Darwin Initiative Annual Report

Important note:

To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be about 10 pages in length, excluding annexes

Submission Deadline: 30 April 2014

1. Darwin Project Information

Project Reference	19-006
Project Title	The CUT plan for large carnivore management in Tanzania
Host Country/ies	Tanzania
UK contract holder institution	Institute of Zoology, Zoological Society of London
Host country partner institutions	Tanzania Wildlife Research Institute (TAWIRI)
Other partner institutions	Wildlife Division
Darwin Grant Value	£299,090
Start/end dates of project	April 1st 2012 – 31st March 2015
Reporting period (eg Apr 2010 – Mar 2011) and number (eg Annual Report 1, 2, 3)	April 1st 2013 – 31st March 2014
Project Leader name	Dr Sarah M. Durant & Dr Charles Foley
Project website	www.tanzaniacarnivores.org
Report authors, main contributors and date	Maurus Msuha, Sarah Durant, Rose Mosha 22nd May 2014 (delay due to illness of Sarah Durant)

2. Project Background

Tanzania holds some of the most important large carnivore populations in Africa, harbouring an estimated 25% of the world's remaining lions, 27% of its wild dogs and 9% of its cheetah. Tanzania's leopard population is also thought to be significant. However, these populations, many of which occur outside protected areas, face growing pressures from multiple threats including direct conflict with rural communities and illegal wildlife trade. Additionally, there are concerns about long-term sustainability of trophy hunting of lion and leopard. As top predators, large carnivores play key roles in the maintenance of Tanzania's unique ecosystems. They also contribute substantially to national revenue as a major draw for tourism, which contributed more than US$1billion in national revenues in 2008. Recognizing the biological and economic importance of its large carnivores, the Tanzanian government endorsed the 2005 National Conservation Action Plan (NCAP) for Carnivores. However, the sustainable management of large carnivore populations is limited by insufficient institutional capacity and weak co-ordination.

The main thrust of this project is to develop institutional capacity and strengthen coordination for management of Tanzania's large carnivores and reduce mortality and improve the conservation status of four IUCN threatened or near threatened species: leopard, lion, cheetah and wild dog. It will do this by managing key direct threats identified by the NCAP, namely: Conflict, unsustainable consumptive Use and illegal Trade (CUT). Conflict due to livestock loss results in retaliatory killing or problem animal control, and is a threat to all four species. Leopard and lion are targets of consumptive use through trophy hunting, which, although controlled through quotas, can be compromised due to insufficient information on abundance, risking unsustainable offtakes. Finally, evidence of a growing illegal international trade may be also increasingly threatening cheetah, leopard and lion populations.

Tanzania is home to around 25% of the world's remaining lions

3. Project Partnerships

The success of the CUT project relies on strong and productive partnerships across a range of stakeholders. The CUT project has been able to build on 11 years of partnerships established by the Tanzania Carnivore Program with a wide range of governmental and non-governmental organisations, that have already established foundations of trust, and the project has further developed these relationships. The project works closely with the wildlife management authorities and other stakeholders in Tanzania, particularly the Wildlife Division (WD) which is responsible for management of wildlife and formulation of policies, laws and regulations. WD have participated in the project fully, and have provided free entry permits to project staff to carry out camera trap surveys in Game Reserves to develop a protocol for monitoring leopard

and lion; and advice on establishing appropriate institutional linkages in developing training programs for customs for the control of illegal wildlife trafficking. WD are also a crucial partner in addressing human-carnivore conflict, and are responsible for developing policy guidelines for managing such conflict. They have actively participated and supported our progress in developing a protocol for the management of human-carnivore conflict.

We have continued to enjoy good working relationship with Tanzania National Parks (TANAPA) which is responsible for the conservation of wildlife in national parks and with the Ngorongoro Conservation Area Authority (NCAA) which manages Ngorongoro Conservation Area. All three management authorities (WD, TANAPA and NCAA) have fully participated in project activities and assisting with project progress as required.

The CUT project has also continued to build strong working relationships with a number of key NGOs and projects. In particular, the Tanzania Human-Carnivore Conflict Mitigation Working Group, which was established in the first year of the CUT project, is critical for developing the evidence base for the protocol to manage human-carnivore conflict. Members of this group include the Ruaha Carnivore Project, which works with communities to develop strategies for mitigating human-large carnivore conflicts in the Ruaha region; the Tarangire Lion Project, which works to mitigate conflicts between livestock keepers and lions in the Tarangire, western Kilimanjaro and Simanjiro regions; the Tanzania People and Wildlife Fund (TPWF) which works with livestock keepers and promotes the use of living walls for reducing livestock loss to large carnivores outside Tarangire National Park; the Ngorongoro Lion Project which aims to develop measures for mitigating conflicts with livestock keepers in the NCA; the Watu, Simba na Mazingira Project (WASIMA) or People, Lions and the Environment, which uses grassroots strategies to halt the trend in lion hunting in the Katavi region; and the long-term Serengeti Cheetah Project and the Range Wide Cheetah and Wild Dog Conservation Program both of which are also led by the CUT PI. We have continued our links with the FAO Tanzania office with whom we are working to develop and adapt their toolkit for managing human-wildlife conflict.

For our work in combatting illegal trade in large carnivore products in Tanzania we have established a strong working relationship with WWF-TRAFFIC. During the reporting period we have also established links with new Lion Borderland Conservation Initiative, where we have shared joint experiences across Kenya and Tanzania in the management of human-lion conflict and survey techniques between ourselves, NGOs and government institutions in border regions.

4. Project Progress

We have been able to implement most of the planned activities for year of the CUT project. Notable achievements include:

1. Renovation of the Tanzania Carnivore Centre building. The Centre now provides a good working environment for the project team and other stakeholders, including TAWIRI, who use it for holding meetings on wildlife conservation.

2. We have conducted a human-carnivore conflict survey in Ngorongoro Conservation Area. 122 households were interviewed and data indicated that livestock depredation has an impact on livelihoods, and that most losses of livestock due to large carnivores occurred away from the household boma in this region.

3. We have leveraged funds from UNDP to initiate a project to manage human-large carnivore conflicts in Longido through construction of predator-proof bomas. Ten bomas have been constructed, helping to safeguard livestock-based livelihoods for pastoralists in the region.

4. We have made steps to develop a lion lights prototype to protect temporary bomas, constructed when herders have more away from the main boma to seek forage further afield.

5. A wet season and dry season survey for establishing leopard density within a hunting concession (Maswa Game Reserve) has been completed, and a total of 45 and 14 leopard and lion sightings were obtained. These surveys will be used to establish

absolute abundance and set quotas. We have engaged with PANTHERA to establish a standardized spoor counting protocol for ongoing monitoring of trends in lion and leopard populations.

6.   We have continued to update a centralized database for reporting all trafficked large mammal (large carnivores and elephants) products. This database how holds information from 35 incidents of illegal trade recorded in the country during the project. These incidents represent a total 530 elephant and 48 large carnivores.

7.   We have successfully engaged Tanzania Game Trackers (TGT), a major hunting company in Tanzania, who have helped to collect samples from leopard and lion for DNA analysis.

8.   We have continued to provide training to TAWIRI staff in order to establish a cadre of trainers at TAWIRI. Project staff have participated in 8 workshops and conferences, and four interns have been provided with training over this reporting period.

9.   A workplan for training of customs officers at priority exit ports to enable better identification of large carnivore products, improve reporting and enforce CITES legislation has been developed in collaboration with TRAFFIC East Africa. Funding has been secured to enable a training workshop to go ahead in the coming year.

10.   Our stakeholder network has increased 350 people during the first reporting to 470 people during the period under review and we have leveraged additional funds to continue publication of our project newsletter – Carnivore NewsBites.

11.   A total of £42,000 of additional funds has been leveraged that directly support project activities, including boma construction, an illegal trade training workshop, and establishing a national carnivore database.

In addition, we have also contributed to a number of unplanned achievements that also support CUT objectives, notably:

12.   The project has provided key information to a number of large carnivore conservation initiatives. These include the contribution of data on lion, cheetah and wild dog sightings to support a major initiative that aims to identify habitat corridors for these species. We have also provided information on the legal frameworks and legislative environment for wildlife in Tanzania to inform a legislative review for SADC.

13.   Publication of 'A Field Guide to the Larger Mammals of Tanzania' – this field guide draws on information gathered in two previous Darwin Initiative projects, that established the Tanzania Carnivore Program. The guide will be on sale in June 2014.

4.1   Progress in carrying out project activities

4.1.1 National Carnivore Conflict Protocol

There are a number of established projects aiming to address human carnivore conflict in Tanzania, who have come together under the Tanzania Human-Carnivore Conflict Mitigation Working Group established under this project. A series of meetings of this group have established that tools to prevent night time losses of livestock at the main household boma are now fairly well understood and are being implemented widely within projects in Simanjiro, western Kilimanjaro and the Ruaha ecosystem. The interventions rely on the use of a strong wire mesh barrier around the boma and, usually, the planting of 'living walls' to create a visibility barrier, so prowling predators are unable to see livestock within the boma. Such interventions can cut night time losses of livestock to lions and leopards from the boma to virtually zero. The Working Group identified a need for wider implementation of this strategy across areas with high attack rates on bomas. We have thus leveraged 69,000,000T/- (approximately £24,700) additional funding through UNDP to address human-large carnivore conflict in the Longido Wildlife Management Area (WMA), and initiate a boma reinforcement program there. Over the current reporting period a total of ten such bomas have been constructed.

Wire meshed reinforced bomas with living walls have been shown to be effective at reducing night time livestock depredation. The project has leveraged funds from UNDP to expand existing boma protection projects into the Longido WMA.

In our first year the Working Group identified two major gaps in tools available for preventing livestock depredation. Addressing these gaps will help communities maintain pastoralist based livelihoods within wildlife areas that support high densities of large predators:

1) Livestock loss at pasture is poorly understood. Information available for understanding losses at pasture are largely confined to the Ruaha landscape, and indicate that the age and number of herders accompanying livestock is key to preventing predator attacks. The study also indicated the use of guarding dogs can help to mitigate against loss, however, a similar study in Kenya suggests that the use of dogs can be counterproductive in some areas, as they may attract African wild dogs. The Working Group identified a need for an improved understanding of the patterns of livestock loss at pasture, and the impact of different livestock management methods in reducing depredation.

2) Prevention of livestock loss at temporary bomas. Many livestock keepers in Tanzania are from semi-nomadic societies, such as Maasai or Barabaig. While they may spend many months a year at a particular boma, which can be reinforced as described above, changes in rainfall and forage, particularly in the dry season, may cause them to forage further afield. In such circumstances they may spend weeks, or sometimes longer, stationed at a less robust and more temporary boma. It is impossible to move expensive wire reinforcement from boma to boma, and it is prohibitively expensive to reinforce these additional temporary bomas, particularly when the time of stay may be quite short. Hence there is a need for tools that can reduce livestock attacks at temporary bomas. Such tools need to be self-contained and sufficiently small to enable them to be carried from boma to boma.

Addressing these gaps has been a focus over this reporting period. For the first, anecdotal reports identified Ngorongoro Conservation Area as a priority area for gathering information due to high reported depredation rates at pasture. In December 2013 we therefore implemented a survey covering the households living between the Serengeti National Park and Ngorongoro crater, where there is high potential of attack from all four of the large carnivores that are a focus of this project (lions, leopards, wild dogs and cheetah), as well as spotted hyaenas. We have worked with Andrew Jacobson, a PhD student based at ZSL, to adapt the questionnaire used by Maddox (2002)[1] and Dickman (2008)[2] for use for rapid assessment surveys, with a view its use for wider roll out across Tanzania. This survey, therefore, not only provided core data for informing the conflict protocol, but also represented a trial for wider use of the questionnaire. 122 households were surveyed in total. Results are being analysed in

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[1] Maddox, T. 2002. The ecology of cheetahs and other large carnivores in a pastoralist-dominated buffer zone. Ph.D. dissertation. University of London, London.
[2] Dickman, A. J. 2008. Investigating the key determinants of human-large carnivore conflict in Tanzania. PhD Thesis. University College London, London, U. K.

detail, however nearly half reported cattle losses due to large carnivores, and the majority (68%) reported smallstock loss to large carnivores. When questioned about the last attack, 81% of lion, 65% leopard, 82% cheetah and 91% African wild dog attacks occurred outside of the boma, either at pasture, moving between different sites or because livestock were left behind at night. A similar survey will be conducted in the Longido WMA through the UNDP supported project (see above). This pattern confirms that loss outside the boma is the most important source of loss in the Ngorongoro region. This questionnaire design will be used within the carnivore conflict protocol, and we are in discussions with PANTHERA about its use as a recommended standard for all big cat surveys in Africa. The use of a standardised questionnaire would enable the use of meta-analysis to establish large scale patterns of livestock depredation.

The development of mobile protection for transient bomas has been a substantial challenge. The conflict working group initially focused on developing materials that might be used for a portable boma, however, after further analysis, this was deemed to be unlikely to be practical on a large scale. Over the current reporting period we have been in discussions with Paula Kahumbu, and are pursuing a model based on the lion lights concept developed by Richard Turere. These lights model the action of a torch carried by a person, and are based on simple low power LED lights. However, the model Richard developed and used in Kenya, is designed to remain on all through the night, and hence there is a potential problem of habituation. For example, a predator may get accustomed to seeing the lights night after night, and, eventually, if these lights do not result in additional aversive experiences for the predator, there is a danger that the predator may resume attacks on livestock. We therefore plan to modify these lights to avoid such habituation by 1) incorporating a motion detector so the lights only operate if a large animal is detected outside the boma; 2) reinforcing aversion by incorporating an alarm system to waken the inhabitants of the boma, who can then provide backup aversion activities to frighten away any stalking predator. It is unlikely that a predator would pursue an attack in such circumstances, and should eventually learn to avoid the lights. Unfortunately, since we have developed this concept, we have had to wait for the capacity to develop it further. ZSL's technical team, who are adept at these sorts of tasks, have agreed to help us, but they are not available until August. We hope, once they are engaged, a prototype can be developed reasonably quickly, to allow some preliminary testing to inform the overall conflict strategy developed in the final year.

Finally, we have met with FAO in Dar es Salaam to engage their support for the adoption of their human wildlife conflict toolkit for carnivore conservation in Tanzania. The toolkit will be adapted and modified for use in Tanzania through a workshop based process in the coming year. This is moving forward in collaboration with the Range-Wide Conservation Program for Cheetah and Wild Dog, who aim to use the toolkit across eastern Africa. We have also leveraged additional funds ($10,000) from St Louis Zoo's WildCare Institute to establish a national human-wildlife conflict database in Tanzania.

4.1.2 Tools for monitoring lion and leopard abundance

The Tanzanian government earns significant funds from trophy hunting in wildlife areas that are not amenable to photographic tourism. However, setting sustainable targets for key trophy animals, such as lions and leopards, presents a challenge, particularly given that both species are highly secretive and elusive.

Leopard recorded at 6:35am, one morning in Maswa Game Reserve – now where is she going?

Same leopard 23 minutes later on her way back…..

The Tanzania government has enacted age-based quotas for lions, which, provided they are properly implemented, should ensure that lion hunting is sustainable. However, there is no similar mechanism for leopards. The sustainability of any given quota in a hunting concession will depend on the abundance of the species within that concession. However, information on leopard abundance in different habitats is sparse, and the derivation of current quotas on leopard is thus largely based on guesswork. In particular, there is no evidence as to whether the current hunting quotas for this species are, or are not, sustainable. Camera traps, whereby remote cameras are used to 'capture' photographs of wildlife species, have been proven to be an effective method for assessing leopard abundance. When deployed within a grid survey design, mark recapture analysis of individually identified leopards can be used to estimate overall abundance. The Carnivore Centre at TAWIRI holds probably one of the most extensive camera trap survey databases in the world. The database holds information from 29 surveys conducted across the country since 2004, and the project team is very skilled at undertaking these surveys. The project has therefore trialled this method for its capacity to deliver accurate and precise estimates of leopard abundance in Tanzania.

In the first year the project initiated a wet season camera trap survey of the Maswa Game Reserve, which started on 25 January and was completed on 18 May 2013, and which was reported in our first report. The survey design used a grid of 40 camera trap stations 2 km (Figure 1) between stations and with paired cameras placed opposite each other. The survey covered a total area of 102 km^2. In our subsequent review, the reviewer pointed out that seasonal differences within sites may have an impact on the survey success. We agree with the reviewer, and hence, during this reporting period, we have undertaken a second survey at the Maswa Game Reserve in the dry season from 01 August to 16 December 2013. These two surveys were designed to be longer than should be needed in the final design, in order to
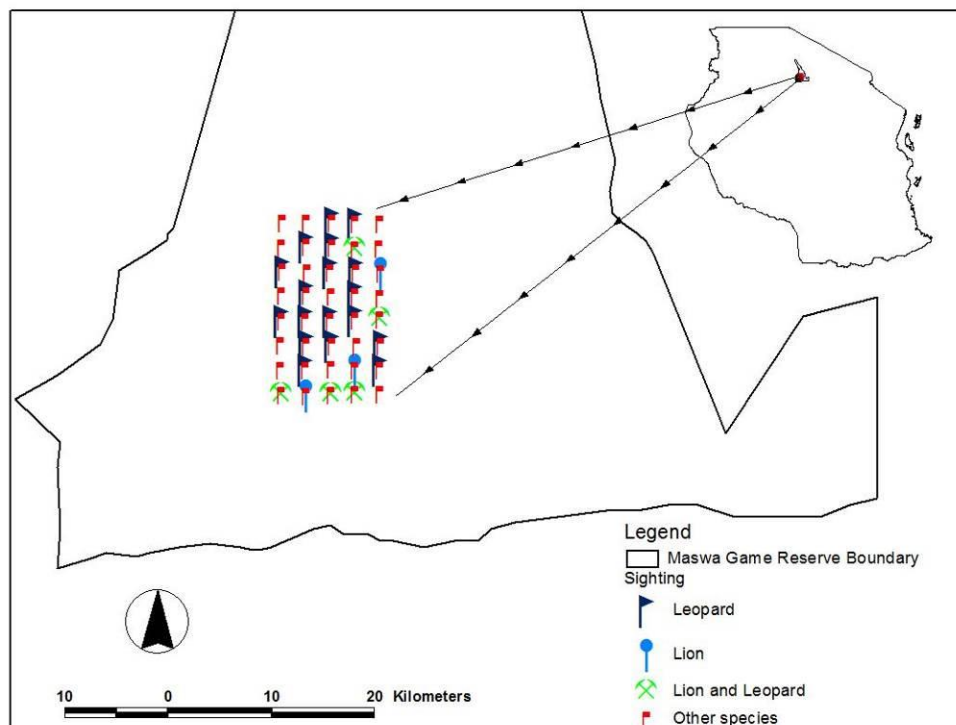

Figure 1. Camera trap survey plan and lion and leopard observations in the Maswa Game Reserve

generate sufficient information to optimise the accuracy and precision of the estimate against the overall cost (length) of survey. It is, perhaps, a reflection of the good state of biodiversity in the area that a massive number of photographs were captured during these surveys, 118,035 photos in the wet and 268,827 photos in the dry season. However, such a large number of photos take a substantial amount of time to process and analyse. Preliminary results (Table 1) show that overall leopard and lion trapping rates were higher during the dry season than during the wet season. Comparing the two species shows that leopard had relatively higher trapping rates than lion. Because of the large number of photos taken, data entry is still ongoing; however we expect to write up the results for scientific publication in the coming year.

Table 1. Leopard and lion trapping rates in the Maswa Game Reserve during the wet and dry season. The large number of trap nights were used in order to derive a shorter protocol for subsequent surveys that maximises accuracy and precision over survey duration. Data is preliminary and not yet adjusted for factors such as camera malfunction etc.

| | Sightings | | Trap nights | | Trap rates | |
| | | | | | | |
Species	Wet	Dry	Wet	Dry	Wet	Dry
Leopard	12	33	4,560	5,080	0.003	0.006
Lion	5	9	4,560	5,080	0.001	0.002

Finally, because of the low number of lions in camera traps, in order to address issues of monitoring lion populations, we are planning to adapt and implement the spoor survey methodology trialled by PANTHERA in west Africa and Kenya. Such methods can be used to monitor ongoing changes in both lion and leopard populations, once an initial quota system has been established either through age based trophies (lions) or through establishment of abundance through camera traps (leopards).

4.1.3 Better enforcement of CITES for large carnivore products

Tackling illegal wildlife trade has been a new area for the project team. We have invested considerable ground work in establishing new relationships with TRAFFIC and the relevant authorities within WD. We have held a series of meetings with WD and TRAFFIC, and have been liaising with the WD CITES authority on this aspect of the project. Google alerts set up during the first year of the project for information pertaining to wildlife trafficking continue to provide systematic reviews of national newspapers. Relevant information from these papers is entered in a database and stored at the Carnivore Centre. This database holds information from a total of 35 incidents of large carnivore or elephant wildlife crime in Tanzania, representing the illegal trafficking of 530 elephant and 48 large carnivores.

A rare example of a confiscation from large carnivores: Lion teeth confiscated from a Chinese national in western Tanzania on 21 April 2013. The Chinese national was also found in possession of 13 pieces of ivory

However, as mentioned during the first year of the project, there is relatively little reporting of large carnivore confiscations. The project leader has talked to a number of experts in wildlife trade, and all are adamant, that given the growth of export of lion parts from South Africa to China, there is likely to be a big demand for lion parts from Tanzania, and that the lack of awareness of the issue is almost certainly due to under reporting. Conversations with TRAFFIC and the customs authorities have identified the following issues:

- There is very little training in how to identify wildlife products.

- Even when suspected products are identified, customs officers lack confidence to confiscate products, particularly when faced with assurances from travellers (who can be well connected) that the items are fake.

- Reporting is haphazard.

We have therefore agreed with TRAFFIC that training is required at a fundamental level, not just for carnivore products, but also for ivory and rhino horn, since it makes sense to focus on all high value mammalian trade items together. We have thus modified our plans to focus on the development and implementation of a training workshop. Such a workshop would be designed to enable it to be used widely across Africa. However, it was estimated that it would incur $15,000 additional costs beyond those budgeted in this project, and hence we identified a need for additional funding. In December this year these additional funds were secured from the Howard G Buffett Foundation, allowing planning for the workshop to go ahead.

TRAFFIC have developed a manual for identification of animal parts subjected to illegal trade, which we are modifying for use in the training workshop. In particular, we are developing a '*fake or real*' section to help enforcement officers determine the difference between real wildlife parts and imitation parts. At present training modules are being developed and the support of the relevant ministries secured. Once these are established the program will go ahead in the

Manual for identification of animal parts subjected to illegal trade designed for use by customs officers (in Swahili).

coming year, and the curriculum developed will be rolled out beyond Tanzania through TRAFFIC.

Finally, one of the planned outputs of the project is to generate a genetic map of lions and leopards using trophy samples, to allow identification of the source of any confiscated illegally traded products from these species. During the reporting period, we have worked with hunting operator, TGT in two of the priority sites (Maswa and Ugalla Game Reserves) and collected eight leopard samples. These samples are held at TAWIRI DNA lab and will be submitted to ZSL for analysis. We are now working on an additional agreement for access to lion samples collected by hunting companies and held at TAWIRI to enable the project to develop a genetic map for lion.

4.1.4 Establish capacity for large carnivore management

Renovation of the project buildings has been key to sustaining the capacity established by the project. After the building was originally constructed in 2002, it has undergone substantial

settling, resulting in large cracks in the walls and floor. Since the start of this project we have consulted with a structural engineer, and in our first year we put out a tender for the repairs, in accordance with capital investment requirements imposed by TAWIRI. On receipt of the tenders, and in consultation between the project leaders and TAWIRI, we engaged Constan (T) Ltd, who strengthened the walls and floor, and resurfaced and replastered over the substantial amount of cracked plaster and floor. The work incurred substantial disruption and all staff had to move out of the building between July -September 2013. No new cracks have developed since then, leading us to believe that the settling has finally finished and hopefully the building will now last for years to come with no further cracking.

During the year under review TAWIRI staff have received on the job training in conflict management of large carnivores, camera trap survey design and implementation, and approaches to addressing wildlife crime. However, where possible, we have taken advantage of opportunities for more formal training:

- Rose Mosha attended a three day workshop on Human Wildlife Conflict mitigation in Arusha, Tanzania from 27th–31st May 2013.

- Maurus Msuha attended a two day workshop in Nairobi in 24-25th September 2013 on using Marxan as a tool to make scientifically sound decisions considering trade-offs between conservation and climate change. The training was organised by AWF and WCS.

- Maurus Msuha attended a two day conference on Carnivores at ZSL in 14-15th November 2013, providing an up to date overview of ongoing international research into carnivore biology. He co-authored a presentation at the conference with the Project Leader.

- Maurus Msuha attended a workshop on illegal wildlife trade organised by TRAFFIC in Dar es Salaam in 27-28th November 2013.

- Project staff provided substantial support to TAWIRI in organising and implementing their biennial conference on Wildlife Research in Arusha in from 4-6th December 2013. This conference provides an important opportunity for learning and information dissemination between researchers and conservationists working in Tanzania.

- Rose Mosha attended a ZOTERO training course held at the Centre in 13 January 2014 to familiarise herself with this software for academic reference management. This will help her to manage the centre's growing academic library.

- Maurus Msuha attended a two day workshop on cross border lion conservation in Kimana, Kenya from 24th-25th January 2014.

- Rose Mosha visited ZSL for one week in 24-30 March 2014 where she was introduced to current approaches to mitigating human wildlife conflict, DNA analysis and landscape genetics and conservation management.

- Rose Mosha attended a two day workshop in March 2014 on conserving elephants and lions in the Tanzania-Kenya borderlands. This workshop familiarised her with new approaches to conservation of these species and experiences learned from Tanzanian and Kenyan approaches.

Providing training and mentorship for young Tanzanian wildlife professionals has also been a priority for the carnivore program throughout its operation. Over this reporting period we have provided internships for four University students and new graduates, Baraka Maree, BSc Wildlife Science from Sokoine University, Ramadhani Mollel, BSC Wildlife Science from Sokoine University, Juma Swalehe, BSc Willdife and Zoology from University of Dar es Salaam and Joseph Mollel, Diploma in Willdife Management, Mweka Wildlife College. Baraka has returned to his studies, while Ramadhani has gone on to a job with Wildlife Division. The latter two interns are still working with the project. Dennis Minja, a Tanzanian Masters graduate, also joined a sub-project as permanent staff – the Serengeti Cheetah Project – and will be increasingly involved with the wider aspects of the Tanzania Carnivore Program.

Project team members Rose Mosha, left third in second row, participating in conflict mitigation workshop in Arusha (left) and Maurus Msuha for lion borderland conservation,(right, fourth from left in second row).

The project continued to expand its extensive network of stakeholders developed over 10 years of operation from 350 during the last reporting period to 470 during the period under review. Notable new stakeholders include Lion Borderland Conservation. Our collaboration with the Lion Borderland Conservation focuses on cross border cooperation and sharing information on strategies for mitigating human-lion conflicts and survey techniques in a trans-boundary lion population in northern Tanzania.

The project has also leveraged additional funding to allow it to continue to print and distribute two issues of its newsletter, Carnivore NewsBites (see accompanying materials), which provides a forum to disseminate information about carnivores to Tanzanian stakeholders and public. This newsletter is widely distributed and has been uploaded on the Carnivore Centre website (www.tanzaniacarnivores.org). Additionally the CUT project has produced an e-newsletter and during the reporting period two issues have been distributed to stakeholders.

In addition to these activities the project maintains a database of mammal distribution across Tanzania. This database has been critical for conservation action planning, and also underlies the distribution maps of a Guidebook to Tanzanian Mammals written by the project team that is due to be published in June 2014. Over the reporting period this database has increased from 48,063 mammal records on April 1st to 50,568 by the end of the reporting period – an increase of 1,505 records.

4.1.5   CUT large carnivore plan

The CUT large carnivore plan will be delivered in year 3 of the project.

4.2 Progress towards project outputs

4.2.1 Standardised evidence based protocol on large carnivore management and conflict reduction agreed and accepted by government, NGOs and local community stakeholders

A Tanzania human-carnivore conflict working group has been established; a workplan for collecting information to guide development of the protocol established; and agreement from WD that TAWIRI should lead on the development of this protocol has been secured. Two priority areas were identified: mitigation against livestock loss at pasture and protecting temporary bomas. A pilot large carnivore conflict survey to assess the importance and mitigation of losses to carnivores outside bomas was implemented in the Ngorongoro Conservation Area, which has demonstrated the importance of livestock losses at pasture in the region. Further analysis will be undertaken to identify factors associated with potential mitigation or exacerbation of livestock loss. A lion lights device to protect temporary bomas has been identified, and the assistance of ZSL's technical team secured in order to develop a prototype for testing during year 3. Finally, reinforcement of bomas has been demonstrated to be effective at reducing livestock loss, and hence additional funds were leveraged to implement a boma reinforcement program in the proposed Longido Wildlife Management Area. Ten bomas have been reinforced over the reporting period.

Maurus Msuha (second right) with pastoralists in Longido after a recent senitization meeting.

4.2.2 Standardised tools for monitoring lion and leopard abundance established, supported and implemented by WD, TAWIRI, hunting operators and conservation NGOs

Two pilot surveys to assess leopard density in the Maswa Game Reserve have been completed. The first was in March-May 2013 covering the peak of the long rains, the second July-September 2013, in the dry season. The survey design used a grid of 40 camera trap stations with 2 km between stations and with paired cameras placed opposite each other. The survey covered a total area of 102 km^2. The surveys recorded a total of 45 sightings of leopard and 14 of lion. We are now compiling detailed capture histories necessary for mark-recapture analysis to estimate leopard abundance. This analysis will provide information that will enable a more efficient design that will be tested in our next survey.

4.2.3 Better enforcement of CITES through a systematic and centralised reporting system at exit ports and identification of source populations for large carnivore products confiscated at custom checkpoints.

WWF-TRAFFIC Eastern Africa Region has been fully engaged as a key partner and we are moving forward with them in this output, with the agreement that we will expand our activities to encompass rhino and elephant as well as big cats. We have altered our approach to develop a training workshop with interpretative materials, rather than providing separate training modules

at each exit port. This has meant that we needed additional funding ($15,000), which we have secured from the Howard G Buffett Foundation in this reporting period. We have developed a joint work plan with TRAFFIC for moving forward with this workshop in Tanzania. The training workshop will be designed with a roll out for other countries in mind. Key stakeholders (WD and Tanzania Port Authority) have been engaged and have shown strong interest and support for the training programs.

4.2.4 Established capacity in Tanzanian institutions, NGOs and local communities for conflict management, ensuring sustainable use of large carnivores, and controlling illegal trade

The project buildings have been repaired successfully. On the job training has been provided in all aspects of the project, including human carnivore conflict management, camera trap surveys and monitoring illegal trade. The project leaders spend substantial amounts of time working directly with staff, and are available for one on one mentoring as needed. A supportive and active human carnivore conflict mitigation working group continues to work well, comprising of Tanzanian and expatriate wildlife research scientists and management authorities. Two of the CUT project staff from the Carnivore Centre at TAWIRI have visited ZSL during the reporting period and taken the opportunity to learn about addressing threats to large carnivores from the wealth of experience of researchers and conservationists based at ZSL working in Africa, Europe, Asia and South America. Four young Tanzanian graduate interns have been supported by the program and provided important work experience in carnivore research and conservation.

In addition, staff have received more structured training and learning from a total of eight workshops and conferences addressing issues around illegal trade, human wildlife conflict, genetics and biodiversity monitoring.

Rose Mosha, right being shown lion distribution maps across the African continent on her visit to ZSL. Extreme left is Sarah Durant, CUT Project Leader and at the centre is Andrew Jacobson, Sarah's PhD student who has been assisting with the design of the conflict survey questionnaire.

4.2.5 CUT large carnivore management plan for sustainable management of CUT threats to large carnivores

Yet to be developed as it depends on the completion of 1-4 above

4.3   Standard Measures

Table 1   Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
1A	Number of people to submit thesis for PhD qualification (in host country)	0	0	0	1	0	0	1
1B	Number of people to attain PhD qualification (in host country)	0	0	0	1	0	0	1
2	Number of people to attain Masters qualification (MSc, MPhil etc)	0	0	0	0	0	0	0
3	Number of people to attain other qualifications (ie. Not outputs 1 or 2 above)	0	0	0	0	0	0	0
4A	Number of undergraduate students to receive training	0	0	0	0	0	0	0
4B	Number of training weeks to be provided	0	0	0	0	0	0	0
4C	Number of postgraduate students to receive training	2	4	2	0	6	2	6
4D	Number of training weeks to be provided	8	8	8	0	16	8	24
5	Number of people to receive at least one year of training (which does not fall into categories 1-4 above)	5	5	5	0	5	5	5
6A	Number of people to receive other forms of education/training (which does not fall into categories 1-5 above)	7	35	210	0	42	132	252
6B	Number of training weeks to be provided	7	35	91	0	42	63	133
7	Number of (ie different types - not volume - of material produced) training materials to be produced for use by host country	0	0	3	0	0	0	3
8	Number of weeks to be spent by UK project staff on project work in the host country	25	25	26	0	0	50	76
9	Number of species/habitat management plans (or action plans) to be produced for Governments, public	1	0	1	0	1	0	1

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
	authorities, or other implementing agencies in the host country							
10	Number of individual field guides/manuals to be produced to assist work related to species identification, classification and recording	0	0	1	0	0	0	1
11A	Number of papers to be published in peer reviewed journals	0	0	3	0	0	0	3
11B	Number of papers to be submitted to peer reviewed journals	0	0	3	0	0	0	3
12A	Number of computer based databases to be **established** and handed over to host country	1	0	2	0	1	1	3
12B	Number of computer based databases to be **enhanced** and handed over to host country	1	1	1	0	1	1	1
13A	Number of species reference collections to be **established** and handed over to host country(ies)	0	0	0	0	0	0	0
13B	Number of species reference collections to be **enhanced** and handed over to host country(ies)	0	0	0	0	0	0	0
14A	Number of conferences/seminars/ workshops to be **organised** to present/disseminate findings	3	1	3	0	4	1	5
14B	Number of conferences/seminars/ workshops **attended** at which findings from Darwin project work will be presented/ disseminated.	0	8	9	0	8	0	9
15A	Number of national press releases in host country(ies)	1	0	2	0	1	1	3
15B	Number of local press releases in host country(ies)	0	0	0	0	0	0	0
15C	Number of national press releases in UK	0	0	3	0	0	0	3
15D	Number of local press releases in UK	0	0	0	0	0	0	0
16A	Number of newsletters to be produced	2	3	5	0	5	4	10 Decrease

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
								from application
16B	Estimated circulation of each newsletter in the host country(ies)	350	470	450	0	470	400	300 Increase from application
16C	Estimated circulation of each newsletter in the UK	0	41	100	0	41	50	100
17A	Number of dissemination networks to be **established**	2	0	1	0	2	1	3
17B	Number of dissemination networks to be **enhanced/ extended**	1	1	1	0	1	1	1
18A	Number of national TV programmes/features in host country(ies)	1	0	1	0	1	0	2 Increase from application
18B	Number of national TV programmes/features in UK	0	0	0	0	0	0	0
18C	Number of local TV programmes/features in host country(ies)	0	0	1	0	0	0	1
18D	Number of local TV programmes/features in UK	0	0	0	0	0	0	0
19A	Number of national radio interviews/features in host county(ies)	0	0	3	0	0	0	3
19B	Number of national radio interviews/features in UK	0	0	3	0	0	0	3
19C	Number of local radio interviews/features in host country(ies)	0	0	0	0	0	0	0
19D	Number of local radio interviews/features in UK	0	0	0	0	0	0	0
20	Estimated value (£'s) of physical assets to be handed over to host country(ies)	0	0	28450	0	0	0	28,450
21	Number of permanent educational/training/research facilities or organisations to be established and then continued after Darwin funding has ceased	0	0	1	0	0	0	1
22	Number of permanent field plots to be established during the project and continued after Darwin funding	0	0	0	0	0	0	0

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
	has ceased							
23	Value of resources raised from other sources (ie in addition to Darwin funding) for project work	£140 K				£140 K	£123K	248,659

Table 2   **Publications**

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Newsletter	NewsBites 11th issue, 2013	TAWIRI	www.tanzaniacarnivores.org	0
Guidebook	A field guide to the larger mammals of Tanzania, Charles Foley, Lara Foley, Alex Lobora, Daniela De Luca, Maurus Msuha, Tim R. B. Davenport & Sarah Durant, 2014 (June)	Princeton Field Guides	Princeton University Press http://press.princeton.edu/titles/10225.html	£19.95 Proceeds to contribute to Tanzanian conservation Free copy will be sent to Darwin

4.4 Progress towards the project purpose and outcomes

The purpose of the CUT project is' improved national and local capacity to reduce direct threats to leopard, lion, cheetah and wild dog by managing Conflict, ensuring sustainable Use; and reducing illegal Trade'. During the reporting period we have completed a number of activities identified as key to meeting the project purpose. These include delivering on information needs for a human-carnivore conflict management protocol; implementing a survey to establish leopard densities and trophy offtake; developing a plan of action for a training and awareness raising program to address the illegal trafficking of large carnivore products; and providing training and support to project staff, including permanent and temporary employees at TAWIRI and young graduate interns.

4.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

The project expects to make its main contribution to overall impact in its final year. However it has generated substantial added value in its first year due to contributions to … key achievements:

•   Tanzania National Action Plan for the Conservation of Cheetah and Wild Dog

A National Action Planning workshop for the Conservation of Cheetah and Wild Dog was held in the last reporting period. The report for this workshop has since been circulated and a letter of support has been provided by the Director General of TAWIRI (also project partner to this project). The report is now with Wildlife Division waiting for final endorsement. This is a major step forward for the conservation of these species, and would not have been possible without support from the CUT project team.
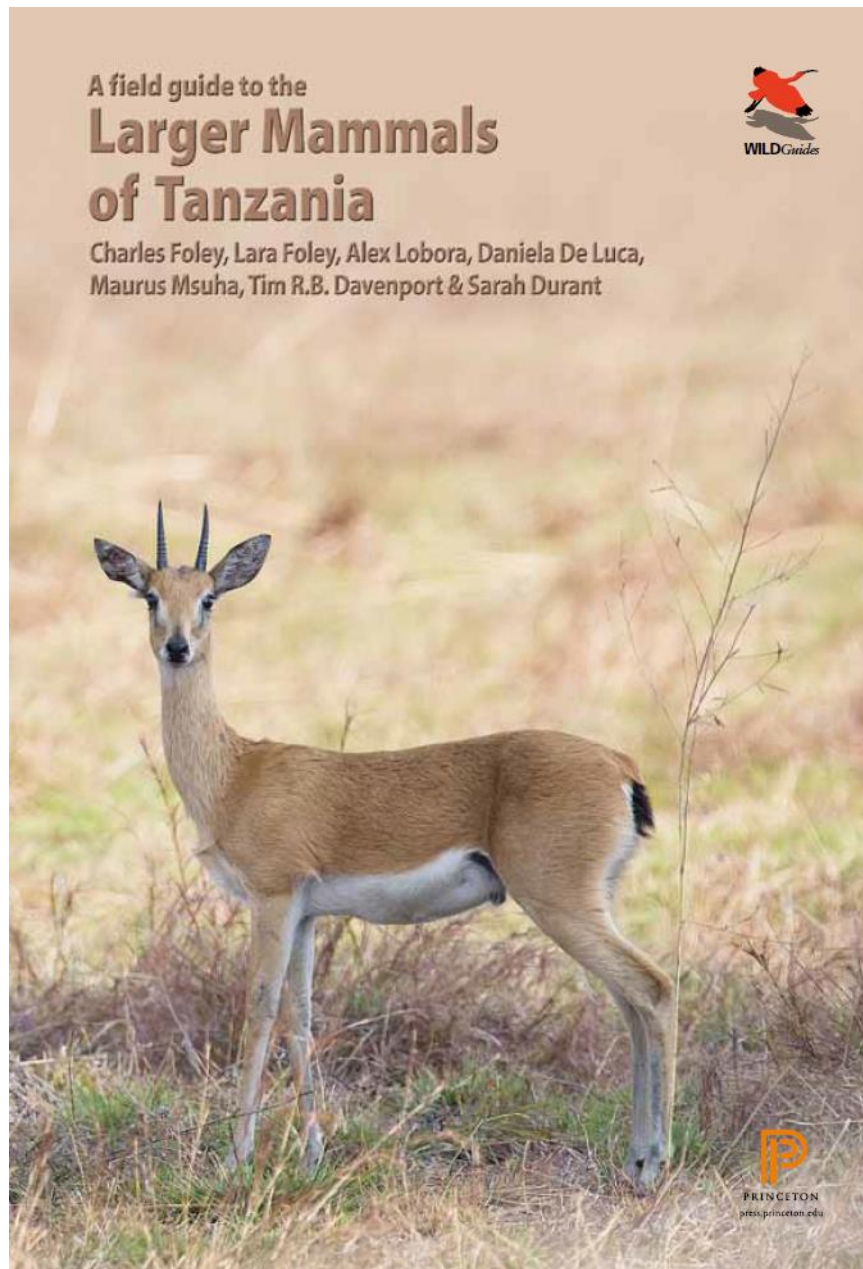
•   CITES proposal to investigate illegal trade in cheetah

This has been spearheaded by the eastern Africa office for the Range-Wide Conservation Program for Cheetah and Wild Dog, which is based at TAWIRI, and headed by the project

leader. The CITES CoP 16 agreed to launch an investigation into the illegal trade, which reported to the recent Animals Committee meeting in Mexico in April.

•   A Guidebook for Tanzanian Mammals will be published in June.

This guidebook draws on information gathered from previous Darwin Initiative projects which established the team now contributing to the activities covered in this report. Proceeds from the book will support conservation activities in Tanzania.

This achievement demonstrates the substantial added value that can be achieved by establishing skills and capacity in national institutions for large carnivore conservation in Africa.

5.   Monitoring, evaluation and lessons

The project is monitored and evaluated in the same manner as previous Darwin Initiative projects managed by the PI, as this strategy proved to be extremely effective. The activities of the project are monitored against work plans drawn up at quarterly planning meetings attended by the entire project team including project leaders. These work plans are based on the logical framework in the original proposal. Each project staff member writes a monthly work plan based on the needs detailed at our quarterly meetings, and this work plan is submitted to the project manager and coordinator who use it to determine progress. The project manager collates the information and submits monthly reports to the project leaders and ZSL which are

also used to monitor progress against the work plans and logical framework. In this way the entire team is engaged in the project implementation and is kept fully aware of project goals and targets and can adjust work plans and timetables to ensure that the project outputs are met.

6.   Actions taken in response to previous reviews (if applicable)

Our reviewer for our first report suggested that we should trial our camera trap surveys to cover seasonal differences in detectability of leopards. We agreed that this was a good point, and hence we organised a second survey in Maswa Game Reserve in the dry season, providing us with wet and dry season data for this site. The survey showed that the reviewer was correct, in that detectability of leopards was much higher in the dry season than the wet season.

7.   Other comments on progress not covered elsewhere

- An edited book was published this year Biodiversity monitoring and conservation: bridging the gaps between global commitment and local action, Editors: Collen, B., Pettorelli, N, Baillie, JEM & Durant, SM. The PI's chapter in this book (Building sustainable national monitoring networks) draws on her experiences with previous Darwin Initiative projects.

- One additional survey using camera traps was carried out in September 2013, using funds leveraged from elsewhere. This was in Kigamboni, an area just south of Dar, where we had received reports of the critically endangered Aders' duiker. Unfortunately no duikers were found in the survey.

- A Tanzanian PhD student, Felix Mkonyi, has joined the project team – he will be conducting a study on cheetah on the Maasai steppe. He is undertaking his PhD at the Nelson Mandela University, Arusha Campus. We hope that this will be the start of a more formal collaboration between ZSL and Nelson Mandela University.

- The project team is working with the range-wide conservation program for cheetah and wild dogs to support an education awareness raising event centred around a piece of music to raise awareness of large carnivores.

- The project team hosted a number of visitors from the academic and donor communities, including a delegation from the Saudi-Tanzania Youth Dialogue forum, accompanying Princess Haifa Bint Abdul Aziz al Mogrin, the King's daughter. Discussions were held about developing a campaign in Saudi Arabia to raise awareness of the illegal trade in cheetah.

8.   Sustainability

This project builds on 12 years of experience, after our first grant from the Darwin initiative in 2002. Over the years, TAWIRI, our main partner organization, has shown its commitment to the project by having made many of our staff permanent TAWIRI employees. We have also been able to build on established foundations of trust with the wildlife management authorities, namely TANAPA, NCAA, FBD and WD. Hence, the core capacity of the project, in terms of staff and relationships with stakeholders, is sustainable. However, the additional training, large carnivore management protocols, and interpretation documents that will be delivered by this project will further secure the ability of the project team to deliver conservation outputs for Tanzania.

9.   Dissemination

Dissemination of information to stakeholders is an integral and essential part of this project. The project has an active and attractive website; maintained communication with an increasing network of data contributors and stakeholders; and produced an edition of the project newsletter detailing information on the project activities and now issues quarterly e-newsletter.

10.   Project Expenditure

Table 3   project expenditure <u>during the reporting period</u> (1 April 2013 – 31 March 2014)

Item		Budget (please indicate which document you refer to if other than your project application or annual grant offer letter)	Expenditure	Variance/ Comments
Staff costs specified by individual	Maurus Msuha			
	Rose Mosha			
	Flora Kipuyo			
	Zawadi Mbwambo			
	Paul Baran			
	Sarah Durant			
	Ally Maghinde			*We needed additional staff to maintain field and office activities. Due to changes in the exchange rate we have managed to take on these staff with very little additional cost.*
	Ishimael Kipuyo			
	Martha Abisalom			
Subtotal				*Individual salaries adjusted to balance overall salary budget*
Overhead costs				*Internet, phone and electricity charges have been larger than expected, water charges introduced this year, and bank charges now charged to project (were covered by TAWIRI)*
Travel and subsistence				*This budget was cut slightly to cover additional costs elsewhere - still within 10% of predicted*
Operating costs				
Capital items/equipment (specify)	Building repairs		-	Adjustment from predicted estimate from tenders in last year's budget
	Camping equipment		-	Adjustment from predicted expenditures in last year's budget
	Binoculars, GPS, cameras etc.		-	Adjustment from predicted expenditures in last year's budget
	Computers, printers and software		-	Adjustment from predicted expenditures in last year's budget
Subtotal			-	Overall subtotal is aligned with predicted budget
Others: Consultancy		-	-	
Others (please specify)	Genetic analysis (primers, lab consumables etc.)	-		We have not yet initiated the DNA analysis component of the project
	Office consumables - stationary, computer consumables etc.			We underestimated this component of the budget leading to a consistent overspend – savings have been made from other budget

Item		Budget (please indicate which document you refer to if other than your project application or annual grant offer letter)	Expenditure	Variance/ Comments
				lines to cover the costs
	Vehicle running costs - two project vehicles			Vehicle running costs have been substantially higher than expected - our vehicles are increasingly elderly and we have had to undertake a number of expensive repairs, and we have needed to run two vehicles much of the time – savings have been made from other budget lines to cover the costs
	Boma construction for conflict mitigation activities			Boma construction funds leveraged from UNDP - these funds are being spent on developing a lion lights prototype
	Printing interpretation materials			Underspend due to being behind in this aspect of the project however expect to use these funds over the coming year
	Website design			
Subtotal				Overall subtotal is approximately aligned with predicted budget
TOTAL				

11.   OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

I agree for LTS and the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

Tanzania is one of the most important countries for large carnivore conservation in Africa. It harbours an estimated 25% of the world's remaining lions, 27% of its wild dogs and 9% of its cheetah, while its leopard population is unknown, but is thought to be equally important to global conservation. However, these populations, many of which occur outside protected areas, face growing pressures. Tanzania has been prominent in the world press over the past year due to an onslaught on its elephant populations fuelled by a growing illegal wildlife trade. However, what is less well known is the impact of this trade on large carnivores, partly because of a lack of information and monitoring. This project is working with TRAFFIC Tanzania to address gaps in information and enforcement, and has leveraged sufficient funds to implement a comprehensive training workshop for customs officers in the coming year.

Living alongside large predators brings serious challenges to local communities, as they are frequently a cause of livestock loss, and can sometimes be a direct danger to people. This project is spearheading a collaborative approach to carnivore conservation in Tanzania, bringing all key players together to seek out solutions to enable the sustainable coexistence of people and wildlife. We are working to identify correlates of livestock loss while grazing at pasture, when it is often particularly difficult to protect them from predator attack. This information will be used to generate guidelines for how best to care for livestock when away from the safety of their boma, We have also reinforced ten bomas – to help keep livestock

secure from night-time attack, and we have secured the support of ZSL's technical team to develop some exciting innovations to protect temporary bomas - important when pastoralists need to protect livestock when seeking forage further afield. We have addressed the lack of information on Tanzania's leopard population by carrying out two surveys to establish leopard density in the Serengeti ecosystem.

Finally, we are publishing the results of six years prior funding from the Darwin Initiative, in a Field Guide to the Larger Mammals of Tanzania, soon to be available from Princeton University Press. This field guide synthesises information gathered by the Tanzania Carnivore Program since it was established through Darwin Initiative funding in 2002. The guide book demonstrates how the Darwin Initiative funding has managed to improve the wildlife information base across an entire country.

Annex 1:   Report of progress and achievements against Logical Framework for Financial Year 2013-2014

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Sub-Goal: Populations of leopard, lion, cheetah and wild dog in Tanzania are well conserved and sustainably managed.	A CUT large carnivore strategy and management plan is established by the wildlife authorities and used for the sustainable implementation of best practice methods proven to reduce Conflict, set sustainable Use quotas, and reduce illegal international Trade.	Methods proven and documented, and CUT strategy and management plan developed and endorsed by MNRT and stakeholders.	
Purpose Improved national and local capacity to reduce direct threats to leopard, lion, cheetah and wild dog by managing Conflict; ensuring sustainable Use; and reducing illegal Trade.	1. National evidence based protocol established to reduce conflict in local communities with lion, leopard, cheetah and wild dog in Tanzania. 2. Survey protocol established for monitoring lion and leopard abundance and tools established for analysing results and assessing impact of trophy offtakes. 3. Reporting systems established and, by the end of the project, confiscations of large cat products originating from Tanzania reduced. 4. Established capacity for sustainable implementation of activities 1-3 within the relevant institutions in Tanzania. 5. CUT large carnivore strategy and management plan formally accepted by MNRT.	All purpose indicators are final year deliverables	

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
Outputs 1. Standardised evidence based protocol on large carnivore management and conflict reduction agreed and accepted by government, NGO and local community stakeholders.	1.1. Review of relevant data on success of approaches to large carnivore conflict. 1.2. Results from field trials of agreed standardised approach at 3 sites. 1.3. Protocol document. 1.4. Letters of support from stakeholders (active carnivore conflict projects, WMA authorities, wildlife authorities, communities etc.).	1.1 Human carnivore conflict working group established; Library established; Review undertaken; and 2-year workplan agreed; 1.2 Survey implemented to establish extent and correlates of livestock depredation in Ngorongoro Conservation Area; Boma reinforcement project established in Longido WMA; Ten bomas reinforced in Longido WMA; ZSL technical team secured to work on developing a lion lights prototype for protection of temporary bomas. 1.3 Agreement for Carnivore Conflict working group to draft protocol document secured from WD 1.4 To be completed Year 3	1.1 NR. 1.2 Analysis of data to date; Development and testing of lion lights prototype 1.3 Protocol document to be written 1.4 Letters of support secured
2. Standardised tools for monitoring lion and leopard abundance established, supported and implemented by WD, TAWIRI, hunting operators, and conservation NGOs.	2.1 Standardised survey protocol for lion and leopard established through review of existing camera trap and call-in data. 2.2 Results from field trials at 4 pilot sites. 2.3 Handbook of survey protocol. 2.4 Website providing tools for data analysis and exploring impact of trophy offtakes. 2.5 TAWIRI/WD recommendations for survey protocols for lion/leopard abundance and example of their use to calculate trophy quotas at 4 pilot sites. 2.6 Hunting operators in support of the survey and quota recommendations.	2.1 Preliminary protocol agreed and field trial implemented in Maswa Game reserve in both wet and dry season 2.2 Results from two surveys currently being analysed 2.3 Year 3 2.4 Year 3 2.5 Year 3. 2.6 Year 3.	2.1 Preliminary protocol will be refined from results of first field surveys. Spoor survey in Maswa to be conducted and calibrated to camera trap data. 2.2 Results to be analysed and written up for publication. 2.3 Handbook to be written and published 2.4 Website to be developed based on survey results and put on-line 2.5 Small workshop to be held with wildlife authorities and hunting operators to discuss and finalise recommendations; TAWIRI to write recommendations document and submit to WD for approval 2.6 Evidence of support secured through workshop (2.5)

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
3. Better enforcement of CITES through a systematic and centralised reporting system at exit points and identification of source populations for large carnivore products confiscated at customs checkpoints.	3.1 Review and prioritisation of likely exit ports for cheetah and leopard trafficking. 3.2 Customs officers at exit ports trained in identifying carnivore products. 3.3 Genetic map of cheetah, leopard and lion for use in identifying source populations for trafficked products. 3.4 Improvement in reporting of trade and reduction in trafficked large cat products. 3.5 Centralised database, using google map, documenting all confiscations relevant to Tanzania, and centralised reporting for trafficked large carnivore products.	3.1 Likely ports identified and documented 3.2 Discussions with Interpol, Tanzania Ports Authority, Wildlife Division, TRAFFIC held and support engaged. Plan of action agreed with TRAFFIC including training workshop on identifying wildlife products and reporting procedures; Funding for workshop secured. 3.3 Leopard and lion samples secured from key hunting operators and maintained at TAWIRI. 3.4 Database on wildlife crime established at TAWIRI 3.5 Year 3.	3.1 NR 3.2 Move forward with the training program as matter of priority 3.3 Undertake genetic analysis and distribute database. 3.4 Improve detection and reporting at exit ports (via 3.2). 3.5 Establish centralised database for reporting of trafficked large carnivore products
4. Established capacity in Tanzanian institutions, NGOs and local communities for conflict management, ensuring sustainable use of large carnivores, and controlling illegal international trade.	4.1 CUT carnivore threat co-ordinator and a minimum of 4 senior staff at TAWIRI trained as trainers in all aspects of project. 4.2 Minimum of 3 communities trained in large carnivore management and conflict reduction and representatives from local pastoralist and conservation NGOs engaged as trainers. 4.3 Training curriculum developed and implemented to train hunting concession stakeholders in monitoring lion and leopard. 4.4 Customs officers at priority exit ports trained to recognise and intercept large carnivore products and enforce CITES legislation. 4.5 Stakeholder network and regular communication established to increase collaboration and cooperation.	4.1 Training and information exchange provided for 3 senior TAWIRI staff in conflict management; 4 staff (one senior) in lion and leopard surveys; and 5 staff (two senior) in developing means to monitor illegal trade in. On the job mentoring provided to all staff. 4.2 Year 3 4.3 Year 3 4.4 Training now to be workshop based (see 3.2) and to take place in Year 3. 4.5 e-newsletter; Carnivore Newsbites and frequent phone calls and email exchanges between stakeholder network.	4.1 Training to continue 4.2 To be completed in year 3 - Interpretation materials to be produced and training to be undertaken through the collaboration of the conflict working group 4.3 To be completed in year 3 - Interpretation materials to be produced and training to be undertaken through a small workshop based process. 4.4 To be completed in year 3 - Interpretation materials to be produced and training to be undertaken through a workshop based process. 4.5 Need for increased frequency of e-newsletter. Maintain email exchanges.

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
5. CUT large carnivore management plan for sustainable management of CUT threats to large carnivores.	5.1 CUT large carnivore management workshop. 5.2 All stakeholders in support of CUT large carnivore strategy and management plan 5.3 letter of acceptance of CUT plan by MNRT.	5.1 Year 3 5.2 Year 3 5.3 Year 3	5.1 Workshop to be undertaken 5.2 Support of stakeholders secured 5.3 Letter of acceptance of CUT plan secured.

Output 1.

Standardised evidence based protocol on large carnivore management and conflict reduction agreed and accepted by government, NGO and local community stakeholders.

Activities

1.1 Review of existing data on approaches to carnivore conflict in Tanzania and other relevant systems elsewhere.
1.2 Meeting with FAO Tanzania office to establish way forward for adapting HWC toolkit for use in Tanzania
1.3 Adapt HWC toolkit for use in Tanzania
1.4 Development of large carnivore management and conflict mitigation protocol and identification of pilot sites (in WMAs, Game Controlled Areas or Open Areas) in collaboration with ongoing community-based human carnivore conflict projects.
1.5 Conduct field trials of agreed standardised protocol at 3 pilot sites.
1.6 Conduct participatory interviews of communities at pilot sites.
1.7 Develop a scientific publication for a peer reviewed journal describing and justifying evidenced based protocol to mitigate conflict between people and large carnivores.
1.8 Develop protocol, interpretive materials and roll out procedure through training workshops across participating community based NGOs and wildlife authorities.
1.9 Distribute, revise and finalise protocol document according to a consensus amongst stakeholder groups.
1.10 Develop a training curriculum and manual for mitigation of conflict with large carnivores to enable national roll out of protocol by extension officers, NGOs and others.

1.1 Library of published approaches to carnivore conflict established; further information needs identified

1.2 One meeting with FAO Tanzania office held; further meetings planned

1.3 Small workshop planned to adapt the HWC toolkit for Tanzania this for year 3

1.4 Carnivore conflict working group established; 2-year workplan agreed for working group; sites selected from areas where ongoing projects located – Ruaha region; west Kilimanjaro; Simanjiro; Ngorongoro

1.5 Survey implemented to establish extent and correlates of livestock depredation in Ngorongoro; Boma reinforcement project established in Longido WMA; ZSL technical team secured to work on developing a lion lights prototype for protection of transient bomas.

1.6 Not necessary – due to full support of members of conflict working group who are working closely with communities, and are already engaged with respective projects in their region.

1.7 Year 3

1.8 Year 3

1.9 Year 3

1.10 Year 3

Output 2.

Standardised tools for monitoring lion and leopard abundance established, supported and implemented by WD, TAWIRI, hunting operators, and conservation NGOs.

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
Activity 2.1. 2.1 Review existing camera trap and call in data (including data from 22 camera trap surveys carried by TCC and 6 call-in surveys carried out by the project leader in and around Serengeti National Park and FCF in Moyowosi Game Reserve) to develop a standardised protocol to survey lion and leopard 2.2 Carry out pilot surveys at 4 sites within hunting concessions, documenting manpower and financial resources used. 2.3 Analyse data from sites and use to refine survey protocol, including maximising cost effectiveness of surveys. 2.4 Develop a handbook outlining the survey protocol. 2.5 Develop a website to provide tools for data analysis and a population simulation model to enable users to explore the impact of different trophy offtakes. 2.6 Develop and justify TAWIRI/WD recommendations for survey protocols for lion/leopard abundance with example of their use to calculate trophy quotas at the 4 pilot sites. 2.7 Write and submit a scientific publication for a high ranking peer reviewed journal justifying approach to quota setting.	2.1 Preliminary protocol agreed for camera trap survey and spoor survey methodology adapted from PANTHERA 2.2 Two pilot surveys conducted, one in wet season and one in dry season, in Maswa Game Reserve – two surveys conducted in different seasons at same site following advice of reviewer on first report; 328,000 photos obtained across the two surveys; results currently being analysed. 2.3 Analysis will be conducted once results available from 2.2. 2.4 Year 3 2.5 Years 3. 2.6 Year 3. 2.7 Year 3	
Output 3. Better enforcement of CITES through a systematic and centralised reporting system at exit points and identification of source populations for large carnivore products confiscated at customs checkpoints.			
Activities 3.1 Review and prioritise likely exit ports for cheetah, leopard and lion trafficking. 3.2 Develop training curriculum, manual and interpretive materials for customs officers at exit ports, training should cover scale of the problem; role of CITES and Interpol; species identification; data recording; and reporting systems. 3.3 Provide interpretive materials at 10 land, air and sea exit ports and set up reporting system. 3.4 Establish centralised database and reporting for all trafficked large carnivore products, including any media articles from source or destination countries for trafficked products originating in Tanzania, using google map to generate a visually accessible geographical representation of trade. 3.5 Extract DNA from leopard and lion tissue samples collected by hunting operators and opportunistically from cheetah (incl. faeces) and conduct microsatellite analysis. 3.6 Use STRUCTURE software to establish a genetic map of cheetah, leopard and lion that can be used to identify source populations for trafficked products and publish scientific paper.	3.1 Likely ports identified and documented 3.2 Discussions with Interpol, Tanzania Ports Authority, Wildlife Division, TRAFFIC held and support engaged. Plan of action agreed with TRAFFIC modified from initial proposal, now centred on training workshop on identifying high value mammalian wildlife products (elephants, rhino and large carnivores) and reporting procedures; Funding for workshop secured. 3.3 Preliminary identification booklet produced, now being adapted to include fake vs real section. 3.4 Database on wildlife crime established at TAWIRI, centralised crime reporting database to be established after training workshop (3.2) 3.5 Leopard and lion samples secured from key hunting operators and maintained at TAWIRI, genetic analysis to proceed in year 3. 3.6 Year 3	

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
Output 4. Established capacity in Tanzanian institutions, NGOs and local communities for conflict management, ensuring sustainable use of large carnivores, and controlling illegal international trade.			
Activities: 4.1 Provide training to establish an effective CUT carnivore threat co-ordinator and a minimum of 4 senior staff at TAWIRI trained as trainers in all aspects of project. 4.2 Provide training to extension officers and community based NGOs to become trainers, and to a minimum of 3 communities, in large carnivore management and conflict reduction. 4.3 Develop a training curriculum for hunting concession stakeholders in all aspects of lion and leopard monitoring protocol, including use of data analysis tools. 4.4 Provide training in monitoring protocol to hunting concession stakeholders (WD, hunting operators, NGOs, communities) in at least 4 hunting concessions 4.5 Provide training to customs officers at priority exit ports to enable better identification of large carnivore products, improve reporting and enforce CITES legislation. 4.6 Establish a stakeholder network and issue a quarterly email newsletter to deliver news, report project progress and raise awareness of CUT issues..		4.1 Training and information exchange provided for 3 senior TAWIRI staff in conflict management; 4 staff (one senior) in lion and leopard surveys; and 5 staff (two senior) in developing means to monitor illegal trade in. On the job mentoring provided to all staff. 4.2 Year 3 4.3 Year 3 4.4 Year 3 4.5 Training now to be workshop based (see 3.2) and to take place in Year 3. 4.6 enewsletter; Carnivore Newsbites and frequent phone calls and email exchanges between stakeholder network.	
Output 5. CUT large carnivore management plan for sustainable management of CUT threats to large carnivores.			
Activities 5.1 Hold a workshop with government, NGO and safari/hunting operator stakeholders to develop consensus based CUT large carnivore strategy and management plan 5.2 Circulate strategy and management plan and engage support of all stakeholders 5.3 Engage acceptance of CUT strategy and management plan by MNRT.		All planned for year 3	

Annex 2 Project's full current logframe

Logframe has not changed in any substantial way – only some changes to activities in order to better deliver the project purpose, all of which are described above.

Annex 3 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

This may include outputs of the project, but need not necessarily include all project documentation. For example, the abstract of a conference would be adequate, as would be a summary of a thesis rather than the full document. If we feel that reviewing the full document would be useful, we will contact you again to ask for it to be submitted.

It is important, however, that you include enough evidence of project achievement to allow reassurance that the project is continuing to work towards its objectives. Evidence can be provided in many formats (photos, copies of presentations/press releases/press cuttings, publications, minutes of meetings, reports, questionnaires, reports etc) and you should ensure you include some of these materials to support the annual report text.

Checklist for submission

	Check
Is the report less than 5MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	Yes
Is your report more than 5MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	No
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	