

REPORT OF THE LAIKIPIA RABIES VACCINATION CAMPAIGN, 2017

Summary Report

Background

Every year, about 2,000 people die of rabies in Kenya (World Health Organization (WHO), 2014). Over 98% of human rabies cases in developing countries are caused by a bite from an infected domestic dog (Butler *et al*, 2004). Particularly at risk of the disease are populations in remote rural areas, who may find it difficult to access or pay for rabies treatment, and children, who interact most closely with domestic animals. Rural populations and mostly children under 15yrs of age are most affected by rabies.

Mass vaccination of domestic dogs is the most cost-effective intervention to control canine rabies and to prevent transmission of the virus to humans (WHO, 2014). The World Health organization estimates that vaccinating 70% of domestic dogs for 3 consecutive years is sufficient to eliminate the disease from the domestic dog population and, by extension, humans (Cleaveland *et al*, 2003).

The Laikipia Rabies Vaccination Campaign began in 2015 as a localized effort in 5 pastoralist communities around Mpala Research Centre, where Dedan Ngatia, Karatina University MSc. student, and Dr. Adam Ferguson had been researching the spatial ecology of domestic dogs. The two scientists partnered with veterinarian Dr. Dishon Muloi to found the vaccination campaign in September of 2015. The first year, LRVC vaccinated a total of 821 domestic dogs and cats. In its second year, LRVC took place over 5 weekends, reaching more communities and a total of 4,530 domestic dogs and cats.

The 2017 campaign aimed to more than double the county's vaccination coverage, to reach 10,000 dogs and cats across Laikipia. The campaign aimed to do this both by returning to areas where vaccination has previously taken place and expanding coverage there, and reaching out into new communities around the county.

Goals

The ultimate goal of the Laikipia Rabies Vaccination Campaign is to eradicate rabies from domestic dog populations in Laikipia County as part of the national rabies eradication effort in Kenya. **LRVC 2017** specifically aimed to increase the campaign's vaccination coverage to 10,000 domestic dogs and cats across Laikipia County.

Partners and Team

The 2017 field campaign was coordinated Dedan Ngatia with support from Mpala Research Centre and Laikipia Wildlife Forum throughout the campaign. The field vaccinations were conducted by volunteer veterinarians and students.

The 2017 campaign expanded LRVC's partnerships, receiving essential support from the Laikipia County Government and the Kenya Zoonotic Disease Unit. In addition to Mpala, three Laikipia conservancies - Ol Jogi, Ol Pejeta and Borana - joined the campaign partnership team. Additional support came from International Livestock Research Institute (ILRI), Veterinarians International, the Kenya Rangelands Wild Dog and Cheetah Project, Raw Africa, the Kenya Long-term Exlosure Experiment (KLEE), The Field Museum of Natural History, the Smithsonian Institution, the Rufford Foundation, and the Ludwig Foundation. Numerous individual sponsors also donated funds to support the campaign.

Strategy

The 2017 campaign was held over six consecutive weekends, from 3 November to 9 December, 2017, with field vaccination taking place all day on Friday and Saturday during this period. The vaccination teams consisted of around 50 members. Volunteers were grouped into six or seven

vaccination teams, plus an additional Public Address team and a security vehicle. Each team included at least two veterinarian doctors or students, who were solely responsible for performing vaccinations and handling the dogs. Each team also included at least three student volunteers, who were responsible for photographing the animals, issuing vaccination cards, and filling in a data sheet listing each vaccinated animal and including the animal's age, sex, reproductive status, whether they were vaccinated before, and whether they received additional treatment such as a multivitamin or deworming injection. The vaccination teams were also accompanied by a human doctor, who delivered human rabies vaccines to any participants or community members suffering bites.

Vaccination centers were chosen to include previous vaccination centers, to cluster around partner conservancy areas, and to target communities where demand for vaccination was particularly high. Centers were advertised to communities in advance by community organizers and signage, and during the vaccination weekend by the LWF public awareness (PA) vehicle. When turnout was low, teams would sometimes leave stations early, having vaccinated all animals present, and adopt a "roaming" strategy, in which they drove through the communities and visited homes or bomas individually to offer vaccination.

Outcomes

Table 1: Vaccination Summary Table

	Dates	Cluster	Total vaccinated
1	Nov. 3-4	Naibunga Group Ranch	602
2	Nov. 10-11	Naibor and Jua Kali	1,738
3	Nov. 17-18	Il Polei; Jua Kali area	1,498
4	Nov. 24-25	Ol Pejeta	1,601
5	Dec. 1-2	Borana	1,664
6	Dec. 8-9	Rumuruti	2,210
		TOTAL	9,313

Challenges, Recommendations, and Conclusions

This year's campaign has yielded several lessons learned for the coming years. In the field, the campaign would benefit from more attention to animal rights, human safety (preventing bites and scratches), and addressing bites and scratches promptly and effectively.

Several important scientific questions lie ahead for the campaign. The vaccine uptake rate, the prevalence of **rabies in wildlife** populations, and the rate of transfer between wildlife and domestic animals are all unknown in the Laikipia context. Additionally, the critical question of **how many dogs** are in the county - and, thus, how many we must vaccinate to reach the 70% target - remains to be determined by ongoing research.

In some communities, community members expressed distrust of the vaccination, and the false assumption that the 2016 vaccinations were the cause of the canine distemper outbreak that struck the communities last year. Turnout in these communities was extremely low. By improving education about rabies vaccination, both at the vaccination centers during the campaign, and in schools year-round, we can fight these misconceptions and assure the long-term success of the campaign. The campaign could expand its reach, increase trust, and fight misinformation by increasing involvement from within the communities themselves. Although we have seen great success in terms of vaccination numbers and extremely high turnout in new communities this year, increasing education and trust alongside vaccination numbers is critical to the LRVC's ultimate success as the campaign continues and expands over the next 5 or more years.

LRVC 2017 ultimately reached over 9,300 domestic dogs and cats across the county. This number is within range of the year's target of 10,000 animals, and represents a major step towards the ultimate goal of eradicating rabies in Laikipia County, and the nation of Kenya. This year's expanded partnership and lessons learned have laid the groundwork for the campaign's expansion and sustained success in the coming years.

FULL REPORT

Introduction

Rabies Eradication: Science and Policy

Every year, about 2,000 people die of rabies in Kenya (World Health Organization (WHO), 2014). A viral disease that causes acute inflammation of the brain and spinal cord, rabies kills almost 100% of its human victims and up to 86% of rabid dogs. Other domestic and wild mammals are also vulnerable to rabies; during outbreaks, the disease can threaten livelihoods and conservation efforts. A significant number of livestock, especially cattle, die from rabies annually: between 2011 and 2012, a total of 123 cases were reported in Kenya to the OIE World Animal Health Information System.

Over 98% of human rabies cases in developing countries are caused by a bite from an infected domestic dog. Particularly at risk of the disease are populations in remote rural areas, who may find it difficult to access or pay for rabies treatment, and children, who interact most closely with domestic animals.

Mass vaccination of domestic dogs is the most cost-effective intervention to control canine rabies and to prevent transmission of the virus to humans (WHO, 2014). The World Health organization estimates that vaccinating 70% of domestic dogs for 3 consecutive years is sufficient to eliminate the disease from the domestic dog population and, by extension, humans.

Implementation Background

Due to both logistic and financial hurdles, rabies vaccination is rare in many rural areas of Laikipia. In communities where the LRVC has not previously visited, almost 100% of animals are unvaccinated, according to surveys of animal owners conducted as part of the campaign. Less than 5%, a very low number, of the total number of dogs have been vaccinated by the County Government because the communities are never willing to pay the vaccination fees charged

The canine rabies vaccine used in the LRVC is guaranteed for one year, and must be repeated annually. (Although an alternative vaccine provides “up to 3 years” of immunity, the campaign has not yet used this strain of the vaccine, in part because its 3-year effectiveness is not completely guaranteed.) Vaccinated animals are typically issued a vaccination card or certificate, signed by a veterinary doctor, which documents the immunization and releases the pet owner from liability in case of a bite.

Although the LRVC is focused primarily on dogs, which are the main vector of the rabies virus to humans, the campaign also offers vaccination to domestic cats.

LRVC History

The Laikipia Rabies Vaccination Campaign began in 2015 as a localized effort in 5 pastoralist communities around Mpala Research Centre, where Dedan Ngatia, Karatina University MSc. student, and Dr. Adam Ferguson had been researching the spatial ecology of domestic dogs. The two scientists partnered with veterinarian Dr. Dishon Muloi to found the vaccination campaign in September of 2015. The first year, LRVC vaccinated a total of 821 domestic dogs and cats. In its second year, LRVC took place over 5 weekends, reaching more communities and a total of 4,530 domestic dogs and cats.

The 2017 campaign aimed to vaccinate more than double of the previous campaign’s coverage, to reach 10,000 dogs and cats across Laikipia. The campaign aimed to do this both by returning to areas where vaccination has previously taken place and expanding coverage there, and reaching out into new communities around the county

Campaign Goals

The ultimate goal of the Laikipia Rabies Vaccination Campaign is to eradicate rabies from domestic dog populations in Laikipia County as part of the national rabies eradication effort in Kenya. Doing so requires sustaining approximately a 70% vaccination rate for at least 3 consecutive years (Cleaveland *et al*, 2003), although further research is needed to determine the total domestic dog population of Laikipia, rates of wildlife-domestic and domestic-domestic rabies transmission, and the exact vaccination rate needed to eliminate the disease from domestic dogs in Laikipia.

LRVC 2017 specifically aimed to increase the campaign's vaccination coverage to 10,000 domestic dogs and cats across Laikipia County. The campaign's focus is in rural communities with the greatest risk of rabies exposure and least access to rabies vaccination and treatment, but also included a semi-urban centre with a relatively large population (Rumuruti).

Partners and Team

The 2017 field campaign was coordinated by Dedan Ngatia, campaign co-founder and scientist at Mpala Research Centre. The campaign was conducted by volunteer veterinarians and students, with staff from Laikipia Wildlife Forum and Mpala Research Centre assisting throughout the campaign.

Fundraising and campaign planning were conducted by a partnership of Mpala and Laikipia Wildlife Forum staff.

Team members and roles included, in no particular order: John Gitonga (community outreach and mobilization), Wangechi Kiongo (field coordination, logistical support, and campaign publicity), Zoe Sims (publicity, US-based crowdfunding, and field support), Joan Wandegi (publicity and Kenya-based crowdfunding), Peter Hetz (partner organization recruitment and coordination), Dr. Adam Ferguson (fundraising and scientific support), Dr. Dino Martins (fundraising and scientific support), Dr. Dishon Muloi (scientific support; veterinarian recruitment); Dr. Duncan Kimuyu (field support and volunteer recruitment and coordination); Emmanuel Obuchere (community mobilization).

Mpala Research Centre provided all meals for the campaign teams (around 60 people), Thursday evening through Sunday mid-afternoon, for all six weeks of the campaign. MRC also provided accommodation for 60 people at the Centre for 5 of the 6 weeks, two vehicles, and one driver for the duration of the campaign, in addition to logistical support.

The 2017 Campaign partner organizations included:

- The County Government of Laikipia, which generously donated all pharmaceutical supplies (gloves, syringes, needles, coolers, sterilization spirits, etc.) needed by the campaign.
- The Kenya Zoonotic Disease Unit, which generously provided all 10,000 canine vaccines.
- The International Livestock Research Institute (ILRI), which helped coordinate the volunteer veterinarians.
- Ol Jogi Wildlife Conservancy, which donated \$1,000 and allowed teams to drive across the conservancy property to reach target communities.
- Ol Pejeta Wildlife Conservancy, which contributed accommodation at their Rift Valley Adventures site for one weekend of the campaign, during vaccination in the Ol Pejeta area.
- Borana Conservancy, which contributed two vehicles and drivers for one weekend of the campaign, during vaccination in the Borana area.

- **Veterinarians International**, which contributed \$1,000 to the campaign.
- **Kenya Rangelands Wild Dog and Cheetah Project (KRWDPC)**, which contributed one vehicle and the time of Dedan Ngatia, KRWDPC Project Manager.
- The **Kenya Long-term Exclosure Experiment (KLEE)** research project contributed the use of one vehicle through Dr. Duncan Kimuyu.
- **RAW Africa** provided two vehicles and drivers for the duration of the campaign, and fundraising support.
- **The Field Museum of Natural History** provided Support and time for Adam Ferguson, Co-founder of LRVC. To join the campaign
- **The Smithsonian Institution** provided financial support to Adam Ferguson in aid of enhancing scientific research (data collection) in support of the campaign
- **The Rufford Foundation** awarded a research grant to Dedan Ngatia in support of the campaign
- **The Ludwig Foundation** donated \$3,000 to the campaign.

Numerous individual sponsors donated funds to the campaign through a Kenya-focused M-Changa crowdfunding account established by Laikipia Wildlife Forum (total funds raised: KSh. 106,000; average donation amount: KSh. 21,200), and a US-focused Classy crowdfunding account established by Mpala (total funds raised: \$2,296; average donation amount: \$92).

Strategy

The 2017 campaign was held over six consecutive weekends, from 3 November to 9 December, 2017. The vaccination teams consisted of around 50 members: approximately 14 veterinarians, 18 volunteer students, 3 drivers, and 3 Laikipia Wildlife Forum participants, in addition to around 5 other volunteers based at Mpala Research Centre and a security team deployed from Mpala Research Centre.

For five of the six weekends, the full vaccination teams were hosted at Mpala Research Centre. On Week 4, during vaccination at the Ol Pejeta cluster, the team was hosted at the Rift Valley Adventures (RVA) camp at Ol Pejeta Conservancy.

Each week, the teams arrived at Mpala (or RVA) on Thursday evening before dinner. In the evening, the volunteers were briefed and grouped into six or seven vaccination teams, plus an additional Public Address team and a security vehicle. Each team included at least two veterinarian doctors or students, who were solely responsible for performing vaccinations and handling the dogs. Each team also included at least three student volunteers, who were responsible for photographing the animals, issuing vaccination cards, and filling in a data sheet listing each vaccinated animal and including the animal's age, sex, reproductive status, whether they were vaccinated before, and whether they received additional treatment such as a multivitamin or deworming injection. The vaccination teams were also accompanied by a human doctor, who delivered human rabies vaccines to any participants or community members suffering bites.

Vaccination centers were chosen to include previous vaccination centers, to cluster around conservancy areas, and to target communities where demand for vaccination seemed high.

The teams departed for the field each morning at around 7:30 a.m., or earlier on weekends with longer travel time to the vaccination centres, such as the Borana and Rumuruti weekends. Most weekends, each of six vaccination teams visited one centre in the morning (~9 a.m. - 1 p.m.) and a new centre in the afternoon (2 p.m. - 6 p.m.), with all the teams taking a break and meeting up for lunch in the field around 1 - 2 p.m.. Teams convened again and returned to camp in the evening for dinner.

Volunteers typically arrived to Mpala Research Centre on Thursday evening, vaccinated all day on Friday and Saturday, and left Mpala again on Sunday, in the morning or shortly after lunch.

Centers were advertised to communities in advance by community organizers and signage, and during the vaccination weekend by the LWF public awareness (PA) vehicle. The PA vehicle drove through the communities playing music and a loudspeaker message urging community members to bring their animals to the vaccination center. Advance signage was usually posted in the few days preceding vaccinations, with signs mounted on a signpost, wall, or tree at the site of the vaccination center. These signs typically gave the time for morning centers as 9 a.m., and for afternoon centers as 2 p.m. This caused the highest rush of community members and animals at the beginning of each session, with crowds diminishing over time.

When turnout was high, the teams adjusted their schedules, adding extra hours to ensure that all animals that arrived at the stations were vaccinated. When turnout was low, teams would sometimes leave stations early, having vaccinated all animals present, and adopt a “roaming” strategy, in which they drove through the communities and visited homes or bomas individually to offer vaccination.

Campaign calendar

	Dates	Cluster	Communities	Total vaccinated	Comments and additional information
1	Nov. 3-4	Naibunga Group Ranch	Koiya, Il Motiok, Kijabe, Mosul, Tiememut, Nkiroriti	602	Poor community turnout due to misinformation about vaccination
2	Nov. 10-11	Naibor and Jua Kali	Naibor, Maramoja, Endana, Makandura, Jua Kali, Lekiji, Tangi Nyeusi, Ngare Nyiro, Muramati, Mukima, etc.	1,738	Good turnout despite heavy rainfall
3	Nov. 17-18	Il Polei; Jua Kali area	Il Polei, Mugumo, Mwireri, Umande, Umande, Nyariginu, Ndemu, Murungai, Milo saba, Milo nane, Milo tisa, etc.	1,498	Cancelled Dol Dol and some Il Polei stations due to low turnout related to misinformation about vaccination; instead created new stations revisiting the areas of the previous week
4	Nov. 24-25	Ol Pejeta	Withare, Ngobit, Mwakinya, Tharua, Riacho, Kijabe, Kahuruko, Mutaru, Muhonia, etc.	1,601	Good turnout
5	Dec. 1-2	Borana	Ngenia, Gitugi, Kongoni, Kairigire, Kahira, Mia Moja, Laragai, Katunga, Murua,	1,664	Good turn out by the communities and good communication through

			Olotasha, Ositat, Olokisiria, Gratton, Bodeni, Naikishomi, Murua-Nairusha, Lokuseru, Sieku, Olkiyei, Ololong'ok, Makurian		Twitter by the area chief, which meant many people were able to get the message quickly.
6	Dec. 8-9	Rumuruti	Katutura, Maondo meri, Loroka, Kinamba, Container, Thome, Rumuruti town, Veterinary, Nkiloriti, Location, Kiseriri, Katutura, Masenge, Daraja, Kisiriri, Milimani, Usalama, Sukuroi, Mowarak, Nkoi susu, Nkirashi, Nkalemare	2,210	Good community mobilization was done by community liaison officers and there was great turnout in the communities.
		TOTAL		9,313	

Challenges and Recommendations

Logistical

Dog handling: Animal rights and human safety

Several veterinarians in the campaign expressed concern for the welfare of the animals receiving vaccination. Not all of the volunteer veterinarians have experience working with animals that are not habituated to human contact. Sending these vets into the field without training poses a risk for both health and animal welfare. Some teams resort to nearly choking the animals, stringing them up by a chain around a tree or a car. This inhumane and unsafe treatment is extremely stressful for the animals, which decreases their odds of uptaking the vaccine. It also poses risks for humans at the vaccination center; bites and scratches are caused by poor handling, usually when an owner is trying to restrain their animal, but without knowledge of how to do so properly. The resulting distress at the vaccination centre may also deter community members from bringing their animals back for vaccination in subsequent years.

Fortunately, many of the LRVC volunteer veterinarians *do* have experience working with less-domesticated animals, and have developed excellent strategies for safely and humanely vaccinating even extremely hostile animals. Next year, one or two of the veterinarians who are experienced with less-habituated animals could hold a short clinic prior to the campaign (or each weekend, for new volunteers) to brief the vets on appropriate and inappropriate methods of restraining hostile dogs.

Training all volunteer veterinarians in proper handling techniques will help decrease stress and chaos at the vaccination centers, increase the animals' welfare, increase vaccine uptake, increase the chances that owners will bring their dogs back the next year, and decrease the chances of a bite or scratch.

Finally, part of the LRVC briefing should include mention of when it may *not* be worth vaccinating an animal. The drive to increase vaccine coverage led 2017 teams to adopt a "leave no dog unvaccinated" attitude; however, it is not worth vaccinating one animal at the cost of a bite to a

human. Going forward, the campaign leadership should critically consider at what point extremely hostile dogs should be left unvaccinated.

Addressing bites and scratches

Treating bites and scratches at the vaccination sites poses a major logistical challenge. Starting on the second week of the campaign, we used a combined report form and waiver to document each injury, release the LRVC from liability, and ensure that (a) the bite victim receives their first rabies post-exposure prophylaxis shot, (b) the victim understands the necessity and method to obtain the subsequent four shots, and (c) the vaccine doses are delivered to the clinic with refrigeration located nearest to the victim.

The human doctor who traveled with the vaccination teams through the weekends delivered post-exposure prophylaxis where necessary and filled the necessary paperwork. However, there was room for error if the victim - often a young person or child - did not understand the subsequent procedure; if they forget to visit the clinic for their subsequent vaccinations; and/or if the clinic decides to use the vaccines (which are provided free of charge) for profit. Prior to next year's campaign, the LRVC team should conduct a critical assessment of the accident treatment procedure, translate both the waiver and the vaccination information form into Kiswahili, and get a lawyer to assess the waiver and any potential liability carried by the campaign.

Daily briefs

Participants also suggested that holding an evening briefing following the first day of vaccination each weekend would help the teams to address issues and questions before the second day.

Scientific

At this time, several critical questions remain unknown. First, it remains unknown at what rate the animals, which are often sickly, skinny, or malnourished, **uptake the vaccine** (convert the vaccine into disease resistance). If vaccine uptake rates are low, the LRVC will need to achieve a higher-than-expected vaccination rate in order to eliminate rabies in Laikipia.

Secondly, the prevalence of **rabies in wildlife** populations, the rate of transfer between wildlife and domestic animals, whether or not the wildlife strain of the disease can be transferred from wildlife, to a domestic animal, to a human are all unknown in the Laikipia context.

Thirdly, although the campaign has been vaccinating some **domestic cats** alongside dogs, the rabies rate in Laikipia's cat populations is also unknown, meaning it is unknown whether this is an effective strategy or a waste of vaccine.

Finally, one of the most commonly-asked questions about the campaign is how much farther we have to go. **How many dogs** are in the county - and, thus, how many must we vaccinate to reach the 70% target? Ongoing research led by Wangechi Kiongo aims to address this question and will guide the LRVC strategy in the coming years. Using this data, we will be able to tell how effective our campaign is over time by conducting further rabies surveillance

Strategic

Low-turnout communities

In some communities, such as Il Motiok and Il Polei, turnout was very poor, and many community members expressed distrust of the vaccination. The same canine distemper outbreak that devastated Laikipia's endangered wild dog populations last year also had severe impacts on the domestic dog populations in these largely pastoral communities. Because the outbreak took place

shortly after LRVC 2016, some members in the communities assumed that the rabies vaccination was the cause of their dogs' deaths, and that rumor appears to have spread rapidly throughout the communities. In the Il Polei area, for example, some community members explicitly identified this fear, and vaccination turnout was extremely low. LRVC cannot be successful in the long term if communities do not trust and value the vaccination enough to bring their pets to vaccination centres.

The key to improving turnout in these communities is increasing both their education about rabies vaccination, and their trust of the campaign itself. These issues are addressed in the following sections.

Education

During the campaign, the campaign volunteers and vets can make important steps to inform community members about the facts about rabies and the vaccination. For example, although many community members reported having received vaccination previously, few brought their vaccination cards. Community members also may not know that vaccination should be repeated annually.

Before the campaign, LRVC 2018 can expand school programs to inform students about what rabies is, why vaccination is important, and how to treat a bite or scratch. In 2016, the LRVC worked with the Northern Kenya Conservation Clubs to design lessons and teach primary school students about rabies and how to prevent it. This should be revived as part of the long-term educational program essential to the campaign's success.

Trust

Lack of trust in the LRVC was a central issue in the largely pastoral communities where vaccination turnout was lowest. As the campaign expands beyond the communities adjacent to Mpala Research Centre, it is increasingly perceived as the work of outsiders, without support from within the target communities. Also, unsurprisingly, turnout at vaccination centers was the highest in communities where the community organizers were well-known, well-liked, and trusted.

The campaign could expand its reach and turnout by increasing involvement from within the communities themselves. For example, Mpala Research Centre staff might volunteer with the campaign in their home communities (Lekiji, Il Motiok, Rumuruti, etc.). Daraja Academy is also eager to collaborate, and could involve students from the target communities as volunteers.

Expansion

The campaign can be expanded further into Laikipia East, particularly clusters in the communities around Ol Pejeta Conservancy, Sweetwaters, Matanya, Thome, Mwiyo, Marura, and the surrounding areas.

It is also important to consider the campaign's expansion holistically and in a long-term context. It may take 5 years for the campaign to expand to 70% vaccination coverage; this coverage must be maintained for at least 3 years; and it must even continue at a maintenance level thereafter, or rabies will inevitably be continuously re-enter Laikipia's domestic dog population from wildlife and across the county borders. Although we have seen great success in terms of vaccination numbers and extremely high turnout in new communities this year, increasing education and trust alongside vaccination numbers is critical to the LRVC's ultimate success.

Sustainability

The campaign model has both advantages and drawbacks. The campaign is fun for volunteers; we have never had a shortage of volunteers or veterinarians. With the right approach and communications model, partner organizations may become more committed to the campaign over time; for instance, it has become a "given" that Mpala donates accommodation and board for the

duration of the campaign, and we may hope that our neighbouring conservancies will come to see the campaign the same way.

However, the intensity of the campaign, and its on-the-fly organization, may risk exhausting some partners. Crowdfunding is particularly susceptible to “donor fatigue,” as donors can be reluctant to re-open their pocketbooks every year for the same “urgent” cause.

APPENDIX

Week-by-Week Brief

Weekend 1: Naibunga Group Ranch

Vaccination was carried out around the nine group ranches of Naibunga. A total of 609 domestic dogs and cats were vaccinated. There was a very low turnout as the community were afraid that their dogs were going to die once they receive the vaccination. The campaign was also challenged by heavy rainfall which slowed the movements.

Issues emerged where the communities needed a door-to-door vaccination campaign, they insisted this was the only way they were going to let their dogs receive the vaccination as it is convenient to them.

Communities also suggested the vaccination would be appropriate to them very early in the morning when they are leaving to go and look after the animals or late in the evening when they are all back at home. This was especially seen in Koiya community

Nevertheless, some communities like Tura were ready for vaccination and brought their dogs and cats in large numbers.



Figure 1 Volunteers and vets conducting vaccination

Weekend 2: Naibor and Jua Kali

The second vaccination weekend was held between 10th and 11th November. This occurred in areas around Naibor, Maramoja, Endana, Makandura, Jua Kali, Lekiji, Tangi Nyeusi, Ngare Nyiro, Muramati, Mukima, Segera, Digiri, Mugumo, and Loruko. Total domestic dogs and cats vaccinated during the weekend was 1,738.

There was a good turnout as the communities upheld the campaign. The information was also well spread between the communities as the Public Address vehicle did quite a commendable job. There was a good interaction between the LRVC team and the communities.

Weekend 3: Il Polei,

The third vaccination weekend was held between 17th and 18th November 2017. A total of 1,498 dogs and cats were vaccinated. The initial plan was to vaccinate dogs around Dol Dol and Il Polei clusters, however, the plan changed due to low turnout in Il Polei on the 17th November. Many

community members believed their dogs would die once vaccinated. Less than 100 dogs and cats were vaccinated by lunchtime by a total of six teams deployed in the area, with few people willing to bring their dogs for vaccination.

As a result, the team made an abrupt change, shifting their efforts to Mugumo, Mukima, and Nyaregenu area. In these areas, there was a good turnout of dogs where people were willing to bring their dogs and cats for vaccination, even at short notice. This was also a result of the good work done by the PA system, where many people were to get the message easily and clearly. There was also a good interaction between the LRVC 2017 team and the communities where they requested extending the campaign to ensure that all the households were reached.

Weekend 4: Ol Pejeta Cluster

The fourth campaign weekend was held between the 23rd and 24th of November in Ol Pejeta-area clusters. Vaccination occurred in the following areas: Kijabe, Withare, Mwakinya, Ngobit, Tharua, and Riacho communities. A total of 1,601 domestic dogs and cats were vaccinated during the campaign. Both days, this was accompanied by poor turnout during the morning hours but good turnout in the afternoon hours.

Heavy rainfall prior to the weekend also delayed the team, as some vehicles were stuck in the mud, causing the team to start the work late.



Figure 2 One of the 6 teams during the Campaign

Weekend 5: Borana Cluster

The fifth campaign weekend was held between 1 and 2 December. A total of 1,661 domestic dogs and cats were vaccinated. From this number, 1,238 animals were vaccinated from the following areas: Ngenia, Gitugi, Utheru, Kairigire, Makano, Bodeni, Gratton, and Chumvi area on a single day. This was attributed to good flow of information, and the area chief's use of his Twitter account, connected to over 6000 people among which the majority come from his area. The chief was able to send a Tweet to all community members in his area, and dogs came out in large numbers. This was a recommendable innovation and a model for other areas to emulate.

Day two of the vaccination was around Makurian and Il Ngwesi group ranches; compared to the previous day, there was a very poor turnout. One reason for this was abandoned pastoralist settlements, especially in the Makurian area. It was stated that most of the pastoralists there had moved from the area during the dry season and were yet to return home. Other alleged reasons were that some of the pastoralists needed a door-to-door campaign, and were not willing to bring their dogs to the vaccination centres. Some community members feared that the vaccination was going to kill their dogs, echoing the misinformation about vaccination found in other pastoralist areas. Some of the communities claimed to have not heard about the vaccination campaign that was taking place. It was also noted that the communities needed educational awareness, as some of them have different priorities and dogs and cats are not given much attention.



Figure 3 Vaccination in Borana

Weekend 6: Rumuruti

The final vaccination weekend occurred between 8th and 9th December 2017. A total of 2,210 domestic dogs and cats were vaccinated. This was the only weekend where the team was able to surpass the target of 2000 dogs and cats over a single weekend. The reason for high turnout of dogs and cats can be attributed to good community mobilization that was done by the former Community Liaison Officers of LWF, Franklin and Lesian, also accompanied by a PA system which was able to move across the community.

Some of the recommendations arising from the campaign in the cluster included, first, a shift of vaccination centres from town-based to village-based, where most people would be able to access the centers. Second, it was reported that in September 2017 the Laikipia County Government, through the Ministry of Health, had reduced the number of dogs in the town centres; as a result some people were afraid of bringing their dogs for vaccination.

Note: Budget to be attached separately

