



LIVING WITH LIONS ANNUAL REPORT 2009

LAIKIPIA PREDATOR PROJECT LION GUARDIANS PROJECT KILIMANJARO LION CONSERVATION PROJECT MARA PREDATOR PROJECT

Laurence Frank, PhD.^{1, 2, 3, 4} lgfrank@berkeley.edu

Alayne Cotterill, MSc.^{3, 5} alayne.cotterill@gmail.com

Leela Hazzah, MSc.⁶ leelahazzah@hotmail.com

Sara Blackburn⁷ maralions@gmail.com

Kylie McQualter kylie.mcqualter@gmail.com

Antony Kasanga lionguardian@gmail.com

Lisette Gelber lisette.gelber@gmail.com

Steve Ekwanga³ stevo@mpala.org

Stephanie Dolrenry⁶ sdolrenry@gmail.com

Amy Howard, MSc. amyellenhoward@gmail.com

Philip Briggs phil@philipjbriggs.com

Eric Ole Keso lionguardian@gmail.com



¹ Panthera, New York, USA; ² Museum of Vertebrate Zoology, University of California, Berkeley, USA. ³ Mpala Research Centre, PO Box 555, Nanyuki, Kenya. ⁴ Wildlife Conservation Society, New York, USA; ⁵ Wildlife Conservation Research Unit, Oxford University, UK; ⁶ Environment and Resources, Gaylord Nelson Institute of Environmental Studies, University of Wisconsin, Madison, USA. ⁷ Serian Camp, PO Box 40235, 00100 Nairobi, Kenya.



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1. Executive Summary

We are working to restore, conserve and manage viable populations of large carnivores by developing management techniques that foster coexistence of people, livestock and predators in areas bordering parks and other regions without formal protection.

This has been an eventful year in Kenya. The worst drought in living memory, exacerbated by severe overgrazing, devastated both livestock and wildlife populations. Predators prospered in some areas due to the amount of dead and weakened prey; in others, lions were decimated by armed herders. Loss of their



livestock livelihood may help persuade some traditional people to diversify their economies, perhaps eventually reducing the livestock pressure on the land. However, loss of cattle makes the surviving ones more precious than ever, and drastic reduction of wild prey makes those cattle more vulnerable to predators, increasing the likelihood that lions will be killed in retribution for depredation.

Severe drought has devastated both livestock and wildlife populations

Fortunately, developments in all *Living with Lions* project areas have helped reduce the impacts of these events: in the Amboseli region the Lion Guardians have again proven effective in dissuading people from killing lions, while in Laikipia the adoption of mobile lion-proof *bomas* by many commercial ranches has minimized livestock losses to predators.

LWL played a pivotal role in a major conservation victory: the withdrawal from Kenya of the agricultural pesticide Furadan, which has been used to kill countless lions, hyenas, vultures, eagles, and waterfowl over the last decade.

Seamus MacLennan has left the Kilimanjaro Lion Conservation Project (KLCP) and Kylie McQualter has taken on lion monitoring and responding to Lion Guardian reports of Mbirikani Group Ranch. Leela Hazzah and Stephanie Dolrenry have launched their PhD. work on Olgulului and Eselenkei Group Ranches next to Amboseli National Park, and have accomplished an enormous amount in a short time: building their camp, initiating new Lion Guardian projects, predator population monitoring, and studies of both the human and predator aspects of human-predator conflict. While also building a new camp in Laikipia, Alayne Cotterill has



launched her PhD. work on the commercial ranches and communal lands of Laikipia, using GPS collars to follow lion movements in great detail and a sophisticated incident reporting system to document depredation patterns and livestock movements.

In a major new initiative common to all projects, we are starting to move away from traditional, expensive and time consuming radio collaring in favour of simpler indirect methods of predator population monitoring. The Lion Guardians have been trained in spoor (track) counts and scat collection for DNA-based censusing, and in all areas we are adapting Sara Blackburn's photo ID database that she developed for the Mara Predator Project. We hope that all these methods will complement each other in providing accurate and reliable information on lion trends, implemented by local people and engaging them in monitoring and conserving their own natural resources. All these methods should be widely suitable in most African areas of conservation concern.



Lion Guardian Kamunu carries out a spoor count on Eselenkei Group Ranch, Southern Kenya

Since its inception in 1997, the Laikipia Predator Project (LPP) has grown into a group of sister projects in three different parts of Kenya: the original LPP, the Kilimanjaro Lion Conservation Project, Lion Guardians on three group ranches, and the Mara Predator Project. We have been calling ourselves *Living with Lions* for a number of years and have now formalized ourselves as a Kenya-based non-profit research and conservation entity, the **Living with Lions Trust**.



2. Introduction

Lions and other large predators are the most difficult of all animals to conserve. As ever-increasing human pressures reduce wild prey, carnivores turn to domestic animals and are then killed in retaliation by angry livestock owners. This pattern has led to near-extinction of large carnivores on every continent and is now playing out for a final time in Africa: lions, hyenas and other large predators are disappearing under the onslaught of spears, guns and poison. In all of Africa, there are only six parks and managed areas large enough to provide long term protection to lions, as their wide-ranging movements take them beyond the boundaries of smaller parks, bringing them into contact and conflict with humans. Only by maintaining corridors and connectivity in the human-dominated rangelands between parks can the survival of these most iconic animals be ensured.



This lion lives on a Maasai group ranch and comes into regular contact and conflict with people

Living with Lions is a group of dedicated biologist/conservationists working to overcome the age-old conflict between humans and predators while there is still time to preserve viable populations of large carnivores. Our work is a combination of the most ancient and most modern technologies: we help herding tribes live with predators by emphasizing ancient livestock husbandry methods, culturally acceptable and economically affordable to traditional African pastoralists. To better manage carnivores and ensure their survival, we use modern technology in the form of GPS collars and satellite communications to understand how predators adapt to living with humans.



3. Personnel

In addition to the project members whose research is detailed below, we have benefitted enormously from the contributions of many other people in 2009.

Amy Howard continues her invaluable role as Webmistress, blog writer, project and camp administrator for KLCP, and media coordinator.

Lisette Gelber has joined LWL as overall project manager and administrator, with a myriad of organizational and accounting responsibilities, freeing field staff for field work and making us all far more efficient and effective.

William Eldridge ran KLCP from November through June, keeping up the lion monitoring and working with both the Lion Guardians on Mbirikani Group Ranch and the Simba Scouts on Kuku Group Ranch.

Dr. Lyman Macdonald has contributed invaluable statistical and modeling advice in both southern Kenya and Laikipia. Lyman will continue in this role as we develop the indirect monitoring techniques mentioned throughout this report.

Todd Oliver and **Justin Downs** worked heroically to build the new camp for Stephanie and Leela on Selenkay Conservancy.

Philip Briggs has helped train and coordinate Lion Guardians in all the Maasailand projects, as well as initiating new data collection systems with the Guardians.

Mary Smulders has contributed GIS expertise in Maasailand and Laikipia, helping with data analysis.

Siva Sunderasan has also been working with Alayne in Laikipia on data analysis.

Emma Blackburn joined her sister Sara for three months, helping with all aspects of the Mara project and in adapting the photo ID database to other regions.

4. Furadan Ban

For the last decade, the single greatest threat to African carnivores and scavengers has been the widespread use of the agricultural pesticide Furadan to poison lions, hyenas and leopards in retribution for livestock depredation. These were not the only species affected: all species of vultures and scavenging eagles have been dramatically reduced by Furadan-laced carcasses meant to kill predators. Furadan is banned in the US and Europe due to massive wildlife mortality, but FMC Corporation, the American manufacturer of Furadan, had resisted all efforts to reduce its availability in Africa.



The pesticide Furadan



A hyena and two vultures poisoned on Mbirikani Group Ranch

Last November, LWL and Lion Guardians helped the CBS news program *Sixty Minutes* shoot a documentary on the effects of Furadan on Kenya's lions. The piece aired in the US on March 29 2009, and the following day FMC withdrew Furadan from the Kenya market, promising to eventually withdraw it from other African countries. We are extremely pleased at playing a central role in reducing this devastating threat to wildlife.

5. Laikipia Predator Project

Started in 1997, the Laikipia Predator Project is the first integrated investigation into the ecology, management and conservation of large predators in human-dominated African landscapes. Laikipia is the only part of the world where ranchers enthusiastically tolerate a healthy population of large carnivores, making it an ideal laboratory in which to develop realistic and progressive predator and livestock management practices. Current research focuses on the factors which cause some lions to become chronic livestock killers, and on adaptive management of the Laikipia lion population.

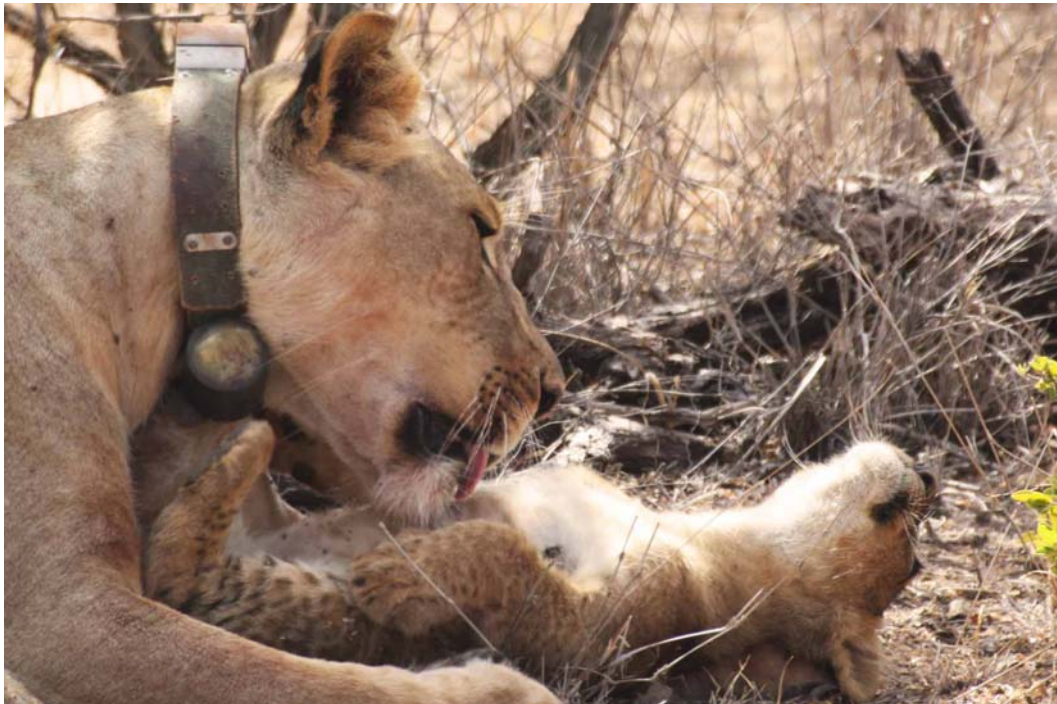
Research

Lion movements

GPS collar data has given us exciting insights into the night time movements of the elusive lions of Laikipia; no longer is our information about their movements restricted to where we find them resting during the day. In addition to the 42 VHF collars currently deployed in Laikipia, 5 prides are GPS collared and we will deploy a further 6 GPS collars in the next two months. These are all prides whose territories cover both commercial ranch land and pastoralist areas. We have always known that Laikipia lions showed a strong preference for the commercial ranches, where human and livestock densities are lowest and wild prey densities are highest. The GPS collars have now shown that lions also utilise the pastoralist areas surrounding the commercial ranches, where human and livestock densities are higher and wild prey densities lower, but they do so under the cover of darkness. These data show how lion movements, energy



budgets, and habitat use change as they move from the relatively safe commercial ranches onto the pastoralist areas where conflict with people is much higher.



GPS collars like the one this lion is wearing have been giving LWL new insights into lion behaviour

Habitat Use

Certain habitat features might also be crucial in allowing lions to utilise higher risk areas, particularly during the daylight hours. With help from visiting GIS expert Mary Smulders, we have recently completed a habitat map of the study area and are currently in the process of categorising habitat types in terms of how lions use their environment. Once this is complete we will be able to look at the importance of such features as vegetation cover and steep/rocky areas in allowing lions to use areas where conflict with people is higher. We will then be able to accurately identify important corridors and buffer zones around or between protected areas.

Lion proof bomas

When OI Pejeta Ranch became a conservancy several years ago, cattle manager Giles Prettejohn designed a moveable, lion-proof *boma*, using interlocking metal panels to use as night time livestock corals. These have the dual benefit of preventing livestock loss to predators, while also being easily transported to new areas where dunging and disturbance help regenerate degraded soils. As land degradation by overgrazing is the paramount conservation problem over vast areas of semi-arid Africa, this is potentially a major contribution, not only to landscape conservation but also to combating global warming. The OI Pejeta bomas have been rapidly adopted by other Laikipia ranches and there is strong interest in other areas. LPP is collecting before and after data from all ranches using the new bomas to accurately document their efficacy at livestock



protection, while another group is investigating the effects on soils. Alayne's results from the livestock incident monitoring system suggests that the new bomas have brought about a shift in depredation patterns, more occurring by day now that livestock are less available to predators by night.

Large carnivore monitoring

Although we still use VHF and GPS tracking technology to monitor the movements of lions in Laikipia, this is very expensive and we are moving towards indirect, non-invasive and more cost effective methods of monitoring over a large area. There are two ways we will implement this in Laikipia over the next year:

Visual ID/Tourism collaboration

As lions on Laikipia's tourism ranches have become less wary and more accustomed to vehicles, we are beginning to involve the tourism industry in lion monitoring, using the methods developed by Sara Blackburn on the Mara Predator Project (below). In collaboration with participating lodges, we are building a database of lion ID photographs, lion locations, and information on pride composition. Four ranches have thus far shown a keen interest in helping to collect these data and Sara is designing the information booklets, data sheets and guidelines needed for visitor participation.

Spoor transects

Although used by several projects in the past, including LPP, only recently has it become clear that spoor transects (counting footprints) are a highly reliable method for assessing predator numbers (Funston *et al.*, in press). We will increasingly use spoor transects in Laikipia, and are collaborating with the Northern Rangelands Trust to collect predator spoor transect data in Samburu District in a scientifically rigorous way. This will be done using a small, highly trained team within the scout networks already in place across the region. These data will be calibrated in areas where lion numbers are known, such as Laikipia's commercial ranches and Samburu-Buffalo Springs reserves. This process will greatly improve the reliability and repeatability of scout-based monitoring programs already in place.



Laikipia Lion Scouts

Incident reporting

The two Laikipia scouts have collected data on over 600 carnivore-livestock incidents in the two Lion Management zones established last year, including information on geographical, environmental, lion



behavioural and livestock husbandry factors associated with each incident. This is an extremely rich data set and will provide information that is highly applicable to carnivore and livestock management in African rangelands. Two other projects, one in Kenya and one in Tanzania, are collecting standardized data in the same way, to allow comparisons across ecological and socioeconomic variables.

Livestock movements

Our scouts have also tracked livestock movements in the Lion Management zones in order to better understand how lions respond to the presence of livestock and whether this varies for certain individuals or age/sex categories of lions. The long term aim is to profile lions that are more likely to be attracted to livestock and may become livestock killers, helping with the better management of lions in the area and reduction in conflict.



Tracking livestock movements has enabled LWL to better understand how lions respond to their presence

Outreach training

We are intensifying our efforts to disseminate to other conservation areas LPP's extensive knowledge on large carnivore behavioural ecology, monitoring and conflict mitigation. Steven Ekwanga has trained the Lion Guardians in track recognition and accurate data collection. Steve and Alayne have developed a comprehensive three-day course in basic carnivore biology, monitoring and conflict mitigation. Funded by Panthera, this was presented to scouts from the Northern Rangelands Trust (Samburu District, Kenya) in July, and received extremely positive feedback; another session will be held in February.

From a conservation perspective, the most important part of the course was ensuring that all scouts are able to impart information on the best conflict mitigation methods to their communities. We are seeking funding to expand our training and education capacity by creating a dedicated mobile training unit that can train more scouts in the region, ensuring that this knowledge reaches the communities whose tolerance is central to carnivore survival.

6. The Lion Guardians Project

The Lion Guardians Project employs local Maasai warriors to carry out lion tracking and conservation work. It has now completed its third year and continues to prove successful, with no lions speared in the areas where the project operates. Lion Guardians directly stopped 20 lion hunting parties in the last year.



Guardian Mushaga tracks collared lions

This year the project expanded from Mbirikani Group Ranch to Eselenkei and Olgulului Group Ranches in the Amboseli ecosystem, where human carnivore conflict is high and where in the past, lion killing was rampant. We collaborate closely with existing conservation partners in the new areas to protect the remaining lions in the ecosystem.

With the expansion onto Olgulului and Eselenkei, we now have 23 Lion Guardians collecting key ecological data, and mitigating conflict in their communities. Lion Guardians monitor lions, both by traditional tracking methods and using radio telemetry to locate collared lions. They also reduce conflict with carnivores by warning herders when lions are nearby, by reinforcing bomas, and finding lost livestock left out in the bush, which might otherwise be killed by carnivores.

This year the Guardians also started spoor (track) counts of all key large carnivore species as well as the primary prey species of lions. Each Guardian counts two designated 6-7 km routes, once per week. The Mbirikani Lion Guardians were visited by Steven Ekwanga from LPP and expert tracker Morani from Laikipia, who trained the Guardians in spoor identification and accurate data recording.

Additionally, Lion Guardians collect hair and scat samples of lions for DNA analysis, as well as GPS track logging the lions' routes as they follow them. This information will be used by Stephanie to develop predictive models to evaluate changes in behaviour and distribution of lion populations in response to changes in human and natural variables.



Guardians look for animal tracks

In February, Philip Briggs joined the team to help expand the project to the new areas, as well as to create new data collection forms and implement new methodologies across all three group ranches to ensure a systematic and rigorous approach to Lion Guardian activities. Eric Ole Kesoi also joined the team as coordinator for Eselenkei and Olgulului.



In April Antony Kasanga, our coordinator on Mbirikani, was accepted in a Postgraduate Diploma in International Wildlife Conservation Practice at the University of Oxford. This course equips native conservationists with the necessary professional and scientific skills to work in conservation in the developing world. Antony has spent eight months studying at Oxford, and is now back in Mbirikani, bringing invaluable skills back to his community and the Lion Guardians project.

Our hope is that by July we can expand the Lion Guardians project to the southern regions of Olgulului (south of Amboseli), as both the community and leadership have requested our help in this region. For more details please visit www.livingwithlions.org to read the full Lion Guardian annual Report, which will be available online by January 1st.



Antony at Oxford

7. Kilimanjaro Lion Conservation Project

In last year's report, when we expanded our work from Mbirikani Group Ranch onto Olgulului and Eselenkei Group Ranches, we regarded the expansion as a separate entity, the **Amboseli Predator Project**. Given that these ranches are contiguous with Mbirikani within the same ecosystem, that some lions and many herbivores move freely between these areas, and that the same researchers work closely together throughout the region, we have chosen to regard all LWL work in the region as the Kilimanjaro Lion Conservation Project.

In February 2009, Leela and Stephanie began construction of their base camp on Eselenkei Group Ranch. Panthera (www.panthera.org) provided the financial support, Porini Ecotourism (www.porini.com) generously allowed the camp to be built within their Eselenkei Conservancy area, and Justin Downs (www.grndlab.com) and Todd Oliver (www.tjames-construction.com) donated their time and effort to build the camp. Stephen Gold has donated a solar electricity system.

Human-predator conflict: the predators

For her PhD., Stephanie Dolrenry is studying lion and spotted hyena movement patterns in order to develop spatial models that help predict lion/hyena habitat priorities, prey distribution, and predation locations. Variables such as habitat type, human infrastructure, daytime cover such as dense bush, etc. are being recorded in GIS data layers. If the models prove to be accurate, they can be used to develop conservation initiatives based on lion behavior and ecology in other human/livestock-dominated areas.

This May, the first lioness, named Nosieki by local Lion Guardians, was collared on Eselenkei. To date, 5 lions (3 females and 2 males) and 1 female spotted hyena, all documented livestock killers, have been collared in both Eselenkei and Olgulului areas. Stephanie and the Lion Guardians have also identified an additional 17



un-collared individual lions as well as 7 cubs using Eselenkei and Northern Olgulului. Stephanie and the Lion Guardians have been monitoring these ‘problem’ and hyena to learn more about their behaviors and movements amongst areas saturated with people and livestock.



The first lioness to be collared on Eselenkei, Nosieki, with one of her cubs

This year, Stephanie has developed non-invasive methodologies based on the collection of DNA samples of lion hair, scat, and bones, as well as Lion Guardian spoor counts and GPS track logging of lion routes (see Lion Guardians Annual Report for more details). The DNA analysis of hair, scat, and bone samples at the Panthera-funded genetics lab of the American Museum of Natural History will result in unique identification and resighting (“marking” and “recapture”) of individuals. These mark-recapture data sets will be used to estimate population sizes within given time periods (seasons) and determine trends and survival rates over time. Stephanie is also collecting data on the demography of lion populations based on a variety of corroborating methods: monitoring of lions provides data for estimation of survival rates, age and sex structure, pride size and composition.



Stephanie collaborates with colleagues Kylie and Amy in compiling a photographic database of all photographed (both marked and unmarked) individuals. When a Guardian calls in a report of lion sign, Stephanie or Kylie respond and take photographs of individual lions for the database. Comparing new photos to historical ones from both inside and outside Amboseli National Park, we have been able to relate several individuals to earlier years or separate social groups, significantly expanding the knowledge of movements and social relationships within and outside the park.

Initial data on GPS-collared lions suggest that those resident outside Amboseli National Park have substantially larger home ranges (up to 815 km²) than those in the prey-rich protected area. Wide scale movements and low rate of identifying new lions suggests that the population is low, and that local peoples' lion reports from widely separate locations may often refer to the same group of animals. Thus, the population may be lower than reporting or conflict frequency suggest.



Human-predator conflict: the Humans

Leela directs Lion Guardians while working on her PhD research. As part of her work with LWL, Leela is reconstructing the actual number of lions that have been killed in the Amboseli ecosystem since 2003. In collaboration with local warriors, she collects habitat data, GPS fix, and specifics of the killing at each site. With a relatively complete dataset on lion kills, LWL will be able to reconstruct the lion population of the recent past, finally addressing the question of how much the lion population has been reduced in this century.

Leela's PhD research specifically investigates the current transition in Maasai attitudes towards lions, which appear to be largely due to climatic factors (drought), reduction of land and land tenure, globalization and tourism, and a shift in religious values. As Maasai traditions and pastoral identity fade, a new market-based livelihood and culture is appearing that directly affects the way that Maasai coexist with wildlife.



When she first began this research for her Master's work five years ago, the chief motivations for killing lions were the traditional rite of passage by warriors and retaliatory killings in response to livestock depredation. However, times are changing, and now we are witnessing an increase in the trade of illegal lion parts and increased potential for retributive political killings due to escalating problems encountered during the prolonged drought of the past year.



The illegal trade of lion parts is increasing

In order to compare how herding investment differed in areas where livestock compensation programs were present or absent, Leela collected baseline data on livestock numbers from three group ranches in the first months of 2009. However, due to the prolonged drought, all cattle left the group ranches in search of pasture and water, and many herds ended up in national parks, creating conflict between herders and park authorities.

Another focus of Leela's research is to interview Maasai warriors about past behaviour toward wildlife in order to a profile analysis of Maasai who have pro-environmental behaviour vs. those who do not. The study will also include a thorough analysis of the different motivation of lion killing. For example, a Maasai who killed a lion as a rite of passage (for traditional reasons) may have very different values, attitudes, etc. compared to someone who kills a lion to sell its claws and teeth. Analyses of these differences will directly inform the types of conservation interventions that are possible in the area.

Mbirikani Group Ranch

The KLCP on Mbirikani has undergone major changes over the last year. Seamus Maclennan, who started the project in 2004, has left to take up MSc. research in West Africa. Lion monitoring was continued by wildlife biologist Bill Eldridge until June, when Kylie McQualter took up the position. There are currently ten collared lions on Mbirikani and Kuku Group Ranches, which are being monitored closely by Kylie and the Lion Guardians on Mbirikani. A further sixteen un-collared lions have been sighted on Mbirikani this year, either visiting or permanently residing there.

There are currently five litters of cubs on the KLCP monitoring areas of Mbirikani, Eselenkei and northern Olgulului Group Ranches. Nempakai, who was collared on Mbirikani in late 2007 and has since proved to be largely a resident of Amboseli National Park, appears to have had cubs in November. Nempakai is unique in that after residing for nearly two years in Amboseli NP, she has recently left the protected area to give birth



to her cubs. She is currently using a large part of Olgulului Group Ranch, as well as the Park. Eselenkei lioness Nosieki gave birth to two cubs in May of 2009 and her un-collared female companion Nasieku gave birth to three cubs in early 2009. Mbalueni had two cubs mid-year on Mbirikani, and Nimaoui, who was collared on Mbirikani in June, has also had cubs recently. There has also been lots of lion mating activity this last quarter so we are hoping for more cubs early in 2010. Because lack of successful reproduction has prevented growth of the lion population since 2004, we will be monitoring their survival closely.



One of Nosieki's cubs on Eselenkei Group Ranch

The loss of livestock to lions has been minimal on Mbirikani this year, with only 62 head of livestock killed, 20 of which were stray goats killed in one incident (data from Masailand Preservation Trust). The reason for few kills is likely twofold: opportunities were reduced as most cattle were moved away from the area in search of pasture, and wild prey was severely weakened by the drought, providing essentially unlimited food for many months. Fortunately, due to the Masailand Preservation Trust's compensation program and the work of the Lion Guardians, there have been neither retaliatory spearings or poisonings by livestock owner, nor any traditional spearing by *morans* (warriors).

Mirroring Stephanie's development of indirect, Maasai-based predator monitoring methods (spoor counting and DNA censuses) on Eselenkei and northern Olgulului, we will be increasingly depending on Lion Guardians for data collection on Mbirikani. Next year we hope to expand our study area onto southern Olgulului Group Ranch, where a large number of lions are said to occur and human-wildlife conflict is high.

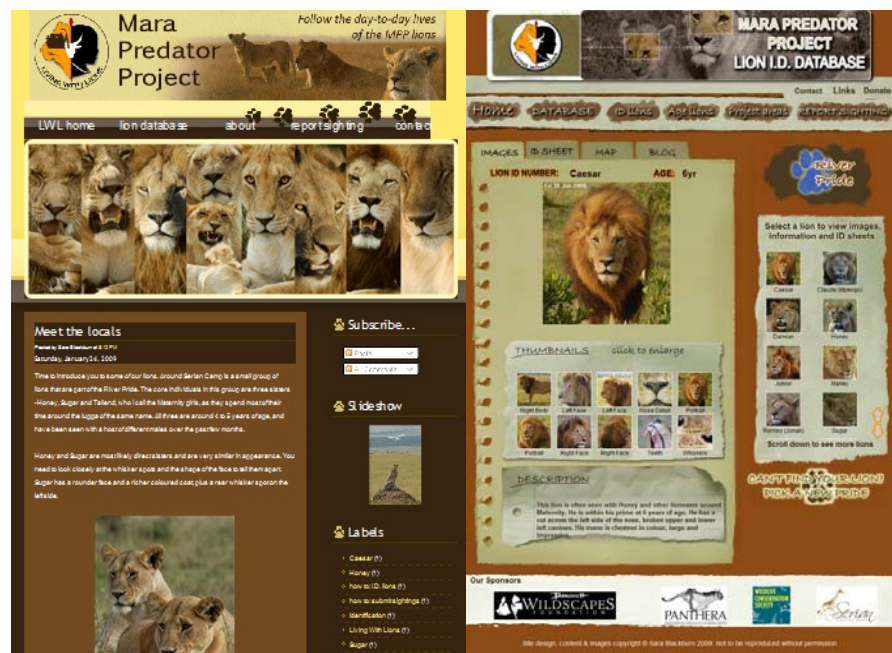


8. Mara Predator Project

Sara Blackburn initiated the Mara Predator Project in mid-2008 in the Mara North Conservancy (MNC), on the northern border of the Masai Mara National Reserve, with the aim of establishing a baseline estimate of the lion population of the region, and to establish a community carnivore conservation education program. She is based at Serian Camp on the Mara River. Given the importance and intensity of tourism in the region, we have focused on engaging the tourism industry in lion population monitoring. This year has seen the development and production of materials allowing for tourist involvement and the enrolment of camps and lodges in the project.

The number of identified lions has grown to 118 within the current study area of approximately 250 km². This includes 32 adult females (>3yrs), 15 adult males (>3yrs), 40 sub-adults (1-3yrs) and 19 cubs (<1yr). All deaths have been natural except for the spearing of one adult female who was a chronic cattle killer. Although many new lions have been identified this year, some previously known lions have not been sighted for several months, suggesting that they may have moved onto the Siria Escarpment or to areas south of the study area due to drought and the subsequent influx of cattle into the MNC.

The interactive website www.livingwithlions.org/mara went online this year, and features the lion identification database and associated information, and a section allowing visitors to submit photographs and sightings. A blog accompanies the website, allowing visitors to be kept up to date on lion movements and events.



The MPP ID Database and Blog

Sara designed and printed an initial 250 copies of an identification pack, including an information booklet, water resistant map, lion identification sheets and reporting sheets. The booklets correlate to the online identification database and are intended to be used by both guides and tourists for reporting.

A comprehensive information leaflet contains information about the project, *Living with Lions* as a whole and includes websites and email addresses to encourage participation. A poster has also been printed for participating lodges, and a display area set up at Serian Camp to encourage guest involvement; similar



displays will be set up at other participating lodges. The booklet and website are a work in progress as Sara refines them in order to maximize the validity of reported sightings.

Serian Camp has been at the forefront of lion monitoring, with both guides and guests involved in the reporting process. As a result, a full year of lion distributions have been catalogued and mapped. This has allowed for some preliminary insights into how livestock movements may be affecting lion movements and thus how our research can assist livestock management within the MNC. Our initial results suggest that cattle movements correlate negatively with those of lions, as lions seek out refuges that are inaccessible to both livestock and vehicles.



MPP's Lion Identification Pack

Other lodges throughout the Mara region and elsewhere in Kenya have expressed keen interest in participating in the lion monitoring project. Kicheche Camp, Elephant Pepper Camp and Karen Blixen Camp have all been introduced to the project and given booklets, leaflets and information. Saruni, Royal Mara, Mara Plain and Governors Camps are also eager to participate. This will widen lion monitoring throughout the MNC and to Lemek, Olare Orok Conservancy and the Musiara region of the Masai Mara Reserve, greatly expanding the region under lion surveillance. Future plans for the Mara Predator Project focus primarily on widening our impact and subsequent monitoring, and refining both methods and materials based on the past year's trials. 2010 will see the introduction of the project into many of the MNC lodges, with the likelihood that lodges further afield will also become involved.

The online database has been converted to an offline version, and two computers and cameras have been purchased to allow lodges to become independent in lion reporting. The computers have been set up with an interactive desktop to encourage and enable guests to upload photographs and submit sightings using the database.

Thanks to a grant from Banovich Wildscapes Foundation and assistance from Serian Camp, a house has been constructed for Sara, and Stephen Gold has donated a solar electricity system.

We are also working to begin stage two of the project: community education. Several arts workshops focusing on conservation have been run at local schools, which have already seen a positive change in attitudes towards lions. By hiring a community assistant and adapting our highly successful lion conservation



video to be regionally applicable, we will create a program of predator conservation workshops in Narok District aimed at reducing human-wildlife conflict. We hope that both these efforts and highlighting the value of lions to tourism and local revenue will elicit long-term changes in attitudes towards predators.

Feedback has been very positive, with the project receiving wholehearted support from lodge management, guides and guests. Using these methods to engage tourism in lion monitoring has such potential that we are exploring how they may benefit our other study areas. Sara visited Laikipia ranches in November to discuss how their guests may contribute to our work. Lodges in Laikipia District and the Amboseli region have expressed strong interest, and we are adapting our methods with a view to both involving tourists and establishing more accurate lion population and trend estimates in those areas.



9. Academic Achievements

Alayne Cotterill (University of Oxford), Stephanie Dolrenry and Leela Hazzah (both at the University of Wisconsin) have all commenced their PhD. thesis research this year. Laurence Frank was promoted to full professor status at the University of California, Berkeley, and granted permanent Exceptional Principal Investigator status.

10. Publications

Frank, L.G. In Press. Living with lions: lessons from Laikipia. *Conserving Wildlife in African Landscapes: Kenya's Ewaso Ecosystem*. Smithsonian Institution Scholarly Press.

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11. Media

NPR: Last year LWL were visited by Alex Chadwick of National Public Radio. His two-part Day to Day series on LWL and the Lion Guardians aired on the 11th and 12th March this year.

CBS: Last year CBS *60 Minutes* came to Kenya to document the use of Furadan and the work of LWL, the Lion Guardians and MPT. This program aired in the US on March 29th, and received a huge response. Immediately following the broadcast, the manufacturer of Furadan withdrew it from the Kenya market, though carbofuran, the generic version of Furadan, is made by other companies and can still be imported under different trade names.

BBC: The BBC TV series *Explore* filmed a piece on the Lion Guardians at the end of last year, which aired on BBC2 in the UK on 1st February 2009.

Reuters: World news agency Reuters visited the Mbirikani Lion Guardians in September. They filmed a piece on the project and the lion conservation work on Mbirikani, which has been aired worldwide.

European TV: A Swiss film crew spent a month with LWL for a documentary “Twilight of the Lions” which aired on Swiss TV in November and on ARTE in France and Germany in December. An English version will be broadcast in the UK and North America.

Marie Claire Magazine: American magazine Marie Claire featured a story about Leela and the Lion Guardians in September’s issue.

Vogue Magazine: American Vogue visited Eselenkei and interviewed Leela and the team for an article which appears in November’s magazine.



National Geographic Magazine: January 2010's National Geographic Magazine will feature a one page piece on the Lion Guardians.

Ecoworldly.com: The website published an article about the Lion Guardians project in October.

Nordic Science Illustrated: The Yearbook will feature an article on the Lion Guardians.

Telegraph Newspaper: 18th August Lions face extinction in Kenya within 20 years.

New Scientist: 20th August Kenya's lions could vanish within 10 years.

12. Websites

The project's website www.livingwithlions.org was redesigned and the new site was launched in March. The site features information about lion conservation, all the Living with Lions projects, photos and articles and also includes the Mara Predator Project online ID database of lions.

The Lion Guardians blog (<http://lianguardians.wildlifedirect.org>) is one of the most successful on Wildlife Direct and has raised substantial funds through online donations. It has also initiated fundraising events and brought in donations of a laptop, cameras, mobile phones and camera traps for the project.

Stephanie and Kylie have also started writing about their lion research work for the Kilimanjaro Lion Conservation Project blog (<http://kilimanjarolion.wildlifedirect.org>) and Sara continues to update her Mara Predator Project blog (<http://marapredatorproject.blogspot.com>).

13. Sponsors

Living with Lions has been supported by numerous institutions and individuals over the last year. We are extremely grateful for their generous support, without which none of our work would be possible. Major sponsors this year, in alphabetical order:

- Arthur Blank Family Foundation
- Banovich Wildscapes Foundation: PRIDE Lion Conservation Initiative
- Bonham Safaris
- Calvin, Michael
- Cheryl Grunbock and Martin King Foundation
- Denver Zoological Foundation
- Flora Family Foundation
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- Gold, Stephen
- Kaplan Awards Program/Panthera



- Kresa, Kent and Joyce
- National Science Foundation
- Panthera
- Philadelphia Zoo
- Porini Ecotourism
- Potrero Nuevo Fund/TIDES Foundation
- Serian Camp and their guests/Alex Walker
- Vannini, Jonathan
- US National Cancer Institute
- Wildlife Conservation Research Unit, Oxford University
- Wildlife Conservation Society
- Wildlife Direct – numerous individual donors
- Wings WorldQuest