West Laikipia Fence Project

Draft Final Report

Laikipia Elephant Project

The Symbiosis Trust

July 2nd 2011
1 Introduction

Human-elephant conflict (HEC) is an enormous challenge in rural Africa wherever people and elephants share space, involving the fate of a large charismatic, internationally protected animal that can generate substantial tourism revenue on one hand and the livelihoods of poor subsistence farmers on the other (Lee & Graham 2006). HEC in Laikipia, in particular the problem of crop-raiding, is considered a major cause of food insecurity, illegal killing of elephants and political tension between those who tolerate elephant conservation and those who suffer the costs of living with elephants (Thouless 1994; Gadd 2005; Graham 2007). The damage caused by crop-raiding elephants in the southern part of the Laikipia plateau, is considered to be some of the most extensive and severe in Kenya (Graham et al. 2010). To address this problem the Laikipia Wildlife Forum, (LWF) in collaboration with the Kenya Wildlife Service (KWS) and local landowners, through funding provided by the Kenya Government and Royal Netherlands Embassy, initiated the 163 km West Laikipia Fence (WLF) project. This builds on the Laikipia Fencing Strategy (Thouless et al. 2002) developed in 2002 by the LWF and broadly endorsed by local and national stakeholders.

Fig. 1 The LWF Fencing Strategy to alleviate human-elephant conflict in Laikipia. This map shows the district-wide electrified fence envisaged in 2002.
The original WLF project was planned in three phases. The first phase of the fence, covering 85 km and completed in June of 2008, was constructed along the southern boundaries of four large-scale ranches: ADC Mutara Ranch, Kifuko Ranch, Lombala Ranch and Ngorare Ranch. The first phase of the fence was constructed by a contractor. The owners and managers of each of the adjacent ranches committed in writing to maintain their respective sections of this first phase of the WLF. The plan for the alignment of the second phase of the West Laikipia Fence was that it be constructed along the western boundary of Ngorare Ranch, across the Ewaso Narok River and up along the western boundary of Ol Maisor Ranch. To save money it was agreed that the ranch owners would be resourced to construct their own fences, rather than using an independent contractor. The plan for the alignment of the third and final phase of the West Laikipia Fence was that it be constructed from the western boundary of Ol Maisor Ranch, across a stretch of smallholder land, to join up with the Laikipia Nature Conservancy perimeter fence. However due to insecurity and conflict over abandoned smallholder land, it was agreed in 2010 that this phase of the fence could not be constructed nor, given the insecurity in the area, was it particularly necessary as there was little apparent movement of elephants south of the area concerned.
Fig. 3 This map shows the final alignment of the West Laikipia Fence. Note that construction of the third phase, shown in blue, never began because of problems with land tenure & associated insecurity.

In October of 2009, the LWF entered into a one year agreement with the Laikipia Elephant Project (LEP) to help support the management of the West Laikipia Fence project, building on a strong and effective partnership developed over three years (2006-2009) under a project funded by the UK Darwin Initiative. This agreement was subsequently extended up until July of 2011. Monthly reports are generated by LEP under this project and should be referred to for specific details of the work undertaken. These reports can be downloaded on the project website (www.laikipiaelephantproject.org).

At the time the agreement was drawn up, there were growing problems with the performance of the first phase of the West Laikipia Fence as a result of both elephants and people damaging it and construction of the second phase of the West Laikipia Fence was not progressing as was hoped. Between October 2009 and September 2010, with the support of LEP, significant improvements were made. These were described in the 2009 to 2010 annual report. In summary:

- A monitoring and reporting system was put in place so that the performance of the fence and its impact could be carefully monitored by local stakeholders with a view to taking appropriate action if needed.
• Technical support and some resources were provided to the five large-scale ranches located along the first phase of the West Laikipia Fence so that where necessary, they could upgrade their respective fence sections to become more elephant proof (higher voltage & outriggers) based on lessons learned at the Ol Pejeta Conservancy (Graham et al. 2009).

• An elephant ID system was put in place so that consistent fence breaking elephants could be identified and monitored with a view to supporting the Kenya Wildlife Service to take appropriate management action.

• Three fence management committees, (Ex-Erok, Mutara & Pesi) comprised of the primary beneficiaries of the fence, located along the fence line, were revived and encouraged to engage in the maintenance and management of the West Laikipia Fence.

• Support was provided to create and sustain a new fence management committee, among a smallholder farming community, to construct a fence around Matigari, a small island of cultivation, located on the northern, “wrong” side of the WLF.

• A new alignment for the second phase of the WLF was agreed, with input from the local smallholder farmers, after the owner of Ngorare Ranch was unable to complete their section of the West Laikipia Fence as originally planned.

As a consequence of the activities described above, fence breaking along the first phase of the West Laikipia Fence by elephants decreased significantly with an associated decline in crop-raiding among neighbouring smallholder farms (see table 2).

The purpose of this report is to summarise overall progress with the West Laikipia Fence Project, and the alleviation of HEC generally, from October of 2010 to May 2011, drawing on key conclusions from our experiences to date and making recommendations for the way forward.

2 Construction of the West Laikipia Fence

The first phase of the West Laikipia Fence, covering 84 km, was completed in June 2008. The Matigari Fence, covering 1.75 km, was completed in 2009. Construction of the second phase of the West Laikipia Fence, measuring 49 km, began in 2009. However construction of this section of fence has been frustratingly slow. The reason for this, described in previous reports, is that the owner of Ngorare Ranch was not present or able to authorise and commit the labour & resources necessary to complete the Ngorare section of fence as originally planned. This necessitated the creation of a new 7km “community” fence on the land, adjoining the Ewaso Narok Swamp between Ngorare & Ol Maisor, now known as the “Mathira fence”.

2 Construction of the West Laikipia Fence
This was achieved by supporting local farmers to create a dedicated fence management committee, the Mathira Fence Management Committee and then supporting this group with fence materials and technical advice so that they could construct their own fence. A major problem here was getting the de facto manger at Ngorare Ranch to release fence materials that the LWF had placed in the Ngorare Ranch stores, so that construction of the Mathira Fence could be completed. After several attempts, the owner of Ngorare Ranch was eventually contacted and authorised her manager to release the materials that were needed. The fence is now complete and is measuring 7km recording 7.8Kv of power. The community is however concerned that elephants are now using the remaining ago between Ngorare ranch and the Mathira fence to walk into their farms. Since September 2010 Ol Maisor Ranch management have also stepped up their fence construction with 37.2 km of fence line complete. Of this 30 km is currently powered, while the remaining section needs to have wires installed and connected to an energiser house. The completion of this fence has been delayed by the needs to construct an access road for the Marura community along the south eastern boundary of Olmaisor ranch. It is expected this will be completed by the end of June 2011 to pave way for the completion of the fence.

Once the Ol Maisor & Mathira fences are complete, there remains a 5km section of fence, along the Ngorare western boundary to be constructed to close the gap between the first & second phases of the WLF.
Fig. 5 shows the 5km remaining section of the WLF, along the western boundary of Ngorare Ranch that still needs to be constructed.

From the LWF's perspective the simplest solution for completing this section of fence would be if Ngorare Ranch took on the task. The alternative would be if the neighbouring smallholders were mobilised to construct this fence. If the latter option is pursued it will require coordination & technical support that may not be available to the LWF after the current contract with LEP expires in June. While it may be possible for LEP to mobilise the local community to initiate construction of this fence immediately, the requirement for ongoing outreach support may make this option unviable unless further funding or in kind support is secured.

3 Performance of the West Laikipia Fence

The 31km ADC Mutara section of the West Laikipia Fence has consistently been the worst performing section of the first phase of the West Laikipia Fence. Table 2 shows that since its construction, this section of fence has been broken 1,591 times. This extraordinarily high number of breakages dwarfs any of the problems experienced by any of the other sections of fence that have been constructed and will therefore be the main focus of this section of the report.

From 2009 there was a significant investment into supporting Mutara Ranch management to upgrade the Mutara section of the WLF so that the fence recorded a higher voltage & had elephant “proofing” components (“outriggers”). This fence upgrade was limited to the eastern part of the Mutara fence. The western part of the fence, adjacent to the Pesi River was not upgraded to the standard desired.

There was also a large investment made into training ranch staff in the proper maintenance and management of the WLF and in recruiting and training 5 “community fencers”. Finally a dedicated researcher was put in place to identify and monitor consistent fence breaking
elephants & a rapid response team was put in place on ADC Mutara Ranch to patrol the fence line and scare away any potential fence breaking elephants. All of these measures were implement in accordance with a WLF management strategy agreed by local stakeholders at a meeting in May of 2008 (see Appendix 1).

The immediate impact of this fence upgrade appeared to be a decline in fence breakages and associated crop-raiding incidents (Table 2 & 3). Both decreased significantly between June of 2009 and May 2010, compared with previous years. However from July 2010 to March of 2011 the situation deteriorated sharply with enormous pressure placed by elephants on the ADC Mutara section of the West Laikipia Fence again.

Fig. 6 Phase 1 of the WLF showing 1km sections that were mapped out for the purpose of creating a standardised reporting system
Table 2: Fence breakages along the West Laikipia Fence (2008-2011)

<table>
<thead>
<tr>
<th>Fence Section</th>
<th>Length (Km)</th>
<th>June 2008/May 2009</th>
<th>June 2009/May 2010</th>
<th>June 2010/May 2011</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADC Mutara</td>
<td>31.62</td>
<td>555</td>
<td>320</td>
<td>716</td>
<td>1591</td>
</tr>
<tr>
<td>Kivuko</td>
<td>11.92</td>
<td>14</td>
<td>14</td>
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<tr>
<td>Lombala</td>
<td>15.17</td>
<td>17</td>
<td>34</td>
<td>8</td>
<td>59</td>
</tr>
<tr>
<td>Matigari</td>
<td>1.75</td>
<td></td>
<td>7</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Ngorare</td>
<td>12.2</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>LNC*</td>
<td>41</td>
<td>264</td>
<td>202</td>
<td>165</td>
<td>631</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>837</strong></td>
<td><strong>569</strong></td>
<td><strong>715</strong></td>
<td><strong>2305</strong></td>
<td></td>
</tr>
</tbody>
</table>

*LNC is not part of the WLF. The LNC fence existed long before construction of the WLF and has very high pressure from elephants and people.

While the generally poor state of the fence at Pesi made fence breaking understandable here, the high number of breakages along the WLF in the east, where it had been upgraded to a high standard, was more difficult to understand. It soon became clear that a group of persistent fence breaking elephants were causing the vast majority of damage here. While a rapid response team was in place to try and help with keeping such elephants away from the fence, in reality the team did not function as intended. There are several reasons for this. Firstly the perimeter road on ADC is not in a good state of repair for the rapid response vehicle to move around quickly which made it difficult to access the WLF in time and racked up the operating cost of the vehicle. Secondly there were ongoing wrangles about the composition of the rapid response team (it was agreed that armed guards were needed but KWS were unable to commit their rangers to this team full time and ADC did not have armed guards to supply until very recently).

All of these challenges might have been simple to overcome if it wasn’t for the following factors:

- ADC Mutara Ranch is a complex entity. Firstly the ranch is owned and managed by the Agricultural Development Corporation, a Kenyan government institution. Historically ADC has not been directly concerned with the conservation and management of wildlife and ADC do not appear to be willing to invest the necessary resources into continually upgrading, maintaining and enforcing their section of the WLF at Mutara Ranch to make it an elephant proof barrier, which is very expensive given the presence of many persistent fence breaking elephants. Secondly, while Mutara Ranch itself probably has sufficient labour to help with the maintenance and management of the fence and the current manager has been extremely accommodating, it appears that the culture of some Kenyan government institutions, with “jobs for life”, creates a difficult environment to supervise and manage employees to a standard that is sufficient for the difficult task of maintaining electrified fences. Thirdly there are odd decisions taken on Mutara Ranch, whereby grazing is “leased” to outside interests. This occurs at the level of the individual fencer who allows pastoralists and their livestock to enter into Mutara Ranch illegally, often damaging fence components in the process. It also occurs at a higher level where
large sections of the ranch are leased out for grazing, presumably with the sanction of ADC management at a higher level. This demonstrates there are different interests at play at Mutara Ranch, making it far from clear who is really in charge. Given these factors, while the Mutara Ranch staff on the ground are pleasant and the manager is accommodating, ADC itself is a difficult institution to partner with and far from an ideal “custodian” of the West Laikipia Fence. While much has and is being done to improve ADC’s capacity in relation to the management of the property as a wildlife area, the simple truth is that this is going to take a great deal of time. As a consequence it is likely that some kind of third party fence “oversight” or technical support will be necessary for a number of years to come unless a third party entity were to come in and manage Mutara Ranch for conservation.

- The management of fence breaking elephants is far from straightforward. While under this project we have been able to identify individual fence breakages and attribute specific incidents to specific elephants, the decision of what to do once a persistent fence breaking elephant has been identified not been entirely clear. The reason for this is that there is a reluctance to destroy persistent fence breakers within the KWS, particularly in light of the recent increase in elephant poaching, nationally (although on the neighbouring OPC this has been shown to be an effective way of reducing pressure on perimeter fences). The reluctance may also centre around perceptions of Laikipia among some within the KWS as the domain of “trigger happy” wildlife managers. This needs to be further explored. However in reality the only know alternative to the lethal control of fence breaking elephants, trans-location, is expensive, possibly prohibitively and other approaches (de-tusking, E-Fence) remain under trial. Meanwhile fence breaking elephants teach other elephants to become fence breakers, so the number of fence breaking elephants identified by the project is increasing exponentially and the problem is now out of hand as illustrated in the tables below (Table 4 & 5). The need for other non-lethal alternatives is obvious but as of yet nothing effective or viable has emerged.
Table 3: Crop-raiding by elephants recorded in south Laikipia. Crop-raiding in Ex-Erok, Mutara, Pesi, Thome & Matigari, is adjacent to the WLF. Other sites are in south-west Laikipia and are not a measure for assessing the performance of the WLF.

<table>
<thead>
<tr>
<th>Location</th>
<th>Scout</th>
<th>Number of crop raids in Laikipia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Before fence</td>
</tr>
<tr>
<td>Ex-Erok</td>
<td>Joseph Wahome/ David Wanjau/ Samuel Wachira</td>
<td>773</td>
</tr>
<tr>
<td>Mutara</td>
<td>David Wanjau/ Samuel Wachira</td>
<td>891</td>
</tr>
<tr>
<td>Mwenje</td>
<td>Charles Mwangi/ Paul Murithi</td>
<td>268</td>
</tr>
<tr>
<td>Olmorran</td>
<td>Simon Waweru/ Reuben Mungai</td>
<td>321</td>
</tr>
<tr>
<td>Rumuruti</td>
<td>Charles Kinyua</td>
<td>134</td>
</tr>
<tr>
<td>Marmanet</td>
<td>Maurice Muchiri</td>
<td>1007</td>
</tr>
<tr>
<td>Pesi</td>
<td>Nelson Mbuguru</td>
<td>267</td>
</tr>
<tr>
<td>Lariak</td>
<td>Stephen Kamau</td>
<td>86</td>
</tr>
<tr>
<td>Shamanek</td>
<td>Simon Wachira</td>
<td>0</td>
</tr>
<tr>
<td>Thome</td>
<td>Gedion Lole/P. Muriuki</td>
<td>0</td>
</tr>
<tr>
<td>Matigari</td>
<td>James Lobenyoe</td>
<td>25</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>3,772</td>
</tr>
</tbody>
</table>

Next to WLF

Stephen Kamau From May 2008
From December

Simon Wachira 2009
From December

G.Lole/P.Muriuki 2010
From April

James Lobenyoe 2007
From August

How have we attempted to address the two challenges? With ADC Mutara Ranch we have attempted to apply pressure at the ranch management level and at the higher ADC board level to invest more resources into upgrading and maintaining the WLF. We have achieved the former, primarily by widely distributing monthly reports in which the status of the ADC Mutara Ranch section of the WLF is clearly shown, with a view to applying peer pressure locally (particularly through OPC, which neighbours ADC Mutara and holds a co-management agreement over a 15,000 acres portion of the ranch). Pressure has been applied at a higher level through our project partners within KWS, AWF, OPC & through high level contacts operating within the government (through a report to the Chairman of the LWF, General Waweru, who has taken the matter up with the director of the KWS & ADC). Currently there is a plan to invite the President of Kenya to officially open the WLF at ADC Mutara Ranch, with
the hope that ADC will invest resources into ensuring their section of the WLF is up to scratch.

To some extent this pressure has had an impact as in recent months the manager has taken decisive steps to improve the condition of the fence, including improving the condition of the perimeter road and has made commitments to take on more labour, previously employed by LEP, to monitor, maintain and supervise the WLF. This includes 5 community fencers & one fence supervisor in addition to the existing Mutara Ranch labour committed to the WLF.

The steps taken to manage the broader challenge of managing persistent fence breaking elephants is described in further detail in the next section.

A major challenge that LEP has experienced in providing interim management over the course of this project has been with the capacity of the LWF to provide executive support to the WLF project. For example:

- Requests for materials to upgrade the first phase of the West Laikipia Fence or requests for materials to construct the second phase of the West Laikipia Fence have not been responded to in a timely manner, compromising the performance of the WLF and delaying its construction.

- Monitoring the supply and storage of materials has been inconsistent, leading to confusion over what has been ordered, what has been supplied, what hasn’t been supplied, where materials have been delivered, what materials remain in stores and where. It isn’t clear who was responsible for these tasks but there was a clear breakdown in communication between different personnel, making it difficult for LEP to track the use of materials for the WLF project.

- Support to flag key issues at a higher level (senior ADC, KWS and LWF management) has been slow, such as the issue of managing problem elephants or problems with capacity at ADC to maintain the WLF.

While beyond the scope of this project it is clear that any future third party oversight for managing the WLF will need to be restructured so that the same entity that is charged with providing interim management is also responsible for and properly resourced to order, deliver and track the use of materials in the maintenance of the WLF. This will ensure that materials that need to get to the WLF are delivered on time and use of materials is properly tracked. It may be that specific capacity within the LWF will need to be developed for this to occur.
i. June 2007 - May 2008

ii. June 2008 - May 2009

iii. June 2009 - May 2010

iv. June 2010 - March 2011

Fig. 7 Changing patterns of crop-raiding in and around the WLF, since 2007.

4 Problem Elephant Identification and Management

There have been several activities undertaken to address the problem of persistent fence breaking elephants along the WLF:

Problem Elephant Identification & Monitoring System

From October 2009 a dedicated elephant researcher was recruited by LEP and given hands on training from the OPC elephant researcher on the identification, documentation and monitoring of known problem elephants along the ADC Mutara fence section. Using a powerful camera, a motorbike and binoculars he was able to identify and monitor over 70 known fence breakers on the ADC Mutara Ranch section of the WLF. A problem elephant
database containing details of the known fence-breaking elephants has been used to rank the elephants with the aim of identifying the most problematic fence breakers for management action. The tables below show all the elephants that have been identified to date and the number of breakages they have been associated with. It is important to note that the figures provided show the number of times an elephant was associated with a specific fence breaking incident and do not necessarily show the number of times each elephant was specifically responsible for a fence break. This is because fence breaking is carried out by an individual within a group of bull elephants and while the group of elephants involved could easily be identified by tracking them up, it was not always possible to identify specifically which elephant within the group was responsible.

The Mutara section of the WLF, adjacent to the Pesi Swamp, has encountered a myriad of bottlenecks ranging from poor fence maintenance (not repaired quickly, faulty components not replaced, vegetation not cleared), low fence voltage at Pesi, no perimeter road, security and/or patrols at Pesi to prevent elephants & people from breaking and/or damaging the fence and the breaching by pastoralists, wood fuel collectors and farmers with impunity. Interplay of the said factors leads this section of the fence to be classified as a ‘low’ specification section. A large number of elephants have been identified breaking this fence. These elephants are listed below, in Table 4. However given the state of the fence at Pesi, it is debatable whether these elephants qualify for any form of management intervention at this time.

**Management of Fence Breaking Elephants**

With the objective of measuring the impact of management interventions on the behaviour of individual fence breaking elephants, GPS collars have been fitted on 5 elephants over the course of the last 11 months.

Two elephants, Jangwani and Robinson, were fitted with GPS/GSM/GPRS collars on ADC Mutara ranch on 3rd June 2010. Two more elephants were collared afterwards, Ismail on 23rd September, 2010 and Nelson on the 13th of January 2011. Although Kimani had a collar originally, it had failed to transmit signals and hence it was replaced on 24th March 2011. This brought the total number of LEP collared elephants to five. Robinson, Nelson and Ismail continued to break fences and were frequently seen outside the fence.

**Table 4: Elephants at the ADC Mutara’s high specification section of the fence (M7-M31, see Fig.6)**
<table>
<thead>
<tr>
<th>#</th>
<th>Elephant's Name</th>
<th>Fence breakage incidents</th>
<th>Date first seen breaking fence</th>
<th>Mgt Intervention</th>
<th>Mgt Intervention date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2008</td>
<td>2009</td>
<td>2010</td>
<td>2011</td>
</tr>
<tr>
<td>1</td>
<td>Nelson</td>
<td>14</td>
<td>42</td>
<td>9</td>
<td>65</td>
</tr>
<tr>
<td>2</td>
<td>Rayn</td>
<td>12</td>
<td>37</td>
<td>15</td>
<td>64</td>
</tr>
<tr>
<td>3</td>
<td>Ismail</td>
<td>10</td>
<td>36</td>
<td>16</td>
<td>62</td>
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<tr>
<td>4</td>
<td>Kijana</td>
<td>10</td>
<td>36</td>
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<td>54</td>
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<td>5</td>
<td>Liban</td>
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<td>27</td>
<td>16</td>
<td>50</td>
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<td>6</td>
<td>Nicolas</td>
<td>12</td>
<td>18</td>
<td>16</td>
<td>44</td>
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<tr>
<td>7</td>
<td>Mutara</td>
<td>21</td>
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<td>8</td>
<td>Rex</td>
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<td>Masikio</td>
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<td><strong>225</strong></td>
<td><strong>340</strong></td>
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Table 5: Elephants at the ADC Mutara’s low specification section of the fence (Pesi section, M0-M7; see Fig. 6)

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<tr>
<th>#</th>
<th>Elephant’s Name</th>
<th>Fence breakage incidents</th>
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<td>19/05/2010</td>
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</table>

| Grand Total | 18 31 288 32 369 |

To put in place an agreed plan for the management of problem elephants a joint KWS, LEP, LWF and OPC meeting was held on Thursday the 27th January, 2011 at OPC to discuss the way forward and a modality for the management of problem elephants in Laikipia. After this meeting a small committee was established, The Laikipia Elephant Conservation and Management Committee”, comprised of the meeting participants and ADC Mutara Ranch to follow through with the recommendations made. Subsequently LEP prepared a proposal detailing the process of evaluating the performance of interventions to manage problem elephants (appendix 2) which was subsequently endorsed by the committee during a follow-up meeting on Friday, 4th February 2011, at OPC. The meeting further approved the
immediate de-tusking of the 8 worst fence breakers on ADC. Consequently, on 10th March, 2011, Ismail and Nelson were de-tusked and LEP began monitoring their movements immediately. Heavy rain prevented de-tusking of the remaining six target elephants.

Over the course of the meeting with the committee described above clear direction was sought from the KWS on the protocol for the elimination of consistent fence breaking elephants. It was agreed that decision-making for such action have been devolved to the level of the Assistant Director, rather than held at the level of central HQ in Nairobi and that any such decision would be made on a case by case basis, on presentation of information to support a request for such action. At present the preferred course of action appears to be the translocation of some elephants (see appendix 2). What is clear is that decisive action must be taken and soon if this problem is not to get totally out of control.

Fig. 8 The movement of 5 fence breaking elephants fitted with GPS collars since 2010

5 Strengthen the Institutional and Organisational Mechanisms for the long-term Maintenance and Management of the West Laikipia Fence by the primary stakeholders.

Ranch Management

The WLF project intended for the owners of the large-scale ranches, on whose land the fence was to be built, to ultimately be responsible for its long term maintenance and management.
It was felt this was the best option given that the large-scale ranches were better organised and resourced than the neighbouring smallholder communities for this task.

All the fencers recruited by the large-scale ranches along the WLF were provided with training, early on in the project, to enable them to effectively maintain their fences. However greater investments were made in ADC Mutara Ranch for the reasons described above. Here extra training and resources were invested in training fencers on adding “outriggers” to the fence. In addition LEP providing “on the job” training to an individual fencer to become the overall supervisor of the Mutara section of the WLF.

In addition in March 2010, due to increased number of breakages reported along the ADC Mutara fence, delays in repairs and poor reporting of fence breakages when they are likely to occur and when they have occurred and low fence voltages, LEP worked closely with the ADC management to upgrade the fence voltage and to improve on the personnel performance around the fence. LEP supported the construction of two new energiser houses at Irungu and Bondeni and restructured the existing energisers to cover shorter distance bringing the total to 5 and voltage increased to between 7kv and 8kv.

However Pesi section of the ADC Mutara Ranch section of the WLF remained a problem. LEP recruited and trained five community fencers to provide support to the five ADC Mutara ranch fencers, they were provided with mobile phones and calling credit to enable them to report on a daily basis the fence condition to the LEP office, rapid response team and the fence supervisor at ADC Mutara. In addition LEP facilitated the promotion of one of the fencers to a fence supervisor position with ADC Mutara providing a dedicated motorbike for his daily patrols along the fence. LEP continued to play a support role in the supervision of the fencers and monitoring of the fence. In April of 2011, ADC Mutara Ranch took on responsibility for these community fencers and their costs.

The second phase of the WLF was more complicated than the first phase in that the ranch owners were not only meant to maintain their respective sections of fence, they were also asked to construct them too. While this was agreed in principle by Ol Maisor Ranch, in practice construction was far slower than anticipated because of a lack of adequate labour and supervision. To speed up the process, in November 2010, LEP recruited a dedicated fence technician to work closely with the Ol Maisor Ranch fence construction team.

Smallholder communities

Support to smallholder communities by LEP to enable their effective participation in the management of the WLF has taken several forms.

Firstly four fence management committees along the WLF have been revived (Ex-Erok, Mutara, Pesi & Thome), after many seemed to have stopped functioning after they were initially established at the project planning phase.

Secondly two new fence management committees were established by LEP to actually contract their own fences, one at Matigari and the second at Mathira. The Matigari Fence Management Committee constructed a 1.75km fence around an “island of cultivation” north of the WLF, on a former government outspan now settled and occupied. This remains perhaps the most effective of all six fence management committees along the WLF, raising their own funds and resources to repair and maintain their fence. The second new committee created was that of Mathira. This was an enormously challenging exercise because of the varied ethnic mix that is present at this location and the potential for conflict. However by the end of 2010 a committee had been established and in May of 2011 they have nearly
completed construction of their own 7km fence. The dedicated technician that was recruited to support Ol Maisor, also provided direct support to this community, acting as both a technical supervisor and outreach officer for the community concerned. Ol Maisor Ranch provided transport to get materials to the Mathira site and supported the LEP fence technician with a motorbike so that he could get around easily.

The challenge over the last year, however, was in ensuring that these committees continue to play an effective role in fence maintenance and management. This was particularly important at Pesi, where the fence is being vandalised by pastoralists. At Thome their appears not to be an urgent need for a fence management committee as the ranch appears to be on top of all fence management and maintenance issues. Initially the LEP interactive drama team played an important role in fostering support for the WLF and in preventing people from tampering with fence components. However more dedicated training sessions, through workshops, were provided. Between February 7th and June 6th 2011, the Laikipia Elephant Project organised participatory meetings and training workshops with the primary beneficiaries of the West Laikipia Fence particularly the small-scale farmers and local leaders drawn from Ex-Erok, Pesi, Matigari and Mathira to explore their preparedness to take over the management of the WLF. The general objective of the meetings/workshops was to assess the perceived roles, willingness and capacity of the stakeholders to undertake the right and effective actions for the effective long term management of the WLF in their respective sections (Appendix 3). The same level of training is required with the Mutara smallholder community and is planned for in June in the final phase of this project.

Local Conservation Actors

LEP has provided support to conservation stakeholders operating at the higher management level within Laikipia through the following activities:

- The creation of an effective human-elephant conflict monitoring and reporting system, that supports local stakeholders to make informed decisions. This system is dependent on systematic and honest reporting by local scouts and timely reporting. It is important that such a system is maintained to track the future performance of the WLF and any other management interventions to mitigate HEC in southern Laikipia.

- The creation of a reliable problem elephant monitoring system to support the KWS make decisions in relation to the management of fence breaking elephants. This system has not yet been used to its full potential, partially because the policy and protocol of what to do with persistent fence breaking elephants, once they had been identified, remains unclear.

- The development of a project to “trial” a series of elephant management interventions on fence breaking elephants and the creation of a local committee, comprised of the KWS, OPC, LEP and the LWF to evaluate the performance of the planned interventions.

Maintenance Costs

To give an indication as to the ongoing cost of maintaining the WLF, an assessment is currently being undertaken. The true cost of maintenance is difficult to estimate because there has been no single entity in charge of monitoring and reporting the use of materials on the WLF. The LWF, individual ranches, LWF CLOs and the LEP project manager have all at one stage been involve with requesting and delivering materials. This is quite confusing. However from a preliminary assessment the table below shows monthly costs for fence maintenance of ADC Mutara Ranch. We would suggest that this be treated with caution and a more accurate estimate of costs be compiled with further input from all the key stakeholders.
Table 6: Costs of maintaining the ADC Mutara section of the West Laikipia Fence

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<th>Designation</th>
<th>Units/Quantities</th>
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</tr>
<tr>
<td>Armed Ranger</td>
<td>1 per</td>
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<tr>
<td>Driver</td>
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</tr>
<tr>
<td>Fencers</td>
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<td><strong>Sub-Total</strong></td>
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</tr>
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6 Support the key stakeholders in West Laikipia to establish long-term resolutions to human-elephant conflict in areas not currently tackled by the WLF

Once the second phase of the WLF is complete and effective measures are put in place to address the problems experienced with the ADC Mutara Ranch section and persistent fence breaking elephants, it is likely that HEC south of the fence will be significantly reduced. However HEC will continue to be a major constraint on local livelihoods in south-west Laikipia. This is principally for two reasons. The first is that the forest reserves of south-west Laikipia continue to provide a refuge for both resident and non-resident elephants. The second is that the Laikipia Nature Conservancy boundary fence is not an effective barrier to elephant movement. Both of these are very difficult challenges to overcome. A third challenge that remains is the completion of the third phase of the WLF, currently suspended, because of problems of land-tenure (absentee land occupied by transient groups of armed pastoralists). This too is an incredibly complex problem to overcome.

A strategy for addressing each of these three issues was developed in 2010 (appendix 4), as part of the next phase of the WLF project.

Here we discuss what steps have been taken to move forward with the three components of this strategy:

Securing a management presence on absentee smallholder land (“sub-divided ranches”) in West Laikipia

LEP supported an initiative by the MP for Laikipia West to bring abandoned smallholder land in West Laikipia under productive use and management. This involved establishing who actually owns abandoned sub-divided ranches in West Laikipia and the potential for these owners to collectively lease or sell their land so that it can be put under productive management, possibly with some kind of lease arrangement negotiated so that the pastoralist of the area can use the land under a formal arrangement. This initiative was closely coordinated by the Zeitz Foundation (based out of Segera Ranch) in 2010 but seems to have stalled. It will now be a difficult process to revive with Kenyan elections approaching in 2012. However there is no doubt that pushing this process through with broad government support is absolutely critical if there is to be any possibility of a management presence (community or company) put in place to maintain an electrified fence.

Improving the performance of the Laikipia Nature Conservancy (LNC) Fence in West Laikipia

LEP invested a great deal of time and resources into establishing the reason behind the poor performance of the LNC fence and to improve the relationship between LNC management and the neighbouring farming community which appeared to have broken down. In April of 2010 LEP developed a dedicated proposal for upgrading the LNC fence and managing persistent fence breaking elephants, particularly along the border with the Mwenje smallholder community. Unfortunately the managers of the constituency development (CDF) fund took the decision to instead support a community based organisation to construct a new parallel fence. LEP actively lobbied against this project due to the evident lack of poor planning on the part of the project backers and the lack of awareness or commitment to fence maintenance among the individual farmers who were the intended beneficiaries of the project. This was a badly planned project. It has subsequently failed in its objective and there now exist two parallel fences that are both ineffective at preventing elephants from entering smallholder crops. This provides a useful entry point to revive the original LEP project to upgrade the LNC southern perimeter fence. However, given the poor way in which the community fence was planned and the way in which LNC was marginalised in the decision making process, it may now be difficult to persuade the owners of LNC that they should invest in upgrading and
maintaining their own perimeter fence which is the obvious long term solution. However LEP has continued to provide a monitoring role to establish the performance of the LNC and parallel community fence, with the objective of presenting the results to the project donors and stakeholders who backed the project, with a view to securing support for a more pragmatic solution.

Managing the Elephants of the Rumuruti Forest

Because of the small size of the remaining pockets of forest that remain and a rapidly growing human population and associated expansion of cultivation, there is no future for elephants in the forest reserves south of the West Laikipia Fence. However currently there are both resident and non-resident elephants that use these pockets of forest, typically as staging posts for crop-raiding on the surrounding smallholder land. This was the subject of the third component of the project proposal developed in 2010 for the next phase of the WLF project. It appears that the only really viable solution for the problem of elephants in south-west Laikipia is to remove them completely over time with the possibility of the erection of a perimeter electric fence as an interim solution.

LEP has been providing limited support to the community groups around the Rumuruti Forest and the KWS to encourage a strategic approach to fence construction (at present individual community groups are building individual fences without any overall collaboration) so that individual groups come together to create a single perimeter fence, rather than in the ad hoc way that the fence is being constructed at present.

In addition LEP has been communicating with the KWS and local leaders to assess the feasibility of translocation of elephants from Rumuruti or alternatively, an elephant drive. Neither will be easy to achieve.

7 Recommendations

Overall management of the WLF project

1. The LWF is a reluctant “owner” of the WLF project, particularly as the LWF fencing strategy was designed so that individual ranches took on responsibility for individual sections of the fence, minimizing any need for third party oversight and support. The problems highlighted in this report demonstrate that in West Laikipia the capacity for individual ranches to maintain and manage their respective section of fence is limited, particularly ADC Mutara Ranch and in future Ngorare and Ol Maisor ranches. It is equally unrealistic to expect neighbouring smallholders to maintain fences that large-scale ranches should, ideally, be responsible for. The LWF fencing strategy, therefore, needs to be reviewed for West Laikipia. Either the LWF or another third party entity (the KWS?) must employ and resource a dedicated WLF fence team to be responsible for the maintenance and management of sections of the WLF that fail due to problems of capacity or those sections of fence that fail should be dismantled and redeployed to support viable community fencing projects, such as the ring fence constructed around the Matigari smallholder farms.

2. For all future WLF related construction and maintenance projects a single dedicated individual is identified and authorised to order, deliver and track materials needed for the construction and maintenance of the WLF. Reports of materials used in fence construction and maintenance must be produced regularly and properly audited by the LWF.

Phase 1 of the WLF
1. The Pesi Section of Mutara’s perimeter fence is upgraded

2. The Mutara & Ex-Erok fence sections are assessed and where necessary, upgraded.

3. Resources are sought from the government to put in an all weather perimeter road along the ADC Mutara perimeter fence.

4. The LWF approaches OPC to play a technical support role for the ADC Mutara Ranch section of the WLF up until a period of time that Mutara Ranch is able to fully manage it. In the absence of OPC’s support, a dedicated officer within the LWF (possibly the CCO or a CLO) provides third party oversight to ensure that Mutara Ranch management are committing the necessary resources to maintain the Mutara Fence.

5. The resident farmers and pastoralists at Ex-Erok, Mutara & Pesi will need ongoing outreach support to ensure their fence management committees are well governed and are providing the necessary support to ensure the Mutara Ranch fence is not vandalised or tampered with by local people.

6. Local conservation actors (the LWF, OPC, AWF and the Kenyan Land Conservation Trust) hold a meeting at a senior government level (ADC, KWS, Laikipia County, Ministry of Lands, Local MPs etc) to explore the future of Mutara Ranch and its potential to become a dedicated wildlife area/conservancy/game reserve.

Phase 2 of the WLF

1. The LWF applies pressure on Ngorare Ranch to complete the remaining 5km section of fence

2. Local conservation actors hold a meeting with the owner of Ngorare Ranch to explore the future of Ngorare ranch and its potential to become a dedicated wildlife area/conservancy with associated investment. This will ultimately ensure that the Ngorare section of the WLF will be well maintained in perpetuity.

3. It is highly likely ongoing technical support will be needed at Mathira & Ol Maisor to ensure their fences are well maintained. It is recommended that Ol Maisor Ranch employ their own fence technician for this task. The existing LEP fence officer, Francis Ngatia is an ideal candidate for this job. This fence technician could also, possibly, help provide support to Ngorare Ranch management for their section of fence in future.

4. The Mathira community will need ongoing outreach support to ensure that their fence management committee is well governed and functioning so that the fence is properly resources and maintained. This could be a task for a LWF CLO/LWF CCO.

Monitoring & Evaluation

1. The current system of fence monitoring, whereby voltages and breakages are recorded and reported on a daily basis and compiled into a report to share with local stakeholders, should be maintained. The system of daily fence recording and reporting should be devolved to the individual ranch level to improve in-house capacity to manage their fences. We recommend that information should continue to be collected on a monthly basis and put into a simple one page report to share with
local stakeholders (particularly KWS) by a competent officer, possibly the LWF CCO or CLO.

2. Levels of crop-raiding should continue to be monitored as these data provide the ultimate benchmark by which the KWS, LWF and other conservation stakeholders can evaluate the performance of interventions to mitigate human-elephant conflict.

The Management of Fence Breaking Elephants

1. The identification and monitoring of consistent fence breaking elephants is an activity that must be maintained, possibly indefinitely, to ensure that informed decisions can be made for the management of the WLF. OPC represents the only entity that could take on this responsibility across the broader landscape, though significant training would need to be provided to ensure this is done properly, followed by occasional supervision and oversight by a competent researcher/research institution. Whether or not OPC is willing to take on this broader responsibility is not clear. MRC would be an ideal entity to take up the role of research supervisor in the long run.

2. Decisive action must be taken when consistent fence breaking elephants are identified. This requires confidence and agreement by all local conservation stakeholders in the use of tools that are effective at managing fence breaking elephants, and that such tools are sustainable. It should be noted that OPC have effectively demonstrated that the lethal control of fence breaking elephants, when done properly, does improve the performance of electrified fences. However what is not clear is whether or not this approach is sustainable in the long run (for both ecological and ethical reasons). However the alternative non-lethal approaches proposed have yet to be demonstrated as effective (de-tusking, translocation or the “E-Fence”). A dedicated research project is required to assess these management interventions to help inform policy at the national level. LEP is an ideal position to carry out this study but resources will need to be found to make this happen. In the meantime, however, decisive action must be taken on elephants that are breaking the WLF.

References


Appendix 1

West Laikipia Fence Management:

A strategy for the period between 2008 and 2010

By Max Graham

May 13th 2008
1. Introduction

With a view to alleviating the problems of human-elephant conflict in southern Laikipia, in particular the problem of crop-raiding, The Laikipia Wildlife Forum (LWF), in collaboration with the Kenya Wildlife Service (KWS), has contracted Agrotechno Resources Ltd to construct the first phase of a 153 km electrified fence. The first phase covers approximately 83 km, from the Ol Pejeta Conservancy (OPC), to Ngorare Ranch, and will be completed shortly. Unless this fence is properly managed it will fail in its intended purpose. This proposal outlines the activities that will be undertaken by the LWF and its partners, in particular OPC and KWS, to ensure the proper maintenance and management of the west laikipia fence over the next two years.

2. Project Activities

a. Upgrading the fence

To reduce pressure on the fence under construction, it will be upgraded to include live cantilever wires, also known as ‘outriggers’, along its entire length, at 1m intervals. A cantilever wire is a single piece of high tensile strength wire, tied to a live wire of the fence, at approximately one foot above the ground, so that 1 m of wire projects inwards towards the direction of elephant pressure, at a 45 degree angle, perpendicular to the electrified fence. The purpose of the cantilever wire is to keep a potential fence breaking elephant from getting within a distance where it can short the fence (i.e. by using its tusks or legs).

Fencers, employed by each large-scale property bordering the west laikipia fence (ADC Mutara, Kifuko, Lombala and Ngorare), will carry out the fence upgrade to the agreed configuration. These fencers will be trained and supervised by the OPC.

b. Fence Maintenance

Fence maintenance will involve the clearing of vegetation, repair of damage done by wildlife and people, the replacement of defective components, and the daily monitoring of voltage. This work will be undertaken by trained fencers on a daily basis. A single fencer will be recruited for every 7km of the West Laikipia Fence.

c. Fence Monitoring

Fence voltage, the incidence and location of fence breakages, and ancillary data, will be monitored by fencers on a daily basis under the supervision of the OPC. These data will be recorded by designated reporters, such as Laikipia Elephant Project scouts, using a standard data form. Data forms will be gathered on a weekly basis by a dedicated fence officer, and thereafter entered by a designated clerk into a single database, with a view to generating monthly reports. These reports will be generated by
the LWF with support from the University of Cambridge, to be disseminated and discussed among appropriate stakeholders. The reports will provide the basis for assessing, and where necessary, improving the performance of fences and associated management.

d. Management of Consistent Fence Breaking Elephants

The Ol Pejeta Conservancy will create and deploy two rapid response units, each comprised of a vehicle with driver, fencer and an armed askari, to patrol and enforce the west laikipia fence. Enforcement will involve scaring away potential fence breaking elephants from the fence line. Where necessary the rapid response unit will repair fences broken by elephants.

OPC will employ two elephant researchers, one for approximately every 40 km of the fence, to identify problem elephants. These researchers will be sent on a training course to the Amboseli Elephant Project. Once trained, elephant researchers will be equipped with a motorbike, GPS unit and digital camera and will systematically follow up all fence breaking incidents, recording relevant information on a standard data form.

Once identified the following procedure will be followed in relation to the management of a fence breaking elephant: 1) A photograph/s of the elephant will be taken and physiological traits recorded and entered into a dedicated database; 2) A report will be submitted to the Kenya Wildlife Service warden, with details of the offending elephant; 3) The offending elephant will be closely monitored to establish how often it breaks through the electrified fence; 4) If the offending elephant breaks a well maintained fence (high voltage, projections present) three or more times, the offending elephant will be destroyed directly by the Kenya Wildlife Service or by a suitably qualified manager with the authority of the Kenya Wildlife Service.

e. Community Participation

Individual large-scale properties have agreed to provide the bulk of support for the long term maintenance and management of the West Laikipia Fence. However, wherever possible, it is critical that the small-scale farmers living and working south of the fence, and their representatives, are involved, at least in some respect, in maintenance, to ensure that the fence continues to be community-owned and driven. To this end, the Laikipia Wildlife Forum will facilitate the creation of fence sub-committees, comprised of key stakeholders, along the length of the fence. These committees will organise for labour and resources to be collected from small-scale farming beneficiaries and committed to the maintenance, monitoring and management of the West Laikipia Fence. In addition meetings will be held by these committees to discuss, and where possible, address, fence reports, maintenance problems and other fence-related issues.
A dedicated fence officer, directly employed by the LWF with support from the University of Cambridge Laikipia Elephant Project, will help to facilitate the creation of fence management sub-committees and support their activities. In addition a drama group will help to build support for the West Laikipia Fence among relevant smallholder farmers and other stakeholders, through the use of interactive plays.

f. Impact Assessment

While resources are available, the University of Cambridge will provide support to assess the impact of the West Laikipia Fence. This will be achieved through the use of dedicated scouts to monitor crop-raiding and fence breaking by elephants in the areas concerned. In addition the University of Cambridge will undertake to assess changing perceptions, elephant movement, livelihoods and land-cover as a consequence of fence construction.

3. Sustainable legacy funding and structures

Costs for sustaining the fence management procedures put in place under this project will be clearly identified by the LWF and project partners. A proposal for carrying these costs over the long term through appropriate levels of contributions (possibly quarterly) among key stakeholders, will be developed by the LWF with support from the University of Cambridge and discussed in 2009. Once the level of financial contribution and payment structure has been agreed among stakeholders, letters of commitment will be secured. If and where there is a short fall in meeting costs, a fund raising strategy, principally aimed at LWF members, will be developed.
Appendix 2

Assessing the Impact of Approaches for the Management of Fence Breaking Elephants on the Laikipia Plateau in North-Central Kenya

By the Laikipia Elephant Project

Project Proposal

For the Laikipia Elephant Management Working Group
(KWS, OPC, LWF, LEP)

27 February 2011
1. Background

1.1 The West Laikipia Fence

Human-elephant conflict in Laikipia, in particular crop-raiding, is perhaps the most severe in Kenya, with over 3,000 incidents recorded annually (Graham, 2010). The West Laikipia Fence project, initiated in 2008, through funding provided by the KWS, Royal Netherlands Government, IFAW and the GoK’s Constituency Development Trust Fund (CDTF), aims to address this problem. The project involves the construction of a 163 km electrified fence from the Ol Pejeta Conservancy in south-central Laikipia, to the Laikipia Nature Conservancy in west Laikipia. Once completed, this fence will realise the Laikipia Wildlife Forum’s strategy of creating a Laikipia-wide electrified fence, separating land from where elephants are tolerated (large-scale ranches & group ranches) from land where elephant are not tolerated (small-scale farms). The strategy, written in 2002, proposed a modular approach, where each of the adjoining large-scale properties located along the proposed fence line from east to west, constructed and maintained their own respective fence sections. By 2007, contiguous sections of electrified fence had been constructed along 10 different properties, from the Lewa Conservancy just east of Laikipia, to the Ol Pejeta Conservancy in central Laikipia, creating a single barrier to elephants attempting to traverse onto smallholder cultivated land, south of these contiguous fences. However the large-scale ranches lying west of Ol Pejeta remained unfenced, and elephants were able to move south of these ranches onto land farmed by smallholders, where they caused significant damage to property and crops, and occasionally injured and killed people. The West Laikipia Fence was an obvious solution to this problem and a charismatic and powerful local politician used the project idea as a platform for his unsuccessful campaign to become re-elected as MP for Laikipia West in 2007. Riding on this wave of political will and against expectations, the Laikipia Wildlife Forum and its partners successfully managed to mobilise resources to construct the West Laikipia Fence.

By June of 2008, the first phase of this electrified fence was constructed by an independent contractor, along the boundaries of four separate but adjoining large-scale ranches: ADC Mutara Ranch, Kufuko Ranch, Lombala Ranch & Ngorare Ranch. Each of these properties committed in writing to maintain and manage their respective sections of fence. In addition a smaller fence, of approximately 1km in length, was constructed around a small-scale farming community living on a former government “outspan”, known as “Matigari”. Matigari was located north, on the wrong side, of the fence line.

1.2. Identifying Criteria for Successful Electrified Fences

As soon as the first phase fence of the West Laikipia Fence was constructed, it was challenged by elephants. This was particularly problematic along the ADC Mutara Ranch section. To address this problem, a study was undertaken to assess the factors important for the successful performance of
electrified fences in preventing elephant movement (Graham et al 2009; Graham & Ochieng 2010). There were several key conclusions drawn from this study:

- **Design**: Fences should be constructed to achieve a voltage above 7kv. If elephants learn to break fences with such high voltage then elephant proofing of vulnerable components, in particular posts, should be attempted along identified pressure points. Outriggers can help with this. Outriggers are one metre lengths of high tensile wire attached to one of the electrified wires of the fence, approximately one metre above the ground so that they project outwards at a forty-five degree angle perpendicular to the fence and facing into the direction of elephant pressure. These make the fence more “elephant proof”, along certain pressure points.

- **Maintenance**: Fences must be monitored, patrolled and maintained on a daily basis, ensuring that vegetation is cleared and damaged or faulty components are repaired or replaced immediately after they are identified.

- **PAC**: Elephants must associate breaking fences with risk beyond just an electric shock. This can be achieved by patrolling fence lines in the early evenings and scaring away any elephants that appears to want to challenge the fence. If fence breaking continues to be a problem then the identification and management of persistent fence breaking elephants must be available as an option for the purpose of fence enforcement. The case of the Ol Pejeta Conservancy demonstrates that lethal control of known persistent fence breaking elephants can greatly enhance the overall performance of an electrified fence. While this has shown to be effective, other fence breaking elephants will replace those that are removed and so it is likely that fence breaking elephants will need to be identified, monitored and euthanized on an ongoing basis. While to date this has involved just a few individuals over time (approximately 2 per annum), further research is required to understand the speed of “replacement” and to assess the ecological sustainability of this approach over longer time periods before being adopted as a management tool to fence breaking elephants. Such lethal control will continue to be employed by KWS in exceptional situations as we await the findings of the integrated research approach proposed here. Non-lethal tools for fence enforcement, such as de-tusking and the use of smart GPS ‘early warning’ collars are being trialled in Laikipia and may represent alternatives in future. Translocation of problem elephants has also been used in the past (Omondi et al. 2002). However it has yet to be demonstrated conclusively that any of these non-lethal options are effective alternatives to lethal control for the enforcement of electrified fences.

1.3 Upgrading the West Laikipia Fence & the deployment of a Rapid Response Vehicle

On the basis of the conclusions drawn from the study described above, the ADC Mutara section of the West Laikipia Fence was upgraded to ensure that it achieved greater than 7kv and outriggers were constructed to make it more “elephant proof”. While problems remained with the top sections of posts being unprotected, and therefore remaining vulnerable to being broken by elephants, this too was rectified over time, by adding an additional live wire. In addition a rapid response vehicle, including armed rangers and a fencer, was deployed at ADC Mutara Ranch, with the aim of patrolling the fence line in the evenings to discourage any elephants from challenging the fence.
There was a marked decline in fence breaking and associated crop-raids, after this work was undertaken, suggesting that the fence upgrade and rapid response vehicle had improved the performance of the Mutara section of the West Laikipia Fence.

1.4 Persistent Fence Breaking Elephants

Since September of 2010, fence breaking by elephants along the western section of the OPC perimeter fence and the Ex-Erok section of the ADC Mutara Ranch fence has increased significantly. These fences are of a good design, recording voltages of around 8kv and have outriggers to act as an added deterrent. In addition both sections are patrolled by rapid response vehicles which actively scare elephants away from the fence, when they can. Despite this, both fence sections continue to be broken regularly by habitual fence breaking elephants, undermining the performance of the entire West Laikipia Fence and creating huge risks for the lives and livelihoods of the farmers living on the other side.

Systematic monitoring on the ground undertaken by the Ol Pejeta Conservancy and the Laikipia Elephant Project has identified the elephants involved in these fence breaking incidents and the number of times that each is associated with a fence breaking incident (on those occasions when a positive identification can be undertaken).

On the 28 of January 2011 a meeting was held at Ol Pejeta Conservancy to address the problem of fence breaking elephants. OPC chaired the meeting and KWS, LEP and the LWF participated. It was agreed that an integrated approach to the management of fence breaking elephants would be adopted including lethal control, de-tusking and translocation. It was agreed that an appropriate monitoring and evaluation system should be put in place to ensure that as much as possible could be learned from each of the enforcement interventions used, balanced with the need to take action as soon as possible to prevent the small-scale farming communities, neighbouring the fence, from suffering, and wider political problems from emerging. To this end a series of management interventions and associated monitoring is proposed below.

2. Evaluating the Impact of Management Interventions on Fence Breaking by Elephants

2.1 Principles on Study Design

The impact of individual “enforcement” activities on fences, as described above, has never been undertaken before in Africa. Therefore the current situation represents an enormous opportunity for the stakeholders present to design a study that will ensure that future policy and practice can be
informed by the interventions planned. However this can only occur if two principles are adhered to:

1. There is sufficient data collected before and after an individual intervention takes place to properly assess its impact.

2. The influence of confounding factors is controlled, as much as possible, so that the impact of the specific intervention being studied can be measured. This means that only one intervention can be undertaken in one place, consistently, and there is sufficient distance between the sites where interventions are being undertaken to minimise any confounding influences.

2.2 PAC of Fence Breaking Elephants

This is the approach that OPC and KWS have undertaken in the past to enforce OPCs perimeter fences so as to discourage fence breaking elephants. The idea here is not just to remove a problematic elephant but to reinforce the perception among the elephants that remain that a fence represents a real risk if challenged. The concept is that as elephants are highly social and intelligent animals, if lethal enforcement is undertaken with a particular individual as it breaks a fence, then other elephants learn through social transmission of knowledge that the fence represents a lethal risk when challenged. It follows that, conceptually, the impact of lethal enforcement is maximized if other elephants are present at the time that the individual target animal is euthanized.

To establish the impact of this intervention on these elephants the following information is desired: 1) Number of fence breakages along the fence section before & after an elephant is euthanized; 2) Number of fence breaking incidents associated with elephants that accompanied the euthanized elephant, before and after it is euthanized; 3) Elephant movement, collected through GPS collars, on associated elephants, before and after the target elephant is euthanized.

On OPC all of the above monitoring data is available with the exception of elephant movement data. The decision to euthanize an elephant will be made on a case by case basis, on presentation of the results to the KWS, when fence breaking by an elephant reaches an intolerable level (on a daily basis for a sustained period of time, such as the case now with Winston, see below). To enhance the existing system of monitoring and evaluation we propose that GPS collars are deployed on 3 individuals that associate with identified fence breakers, so as to establish elephant behaviour before and after individual fence breakers are euthanized. While we cannot be sure that the candidate individuals will be the correct targets, we can make an informed guess, on the basis of the information that is available, as to which individual elephants accompany fence breakers on crop-raiding forays into smallholder land.
Kimani, a male elephant, is an ideal target to deploy a collar on immediately so as to evaluate elephant behaviour after a target elephant is euthanized. Historical GPS movement data (up until 2008) is available for Kimani which may help to evaluate the impact of PAC on fence breaking elephants.

The two other proposed collars should be deployed on two candidate elephants, given the above criteria, as soon as possible over the next three months.

2.3 De-Tusking

De-tusking has been used as a tool for the management of fence breaking elephants on OPC in the recent past and at the Laikipia Nature Conservancy, in the early 1990s. The theory behind this approach is that as elephants use their ivory tusks to break electrified fences (as ivory does not conduct electricity), if an elephant has its tusks shortened, by sawing them off, just above the nerve, then they will be unable to break fences as easily. However the impact of this management intervention remains unclear. The experience on OPC suggests that some elephants that have been de-tusked are no longer associated with fence breaking incidents while others continue to be associated with fence breaking incidents. However it may be that de-tusked elephants are not breaking fences directly but are instead simply joining other groups of fence breaking elephants, containing individuals that still have their tusks.

We recommend that to evaluate the impact of de-tusking conclusively, eight individual fence breaking elephants that are currently involved in breaking the ADC Mutara section (Ex-Erok/Mutara) of the West Laikipia Fence and have been directly observed breaking the fence using their ivory, are de-tusked. These individuals are Nelson, Ismail, Kijana, Sirikwa, Mutara, Nicholas, Mwituria & Robinson. The full list of elephants that are breaking the fence at Ex-Erok/Mutara are provided in Appendix 1, with a justification for why we have chosen these as target animals (there are some elephants that are associated with many fence breaking elephants but based on observations on the ground, it is a fraction of these that actually break the fence). It should be noted that one of these individuals has been de-tusked but based on observations his ivory was not cut off shot enough to prevent him from still using his ivory to break fences. To establish the impact of this intervention on these elephants the following information is desired: 1) Number of fence breakages along the ADC Mutara section (Ex-Erok/Mutara) before & after these elephants are de-tusked; 2) Number of fence breaking incidents that can be associated with the de-tusked individuals before and after the fence is broken; 3) Elephant movement, collected through GPS collars, before and after the individuals are de-tusked.

While all the other data listed above are available, in the case of the elephant movement data, seven months are available for Robinson, five months of GPS tracking data are available for Ismail and two months of data are available for Nelson. None of the other major fence breaking elephants demonstrating high fidelity to this area have been collared. This will not provide an adequate
sample size for evaluating the impact of de-tusking on the movement patterns of these elephants in relation to the West Laikipia Fence. However we will be able to monitor how often these three elephants that have been collared challenge the fence after they are de-tusked which will be useful for illustrative purposes, particularly if combined with direct observation data collected on the ground by researchers.

2.4 Translocation

While translocation has been used for the management of problematic elephants in the past, it hasn’t been used as an intervention for the “enforcement” of electrified fences. Furthermore the behaviour of translocated elephants, in terms of their movement, has not been well monitored in the past. Here we propose to translocate the most problematic fence breaking elephants, located along the ADC Mutara section of the West Laikipia Fence, to evaluate the impact on fence breaking. The information desired to establish the impact of this intervention is: 1) Number of fence breakages along the ADC Mutara section before & after these elephants are removed; 2) Number of fence breaking incidents that can be assigned to individuals that associated with the translocated elephant before and after the fence is broken; 3) Elephant movement, collected through GPS collars, before and after the individuals are translocated.

We propose that translocation be trialled, after the de-tusking trial and if de-tusking fails as a management intervention. We will know after several months of monitoring if the de-tusking trial has been effective. If it has not, then we propose that the most problematic elephants involved in fence breaking are translocated, on a case by case basis, and preferably one at time to be able to monitor the impact of each translocation, and ensuring that a sample of those animals that are translocated, are fitted with GPS collars to establish their movement patterns and behaviour post-translocation.

2.5 GPS Collaring

To better understand the impact of translocation or any other management intervention, we propose to deploy GPS collars on elephants (up to 5), that demonstrate high fidelity to the area close to the ADC Mutara Ranch fence along the Pesi River and regularly break the fence here to raid irrigated smallholder crops, on the other side. Based on reports collected by researchers on the ground, the fence breaking bull elephants that spend much of their time in this area appear to be distinct to those that are breaking fences in the Ex-Erok and Mutara areas. We recommend that the following individuals are good candidates for deploying GPS collars here: Serubuka, Mathew, Zadok, Thunder & Lampard.
Currently the Pesi Section of the ADC Mutara perimeter fence is in too bad a state to justify undertaking management interventions on the elephants concerned. However we expect that this fence will be upgraded (or moved) in the near future and so this area represents an ideal opportunity to deploy GPS collars on elephants, so that sufficient “before” data can be collected. In the event that these elephants do continue to break the electrified fence, once it is in a good condition, then the impact of management interventions on certain individuals, using GPS tracking data, will be possible.

References


Table 1: Fence breaking elephants along the Ex-Erok/Mutara Section identified for management

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Appendix 3

West Laikipia Fence Project

Report of the community seminars on the West Laikipia Fence held between February 7th and June 13th 2011

By

Tobias Ochieng

Laikipia Elephant Project

The Symbiosis Trust

June 2011
**Introduction**

The West Laikipia Fence was constructed to help address the problem of human elephant conflict, especially crop raiding by elephants on smallholder farms in southern and West of Laikipia. The fence was constructed as a collaborative initiative between the Laikipia Wildlife Forum (LWF), the Kenya Wildlife Service (KWS) and local landowners through funding provided by the Kenya Government and Royal Netherlands Embassy.

The west Laikipia fence was constructed along the southern boundaries of four large-scale ranches; ADC Mutara Ranch, Kifuko Ranch, Lombala Ranch and Ngorare Ranch and the western boundary of Olmisor ranch. ADC Mutara, Lombala and Ngorare fence sections are surrounded by small-scale farmers, especially ADC Mutara is bordered all along the entire length by farmers and pastoralists thereby placing pressure on the fence both as an elephant and human barrier. Over the past three years the LEP has provided support to the primary stakeholders on fences and fence management, while also monitoring the performance of the fence. This has produced mixed results depending primarily on the institutional structures and capacities both formal and informal of the stakeholders to continue and implement the recommendations.

In October 2010, LWF called upon the LEP to begin the process of preparing the primary beneficiaries and stakeholders of the WLF towards self reliance and to take over the responsibilities for the management of the fence. The overall goal in this process was to **strength the institutional and organisational mechanisms for the long term management and maintenance of the west Laikipia fence.** The process would involve participatory meetings with the primary beneficiaries and relevant stakeholders such as small-scale farmers, large-scale ranch owners, local government, local leaders, the KWS and the original donors.

Between February 7th and May 26th 2011, The Laikipia Elephant Project organised participatory meetings and training workshops with the primary beneficiaries of the West Laikipia Fence particularly the small-scale farmers and local leaders drawn from Ex-Erok, Pesi, Matigari, Mathira and Mutara to explore their preparedness to take over the management of the WLF.

The general objective of the meetings/workshops was to **assess the perceived roles, willingness and capacity of the stakeholders to undertake the right and effective actions for the effective long term management of the WLF in their respective sections.** Specifically, upon completion of the meetings/workshops, participants would have:

- Learnt more about elephant ecology and behaviour, human elephant conflict and conflict mitigation; including various techniques that have been used both in Laikipia and elsewhere, wildlife policy in relation to compensation and poaching, their anchorage in specific national contexts and of the necessity to actively take part in the conflict mitigation process;
- Learnt about the West Laikipia Fence project initiative, what LEP/LWF have done so far, what large scale ranches have done so far, the existing challenges with the fence performance, How fences work and why they fail, What Strengths, Weaknesses, Threats and Opportunities exist or are expected to exist within the communities to hinder or foster the fence performance; and
- Discussed their roles and responsibilities in the WLF management and of the necessity to actively take part in the maintenance and ownership of the fence either as individuals or organised groups; and identified ways to effectively engage in the process of WLF maintenance;

The meetings/workshops were envisaged to introduce the plans by the LWF to hand over the fence to the primary beneficiaries in Laikipia. The outcomes of these meetings were meant to guide the next steps and actions in the process of handing over the fence and should provide useful insights for decision on this as a major HEC mitigation project in Laikipia. The meetings/workshops were conducted
between February 7th and June 13th 2011 among communities from Ex-Erok, Mutara, Pesi, Matigari and Mathira all of which are neighbouring ADC Mutara, Lombala, Ngorare and Olmaisor ranches and form the major sections of the WLF.

**Ex-Erok Community: 7th to 8th February 2011**

**Session 1: Introduction of Workshop, Presentation and Expectations of Participants**

The first day of workshop though, began late due to transport problems, commenced with opening remarks by the area Chief Mr Patrick Wachira on behalf of the community and Mr Felix Mathenge; chair of the Ex-Erok fence management committee. It was followed by an introduction of the participants, resource persons and the LEP drama team all of whom expressed their expectations of the workshop. The expectations were then matched with the objectives of the workshop. This was followed by a drama presentation on Fences and fence maintenance.

Contrary to our expectations, the community had little information on elephant ecology, behaviour and policies and expressed desire to learn much more about these. A detailed presentation and synthesis was then made on the above areas facilitated by Mr. Nyumba (LEP Manager) and Mr Wanjau (LEP Supervisor). The participants actively took part in the discussions and expressed satisfaction with the amount of information they had gathered. The participants expressed desire for regular sessions of community awareness and education on wildlife including any benefits they may accrue from their existence, changes in laws, and their roles as stakeholders in wildlife conservation.

**Session 2: Presentation on electrified fences and group discussions**

The LEP manager Mr. Nyumba made a presentation that covered on the history of HEC and HEC mitigation in Laikipia, why the preference for electrified fences including types, designs, configurations, maintenance requirements and enforcement; different fence ownerships such as community owned or institutionally owned, the process of initiating a fencing project including participation and purpose; and the challenges with fence maintenance both for the communities and institutions. The session was based primarily on the LEP fence reports, working papers/publications and the comic book ‘good fences make good neighbours’.

The participants presented their response to the issues raised during the presentation on fences and elicited a lot of comments in terms of challenges, preparedness to take over the fence, roles of ADC Mutara ranch as an immediate neighbour among other issues. This raised specific questions:

1. If the fence was handed over to us (primary beneficiaries) today as planned by the LWF, what factors in the long term would lead to its failure or collapse as an elephant deterrent?
2. What measures such as capacities, institutional arrangements, partnerships etc do we (primary beneficiaries) need to put in place to avoid the failure of the fence project?

The participants were then divided into groups of between 4 to 5 members to deliberate on the above two questions. Each group leader then made a presentation. The final list of issues and proposed solutions was then drawn and is presented below.

1. **Factors that would lead to Failure:**
   - Lack of awareness among the community members on their roles and responsibility for the fencing project.
   - Lack of skilled personnel on fence maintenance
   - Lack of proper fence maintenance tools and equipment
   - Lack of materials for continued maintenance of the fence such as wires, insulators, nails
   - Lack of funds and capacity to fundraise through proposals or funds drives
   - Lack of proper governance structures such as bylaws to enforce the fence among the community members
   - Poor networking and partnerships with other stakeholders
   - Lack of capacity to enforce fence against elephants; patrolling and driving away elephants from the fence line
Lack of other resources within ADC Mutara ranch that may force elephants to walk out in search of such as constant water supply, salt licks,
Poor fence design and configuration. The fence must be strong enough to stop elephants as this will reduce the amount of time and labour in the maintenance process.

2. **Measures to address issues raised:**
There is need for a well structure institution that can provide a platform for management of the fence, training and fund raising for long term fence maintenance. The community proposes to form and register a CBO to focus on the fence project. They will rely on partner organisations to facilitate the formation and registration of this CBO as an independent institution. Through the CBO, the community hopes to:

   I. Engage with the partner organisations (LWF, LEP, OPC, KWS, ADC Mutara and relevant government departments) in provision of necessary training, securing of funds, tools and equipment and materials for fence maintenance.
   II. Form a Project Implementation Committee (PIC) made up of representatives from the CBO, ADC Mutara ranch, Laikipia Elephant Project, Laikipia Wildlife Forum, Kenya Wildlife Service, Provincial administration, development agencies and other relevant community groups to oversee the implementation and sustainability of the fence project. The PIC will then provide technical guidance to the project, guide the employment of a dedicated community fence supervisor and fencers who will report to the PIC, establish a mechanism to manage the persistent problem elephants through the relevant partner organisations.

**Pesi Community: 14th to 15th February 2011**

**Session 1: Introduction of Workshop, Presentation and Expectations of Participants**

The Pesi community lies along a proximately 7km of the WLF on ADC Mutara ranch fence section to the West. The fence section is poorly maintained, with broken and hanging posts and broken insulators. The pastoralist community to the north of this section breach the fence regularly to access water and grass on ADC Mutara ranch. There is little or no cooperation among the farmers and pastoralists on fence maintenance and frequently, fencers have bee threatened whenever they try to stop cattle from passing through the fence. Farmers have also dug trenches to drain water into their plots; others walk through the fence with their water pumps to the river banks for irrigation purposes.

Like other communities around the WLF, Pesi community shared lots of concerns about the effectiveness of the WLF to deter elephants. However Pesi’s issues were made worse by:

1. Need to access grass in ADC Mutara ranch,
2. Need to access water for livestock and domestic use,
3. Lack of unity among different ethnic communities,

According to the pastoralist community members, the fence is now viewed not only as a deterrent to elephants but also to predators. These have occasionally walked out of the ranch to attack their livestock leading to losses. The glaring lack of unity among the community members was evident as each group took a defensive stance at the beginning of the meeting.
Session 2: Presentation on electrified fences and group discussions

The seminar was conducted in sessions; the first being an informative session on elephants, their behaviour, ecology, national policy on elephants conservation, poaching, HEC, and HEC mitigation; the second session focused on HEC mitigation with particular emphasis on fences including their history and use in Kenya and Laikipia, types, designs, construction, alignment, and maintenance. The session also focussed on the WLF, its conception, performance and challenges to date.

The participants were then broken into groups to answer the following questions:

1. If the fence was handed over to us (primary beneficiaries) today as planned by the LWF, what factors in the long term would lead to its failure or collapse as an elephant deterrent?
2. What measures such as capacities, institutional arrangements, partnerships etc do we (primary beneficiaries) need to put in place to avoid the failure of the fence project?

Each group leader then made a presentation. The final list of issues and proposed solutions was then drawn and is presented below.

1. Factors that would lead to Failure:
   - Lack of proper and dedicated leadership. Many community based project leaders are lacking in skills to mobilise people and to guide actions towards successful projects implementation. Such projects include the WLF and WRUAs,
   - Lack of fence maintenance materials: The community recognises their inability to fund raise, and to buy the required fence materials, including where they can be sourced.
   - Lack of unity among the different ethnic groups in Pesi. Pesi residents are engaged in both agriculture and pastoralism, more often they fail to agree on the need to maintain the fence due different needs among them.
   - Ignorance to the law and to the consequences of mismanagement of resources. While the pastoralists are oblivious of the legal implications of their actions especially vandalising the fence components and illegally grazing inside ADC Mutara ranch, the farmers are over abstracting water for irrigation leading to conflict with elephants and pastoralists.
   - Lack of technical knowledge on fences and fence maintenance. Many community members have no skills on fence repair and maintenance. Consequently in the event they own the fence, it will be difficult for them to maintain it to the required standards whenever it is breached either by people or elephants.

2. Measures to address issues raised:
   - Form and register a community based wildlife group to provide a platform upon which the community can engage with other partners as primary fence stakeholders and beneficiaries.
   - Provide an intensive awareness campaign among the different community groups to increase awareness on wildlife and wildlife policies, their roles in the wildlife conservation and the need for a wise resource use among the various resource user groups.
   - Provide and facilitate training sessions for the community on leadership, community based conflict resolution, financial management, community governance and fence maintenance.
   - Provide alternative watering points for pastoralists and elephants to relieve pressure on the fence.
   - The community to foster amicable working relationship/arrangements with the ADC Mutara management on how to access resources within the ranch such as fire wood and grass without breaching the fence.

Matigari Community: 16th to 17th February 2011

The Matigari community fence is approximately 1.75km ring fence. The fence encloses farmers inside and herders and wildlife are left to roam freely outside.

The seminar was opened with very clear observations by the community leader Mr Maina that HEC had dramatically declined since the construction of the Matigari ring fence in April 2009. With an indication of satisfaction from the participants, they were all in agreement that compared to several years before,
HEC and in particularly crop raiding was a major cause of overreliance on government relief foods. This they acknowledged was now a thing of the past. The farmers openly acknowledged that their living standards had improve a lot and that they now owned watering machines and automobiles like motorbikes and many had bicycles. Of importance was the influx in settlement, agricultural extensification and in migration witnessed between the time the fence was completed to date.

The Matigari community attributed their success in fence maintenance to the initial training sessions they received prior to the fence construction. This they affirmed prepared them for the responsibility of fence construction and maintenance. Some of the topics discussed during the 2009 seminars included fences and fence maintenance, community conflict resolution, leadership and CBO governance among others. In addition, the community boast a good working and communication relationship with the ADC Mutara ranch management, LEP, KWS and LWF.

Unlike other community groups, the Matigari community has organised themselves into a fence group and placed a registration request with the department of social services. Their registration has been approved and is awaiting a registration certificate. Following which they are planning to open a bank account and have raised over Ksh. 10,000 form community contributions. The community has in the past been involved actively in fence maintenance including replacement of fence components like batteries, fence posts and have purchased and added more strands of wire on the fence.

The LEP team facilitated a presentation and discussion on the roles of the community on the future fence maintenance, roles of external partners and neighbouring ranches (Kifuko, ADC Mutara and Lombala) in supporting the community especially since the LWF had planned to hand over fence maintenance and management to the respective community groups. The participants were then broken into groups to answer the following questions:

1. If the fence was handed over to us (primary beneficiaries) today as planned by the LWF, what factors in the long term would lead to its failure or collapse as an elephant deterrent?

2. What measures such as capacities, institutional arrangements, partnerships etc do we (primary beneficiaries) need to put in place to avoid the failure of the fence project?

Each group leader then made a presentation. The final list of issues and proposed solutions was then drawn and is presented below.

1. **Factors that would lead to Failure:**

   - Lack of capacity to raise adequate funds for the continued maintenance of the fence
   - Lack of structures to ensure compliance with the fence regulations especially when and where people would want to walk through or graze their livestock across the fence,
   - Lack of structures for cooperation with the WLF partners
   - Lack of security for fence components especially the energisers, solar panels and batteries, poor storage of fence maintenance materials like posts, wires etc, that may be damaged due to harsh weather conditions.
   - Lack of a dedicated and willing leadership and workforce among the community members; this could be due to community conflicts or lack of awareness among the members

2. **Measures to address issues raised:**

   - Make use of the community group to foster a working relationship with partners to provide training on fundraising and accountability, fence maintenance, leadership and conflict resolution
   - Increased cooperation with partners through regular but frequent meetings, reports and exchange visits
   - Increased awareness among the members through regular but frequent community awareness campaigns and meetings facilitated by relevant partners such KWS and LEP.

**Mathira Community: 18th February 2011**
Mathira community lies between Ngorare and Ol Maisor ranches and is composed of both pastoral and agricultural communities. The Mathira community owned section of the WLF is approximately 7.5km and runs along the irrigated farms on the Uwaso Narok swamp. The construction of the Mathira community ring fence began in October 2010 and is still underway. The community therefore have not experienced any challenges in as far as the maintenance of an electrified fence is concerned. However, out of experiences elsewhere, they take cognisance of the eminent challenges that come with the construction of an electrified fence.

The LEP team took the community through an educational session on HWC and narrowed down to elephants. Further the discussions were centred on the issues of compensations for wildlife damage, reporting of such damages, the role of community scouts and the need to foster a working relationship with established partners in the locality. On fences, the discussions revolved around the process of installing a community fencing project, community mobilisation towards the maintenance of the fences among others. We further discussed the overall process of the fence performance and what it takes to make them work or fail to work. The participants were then broken into groups to answer the following questions:

1. If the fence was handed over to us (primary beneficiaries) today as planned by the LWF, what factors in the long term would lead to its failure or collapse as an elephant deterrent?
2. What measures such as capacities, institutional arrangements, partnerships etc do we (primary beneficiaries) need to put in place to avoid the failure of the fence project?

Each group leader then made a presentation. The final list of issues and proposed solutions was then drawn and is presented below.

1. **Factors that would lead to Failure:**
   - Lack of awareness on the functions of the fence as an elephant deterrent.
   - Lack of ownership of the fence by the primary beneficiaries
   - Lack of structures to enforce fence compliance by both people and elephants
   - Lack skills on fence maintenance and repair

2. **Measures to address issues raised:**
   - The community proposes to form and register a CBO. They will rely on partner organisations to facilitate the formation and registration of this CBO as an independent institution to engage with the partner organisations in provision of necessary training, securing of funds, tools and equipment and materials for fence maintenance.

**Mutara Community: 13th June 2011**

Mutara section, unlike the other fence sections is relatively well maintained, has had fewer breakages, is accessible and is always easily supervised by the community members. However the major issue here is that elephants break out of ADC from other sections and walk round to raid crops at Kiamariga. This has raised tensions and led to losses. Even though this fence section is relatively well maintained, problems especially with the long term maintenance of the fence are expected. The meeting at Mutara identified the following issues as possible obstacles:

- Lack of capacity to raise adequate funds for the continued maintenance of the fence
- Lack of structures to ensure compliance with the fence regulations especially when and where people would want to walk through or graze their livestock across the fence,
- Lack of fence maintenance materials: The community recognises their inability to fund raise, and to buy the required fence materials, including where they can be sourced
- Form and register a community based wildlife group to provide a platform upon which the community can engage with other partners as primary fence stakeholders and beneficiaries.
To address the above issues, the meeting suggested the following actions:

- Provide an intensive awareness campaign among the different community groups to increase awareness on wildlife and wildlife policies, their roles in the wildlife conservation and the need for a wise resource use among the various resource user groups.
- Provide and facilitate training sessions for the community on leadership, community based conflict resolution, financial management, community governance and fence maintenance.
- Provide alternative watering points for pastoralists and elephants to relieve pressure on the fence.
- The community to foster amicable working relationship/arrangements with the ADC Mutara management on how to access resources within the ranch such as fire wood and grass without breaching the fence.

**Conclusions and recommendations:**

Electrified fences are a major tool used in the management of human-elephant conflict (Hoare 1995) and are often perceived by communities and some wildlife managers as the final solution. However in practice the effectiveness of fences in controlling crop-raiding varies widely. Elephants can adapt to new fence features, creating an expensive “arms race” between managers and elephants, whereas local communities may feel locked out of access to resources like water, firewood and grass. This inadvertently places enormous pressure on fences leading to challenges in their performances. Electrified fences, in their own right, do not represent a solution to human-elephant conflict but a thin edge of a wedge of a particular type of adaptive and flexible management approach that can mitigate human-elephant conflict to tolerable levels if properly implemented. Fences therefore form a nucleus around which several management activities can be undertaken. The set of activities must therefore target human neighbours and the elephants (figure 1).
While each of the community groups had some distinctively different challenges on fence management, it was clear that the range of issues could be dealt with in a uniform manner through an organised structure that would tackle the entire West Laikipia Fence project. Such a structure could be in the form of a Project Implementation Committee (PIC).

The committee will be instrumental in applying pressure directly on different ranch managements and community groups and lobby for investment of more resources on fence maintenance, upgrades and training of fencers. In addition such a committee will effect change in practise through sharing of ideas, challenges, sharing of reports that clearly show the performance of each fence section thereby diplomatically creating a peer pressure among members. This may lead to opportunities for co-management agreements and or training and exchange through partnerships.

With the decentralisation of problem elephant management protocol especially the elimination of persistent fence breaking elephants to the level of the Assistant Director at KWS, the committee will be instrumental in fast tracking decision-making for such action on a case by case basis, on presentation of information to support a request for such action thereby reducing tensions and extreme damages caused by delay in taking prompt action against problem elephants.

Lack of information and low levels of awareness were identified as major obstacles to community participation in fence maintenance. While LEP has worked hard to improve on this, there still remain gaps that need to be filled. The full participation of community representatives at the decision making levels (at PIC) will foster ownership of decisions, enforcement and follow-ups with community members. In addition this will reduce pressure from community members by creating a forum for agreements on how to access resources from the private ranches without breaching fence or any agreements. The net effect is the fence components will be protected and this will reduce the resources invested in maintenance as opposed to improving the status of the fence.

To this end we propose that:

1. Each local community fence committee be transformed into a registered community based organisation with legal provisions and mandate to source and receive grants for conservation activities. Such an organisation will provide a platform for management of the fence, training and fund raising for long term fence maintenance (Figure 5). The following communities have registered their respective CBOs:
   - Mutara Electric Fence and Wildlife Conservation (9618)
   - Mathira Electric Fence and Irrigation (9613)
   - Pesi Elephant Electric Fence Self Help Group (LLW/00817)
   - Mweturia Electric Fence-(Ex-Erok) (LE-NUK-065)

   Matigari has also completed the process and received a registration certificate with an operational bank account.

2. A Project Implementation Committee (PIC) be established, made up of representatives from each of the Newly formed CBOs, Ranch representatives, Laikipia Elephant Project (Space for Giants), Laikipia Wildlife Forum, Kenya Wildlife Service and Provincial administration to oversee the implementation and sustainability of the fence project. This group shall be divided in to specialise Sub-committees. Drawing on our experiences with what it takes to make a fence work, we propose the following subcommittees: Training, Capacity Building & Awareness; Fund Raising; and Research Monitoring, Maintenance & Enforcement. The PIC will work very closely with the Laikipia Elephant Conservation & Management Committee. This group shall meet regularly to discuss progress with project implementation and any issues arising over fence performance. The idea behind a PIC is to enhance and expand community participation in the process of decision making fence maintenance within a participation spectrum. (Figure 4)
<table>
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<th>Consultation</th>
<th>Deciding together</th>
<th>Acting together</th>
<th>Supporting independent community initiatives</th>
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<td>Awareness building</td>
<td>Identifying problems, offering solutions and getting feedback</td>
<td>Encouraging interested stakeholders to contribute ideas and options and together decide the best way forward</td>
<td>Different interests decide together what is best and formalise an organisational structure to carry it out</td>
<td>Groups are helped to do what they want within a framework of grants, advice and support provided by the resource holder</td>
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<td>Telling people what is planned</td>
<td>Increasing the knowledge base from which decisions are made</td>
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<td>Participation</td>
<td>Participation</td>
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<td>Public relations Education material Informal feedback</td>
<td>Submission making Voluntary projects Conservation Corps Focus groups</td>
<td>Working groups Action planning* Citizens juries</td>
<td>Community based conservation initiatives eg Landcare groups, Trusts, Partnerships</td>
<td>Independent community based conservation initiatives</td>
</tr>
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*Action planning is a process whereby experts, agencies and community members work together to look at issues in a holistic way.

Figure 4: Citizen Involvement in conservation decision making (Adapted for the Forgie’s table)
1. A dedicated fence manager/coordinator be recruited to work under the project implementation committee and shall be responsible for overall implementation and coordination of the PIC recommendations including follow-ups with partners, stakeholders and monitoring and reporting of the progress and performance of the fence on a regular basis.
Presentation on Fences by LEP Manager

Pesi community member contributing to discussions

LEP Drama team engaging the participants

Matigari community during group discussions

Group leader making a presentation

LEP scout closing the seminar
Registration certificates for the transformed community fence committees.
Appendix 4

Proposal for Mitigating HEC to tolerable levels on the Laikipia Plateau in North-Central Kenya

A proposal by the Laikipia Elephant Project

for the Laikipia Wildlife Forum

17 June 2010

Laikipia Elephant Project

The Symbiosis Trust

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1. Introduction

Human-elephant conflict (HEC) is an enormous challenge in rural Africa wherever people and elephants share space, involving the fate of a large charismatic, internationally protected animal that can generate substantial tourism revenue on one hand and the livelihoods of poor subsistence farmers on the other (Sitati et al. 2002). Eighty per cent of the world’s African elephants range outside protected areas, over large tracts of land increasingly occupied by farmers and other land users (Blanc et al. 2007). The social and economic costs of HEC are a serious problem in many parts of Africa and Asia, resulting from the destruction of crops, damage to property and killing of humans by elephants (Hoare 2001; Sukumar 1989). Farmers are rarely, if ever, compensated for their losses and so they often retaliate by injuring or killing elephants. The associated political and media interest in HEC and the spreading culture of intolerance, present a considerable challenge to the conservation of elephants and wider biodiversity (Lee & Graham 2006). Identifying solutions to achieve coexistence between people and elephants is a priority for communities living alongside elephants and for wildlife conservationists worldwide.

Land-use planning offers the best hope of preventing human-elephant conflict occurring in the first place by discouraging patterns of settlement and cultivation that result in high vulnerability to crop-raiding by elephants (Graham 2007). Where human-elephant conflict already occurs farmers typically rely on traditional methods for deterring elephants from entering their fields, such as the use of fire, throwing stones and various noise makers. These are rarely effective (Osborn & Parker 2002). The wildlife authorities often do not have the resources to address the problem and respond to the associated political pressure they are under by killing elephants to provide a palliative to the community. There is rarely a systematic approach behind the elimination of crop-raiding elephants and often the “wrong” elephant is killed. Lethal control, as is currently practiced, rarely reduces human-elephant conflict (Hoare 2001). In recent years practitioners have invested a great deal of time and resources in promoting simple and affordable farm-based deterrents that will allow local farmers to manage the problem of crop-raiding, complimenting traditional approaches rather than relying on a centralised wildlife authority (Osborn and Parker 2002). Such methods include early warning systems, watchtowers, solar powered spot lights, very loud noise makers, various types of chilli-based deterrents and collective guarding. While there has been some success with these methods (Sitati & Walpole 2006; Hedges & Gunyaradi 2009), labour availability is a key factor determining uptake and many households simply do not have the labour to defend their crops regardless of the effectiveness of the mitigation tools and training provided (Graham & Ochieng 2008). Under these challenging circumstances electrified fences are often perceived as the only viable solution for mitigating crop-raiding.

The Laikipia Plateau in north-central Kenya captures all of the problems associated with human-elephant conflict. The combination of a post-independence policy of “africanisation”, land speculation and land scarcity resulted in the sub-division of many large-scale ranches into smallholder plots with the intention of settlement by small-scale farmers from central Kenya. In southern Laikipia where rainfall is sufficient or there is access to permanent water, plots have been successfully cultivated. However in the more arid northern parts of Laikipia, many plots have instead been abandoned. In addition the large-scale ranches that remained have become increasingly tolerant of wildlife, associated with the development of a wildlife-based tourism industry across Laikipia. This has resulted in a mosaic of different land-use types. With the massive influx of elephants into Laikipia from their former range in the north as a result of uncontrolled poaching in the 1970s and 1980s, the consequences were inevitable. Today human-elephant conflict in
Laikipia is perhaps the worst in East Africa and is certainly the most severe in Kenya. It is critical that this problem is addressed for several reasons.

Firstly several thousand incidents of human-elephant conflict are recorded in Laikipia every year, undermining food security and destroying the lives and livelihoods of many people. For example between 2006 and 2007 there were 6,770 crop-raiding incidents recorded in west Laikipia, resulting in 2,105,581 m² of maize destroyed, valued at KES 86,328,821 or US$ 1,079,785, (maize yields KES 41 per m², US$1 is KES 79.95). Local subsistence farmers do not have any other sources of income, thus when their crops are destroyed, they often turn to harvesting wild animals for meat, charcoal production and/or rely on relief food distributions from the government. Thirty-two people were killed by elephants in Laikipia between 2000 and 2010.

Secondly Laikipia is today the most important refuge for Kenya’s second largest population of elephants numbering some 7,500 animals. If human-elephant conflict cannot be addressed then the future of this important elephant population is uncertain. Already local resentment of elephants is leading to unsustainable levels of elephant mortality in some areas. For example one hundred and twenty-nine elephant have been killed in Laikipia as a result of HEC in the two year period between 2007 and 2009 alone.

Thirdly human-elephant conflict is undermining confidence, the value of and the benefits derived from the wildlife tourism sector of Laikipia. This sector has emerged over the course of the last 20 years as private and group ranches have developed tourism facilities and collectively contributed to the Laikipia “brand” now recognised within the tourism sector internationally. In total there are 28 tourism facilities in Laikipia with a total capacity of 1106 beds. In 2007 alone these tourism facilities generated approximately US $20,500,000 of revenue, $3,000,000 in wage earnings and directly employed 1,300 people each of whom has approximately 5 dependents. These tourism operations also make enormous contributions to social, development and conservation projects that are not directly related to their tourism business. For example in 2007 tourism operations contributed $3.5 million to social development projects (water, roads, healthcare, fencing, enterprise development) and $5 million to wildlife conservation. However human-elephant conflict in Laikipia means that there is nowhere else in Kenya where the distribution of the costs and benefits of conservation are so imbalanced. This has inevitable consequences including: 1) Local people directly killing wildlife out of vengeance; 2) Angry farmers damaging private property (e.g. setting fire to grass on ranches); 3) Angry farmers blocking public roads and access to tourist facilities; 4) Political demands for the sub-division of large-scale ranches that harbor but do not contain elephants and; 5) Difficulties for the government and local NGOs in engaging local people in wider programmes of biodiversity conservation and development.

In response to the enormous problem of human-elephant conflict, the Laikipia Wildlife Forum produced a Laikipia Fencing Strategy in 2002 (Thouless et al. 2002) and in line with this strategy secured funding towards construction of a 163 km “West Laikipia Fence” in 2007. The purpose of the West Laikipia Fence is to prevent elephants from leaving large-scale ranches and pastoralist areas where they are tolerated and entering smallholder land where they are not tolerated (Fig.1). The intention was to complete the fence in three phases. The first 83km phase of the fence was constructed in June 2008. The second phase of the fence is currently nearing completion. In 2008 due to the ongoing challenge of making the West Laikipia Fence an effective barrier to elephant movement the Laikipia Wildlife Forum developed an agreement with
the Laikipia Elephant Project (LEP) to help manage the overall project and to develop activities for the mitigation of human-elephant conflict across Laikipia to tolerable levels. LEP has successfully developed and undertaken activities to make the first phase of the West Laikipia Fence effective at reducing human-elephant conflict (see below). However several activities still need to be undertaken to mitigate human-elephant conflict to tolerable levels which is the subject of this proposal.

This project aims to reduce human-elephant conflict among the smallholder farms of southern Laikipia to an absolute minimum level that can be tolerated by local people. This will be achieved by: 1) Completing construction of phase 2 of the West Laikipia Fence; 2) Rolling out a system of effective fence management across Phase 1 and 2 of the West Laikipia Fence; 3) Consolidating abandoned smallholder land in West Laikipia and bringing this under productive management in partnership with landowners, land users and the government to create a secure environment so that phase 3 of the West Laikipia Fence can eventually be constructed; 4) Upgrading the Laikipia Nature Conservancy perimeter fence and putting in place an effective system of fence management; 5) Constructing a fence around the Rumuruti Forest; and 6) Moving elephants that are on the “wrong” side of the West Laikipia Fence to the “right” side of the West Laikipia Fence.

Fig.1 Map of Laikipia and the surrounding area showing land-tenure/use, existing game barriers, the location of elephants counted in 2002 and the proposed West Laikipia Fence

2. Project Structure and Partners
The Laikipia Elephant Project (www.laikipiaelephantproject.org)

The Laikipia Elephant Project will manage all of the activities outlined in this proposal and will coordinate the role of all of the other project partners in implementation. The mission of the Laikipia Elephant Project (LEP) is to “conserve Kenya’s last free ranging elephant population and the ecosystem they inhabit in partnership with and for the benefit of the people of northern Kenya” with the objective “to enable partner organisations and local people in and around the Laikipia plateau in north-central Kenya to alleviate human-elephant conflict, prevent poaching and create space for elephants”. LEP has built up 10 years of hands on experience in human-elephant conflict management and has in place a team of highly trained and experienced Kenyans. Technical support is provided by the University of Cambridge in the UK with the implementation of project activities guided by a local advisory group that includes the Kenya Wildlife Service, Mpala Research Centre, the Laikipia Wildlife Forum, the Ol Pejeta Conservancy and the Centre for Training and Research in ASAL Development. The LEP team is ideally placed to build the capacity of local people to manage the problem of human-elephant conflict across the Laikipia Plateau.

The Laikipia Wildlife Forum (www.laikipia.org)

Founded in 1992, the LWF’s mission is to “conserve the integrity of the Laikipia Ecosystem by creatively managing its natural resources to improve the livelihood of its people”. It is a not-for-profit company with a board of directors elected annually from a membership base representing 400,000 people across a 10,000 km² area. To achieve its mission, the LWF operates five programmes: 1) community conservation; 2) tourism development; 3) wildlife management; 4) environmental education and; 5) security. Ten core staff, five of whom are field-based, provide support so that LWF members can implement these programmes. The LWF is LEP’s main partner in Laikipia and will coordinate and support its members to facilitate implementation of the activities described in this proposal.

The Kenya Wildlife Service (www.kws.org)

This is the national wildlife authority in Kenya. The KWS provides government level support for the project and is the main beneficiary of all project activities. LEP works closely with the local area wardens based in Laikipia to generate collaborative outputs and to ensure that the capacity of the KWS is enhanced.

3. Project Components

The aim of this project is to mitigate human-elephant conflict in Laikipia to minimal levels that can be tolerated and managed by local people. This will be achieved through the four project components described below. The geographical focus of each of these four components is illustrated in figure 2.
3.1 Rolling out a system for the effective management of the West Laikipia Fence

Soon after it was constructed the performance of the first 85km phase of the West Laikipia Fence was compromised by problems of persistent fence breaking elephants, pastoralists breaking the fence to access pasture for their livestock, and poor maintenance along certain sections. In 2008 The Laikipia Elephant Project was contracted by the Laikipia Wildlife Forum to address this problem of poor fence performance, cementing a relationship developed over the course of a three year UK Darwin Initiative supported project. LEP subsequently developed a fence management system to ensure the West Laikipia Fence is effective and that designated community groups are responsible for and take ownership of their respective fence sections. This system is comprised of the following components:

a. Fence design

LEP carried out a thorough assessment of the electrified fences in Laikipia to identify the design features of importance in ensuring high fence performance as a barrier to elephant movement (Graham et al. 2009a). The features identified include: 1) Voltage above 7kv, made possible by ensuring each energiser services under 7km of fence line and; 2) the use of outriggers at high pressure points. Outriggers are one metre lengths of high tensile wire attached to one of the electrified wires of the fence, approximately one metre above the ground so that they project outwards at a forty-five degree angle perpendicular to the fence and facing into the direction of elephant pressure. These are placed along the area of pressure at one metre intervals.

b. Fence maintenance
Fence maintenance involves the clearing of vegetation, repair of damage done by wildlife and people and the replacement of defective components. This work is undertaken daily by trained fencers. LEP trained ranch fencers and where further capacity was needed put in place five community fencers to ensure proper maintenance was carried out along a 35km section of the first phase of the West Laikipia Fence (along ADC Mutara Ranch’s southern perimeter) that is most heavily impacted by fence-breaking elephants (due to limited management capacity of ADC Mutara Ranch). Each fencer is responsible for a 7km section of fence and reports any HEC incidents to a community elephant scout (see below).

c. **Fence monitoring**

Ten community elephant scouts systematically collect information on fence breakages and performance, crop-raiding and any other incidents of HEC in south-west Laikipia. Scouts use a protocol for early reporting of fence breakages through mobile phone text messages sent to a SMS group. Each daily message reports whether there has been a breakage, a location code, and the voltage of each fence section. Text messages are received by all scouts and the LEP office so that fence performance can be monitored on a daily basis, ensuring the timely management of any problems that do arise. All human-elephant conflict incidents are also recorded using data forms, which are gathered on a monthly basis at scout meetings and entered into a database. The information is subsequently analysed and compiled in monthly reports and sent out to key local stakeholders. A scout supervisor equipped with a motorbike supervises scout monitoring and reporting, regularly travelling to all scout locations. LEP also provides training for fencers, community members and fence supervisors to ensure they have the capacity to undertake fence monitoring, maintenance and management.

d. **Fence enforcement**

As well as maintenance and monitoring of the fence line, a rigorous system of fence “enforcement” is carried out as part of LEP’s fence management system. This is comprised of two components. Firstly, LEP deploys a rapid response team (currently only at ADC Mutara) equipped with a Maruti jeep to scare elephants away from electrified fences and crops in response to early warning reports from fencers and neighbouring farmers. The team patrols the fence line and aggressively drives away any elephants approaching the fence using a vehicle and spot lights. This team will also immediately repair the fence if it is broken. The rapid response team is comprised of a driver, a fencer and an armed guard. The added benefit of this team is that it discourages vandalism of the fence by people.

The second component of this enforcement system is the identification and monitoring of persistent fence breaking elephants. A trained elephant researcher patrols a designated section of an electrified fence. He is equipped with a motorbike, GPS unit and digital camera. Elephants involved in fence breaking are invariably bulls, because in elephant society bull elephants are high risk-takers (Sukumar 1991). When a fence breakage occurs, community fencers/scouts inform the elephant researcher of the incident, who travels to its location to identify the animal responsible. As well as being proficient in elephant identification skills, the elephant researcher is trained in tracking skills to follow and trace the fence-breaking elephant if it has moved on from the fence line. For each incident the researcher records the GPS location of the breakage, estimated time of breakage, identification (and if necessary an identification photograph) of the elephant responsible and if there were other elephants present at the time of the incident. Fence breaking incidents can
then be assigned to a known individual or group of elephants. This information is entered into a
dedicated problem elephant database.

The third and final component of enforcement is the management of problem elephants that
persistently break fences. The LEP problem elephant monitoring system supports the KWS to
make decisions regarding the most appropriate management intervention. These interventions
include de-tusking, non-lethal enforcement (actively ‘teaching’ a GPS collared elephant not to
approach a fence line by scaring it away before it reaches the fence using a vehicle, torches and
loud noise makers) and, as a last resort, elimination. A clear and timely flow of information to the
KWS from the elephant researcher is provided for effective management of problem elephants.
Laikipia is the only place in Africa where a system has been developed to identify fence-breaking
elephants and to establish how often they are involved in fence breaking incidents.

The management approach described here is based on an understanding that a critical factor
shaping elephant movement outside of protected areas, among the mosaic of the land-use types
that comprise elephant ranges across Africa is risk (Graham et al. 2009b). Therefore for fences to
be effective as a barrier to elephant movement they must represent a real or perceived risk of injury
or mortality to elephants. Once the level of risk associated with a fence goes above a certain
threshold, only the occasional bull elephant will be involved in fence breaking.

e. Ownership and Sustainability

It is critical that the large-scale ranches/conservancies that can afford to host elephants on their
land take overall responsibility for the maintenance and management of their respective fence
sections. It is equally important that the small-scale farmers living and working adjacent to the
West Laikipia Fence and are the ultimate beneficiaries of this project participate in fence
maintenance and management and accept a degree of “ownership” over the project. To this end
LEP has undertaken several activities. The first of these is the creation of dedicated fence sub-
committees, comprised of key stakeholders, along the length of the fence. Committees are elected
by the local communities around the fence and include representatives from large-scale ranches
and community groups. They are involved in fence management and work closely with the scout
supervisor and LEP project manager to mobilise the wider community to participate in fence
clearing, maintenance, monitoring and management. The second activity undertaken was the
creation of a dedicated drama group who perform interactive plays with the community. The
performances are innovative, informative and highly amusing and allow presentation of key, and
often contentious, issues surrounding HEC in a manner that is stimulating, engaging and relevant
to local communities. This allows subsequent discussion of key project activities and the role of
the community in such activities in a relaxed environment (Graham et al 2009c).

Many fencing projects have failed in their objectives which was a major danger with the West Laikipia
Fence project. However due to the systems developed and put in place by LEP and applied along the
completed section of Phase 1 of the West Laikipia Fence, HEC has been significantly reduced. The year
before the completion of Phase one section of the WLF (June 2007-May 2008) there were 3656 crop raids
recorded by community elephant scouts among the small-scale farms located adjacent to the planned fence
(Fig.3a). Between June 2009 and April 2010, after rolling out the fence management system along Phase 1
of the WLF, there were 1206 crop raids recorded in the same area (Fig. 3b). This is a significant reduction that has allowed many farmers to harvest crops where previously they could and did not. In this project proposal we intend to complete the job that was started by undertaking activities in the places where HEC continues to be high and where intervention is most needed.

**Fig. 3a. HEC before the construction of the West Laikipia Fence (2007-2008)**
Fig. 3b. Current levels of HEC after the construction of the West Laikipia Fence (2009-2010)

We are requesting funding for two years so as to maintain the system described above along the first phase of the WLF and to roll it out along the second phase of the WLF. Construction of this second phase will be completed in 2010.

Specifically we propose to undertake the following activities:

- To employ 10 community fencers along the completed phase 1 and soon to be completed phase 2 of the WLF (113km of contiguous fence) for the purpose of effective fence maintenance;
- To employ 13 community elephant scouts to ensure adequate monitoring is in place to evaluate fence performance and help with management of human-elephant conflict, generally;
- To develop fence committees for phase two of the WLF. These committees will be responsible for organising labour and resources to maintain this phase of the fence;
- To roll out the elephant monitoring and identification system along Phase Two of the WLF for the purpose of fence enforcement. Data collected will be fed into the existing problem elephant database;
- To deploy a mobile rapid response team (LEP will provide a driver, two rangers will be provided by ADC Mutura and KWS) to scare elephants away from electrified fences and/or crops in response to early warning messages.
- Provide new community fencers and scouts with formal and “on the job” training to effectively carry out the following specific tasks:
  - Monitoring and reporting fence breakages;
  - Monitoring and reporting voltage of electrified fences;
  - Fence maintenance;
  - Monitoring and reporting HEC incidents adjacent to the West Laikipia Fence;
  - Rapid reporting of HEC incidents using a group text message system

2. Bringing Security to West Laikipia

The original plan for the third and final phase of the West Laikipia Fence was for a fence to be constructed from Ol Maisor Ranch through to the Laikipia Nature Conservancy. However this proposed fence line would dissect an area of smallholder land (Fig. 4) that has been abandoned by the rightful land owners and is now occasionally used by Pokot and Samburu pastoralists.

This land represents a significant conservation challenge and the largest source of insecurity for the people and wildlife of the Laikipia Plateau, through conflict over pasture, cattle theft and poaching. This abandoned land is now experiencing the classic ‘tragedy of the commons’ with uncontrolled charcoal burning, grazing and poaching for bush meat, ivory and other game trophies, among other problems. Samburu and Pokot pastoralists have guns and are currently in conflict. Both groups occupy abandoned smallholder land on sub-divided ranches in northwest Laikipia. Occasionally these pastoralists hold up vehicles on the Marallal-Rumuruti road. The Pokot are also notorious hunters and kill wildlife for meat and for traditional ceremonies. The presence of these armed groups is a challenge for the development of tourism and trade in the region, for wildlife conservation and for the district administration.
Consolidating and leasing this abandoned smallholder land to create productive group ranches and/or wildlife conservancies under a single management entity could, to a large degree, address the problem of insecurity described above. Preliminary discussions with the owners of P&D and Narok Ranch suggest that these could be potential land units where this process could start.

After consultation and discussion with local landowners, government officials and the LWF, we propose to develop a plan for the productive use of the sub-divided ranches of northwest Laikipia with and on behalf of the Government of Kenya for resolving the issue of abandoned smallholder land and the associated problems of inter-tribal warfare, armed theft and associated insecurity. Until these issues are resolved we cannot envisage any circumstances under which the construction and maintenance of the third phase of the West Laikipia Fence will be possible.

With the support of GoK and LWF, LEP will develop a plan for the productive use of the sub-divided ranches of northwest Laikipia. This plan will be comprised of the following elements:

- Current status of land-tenure in West Laikipia and its impact on security, the economy, society and wildlife
- Current owners of abandoned parcels of land in West Laikipia and their willingness to lease or sell their land to a management company;
- Current users of abandoned smallholder land and their willingness to participate in a managed livestock grazing programme on the land concerned;
- Current community livestock management programmes under operation in Laikipia and an assessment of their performance;
- Options for improving security in the area (exploring the Lewa Conservancy and NRT models)
• Income generating options on the land concerned (livestock, wildlife-based tourism, British Army Training, dryland farming, forestry) with projected returns over 20 years;
• Legal structures;
• Risks for investors
• Potential investors and donor partners

This plan will be developed by LEP, drawing on support from Conservation Capital (conservation-capital.com), an international team of experienced financial, legal and management experts focussed on delivering conservation at sites across the world.

This project component will be delivered through a desk-based study, formal and informal meetings and interviews with local stakeholders, experts, government departments and potential investment partners. The project implementation team will be comprised of a project leader and three local research assistants (one to work with the land buying companies, one to work with the relevant Pokot community and one to work with the Samburu community).

3. Upgrading the electrified fence on the southern border of the Laikipia Nature Conservancy

The Laikipia Nature Conservancy (LNC) covers an area of approximately 100,000 acres in West Laikipia (Fig. 5). The conservancy straddles the interface between the high Laikipia plateau and the lower Great Rift Valley creating a unique undulating topography and high levels of biodiversity and endemism. The combination of the conservancy’s intact natural leleshwa bushland vegetation and its policy of wildlife-compatible land-use has resulted in LNC becoming a haven for large mammals including approximately 300 elephants.

![Fig. 5 Human-elephant conflict and the Laikipia Nature Conservancy perimeter fence that needs to be upgraded.](image-url)
The conservancy is surrounded on all sides by land owned and used by subsistence farmers and pastoralists, placing significant pressures on the conservancy as people access the land for livestock grazing, to collect firewood and medicinal plants and to hunt wildlife for meat and game trophies. Elephants leave the conservancy to migrate to other parts of Laikipia where they raid smallholder crops, damage property and threaten the livelihoods and lives of local communities, particularly to the south and southeast of LNC. This problem is severe. For example between January 2008 and December 2009 there were 300 incidents of fence breaking and over 900 incidents of crop-raiding recorded here. In addition over this same time period over 85 elephants were killed both due to problem animal control and illegal poaching in and around the LNC. Human-elephant conflict here is most certainly increasing and it is likely that incidence of human-elephant conflict in 2010 will be higher than those recorded for previous years.

Human-elephant conflict is not new in and around LNC. Indeed in 1992, under the auspices of the KWS, the European Community funded an experiment to compare the effectiveness of five types of barriers (a dry stone wall; a six-strand electric fence; a three-strand electric fence; a twelve strand “porcupine” electrified fence 30 cm above the ground) along a contiguous 32 km stretch of the southern and eastern boundaries of LNC (Thouless & Sakwa 1996). Despite these barriers being well designed and well maintained, all were regularly broken by elephants. The fences of these past experiments have since been upgraded in places but they have not been effective at reducing HEC here.

The problem of fence breaking, crop-raiding and associated incidents of elephants being killed have all become increasingly problematic as a result of the following factors:

- The fence and its components are regularly damaged by people illegally accessing natural resources within LNC. Fence components have been stolen, compromising fence performance, making it easier for elephants to break out into the adjacent cultivated lands;
- The presence of persistent fence breaking elephants that have learnt how to overcome various designs of electrified fences;
- A breakdown in constructive communication between LNC and the smallholder farmers living to the south and southeast of LNC.

This project proposes to address the persistent problem of crop-raiding by elephants on cultivated land to the south and southeast of LNC by upgrading the southern LNC perimeter fence and putting in place a fence management system that has proved to be effective along the West Laikipia Fence. The goal of this fence project is to significantly reduce crop raids, improve the relationships between LNC management and the neighboring communities and secure a safe refuge for elephants, while maintaining connectivity with other preferred elephant habitats within Laikipia.

The LNC fence upgrade project will improve the livelihoods and wellbeing of approximately 24,000 smallholders and pastoralists living in areas to the south and southeast of LNC. The project will also support the local farming economy that directly relies on the above communities for the regular supply of livestock and farm produce. The LNC fence is currently comprised of a mixture of configurations, none of which are currently effective barriers to elephant movement. To make the LNC fence more effective, we propose that the existing fence is upgraded to a single seven foot, five-strand design with outriggers along the entire 25km length. Outriggers are one metre lengths of high tensile wire attached to one of the electrified wires of the fence, approximately one metre above the ground so that they project outwards at a forty-five degree angle perpendicular to the fence and facing into the direction of elephant pressure. These are placed along the area of pressure at one metre intervals.
We propose that the fence be upgraded using available labour from LNC and from the local community. We also suggest that the LEP and LWF provide technical and supervisory support for this project.

The case of the Ol Pejeta Conservancy illustrates that such a project can succeed. In 2005 the Ol Pejeta Conservancy undertook a major fence upgrade to reduce breakages along the perimeter fence and crop raiding by elephants among the neighbouring smallholder farms. This combined with other fence management measures, including the identification and removal of persistent fence breaking elephants, resulted in a significant decline in fence breakages along their eastern boundary from 59 in the year before the upgrade to just 4 breakages in the year after. Crop raids also declined east of Ol Pejeta from 200 crop raids in 2005 to just 5 in 2006, one year after the upgrade.

Given the level of vandalism that is caused by members of the local community, it is very clear that the support of the local community is critical for the LNC fence to be effective. Therefore LNC and the local community must be brought together in this project to carry out the fence upgrade and to meet the challenge of ongoing fence maintenance. It must be clear from the project outset what is required in terms of labour and resources for ongoing maintenance and who will be responsible for providing these.

LEP proposes the following arrangements for the implementation and management of the project:

- A Project Implementation Committee (PIC) be established, made up of representatives from Ng’arua Environmental Conservation and Livelihoods Improvement Group, Laikipia Nature Conservancy, Laikipia Elephant Project, LWF, KWS, Constituency Development Fund, Community Development Trust Fund, Provincial Administration, Mwenje Fence Committee and other relevant community groups to oversee the implementation of the fence project. This group shall meet regularly to discuss progress with project implementation and any issues arising over fence performance.

- Community Fence Management Committees. These will be elected by the local communities around LNC and will be involved in fence maintenance and management and will work closely with the PIC and the fence supervisor to secure the support of the local community in fence maintenance and management.

- A dedicated fence supervisor be employed to work under the project implementation committee who shall be responsible for:
  - Training and supervising LNC and community fencers to ensure they have the necessary skills to undertake their duties
  - Supervising all day to day work associated with the fence upgrade, ensuring the work is undertaken to the planned specifications agreed and all fencers are working to the standard required.
  - Providing daily monitoring of fence performance and provide regular reports on progress with the fence upgrade to the PIC.

- LEP will provide project oversight and supervision and will train fencers, community members and the fence supervisor/elephant researcher to ensure they have the capacity to undertake fence monitoring, maintenance and management. LEP will also ensure the community fully owns and is engaged with the project and the future maintenance and management of the fence through the use of tools including community drama, community elephant scouts and regular meetings with fence committees. To ensure the fence is not breached or broken by both wildlife and people, there
needs to be strict enforcement of the LNC perimeter fence. This will require a team of four fencers and two scouts to patrol the fence line. They will, respectively, repair and maintain the fence and monitor fence performance and HEC incidents.

- A rapid response vehicle and associated team (provided by KWS and LNC) that will vigorously patrol the fence line and actively prevent elephants from breaking the fence.

- An elephant researcher to monitor, identify and record problem elephants to inform management decisions. A database will be set up at LNC, in the same format as LEP and Ol Pejeta Conservancy’s ‘problem elephant database’ to manage this information to inform effective management decisions.

4. Reducing Human-Elephant Conflict around the Rumuruti Forest

The small-scale farms around the Rumuruti Forest are currently facing the most intense levels of HEC in Laikipia. The high levels of HEC here have created resentment and a resulting lack of communication and cooperation among local farming communities, the KWS, the LWF and the Rumuruti Forest Association.

The degraded forest reserves south of the West Laikipia Fence provide a refuge for both resident and migratory elephants, most of which are likely to be involved in crop-raiding around the Rumuruti Forest. There are around 300 elephants that are using this area at any one time, with major influxes when maize ripens. LEP currently employs two scouts around the Rumuruti Forest. Between June 2008 and May 2010, these scouts recorded 1286 crop raiding incidents (Fig. 6) and three people were killed by elephants in the area in just the first three months of 2010. We propose to address this extremely high level of HEC through the following activities:

4.1 Fencing the Rumuruti Forest

With the high level of HEC around the Rumuruti Forest there has been a recent and rapid spread of small-scale community fencing projects in the area. The community around the Rumuruti Forest have constructed a two strand electrified fence, 25km in length. This has been undertaken with support from the GOK Constituency Development Fund and the KWS (who provided a fence line survey, community mobilisation meetings, training and moat digging equipment in 2007). Although this commitment demonstrated by the community is encouraging, this is not being invested in a single coordinated fencing strategy for the Rumuruti Forest area. It is therefore important that a single plan for HEC management is designed and implemented here. This will ensure that all stakeholders can focus their resources which will reduce costs and maximise impacts.

LEP began to monitor community-constructed fences in the area in 2009 and is providing support to community groups through training on fence design, construction and maintenance. In March of 2010 LEP ran a field day for 45 community members who have constructed a simple fence along part of the boundary with the Rumuruti Forest. These activities have resulted in a strong platform from which to develop collaborative projects.

LEP proposes to support local farmers to construct a ring fence around the remaining unfenced perimeter of Rumuruti Forest, linking up with the existing community fence (Fig. 6). The total perimeter of this ring fence will measure 85km, 60km of which still needs to be constructed.
We are requesting support for the following activities:

- To construct a 60km electrified fence around the Rumuruti Forest, linking up with the existing 25km fence line. This will be carried out with local community members, trained in fence construction;
- To establish fence committees with representatives from among each of the communities that surround the Rumuruti Forest;
- To employ and train ten community fencers to monitor and maintain the 85 km Rumuruti Fence;
- To recruit, train and deploy five community elephant scouts;
- To deploy a Rumuruti HEC officer who will supervise fencers and scouts, and identifying and monitor problem elephants;
- Training of scouts and fencers in monitoring and reporting fence breakages, voltage of electrified fences, HEC incidents adjacent to the fence and rapid reporting using a group SMS system. The Rumuruti HEC officer will be trained in elephant identification techniques.
- Put in place a rapid response unit. KWS will provide personnel to make up the team and LEP will provide the vehicle and driver.

4.2. Moving elephants from the Rumuruti Forest area into tolerant areas

The Rumuruti Forest contains approximately 80 resident elephants while we think that approximately 200+ elephants move in and out of the area. These elephants are causing catastrophic crop losses and threatening the lives of small-scale farmers in south-west Laikipia. North of the west laikipia fence large scale and group ranches have increasingly shifted towards wildlife conservation, providing a haven for wildlife, including elephants.

In 2007, the KWS translocated three elephants out of the Rumuruti Forest under a pilot project to Meru National Park, to assess translocation as an option for reducing the intolerable levels of HEC in the Rumuruti Forest area. The terrain and proximity of large numbers of small-scale farmers made this a challenging exercise but the operation was carried out successfully, indicating that future translocations are possible.

LEP proposes, as the most humane and effective solution under current wildlife policy, to support KWS in translocating 100 elephants from the area surrounding the Rumuruti Forest to the ranches to the north of the West Laikipia Fence (Lombala, Ngorare, Segera), where elephants are tolerated.

We propose that the remaining elephants outside of the Rumuruti Forest in Lorian and Salama (Fig. 6) will be driven through an opened section of the West Laikipia Fence, by a combination of helicopters, vehicles and a team on foot and directed north of the West Laikipia Fence. Once they have been driven north, the fence will be closed and actively enforced by scouts and wildlife managers to ensure elephants do not break through to return to the area around the Rumuruti Forest. Rather than attempting to drive all the elephants out in one operation, we instead propose to carry out a number of elephant drives opportunistically when elephants are in a favourable location, close to the West Laikipia Fence. This will only be possible by resourcing and equipping a local team (helicopter and pilot based in Nanyuki, the KWS and LEP ground teams) to undertake the work on short notice. The presence of community elephant scouts on the ground will make it possible to monitor the situation on the on a daily basis to identify the best time to launch elephant drives.

The movement of elephants north, to the “right” side of the West Laikipia Fence will only be possible with the support of the community. We expect strong positive buy-in from the community since the problem of
HEC in the area has been so severe over the last few years. Prior the movement of these elephants, LEP will undertake an intense community engagement programme throughout the Rumuruti Forest area. This will be carried out through:

- LEP’s drama group – who will carry out interactive, innovative performances in 12 sites throughout the area to explain the justification, the process, the dangers and the benefits of removing elephants from the Rumuruti area and to describe the need for community involvement, support and participation. The performances will be carried out in the field to engage smallholders and community members directly, to stimulate discussion and interaction;

- Community meetings to discuss concerns and opinions.

Fig.6 Map showing the Rumuruti Forest, nearby large-scale ranches, existing community fences, the proposed Rumuruti ring-fence, the West Laikipia Fence and the proposed direction of elephant drives.

5. Overall Impacts of the Project

5.1 Biodiversity conservation impacts

The effect of reducing HEC in Laikipia will reduce the direct killing of elephants that raid crops, either by KWS problem animal control or poisoning by small-scale agriculturalists. The likely change in attitudes as a result of reduced conflict will also support ongoing conservation efforts across Laikipia.
If the three fences are viewed as a success by local people and their leaders then there is likely to be growing local acceptance of and political support for conservation-compatible land use on the ‘elephant tolerant’ side of the fences. This will have longer-term benefits for the conservation of biodiversity on the Laikipia plateau, a landscape of conservation significance at the international level due to its size, integrity, unprotected status and high mammal diversity.

5.2. Social and economic impacts

This project will improve food security among thousands of people in Laikipia. The effect on the local economy, through the greater availability of agricultural goods and associated cash revenue will be significant. In addition the reduction on dependence on food-aid will be of enormous benefit to local social wellbeing. Last but not least this project will have a significant impact on security of the area, allowing people to live and work where they previously could not and allowing the government and private sector to invest in the development of the region, in particular arable farming, sustainable livestock production and tourism. The economic impact of wildlife conservation in Laikipia continues to grow as seen by the rapid development of wildlife-based tourism as a significant source of income on both communal and private ranch land. It is expected that the fence will consolidate conservation efforts in the district and will give greater investor confidence in the wildlife sector.

The structure of the fences to be constructed will have minimal impact on the people living in close proximity because they do not impinge on the movements of people or livestock, which will be catered for at agreed gates, roads and stock routes. The fences will have an additional positive social impact on security by controlling livestock movements through agreed access ways. This will have an enormous impact on reducing livestock theft in the area which is currently having a devastating impact on smallholders and pastoralists in the area.

6. Monitoring and Evaluation

For each of the three fencing projects described (the West Laikipia Fence, the Rumuruti ring-fence and the LNC fence) LEP trained scouts and fencers will collect data on fence breakages, fence performance, crop raids, problem elephants and local attitudes. Data will be entered into a central database and subsequently analysed for presentation in monthly reports to be distributed to local stakeholders and conservation actors. A project advisory committee will be established so that problems that do emerge, as described in monthly reports, can be addressed in a timely and collaborative manner. The community fence committees will play a similar role in providing forums for discussing and disseminating project results and overcoming specific problems at the grassroots level.

The following indicators will be monitored to assess the impact of each of the three fences:

- Performance of the three fences and associated fence management system: fence voltage, number of fence breakages by elephants along each of the fence sections, number and extent of crop-raiding incidents, number of people injured and/or killed by elephants, number of elephants killed by people
- Efficiency of physical fence maintenance: time between reporting a fence breakage and repairing the fence along each of the fence sections;
- Efficiency of HEC rapid response team: assessment of time between receiving HEC reports via text message / call from farmer and the time of HEC team to respond to incident; number of incidents in which elephants are successfully deterred from breaking fences and/or damaging crops.
- Indicators for impact on elephant conservation: change in numbers of HEC incidents; number of elephants killed/injured through HEC in south-west Laikipia;
- Economic & social impact: change in numbers of HEC incidents before and after the project; change in amount of crop-loss to elephants per farmer; change in time local community members
spend defending crops and households from elephant raids; change in numbers of human injuries/fatalities due to HEC;

- Sustainability of fence management system; Investments made by fence beneficiaries (labour and resources including cash); number of meetings held by fence committees and number of action points successfully completed as agreed in each meeting.

The following measures and indicators will assess the impact of the elephant movement operation from the Rumuruti Forest area:

- Levels of HEC: change in the number of HEC incidents, number of people/elephants killed/injured as recorded by Rumuruti scouts before and after the elephant movement operation;
- Number of elephants in the Rumuruti Forest area: through an aerial survey carried out before and after the elephant movement operation (two aerial surveys before and two after-dry and wet season counts);
- Economic & social impact: change in amount of crop-loss to elephants per farmer; change in time local community members spend defending crops and households from elephant raids; change in numbers of human injuries/fatalities due to HEC.

7. Outputs

- Eight new scouts and 19 community fencers trained with fence and HEC monitoring and maintenance skills, two trained scout supervisors/elephant researchers
- An updated and accessible problem elephant monitoring database with efficient data flow from the field, to the database manager, to KWS.
- Monthly reports and an in-depth quarterly report on the number of crop raiding and fence breaking incidents, fence performance and HEC incidents associated with identified problem elephants. The reports will provide the basis for assessing, and where necessary, improving, the performance of the three fences and their associated management.
- A plan for the productive use of the sub-divided land in southwest Laikipia will be published with the GoK.
- A reduction in human-elephant conflict in Laikipia to less than 10% of current levels

8. Dissemination

Monthly and quarterly reports will be circulated to the KWS and other local stakeholders. The resulting data analyses will be presented in the LWF newsletter, made accessible through the LEP website www.laikipiaelephantproject.org and a working paper and paper submitted to reviewed journals on the performance and management of the three fences.

9. Endorsement of project

The project has strong support from national government, local government administration and the area Member of Parliament, small scale farmers and large scale ranches. The project directly supports the KWS National Elephant Conservation and Management Strategy and has been endorsed by the KWS at all levels. It is also supported by local conservation organisations including the LWF, the Ol Pejeta Conservancy, Mpala Research Centre and CETRAD.

10. Project sustainability

We are confident that the measures described in this proposal will significantly reduce human-elephant conflict in the remaining HEC hot spots of Laikipia. This will take place with strong technical and institutional support from local conservation and development partners including the KWS, LEP, LWF and the local government. The electrified fencing components of the project aim to equip and enable
communities and landowners to become self-sufficient in managing and maintaining the proposed and existing electrified fences in Laikipia. The following issues will be addressed to ensure this project is sustainable over the long term:

1) **Ownership.** The electrified fences described here must be effectively owned with clear and unequivocal responsibility for fence maintenance and management accepted by local landowners, in particular the large-scale ranches and conservancies of West Laikipia.

2) **Support.** The fence must be strongly supported by the neighbouring communities for whom it is being built and this support must be secured prior to the fence construction/upgrade. These communities must be partners in the fence projects as they represent future custodians of the fence. Such support should be demonstrated through commitments of in-kind labour for ongoing fence maintenance and management if not direct financial support.

3) **Resources.** It must be clear what is required for ongoing fence maintenance and management and the associated costs prior to fences being upgraded and there must be a commitment to secure these resources on an annual basis. Currently local landowners and communities have pledged to meet the costs of ongoing fence maintenance and management.

11. References


