse the factors that determined elephant pathways within Naikarra group ranch and then use these data to test whether the positioning of pathways affected community attitudes to elephant conservation. This was achieved through a questionnaire survey and the creation of a spatial pathway map. The pathways were 'ground-truthed' using belt transects to measure the signs of elephant presence (dung) across the identified network; these data was then added to the GIS for analysis.

Spatial Analysis of the pathways showed that elephant abundance was higher closer to roads and in wooded habitats than grassland habitats, and lower with closer proximity to rivers. Analysis of the elephant habitat suitability map also showed no spatial autocorrelation and the model showed that observed findings matched expected findings, validating the elephant map. Analysis of the community questionnaires showed a that the majority of respondents had a negative attitude towards elephant conservation (55%) and that a negative attitude was mainly explained by a respondent living closer to elephant pathways and woodland habitats, the factors that positively influenced elephant habitat suitability. These findings highlight the need to work with these communities to improve the conservation management of elephants in Naikarra.

Training and capacity building

The Darwin Initiative project visited each of the 10 Group Ranches in GME during the early months of Project Year 1, to pay courtesies to its leaders and members, and to gain community support to select and train the 74 Maasai scouts. A date was then set for a wider Group Ranch meeting with the Group Ranch leaders and for members to nominate a list of scout candidates in advance for FoC. Interviews were then conducted by a panel, comprising Group Ranch leaders and FoC Scout Coordinators, including Stephen Kisotu, the lead Scout Coordinator.

After scout recruitment had been satisfactorily completed, an induction course was run from June-July 2005 to orientate successful candidates to the project goals and objectives, and to explain their duties as community scouts. Training was then provided in: (i) monitoring and patrol skills; (ii) community outreach skills; and, (iii) any other more general skills to enable them to perform their roles as community scouts, such as communicating effectively with the community, making reports to Kenya

Wildlife Service (KWS). The training also included 17 other scouts from partner organizations who were also operating in the GME. By the end of the training sessions all scouts were able to:

i) To record wild animals observation using the monitoring datasheet;
ii) Search for different threats to wildlife in different habitats;
iii) Record conflicts and assess damages caused by different wild animals species;
iv) Assist local communities to report conflicts cases to KWS and other relevant government authorities;
v) Use GPS units to map animal sightings, threats and conflicts incidences; and,
vi) Convey conservation messages to local communities through outreach sessions.

Once the Scout Coordinators were satisfied with the scouts' progress, the scouts were allowed to conduct patrols under the supervision of a Scout Coordinator, who further monitored scout progress, e.g. by checking that their patrol sheets were correctly completed and by observing their outreach activities to ensure that they gave correct information and were confident in delivering their talks. This close supervision enabled additional scout training needs to be identified, and subsequent training was conducted 2-3 months after the field patrols had begun. In addition, regular meetings were conducted between the Scout Coordinators and the scouts in their group ranch to enable any problems to be dealt with quickly. At the end of one year of patrolling activities, the scouts were given awards commensurate to their performance. At the end of the project period all scouts were awarded certificates of merits to recognize the importance role they played throughout the project period. The scouts who were retired during the changeover in FoC Director towards the end of the project, were also given letters of recommendation.

5. Project Impacts

Project purpose

The scouts' main duties were to: i) monitor wildlife populations; ii) record and mitigate threats to wildlife; and, iii) undertake community outreach. There is clear evidence that all these purposes were accomplished. Wildlife monitoring was conducted in 37 village cluster areas across 10 group ranches. From January 2004 to March 2006, a total of 152 fixed transects had been walked on a combined total of 2158 times with, resulting in a total field survey effort comprising 9883.6km. Encounter rates for four focal species were recorded for the 2005-2006 wet season and the 2005-2006 dry season. For all four focal species there were differences between encounter rates between wet and dry seasons, as follows: lions (wet: -17.0%±5.7, S.E.; and, dry: -5.9%±4.86), elephants (wet: -86.1%±14.8; and, dry: -140.2%±18.5), wild dog (wet: -11.2±9.5; and, dry: +16.6%±10.1) and zebra (wet: -168.9%±23.5; and, dry: -128.9%±21.0). Encounter rates for all four focal species declined from the 2005-2006 wet season. For the two herbivore species of elephants and zebras, a severe drought was experienced in the GME from December 2005-February 2006, so this decline might have been expected, as herbivores sought water and grazing elsewhere or died. In contrast, encounter rates for lion populations would not have been affected by the drought. Indeed, if anything, encounter rates for lions might have been anticipated to increase from wet to dry seasons, since as there was an abundance of prey carcasses across the GME during the drought. However, the reduced encounter rates for lions was consistent with observations of local persecution of lions outside the MMNR. Encounter rates for wild dog populations during the dry season showed a slight increase, which is consistent with local reports by Maasai and tour operators that wild dogs were beginning to recolonise the GME after a lengthy absence following disease outbreaks in the early 1990s.

Evidence of threat mitigation was measured through the threat patrols conducted from November 2004 to March 2006 in 16 village cluster areas. Over a 16 month period, a total of 1152 patrols were conducted in the nine cluster areas within the three Transmara group ranches of Kerinkani, Kimintet and Oloirien, where wildlife threats were considered to be greatest. The scouts confiscated a total of 107 snare traps, arrested 12 poachers and 18 charcoal burners, while 25 poachers and

39 charcoal burners evaded arrest and were chased away. On the Narok side of the GME, threat patrols focussed on seven cluster areas in the two group ranches of Koiyaki and Olkinyei, which, based on scout intelligence information, were considered to have the highest level of threats in Narok. A total of 61 patrols confiscated six snare traps, arrested 3 poachers and 0 charcoal burners, while 48 poachers and two charcoal burners evaded arrest. These three poachers were subsequently prosecuted by KWS and fined, for an undisclosed amount.

Evidence of the accomplishments of the community scouts was measured further by the response scouts to incidents of human-wildlife conflict. In the Transmara District, the scouts responded to 10 incidents of elephants that were raiding maize crops, and in which the scouts successfully negotiated with the farmers not to kill the elephants but to wait for KWS to drive the problem animals away. The scouts also responded to one conflict incident involving a leopard that had allegedly killed over 200 sheep and goats in various *bomas*. During this time, the scouts were able to contact KWS, who captured and relocated the leopard before the community killed it, as they were threatening to do. Scout activities in the Transmara District predominantly focussed on the more serious types of human-wildlife conflicts, because the scouts had to concentrate on the more pressing issues of poaching and charcoal burning. In contrast, scout activities in the Narok District focussed more on recording human-wildlife conflicts and conducting community outreach activities to help the Maasai reduce these conflicts, by providing mitigation advice derived from a previous DICE-Darwin Initiative in the Mara. Thus, between January 2004 and March 2006, a total of 3925 incidents of human-wildlife conflict were recorded by the scouts in the group ranches of Naikarra (n = 684), Olderkesi (n = 651), Siana (n = 600), Olkinyei (n = 685), Koiyiaki-Aitong (n = 580), Maji Moto (n = 282), Lemek (n = 244) and Koiyiaki-Talek (n = 199).

Evidence and accomplishment of community outreach was measured by the number of talks given to the communities by the scouts in Transmara (n = 96) and in Narok (n = 648) and though a survey on community awareness and perceptions of the scout programme activities. A fixed and open response household questionnaire survey was conducted by a Maasai from Naikarra who was not part of the scout programme, but who had previous social survey experience from working with Stephen Kisotu on Darwin project 162/6/131

From 100 randomly selected Maasai, aged 16-56, representing 36 village cluster areas and five group ranches from Narok District, the majority (98%) of respondents knew of the scout programme. Of these respondents, the majority (79%) said the greatest benefit provided by the scouts was being alerted to the location of dangerous wildlife, such as buffaloes and elephants. This was probably why the majority (56%) of respondents said that the most noticeable change since the community scout programme began was a reduction in human-wildlife conflict. Some of the other changes that were given included: reduced poaching levels (10%) increased awareness of endangered species (9%) and improved protection of wildlife as a tourism resource (5%). When asked, 'Would you like to see other organizations working more closely with the scout programme', the majority of respondents (94%) said 'NGOs', which is encouraging because the respondents did not perceive the community-based programme activities as being run by an NGO. The majority of respondents (97%) cited the scouts as being primarily responsible for the wildlife in their area. Overall, all respondents felt that they benefited from the scouts' work, and the most important benefit cited was a reduction in human-wildlife conflict.

Over the past five years, the majority of respondents thought that there had been a decrease in several threats to wildlife, including: forest clearance for charcoal extraction (90%); forest clearance for farmland (91%); wildlife killings for bush meat (100%); wildlife killings as a result of crop raiding (90%); and, wildlife killings as a result of livestock depredation (95%). Over the past five years, the majority of respondents thought that there had been a decrease in several forms of human-wildlife conflict, including: crop raiding by wildlife (72%); livestock being killed inside bomas (99%); livestock being killed whilst grazing (99%); and, wildlife attacks on

humans (89%).

The community outreach work of the scouts over the project provided a direct link between the scouts and the communities who had originally nominated them. Besides providing a mechanism for the communities to voice their concerns, opinions or praise for the scouts' work, the outreach activities raised the profile of the Darwin Initiative project within Maasai communities across the GME. To determine how the scouts' role was perceived by the local community, the 100 Maasai interviewed were also asked to say how they would react to different human-wildlife conflict situations. The majority of respondents (81%) said that they would kill a leopard if it attacked a goat from their boma the previous night, while a few (9%) said that they would first report the incident to the scouts. This result shows the importance of mitigating conflicts through improving animal husbandry rather than through scout patrol efforts. The majority of respondents (64%) said that if they found an injured lion in the bush they would report it to the scouts for help, while other respondents said that they would report it to KWS (14%), do nothing (10%), kill it because they do not like lions (9%) or other (3%). The respondents said that if a lion killed a member from their community then they would either seek help from KWS (41%), seek help from the scouts (34%), kill the lion (18%) or other (7%). As noted through group interviews with scouts from different group ranches, it is most likely that the communities would seek their help to act as facilitators between them and KWS, who could send armed units to tackle problem animals. The scouts themselves said that communities' had mentioned their previous bad experiences in dealing with KWS and better trusted the community scouts to act on their behalf.

The project has made the following direct contributions to help Kenya meet its obligations under the Convention on Biological Diversity, as follows:
Articles 7, 8 and 12: Increased capacity of local communities and a national NGO, FoC, to monitor and manage wildlife and conflict, both locally and (in terms of FoC) across their portfolio. Increased capacity within FoC to train community members and KWS rangers in enhanced monitoring and mitigation techniques.

Articles 10 and 11: Increased incentives for conservation being provided by FoC to local communities through training and employment of community scouts; increased capacity of local communities to generate sustainable benefits from wildlife through ecotourism.

Article 13: Increased public education and awareness was generated though scout community outreach activities and through scientific presentations and popular publications locally, regionally and internationally.

Article 17: There was substantial exchange of scientific and socio-economic information between the UK (DICE) and Kenya (local project partners) through training and field survey activities. The two DICE MSc dissertations produced within this project were completed with permission from the Kenyan Ministry of Education, Science and Technology, who received final copies of the scientific work.

Capacity building

The training of local community scouts and Scout Coordinators has improved the capacity for biodiversity conservation in Kenya. The training has yielded a data collection system that can be used to inform management and mitigation planning, and that can be used by local tour operators. The lead Scout Coordinator and former Darwin Scholar, Stephen Kisotu, continues to work for FoC on the project as the lead Scout Coordinator. Of the other five Scout Coordinators, four remain employed on the project in their same roles. Furthermore, the fifth Scout Coordinator now works as a conservation officer with one of the local tour operator partners, which is anticipated to strengthen links further between tour operators, FoC and Maasai communities. Of the scouts trained to work on the project and associated FoC initiatives, 31 community scouts remain active in the field, under FoC's revised arrangement for patrolling the GME.

Collaborations and social impact

An integral part of this project's philosophy has been, where possible, to collaborate and support similar projects across the GME and Kenya. In-country collaboration has been achieved through support and training within a GIS training workshop run by DICE and FoC, which also included staff from WWF, KWS, the Transmara Scout Association and the Kenyan National Environmental Management Authority (NEMA). A CD containing all GIS tutorials produced for this workshop, as well other documents, such as on how to use a GPS unit, was provided for all workshop participants (Appendix III).

Throughout the project, DICE and FoC collaborated with the International Livestock Research Institute, Frankfurt Zoological Society and GTZ (working on behalf of the German Federal Ministry for Economic Cooperation and Development) through the exchange of GIS and remote sensing data.

Many positive social benefits were noted throughout the project, which were identified by the scouts during project meetings in Project Year 2 and through a community questionnaire survey. The scouts themselves reported personal benefits, including direct employment, learning new skills, becoming more respected within their community and learning how to better communicate with people. The scouts reported that the communities felt involved in the project because they had elected the scouts from among their community. To maintain community participation and sense of ownership in the project, the scouts reported back to their communities through outreach activities and, when on patrol, the scouts joined in any community meetings that they encountered en route. This enabled the scouts to mobilize community action for conservation activities more effectively. For example, in Siana group ranch, the scouts got the community involved in litter picking after they had explained the dangers that litter posed to livestock, through injured hooves or ingestion of plastic. An unexpected and key benefit reported by both scouts and community members, was the ability of scouts to warn Maasai women collecting fuel wood, and Maasai herdsmen grazing livestock, of the location of dangerous animals. Through their outreach activities, the scouts taught the communities of the benefits of not cutting down or destroying trees, or of starting wildfires that destroyed the trees. This information was particularly relevant during the 2006 drought and the communities told the scouts that they appreciated this advice as the trees had provided vital, and often the only, nourishment for their livestock during this period. Other benefits reported by the community were of scouts rescuing stray livestock whilst on patrol, of scouts intervening and amicably resolving community disputes regarding wildlife (e.g. stopping the contentious tree felling conducted by a few individuals in Maji Moto Group Ranch), of scouts reducing poaching by local hunters, known as *dorobos*, and of scouts facilitating between the community and KWS for resolving human-wildlife conflict incidents.

The Narok group ranches mentioned one perceived negative impact of the project, although this was not directed towards the scouts nor was it an aim of the project. However, these group ranches commented that FoC did not provide compensation for wildlife related losses. In turn, this occasionally made it difficult for the scouts to explain the benefits of conserving wildlife. However, the potential solution to any problems that arise from a lack of compensation relate to the ambiguous distribution of wildlife tourism revenue received by the Narok County Council. Were this tourism revenue equitably distributed, it would ample compensate the community to offset any of their losses to wildlife.

One of the successes of this project was that it secured and then strengthened the trust of local communities with the scouts across the GME. This was achieved through the formal and informal community meetings that Darwin scouts and scout coordinators held across the GME throughout the project period. This trust was also developed through the benefits provided to the communities through scout patrol activities. With the change in FoC Director and in terms of ensuring legacy, it is crucial that community project partners remain informed of changes to the scout programme.

6. Project Outputs

Changes to outputs

Due to the unavoidable delays in the scout recruitment process, 10 scouts had received one year of training instead of the 20 that were originally planned for Project Year 1. However, by the end of Project Year 2, four times more scouts than originally planned had been recruited, and 74 scouts had received over one year of training. This also resulted in the holding of an extra community workshop. As already noted, a total of six Scout Coordinators instead of 12 team leaders were trained within this project. With fewer coordinators, training was considered to be more effective as the Scout Coordinators received more individual training, and over more weeks, than originally planned.

The scout association was not registered at the end of Project Year 2 as had originally been agreed with the former FoC Director. The incoming FoC Director was less keen on using the community-based model developed in this project and placed more emphasis on using KWS rangers and less emphasis on using local Maasai community scouts. It was therefore futile to try and register a scout association without a commitment of support from the new FoC Director after the Darwin Initiative project period had ended. This outcome was very disappointing indeed after gaining buy-in from the previous FoC Director and the TOs operating in the GME to securing a sustainable future for community scouts. However, when organisations change Director and policy in turn then changes, there is little that projects can do to influence any changes.

The radio interview in Kenya planned for this project was not conducted, although considerable effort was made to arrange this through two national radio stations (Kenya Broadcasting Corporation-National and BBC radio, Nairobi) and one regional radio station (Kenya Broadcasting Corporation-*Maa*). After lengthy negotiations with the different station managers, these stations would only agree to an interview if the project paid approximately £50. Whilst this amount may seem small, the project had no 'advertising' budget, and any transfer of funds within the budget would have been at the cost of the more important scout patrols.

Additional outputs

The Project Officer spent 20 weeks instead of eight weeks in Kenya to provide extra training for the Scout Coordinators, to develop the sponsor-a-scout funding initiative with the then FoC Director, Richard Hartley, and promote the scout programme to the TOs. In May 2005, at the start of Project Year 2, the Project Officer was joined by the Principal Investigator to present and discuss the scout programme amongst the TOs at a stakeholder meeting held in Nairobi. All TOs present expressed their continued desire and willingness to participate in the programme by sponsoring-a-scout and promoting the programme amongst responsible fellow TOs. For example, Cavin Cottar (1920s camp) offered to sponsor two scouts, provide them with radio equipment and vehicle support for anti-poaching patrols. The feedback from the meeting was very positive and the TOs were all impressed by the extensive GME scout patrol system implemented during Project Year 1. Further international support was provided by the six volunteers who provided GIS training for the scout coordinators, and who helped to enhance the project database, as well as to construct a brand new database for the Narok County Council rhino monitoring team working inside the MMNR.

Six additional outputs were achieved during this project. As noted already, two DICE MSc research dissertations were completed in the GME: one dissertation investigated the factors that explain elephant habitat suitability in Naikarra and Olderkesi group ranches and the other dissertation investigated the synergistic effects of different threats and environmental factors on lion, wild dog, elephant and zebra abundance and population trends across the GME. Both projects provided employment for local Maasai and training of KWS rangers in the field. Two additional training manuals and

an enhanced wildlife conflict monitoring form were produced. These were used to further develop the local capacity to monitor, map and protect wildlife, and resulted in the establishment of 152 monitoring transects across the 10 group ranches in GME and a greater number of training weeks for the scout coordinators (six weeks each instead of two weeks each). Due to a favourable exchange rate, surplus funds from Project Year 1 were used to expand the Darwin field station created during project 162/10/003 into a Centre for Wildlife and Conflict Monitoring. Four extra bedrooms, and a native species tree nursery to provide local training and reforestation activities, were created at the Centre.

A total of US$90,259 was secured during Project Year 2 from the US Fish and Wildlife Service Rhino and Tiger Program to directly support scout wildlife, threat and conflict mitigation activities. The activities funded included: the provision of an extra 4-wheel drive vehicle; and the establishment of a mobile education unit as part of conservation education programme to further develop and extend the scouts' outreach work in local communities. The aim of the mobile education unit was to travel around the GME to encourage conservation by engaging children and adults through documentary films and activities focused on wildlife conservation and environmental management. This additional funding enabled approximately £41,000 of assets to be handed over to FoC at the end of the project, instead of the originally estimated £7000. Thus, all proposals submitted were intended to support FoC in its future work, including information dissemination to all stakeholders. It is also hoped that FoC-UK will continue to disseminate information on the scout programme in its biannual newsletter, which has a current circulation of 5000 copies.

7. Project Expenditure

Details of our budget are given in the table below, which shows that the majority of our expenditure varied by less than +/- 10% for each budget line. For those budget lines with >10% difference, the extra 'travel & subsistence' expenditure was due to the Project Officer spending a greater number of weeks in the field. Under spending for 'capital items' and 'other' was due to GPS units and unit batteries, respectively, not being bought for each scout pair. These was a necessary change because the modification of the wildlife survey method, which was more suited to the scouts capabilities. Fixed transects were used, which meant that the scouts did not need to GPS record their routes for survey. Instead, the transect routes only needed to be mapped on a single occasion by the Scout Coordinators.

Item	Budget	Expenditure	Difference (%)
Rent, Rates, Heating, Overheads etc.			0
Office Costs			0
Travel & Subsistence			+11.19
Printing			0
Conferences, Seminars etc.			-6.61
Others -Scout Training, GPS batteries, Trust registration			-13.51
Capital Items			-16.99
Audit Fee			0
Salaries (specify)			
Project Officer			0.93
			2.75
Collaborators Costs			3.93
Field Workers Scouts			
TOTAL			+1400

1400.00 Provisional

8. Project Operation and Partnerships

Involvement with local partners

Four main local partners worked on the project: FoC; local Maasai communities; KWS and, TOs working in the Mara. All partners were closely involved during the project development stages and project implementation. As a result, plans were continually modified during project development, but not during project implementation. Throughout the project, there was on-going collaboration to maintain partner commitment and interest. All partners adhered to their agreed roles within the project lifespan, with the key exception of the change in FoC Director towards the end of the project. FoC were involved in running the project in-county and were involved in biodiversity monitoring, protection and awareness raising with the Maasai partners. TOs were involved with DICE's only international partner, FoC-UK, and FoC-Kenya in developing the long-term funding strategy for the scout programme. It was only during the last two months of the project when FoC-Kenya changed its Director, that the scout programme unexpectedly changed direction. Our local partner, FoC-Kenya has been active in continuing the project, but has based their approach on an entirely different scout programme model. The new Director of FoC has reduced the 74 Darwin scouts to 31 scouts, and has provided funding for these scouts for an additional 12 months through FoC-US. From DICE's perspective, greater and wider community participation is needed in order for the community-driven scout programme to continue to succeed. While, the alternative FoC model, which works more closely with KWS and less closely with the communities, may succeed also, it is still too early to evaluate its success properly.

KWS remained a project partner across the GME and our involvement with their local staff strengthened during the project. For example, the community scouts successfully assisted KWS in obtaining the tusks of an elephant locally killed in retribution from the Transmara District, which KWS had been previously unable to retrieve from an irate Maasai community who had lost a village member to the elephant. A meeting held between the Project Officer and Patrick Omondi, KWS elephant conservation coordinator, led to the development of a coordinated strategy for FoC-DICE-KWS and local communities to monitor and mitigate human-elephant conflict incidents in the eastern side of the GME, comprising Naikarra, Olderkesi and Siana group ranches. A funding application was subsequently sent to the US Fish and Wildlife Service African Elephant Fund, but this was unsuccessful. This project plans to also work with WWF, in particular with Dr Noah Sitati, a former Darwin Scholar, DICE PhD graduate and current DICE Honorary Research Fellow, who is managing a human-elephant conflict project in Transmara.

Collaborations with other projects and institutions

This project collaborated with two active Darwin projects (14040-Dr Mika Peck and 14024-Ms Belinda Stewart-Cox) through the exchange of information. There was no consultation with the host country Biodiversity Strategy Office.

9. Monitoring and Evaluation, Lesson learning

There were no external Darwin evaluations of the project during its lifetime. However, the project has been continually overseen by the Project Officer, using the logical framework, and agreed outputs and milestones, for guidance. The monitoring and evaluation was boosted by the Project Officer spending more time in Kenya than originally planned. When the Project Officer was not in Kenya there was regular communication with the lead Scout Co-ordinator, Stephen Kisotu, and to a lesser extent the then FoC Director, Richard Hartley. The Principal Investigator joined the project for two weeks at the start of Project Year 2 to assess project performance and provide valuable guidance for future planned activities. Financial monitoring was provided through external auditing conducted within FoC and the University of Kent's Finance Office.

Baseline data, milestones and indicators

The indicators of achievement comprise the successful completion of project objectives and milestones on time in Project Year 1. The Maasai Scout Coordinators had great understanding and insight into village politics which enabled us to circumvent the potential problem of a few politically powerful individuals promoting their own self interest, and de-railing the project. However, fundamental to project success was having patient, erudite and diplomatic Maasai counterparts of good standing within their community. In particular, working with Stephen Kisotu, a former Darwin scholar and DICE MSc graduate, who therefore knew how to manage the field activities of a Darwin project, was a key aspect of project success.

The baseline data collected included biological data from wildlife field surveys and threat data, both of which can be used to monitor long-term population trends of wildlife, and social data from a questionnaire survey administered to local Maasai and to the Maasai scouts, which can be used to monitor changes in attitudes and perceptions. These results have already been discussed and presented in Section 5 (Project Impacts).

Main problems and evaluation

At the start of Project Year 2, we did not foresee any reason why all the forthcoming milestones could not be completed properly and on-time. However, with the unexpected change of FoC Director, we were unable to complete the milestone of a registered scout association. Unfortunately, FoC delayed in informing DICE of the change in Director, who then took time to take up his duties. Consequently, DICE was unable to influence this unilateral modification of intended project outputs, and therefore to complete this milestone. The lack of institutional commitment by FoC to the project goals, with the change in Director, could only have been guarded against by a secondary contract between project executant and partner organisations. However, even had there been such a contract in place, the incoming Director could still have altered the goals after the project had ended.

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

There were no recommendations from previous reviews that required action.

11. Darwin Identity

The project made a concerted effort to publicise the Darwin Initiative wherever appropriate. Thus, the Darwin Initiative logo was included in six presentations, which were: (i) 'Tourism, Wildlife and Communities in the Mara' conference hosted by the East African Wildlife Society in Nairobi, May 2004; (ii) 'Cheetah Conservation' conference hosted by Cheetah Conservation Kenya in Naivasha, February 2005; (iii)'Impacts of Human-Wildlife Conflicts in Koiyiaki Group Ranch' conference hosted by Kenya Tourism Board in Nairobi, April 2005; (iv) Wildife Conservation and the Darwin Initiative' hosted by FoC and DICE meeting in Nairboi, May 2005; (v) 'Conservation Capacity Building and Practice in a Globalized World' hosted by the Society for Conservation Biology in Brazil, July 2005; and, (vi) 'Eco-tourism National Conference' hosted by the Eco-tourism Society of Kenya in Nairobi, November 2005.

The Darwin Initiative logo was also displayed on all GIS and wildlife training certificates. The 74 Maasai scouts and six Scout Coordinators all received and wore their Darwin Initiative badges on their uniforms. In addition, the Maasai scouts had the Darwin logo printed on the back of their uniforms. Stephen Kisotu who received an MSc in Conservation Biology during a previous Darwin Initiative project proudly used his title of 'Darwin Scholar'. A new Darwin centre opened in Naikarra giving further exposure to the Darwin Initiative. The DICE MSc of Louisa Richmond-Coggan conducted within the Darwin project, and which acknowledges the Darwin Initiative, has been selected by the IUCN/SSC Canid Specialist Group for display on their website where it can be downloaded (*http://www.canids.org/species/Lycaon_pictus.htm*). Louisa has also been

accepted to present this work at the 2007 Student Conference on Conservation Science to be held at the University of Cambridge.

Up until the former Director of FoC resigned, the private sector partnership between DICE, FoC and local TOs, such as Cottars Camp and Rekero Bushcamp, was strong. There are a myriad of conservation projects and conservation organisations in the GME. It was therefore important that this project distinguished itself from these other projects by having clear and realistic objectives that fully addressed the salient conservation issues in the GME. Equally, it was important that, as ambassadors for the Darwin Initiative, DICE and FOC are able to distinguish themselves from these other organisations by always practicing good conservation with honesty and integrity. In a stakeholder meeting, the TOs said that they often found it difficult to differentiate between projects and organisations working in the GME. So, through on-going scout activities across the GME and exposure of project partners to these activities and the Darwin Initiative by DICE and FoC to the tour operators, the TOs increasingly recognised the important services that the scouts were providing across the GME and who was providing these services.

By providing training to, and/or sharing data with, other organisations based in Kenya, such as the Transmara Scout Association, Cheetah Conservation Fund, KWS, Kenyan National Environmental Management Authority (NEMA), International Livestock Research Institute (ILRI), World Wide Fund for Nature (WWF), during the project all partners were exposed to the Darwin Initiative. Project exposure to The Kenyan Ministry of Education, Science and Technology was exposed to the Darwin Initiative because two DICE MSc dissertations were completed within this project, and both received the full support of the Ministry, through the provision of a research permit.

Overall, the project was recognised as being distinctive and having its own identity. Furthermore collaboration with the non-Darwin Initiative funded community scouts in the Transmara did not reduce the identity of the Darwin Initiative scouts in their uniforms. However, this may have caused some confusion to Maasai communities about whether the other scouts were part of the Darwin Initiative project, or not. As with a lot of FoC's community development work in the GME, the scouts became an integral layer in strengthening community relationships and building trust. This may have resulted in Darwin Initiative project receiving the credit for other projects, such as the community-based enterprise scheme funded by the Ford Foundation.

12. Leverage

The UK project staff from DICE, worked closely with FoC in writing two successful US Fish and Wildlife Service grants, secured during Project Year 2, to support project activities and expansion: US$45,725 was awarded for 'The Greater Mara Community Scout Programme' and US$44,534 was awarded for 'The Mobile Education Unit and Conservation Education Programme'. Now that this relationship between FoC and the US Fish and Wildlife Service has been established by DICE, FoC is continuing to raise funds for the scout programme in this way, and a US$38,179 grant was secured for 2006/07 activities. Three flights were donated through the British Airways Assisting Conservation Scheme during the project. Six GIS volunteers donated a total of 36 months of their time, equivalent to £54,000, to work on the project and advance the GIS database and develop an Access wildlife and threat survey database linked to the GIS database. One GIS volunteer donated a high-spec PC to the project. The TOs also donated an unquantified number of bed nights over a three month period to the Scout Coordinators during their wildlife transect mapping activities in the field. Finally, a third US Fish and Wildlife Service grant for US$49,994 was submitted by DICE and FoC to implement a series of human-elephant conflict mitigation schemes across the Narok group ranches. Unfortunately, this proposal was unsuccessful.

13. Sustainability and Legacy

At the end of the Darwin Initiative project, the scout programme was in transition following the appointment of the new FoC Director, and his unilateral decision to

reduce the community scout force to 31 scouts. FoC's current plan is for these scouts to work more closely with the KWS in conducting law enforcement patrols. However, it is unclear whether the scouts will continue with their wildlife monitoring work or community outreach, two vital and successful components of the DICE-run programme. With hindsight, the only conceivable way that the project's legacy could have been improved was if the scout association had been registered during Project Year 1 to expedite moves to make it more independent from FoC. Unfortunately, this was not possible for reasons already mentioned, and was not considered necessary as both FoC and DICE were making good progress on setting up a sustainable funding strategy for the scout programme after the Darwin lifespan, an activity considered more important at the time.

14. Value for money

The project is considered to have been cost-effective. Within one year, the project had set up a network of 74 local Maasai scouts across the GME. The large amounts of monitoring data collected from 10 group ranches, that included previously unknown but important tourism areas, are integral for sound management and conservation of Masai Mara's wildlife. The scouts provided scientifically reliable data using low-tech methods, which made them much more cost-effective than the vehicle-based surveys being conducted by other NGOs. The scouts were also collecting data on a range of wildlife species rather than having a single species focus like the majority of conservation NGOs working in the Masai Mara. It is difficult to put a quantifiable cost on the benefits derived from building and maintaining community consensus and support for a wildlife conservation programme. However, both the scouts and the communities noted a decline in local hunting by *dorobos* once the scouts started patrolling. These successes were generally agreed to have arisen from local peer pressure resulting from community outreach work and increased law enforcement. The initial costs of setting up the scout monitoring protocol were relatively high, but once completed the subsequent daily activities of the scouts were inexpensive as no specialist equipment was required for surveys. Finally, the project worked hard to collaborate widely with organisations working in and around MMNR. The benefits of the goodwill and reciprocity generated are difficult to quantify, but resulted in exchanges of data including a US$1000 satellite image and free accommodation from tour operators during transect mapping and training.

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

Project Contribution to Articles under the Convention on Biological Diversity		
Article No./Title	**Project %**	**Article Description**
6. General Measures for Conservation & Sustainable Use	0	Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	15	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	15	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	0	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	10	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	10	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	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).
13. Public Education and Awareness	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.
14. Impact Assessment and Minimizing Adverse Impacts	0	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	0	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	0	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	10	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	0	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**

16. Appendix II Outputs

Additional outputs are indicated by bold 'quantity' and 'detail' text, whereas enhanced outputs are indicated by bold 'quantity' text only.

Code No.	Quantity	Detail
15A	1	Press coverage in Kenya – The Standard
15D	2	Friends of Conservation newsletter, UK
14A	**6**	4 community stakeholder workshops, 1 scout programme launch and opening of Darwin centre in Naikarra, Masai Mara group ranch association workshop. Final project partner meeting
6A	**74**	Scouts recruited and trained
6B	**36**	Number of training weeks (6 team leaders 6 weeks each)
19A	0	Radio interview in Kenya
6A	6	Team leaders trained in leadership and conflict management
7	2	Educational poster (1 English version, 1 *Maa* version)
8	**22**	Weeks in Kenya of Project Officer (20) and Principal Investigator (2)
5	**80**	Maasai scout coordinators (6) and scouts (74) with over 1 year of training
14A	1	Stakeholder review
21	0	1 scout association registered
10	**3**	**1 wildlife and threat monitoring manual and survey sheets, 1 GIS training tutorials and manual and 1 enhanced wildlife conflict monitoring recording form produced**
21	**1**	**Expansion of the Darwin funded (162/10/003) Mara centre for wildlife and conflict monitoring**
22	**154**	**Number of permanent transects established**
23	**US$90,259**	**Additional funding received during Project Year 2**
10	1	Scout training manual
14B	**5**	Conference attended (SCB – Brazil 2006, East African Wildlife Society, Cheetah Conservation Kenya, Kenya Tourism Board, and Eco-tourism Society of Kenya)
9	1	Conflict management plan
12A	**2**	1 wildlife and threat monitoring database and **1 rhino monitoring database for Narok County Council**
14A	1	Final dissemination workshop
20	**£41,000**	Approximate value of assets handed over
11B	3	3 manuscripts in preparation for submission to peer-reviewed journal
2	**2**	**MSc research dissertations completed by two UK students**

*£45,000

where code appears more than once, numbers are added together on d'base.

17. Appendix III: Publications

Type*	Detail	Publishers	Available from
Management Plan*	Community-based monitoring of human-wildlife conflicts in Naikarra and Olderkessi locations of the Greater Mara region in Kenya (M. Walpole and S. Kisotu 2004)	n/a	DICE, m.linkie@kent.ac.uk
Manual*	Mara Scout GIS training tutorials (M. Linkie 2004)	n/a	DICE, m.linkie@kent.ac.uk
Manual*	A quick guide to downloading Garmin 12 GPS waypoints into ArcView (M. Linkie 2005)	n/a	DICE, m.linkie@kent.ac.uk
Manual*	Monitoring wildlife and threats in the Greater Mara Ecosystem (M. Linkie 2005)	n/a	DICE, m.linkie@kent.ac.uk
Manual*	Wildlife survey training exercises (M. Linkie 2005)	n/a	DICE, m.linkie@kent.ac.uk,
Newsletter*	FoC newsletter spring 2005 edition (M. Linkie 2005)	n/a	DICE, m.linkie@kent.ac.uk
Newsletter*	FoC newsletter autumn edition 2005 (M. Linkie 2005)	n/a	DICE, m.linkie@kent.ac.uk
Presentation*	Scout programme presentation given to the local tour operators (M. Linkie, N. Leader-Williams and S. Kisotu 2005)	n/a	DICE, m.linkie@kent.ac.uk
Presentation*	Society for Conservation biology annual meeting presentation (M. Linkie and others 2005)	n/a	DICE, m.linkie@kent.ac.uk
Manual*	The Greater Masai Mara Community Scout Programme Training Manual (S. Kisotu and M. Linkie 2006)	n/a	DICE, m.linkie@kent.ac.uk
Poster*	The Greater Masai Mara Community Scout Programme poster in English (M. Linkie and S. Kisotu 2006)	n/a	DICE, m.linkie@kent.ac.uk
Poster*	The Greater Masai Mara Community Scout Programme poster in *Maa* (M. Linkie and S. Kisotu 2006)	n/a	DICE, m.linkie@kent.ac.uk
MSc dissertation*	Using a Geographic Information System (GIS) to investigate the factors that determine elephant pathways in Naikarra and Olderkesi group ranches, Kenya (S. Millard 2005).	n/a	scottmillard@gmail.com
MSc dissertation*	Assessing Wildlife Distribution and Population Trends in the Greater Mara Ecosystem, Kenya: the synergistic effects of physical factors and threats (L. Richmond-Coggan 2006)	n/a	http://www.canids.org/species/Lycaon_pictus.htm
Presentation*	Wildlife survey methods (M. Linkie 2005)	n/a	DICE, m.linkie@kent.ac.uk
Sponsorship pack	Sponsor-a-scout (M. Linkie 2006)	n/a	DICE, m.linkie@kent.ac.uk
GIS and remote sensing data	Physical themes (e.g. rivers, roads, MMNR border, administrative boundaries), habitat map, Landsat 7 satellite image	n/a	DICE, m.linkie@kent.ac.uk

All materials that are included with this report are marked with (*)

18. Appendix IV: Darwin Contacts

Project Title	The Greater Masai Mara Community Scout Programme
Ref. No.	162/13/019
UK Leader Details	
Name	N. Leader-Williams

Role within Darwin Project	Principal Investigator
Address	DICE, University of Kent, CT2 7NR
Phone	-
Fax	-
Email	
Other UK Contact (if relevant)	
Name	M. Linkie
Role within Darwin Project	Project Officer
Address	DICE, University of Kent, CT2 7NR
Phone	-
Fax	-
Email	
Partner 1	
Name	Stephen Kisotu
Organisation	FoC
Role within Darwin Project	Scout coordinator
Address	Silver Jubilee Shopping Centre, Langata Road, Nairobi, Kenya
Fax	-
Email	
Partner 2 (if relevant)	n/a
Name	
Organisation	
Role within Darwin Project	
Address	
Fax	
Email	

19. Appendix V: Logical Framework

Project summary	*Measurable indicators*	*Means of verification*	*Important assumptions*
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 • the conservation of biological diversity, • the sustainable use of its components, and • the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources			
Purpose To empower Maasai communities throughout the greater Mara ecosystem to monitor and protect natural resources and manage human-wildlife conflict, and thereby improve local livelihoods, through the development of a sustainably funded community wildlife scout association.	New and existing skills and information on wildlife distribution, conflict and its management being utilised by communities to improve conservation and sustainable use of wildlife.	Masai Mara wildlife conservation and conflict management manual in use. Field surveys and patrol reports. Registration documents and meeting reports for scout association.	Continued stakeholder commitment to maintaining the association and its activities. Availability of future funding from group ranches (from MMNR tourism allocation) and/or the private sector or other donors. Commitment of major local NGO partner to medium term technical input and supervision.
Outputs Local capacity to monitor and protect biodiversity improved and expanded. Regional wildlife management and conflict mitigation manual developed and in use. A multiple-stakeholder regional community scout association established. Sustainable funding strategy developed. Publications and presentations.	50 additional community scouts trained in monitoring and managing wildlife conflict. Manual written, peer-reviewed, edited and printed; 200+ copies distributed locally and nationally, and on web-site. Stakeholders draft objectives and constitution; formal registration of association. Strategy endorsed by group ranches and private sector. 4 press releases, 2 public presentations, 3 scientific papers, school	Training and assessment reports; survey data; correspondence files. Review documentation; published report; copies forwarded to Darwin Initiative. Minutes of meetings; copies of registration documents. Minutes of meetings; copy of strategy. Copies of all publications forwarded to Darwin Initiative.	Suitable candidates available, complete training and remain active. Continued commitment by group ranches and other stakeholders to utilise manual once printed Stakeholder committment to co-operate in developing the association is maintained. Commitment to implement strategy maintained.
Activities Workshops and meetings Scout training Research and Monitoring Manual Development Dissemination	**Activity Milestones (Summary of Project Implementation Timetable)** FY1: Workshops/presentations to define objectives. Meetings to select scout candidates. Developing MoUs between stakeholders, drafting constitution for association, registration of association. FY2: Developing a funding strategy, disseminate results, scout graduation. FY1: Training for 50+20 scouts by KWS (security, discipline and patrols) and FoC/DICE (wildlife and conflict monitoring). Training of 12 team leaders by Nakuru educational institute in conflict management and leadership. FY1: Refine monitoring methods and implement and field test conflict management activities in pilot area. Monthly patrols and conflict monitoring initiated across the region, preliminary data analysis. FY2: Final data analysis and dissemination. FY2: Draft manual produced and sent out for review. Manual published. Press releases and presentations at beginning and end, publications submitted by Mar 06.		