MEP February 2022 Report

The Mara Elephant Project "Foxtrot" ranger team in their wet weather gear, which was needed in February.

GENERAL

I was happy to attend a workshop in Olderkesi Conservancy called Planting the Seed with Director of Research and Conservation Dr. Jake Wall. This workshop was attended by a number of NGOs and partners organized by the Royal African Foundation to pick up where we left off two years ago on the Sand River corridor project. Out of this meeting the group agreed on a framework to plan and execute this project.

I was also honored to be invited to a Tusk Trust symposium where leaders from conservation came together to share their expertise. Thank you to Tusk Trust for the invitation.

The Sidekick Foundation, Inc. doing business as Mara Elephant Project USA in the U.S. has a new executive director. Claire Bolles has been promoted to the position effective February 15, 2022. Many of you already know Claire as she's worked over the last six years on MEP's communications and fundraising initiatives. We want to thank Trey Fehsenfeld for all of his time and effort spent championing MEP as executive director of Sidekick Foundation and as a trustee on the MEP Kenya Board of Trustees.

SECURITY, ANTI-POACHING & CONFLICT

The MEP "Foxtrot" ranger team participated in two different elephant treatments in February. The first, on February 9, occurred when they spotted a bull elephant with a spear wound on his right rear leg, most likely a result of conflict with nearby communities. KWS Vet Dr. Limo from the SWT Mara Mobile Vet Unit was called in to treat him in Oloisukut Conservancy. The next day, the

ranger team found the newly treated bull and he appeared to be healing well. The second was later in February, on the 26th, when while on patrol in the Nyakweri Forest, the team spotted a bull with a spear wound on his left front leg. Once again, KWS Vet Dr. Limo from the SWT Mara Mobile Vet Unit was called in and successfully treated the bull for his wound.

Pictured, Dr. Limo from both treatments in February. The Nyakweri bull in the forest after treatment.

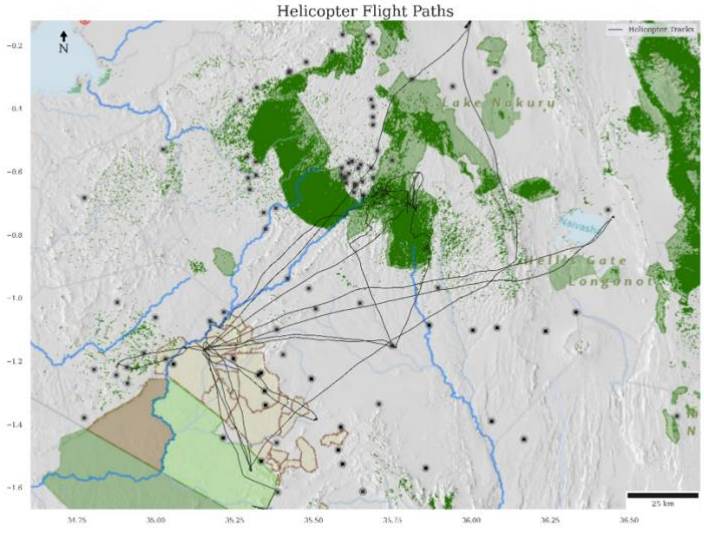
Several busts from the Sheldrick Wildlife Trust Mau De-Snaring "Charlie" team in February.

In February, MEP rangers alongside government partners arrested two suspects with 2.8 kg of ivory. They also arrested three bushmeat suspects, confiscated 107 kg of bushmeat and removed 13 snares. They also arrested six habitat destruction suspects, recovered one power saw, destroyed 26 kilns and 29 charcoal sacks. They also recovered 40 posts, 20 timbers and mitigated six conflict incidents. In February, MEP rangers covered a distance of 747.2 km on foot, 11,679 km by car and 1,236 km on motorbike. In February, MES rangers in Shimba Hills covered a distance 46.7 km on foot.

HELICOPTER

The helicopter was used in two key collaring operations in February alongside Kenya Wildlife Service (KWS) and the Wildlife Research and Training Institute (WRTI). On February 22, KWS, WRTI and MEP collared a bull elephant in Nakuru, who was named Lolotoo, meaning "The Traveller". This large bull elephant located outside of the Mau Forest, near another collared elephant Ritan in the Sachanwan Forest and will provide KWS, WRTI and MEP important movement data to illustrate historical range and connectivity between ecosystems. The helicopter was extremely helpful during the collaring with our partner KWS Vet Dr. Limo. The second collaring was with a re-collaring operation for an elephant everyone seems to know very well, Fred. He was re-collared by KWS, WRTI and MEP on February 23 in Mara North Conservancy. Fred is a favorite among staff and the collaring operation was a team effort with KWS Vet Dr. Limo and MEP's CEO Marc Goss, Director of Research and Conservation Dr. Jake Wall, Conservation Officer Wilson Sairowua as well as the long-term monitoring team. Originally collared in 2013, Fred at the age of 47 is one of the largest bulls KWS, WRTI and MEP monitors in the Greater Mara Ecosystem.

Pictured, Lolotoo during the collaring operation and then Fred after his new collar as fitted and during the operation with MEP staff.



COMMUNICATIONS & FUNDRAISING

On February 9, MEP CEO Marc Goss was featured on an episode of This Wild Life Conservation Podcast. Each week, the podcast features leading conservationists describing tales of wild adventures and discussing the highs and lows of living and working in the wild. Marc was interviewed by Amy Turner about the last decade of MEP's operations and how using technology like EarthRanger will positively impact the next decade of operation. Listen here. MEP was also featured alongside our partner Seedballs Kenya in ADF Magazine in February.

MEP celebrated Valentine's Day by inviting you to show your elephant love. Thank you to Nature's Pitch for supporting the MEP Experimental Farm Project with a $17,000 grant, of which we received the first payment in February. Thank you to the Nobelity Project for supporting MEP with 50 kg of seedballs from Seedballs Kenya. We also received a grant payment from AI2 to support a Kenyan software developer to advance MEP's EarthRanger software. The Sidekick Foundation, Inc. dba Mara Elephant Project USA raised $118,078.27 in February, and MEP Kenya Trust raised $20,510. Thank you to Carolyn Sunny Shine, Caren Chappell, the Rogers Family Foundation, Margaret Buckman, Ada Frasca, John Hondulas, William Buffett, Ginni Keith, Katharine Simonds, Theodora Corroon, Patricia Fitzgerald, Michael Nimkoff, John & Kris Robertson Smith, Raoul Chacon, Gillian Fuller, Margaret Hennell, Cecelia Williams, Kayoko Barbour, Barry Berish, Sandra Carroll, Michael Crawford, Sandra de Roulet, Richard Honeyager, Michael Johnson, Marcy Mackinnon, Kay Murray, Caryl Rine, Emilie Robinson, Foreningen Forsvara Elefanterna and Christopher Tower. We had many amazing entries in February in the Greatest Maasai Mara photo competition. Thank you to everyone who supported us.

A February entry from Jules Oldroyd Photography.

RESEARCH & CONSERVATION

Director's Update

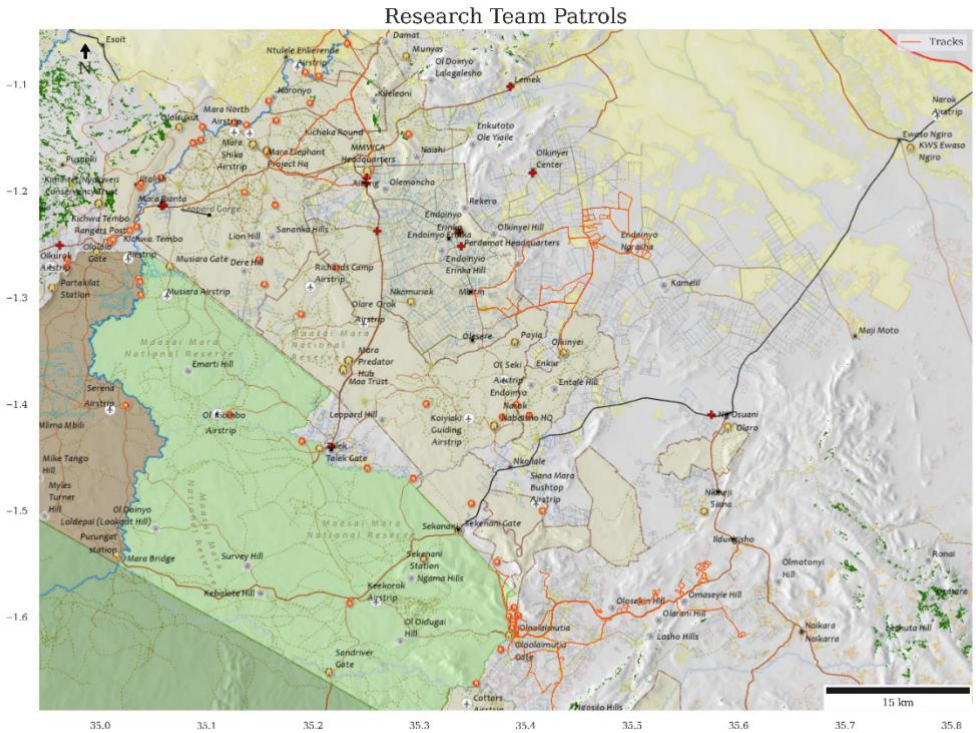
The MEP long-term monitoring (LTM) team was busy in February and helped assist with an elephant treatment alongside rangers and KWS Vet Dr. Limo from the SWT Mara Mobile Vet Unit. We were also able to recollar Fred whose collar needed replacing because of low battery levels.

We made progress on our Ecoscope project that now runs all the data analytics at MEP. We have shared some of the notebooks and code with close collaborators with the aim of making it fully open source. I also attended the *Planting the Seed* workshop in Olderkesi Conservancy with Marc, and we had great discussions surrounding wildlife and livestock connectivity between the Mara reserve and Loita forest. We hosted Dr. Holly Dublin for several days to discuss developing a monitoring framework for the Mara conservancies. The 6-month long project will focus on collecting and consolidating ideas about what the key indicators are for measuring the state of the ecosystem. The long-term monitoring team participated in an elephant treatment and continued their work in February.

On February 5, a female elephant was monitored in Mara North Conservancy (MNC) with a spear wound to her eye, most likely a result of conflict with nearby communities. The MEP LTM team was called in to assist MNC rangers with a plan for treatment. This elephant was known to the LTM team and had been monitored regularly in MNC. KWS Vet Dr. Limo from the SWT Mara Mobile Vet Unit responded for treatment and after successfully treating the wound, she's been closely monitored to watch the healing progress.

Individual 171, a monitored elephant, had just given birth when they saw her on February 26.

An elephant sighting on February 1 from the LTM team. Seems they were enjoying the mud.



Movements (orange tracks) of MEP's three field assistants during February. All of our field assistants are working on mapping fences, roads and landcover ground-truthing points using motorbikes and our Njia app. They recorded 80 km of fences and 36 LCC points in February.

Year	Month	Electric	Other	Wire	De-fenced	Total (kms)
2019	November	48.27	-	18.35		66.62

2019	December	81	-	59		140
2020	January	111.16	4.64	124.71		240.51
2020	February	101.62	1.17	33.99		136.78
2020	March	48.59	0.14	59.76		108.49
2020	April	19.78	0	10.38		30.16
2020	May	24.75	1.88	41.18		67.81
2020	June	15.19	1.48	107.88		124.55
2020	July	37	-	52.76		89.76
2020	August	60.12	7.52	40.08		107.72
2020	September	126.95	7.15	221.44	15.18	370.72
2020	October	109.05	10.57	218.99	1.78	340.39
2020	November	101.2	24.52	153.12	13.88	292.72
2020	December	62.99	9	190		261.99
2021	January	87.9	19.4	121.09	5.2	233.59
2021	February	79.2	22.9	175	-	277.1
2021	March	20.3	7.4	147.92	8.6	184.22
2021	April	80.2	31.05	96.4	2.3	209.95
2021	May	40.3	23.6	296.5		360.4
2021	June	37	44.8	214.2	2.7	298.7
2021	July	21	33.6	138	63.6	256.2
2021	August	14.03	48.7	159.8	0.44	222.9
2021	September	19.2	34.8	218.1	0.1	272.2
2021	October	21.7	17.9	109.5		149.1
2021	November	5.6	7.9	169.9		183.4
2021	December	-	0.6	86.4	-	87
2022	January	13.3	28.9	182.6		224.8
2022	February	1.8	24.5	54		80.3
	Total (kms)	1,388.90	414.12.62	3,491.5	113.78	5,418.08

MEP Experimental Farm

The month of February was marked with high rainfall both in amount and intesity. Most crops are in growth stage making the rainfall very valuable for vegetative development. The rains also supported growth of all types of weeds which competed with our crops, thanks to our team a lot of effort was put into always have the farm clean.

Collaboration and networking is a stronghold for many institutions, we enjoy learning from each other to further improve our work. This month we visited The Maa Trust (TMT) who are managing a hydroponic, vertical garden and mushroom farming. Our objective was to learn about their market areas. On our farm, the market study for the crops we manage is very crucial, without which it will not be sustainable for the communities to adopt any crop not preffered by the elephants. Dr. Crsytal Mogensen, CEO of The Maa Trust has already shared with us a contact that is insterested in buying a lavender crop in bulk. I am happy that I was also able to connect them with herb seedling raisers for their farm.

Four new crops have been introduced to our farm this month, citriodora and tea tree which are believed to have no predators including livestock , in addition, cucumber and eggplant, the later being a family of african nightshade, which so far has no predators from the common animals in our farm (hippos, vervet monkey and birds). On the last day of the month, Fairmont Safari Club chefs and their manager visited the farm. They wanted to know more about the crops in our

experimental farm so they could potentitally place an order instead of waiting for fresh produce from Nairobi. We agreed to let them know when produce was ready a week prior to harvesting it.

Figure 1: Hydroponics system and mushrooms at The Maa Trust.

Experimental Farm Sit Rep

Date Time	Block	Plot	Type of Crop	Details
2022_02_03	1	7	Maize	The vervet monkeys uprooted and ate the crops leaving very few
2022_02_10	1	1	Citriodora	It is a new plant, planted for the first time at the farm, its scientific name is *Corymbia citriodora* and commonly known as lemon-scented gum, it is used to extract essential oils.
	3	7		
	5	6		
	7	15		
	9	15		
2022_02_10	2	3	Cucumber	It is a new crop introduced to the farm for the first time, it is a widely cultivated creeping vine plant in the Cucurbitaceae family that bears usually cylindrical fruits, which are used as vegetables.
	5	7		
	8	14		
	9	8		
	10	12		
2022_02_10	1	7	Maize	They have been replanted after being eaten by vervet monkeys, the few that remained have been uprooted as they have been affected by rust disease.
2022_02_11	2	2	Spinach	It was replanted for the second time after it was predated by birds. In addition, they have been affected by too much rain at young stage so most have died
2022_02_11	2	4	Beans	Most bean plants in this plot have been uprooted and eaten by Egyptian goose. Only a few are remaining
2022_02_12	2	6	Wheat	Planted four times within this month and each of the time it has been eaten by Helmeted Guinea fowl, currently only one plot has successfully grown without being predated.
	5	15		
	7	7		
	9	14		
	10	10		
2022_02_12	9	6	Potatoes	Planted for the second time, the first time it grew up to harvesting stage successful without any predation.
2022_02_12	9	12	Maize	Hugely affected by rust diseases, which is a viral disease caused by the fungus *Puccinia sorghi.* They will be uprooted and planted
2022_02_14	2	7	Sunflower	The heavy rains made it difficult to harvest and dry sunflower, they were in the farm and were mostly eaten by birds. They were all cut down and replanted.
	3	10		
	7	2		

	10 11	3 12		
2022_02_17	3	9	Beans	In this plot the Egyptian goose eat the tips of the bean plants, they have no tips and that affects their flower formation
2022_02_19	8	16	Spinach	Has been affected by a rust like disease and high rainfall
2022_02_21	11	9	Sukuma	A total of 8kgs was harvested in three occasion and was send to MEP's HQ
2022_02_21	4	4	Spinach	It was harvested in two occasions and a total of 7kgs yield was taken to MEP's HQ
2022_02_22	S2B1	1	Maize with Beehives fence	It is believed that elephants cannot get close to crops with a beehive fence, we have put this new system in a 10 by 10 meters plots as another mitigation system that the community can implement.
2022_02_22	S2B2	3	Maize with sunflower as a cover crop	For the past five months sunflower have not been predated by any animals, they are also tall that makes them a great cover crop for maize, it is the first experiment to ever take place, they have been planted as cover crop in this plot surrounding the maize crop one meter around the plot
2022_02_22	S2B3	4	Maize surrounded with a 1.5 M dep and wide ditch	A 1.5 meters deep and wide ditch has been dug around a 10 by 10 meters plots, and maize planted inside this is to experiment if elephants can jump or go through the ditch to each maize if not it can be an alternative system
2022_02_22	S2B4	6	Maize with sunflower as a cover crop	Different systems with sunflower are being implanted, maize intercropped with sunflower is another new system in trial
2022_02_28	8	7	Chili	A total of 3.7 Kgs was harvested
2022_02_28	10	11	Chili	1.5kgs of ready chili was harvested

Figure 3, 4, 5& 6: Sukuma, spinach, tomato tree and carrots plots displaying productivity

Figure 8 & 9: Citriodora and Cucumber crop, two of the new crops introduced in the farm

Figure 10 & 11: Two different plots of wheat, one completely eaten by helmeted guinea fowl and another growing well.

Figure 12 & 13: Plots of Maize affected by rust disease.

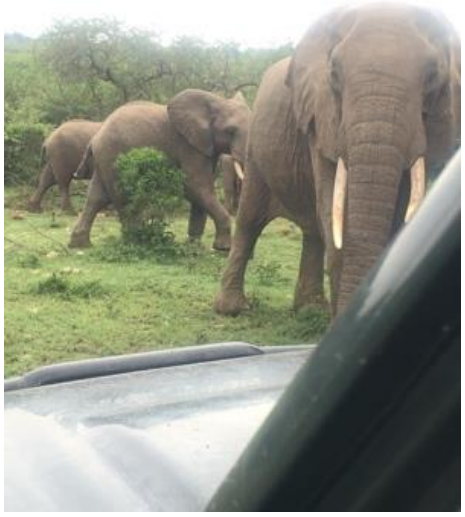
Figure 14 & 15: Ready chili for harvesting and sunflower plot highly predated by birds respectively

Figure 16: Maize crop planted on 10 by 10 meters plot surrounded by a 1.5 meters deep and wide ditch.

Climate Report

Table 2: 1 MEP's Experimental Farm Rainfall Recording February 2022

Date Time	Precipitation (ml) Rain gauge 1	Precipitation (ml) Rain gauge 2 (200m^2)
2022_02_01	30	20.2
2022_02_04	2	1.2
2022_02_06	16	12.4
2022_02_12	24	15.6
2022_02_15	7	6.4
2022_02_16	2	1.2
2022_02_18	19	13
2022_02_21	23	15.3
2022_02_22	5	3.5
2022_02_24	30	21.4
2022_02_25	6	3.5



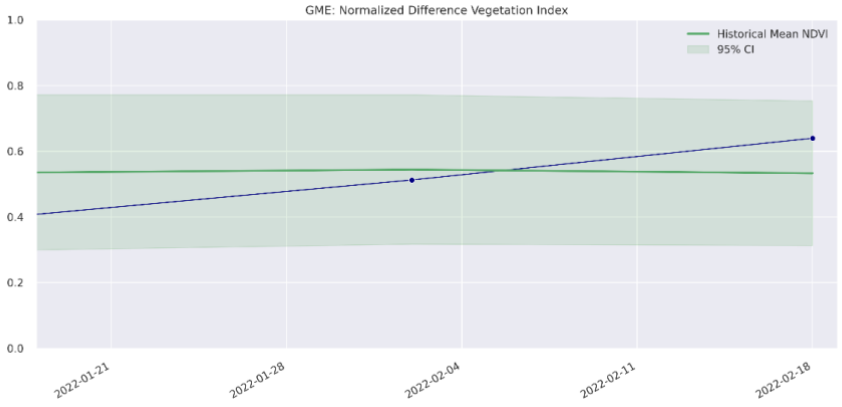
The Mara Elephant Project "Golf" ranger unit monitored collared elephant Chelsea while on patrol on February 23. Re-collared by KWS, WRTI and MEP in 2021, Chelsea is a female elephant that currently resides in a herd of nine elephants including two young calves. Chelsea was in good health and came close to the ranger's vehicle to say hello.

On February 10, the LTM team came across collared elephant Ivy alongside her herd of 15 in Mara North Conservancy.

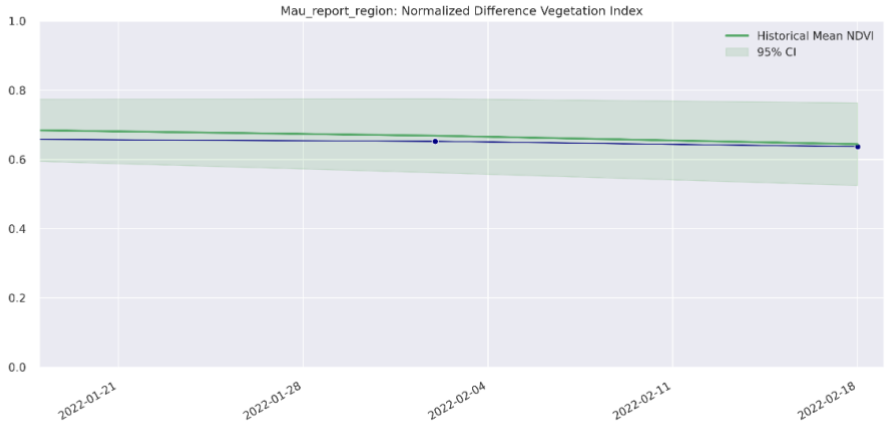
ENVIRONMENT: NDVI

Normalized Difference Vegetation Index (NDVI) is a measure of plant photosynthetic activity. Higher NDVI indicates the plant is greener. The blue trend line shows the current value while the green area shows the 95% distribution of values centered around the green trend line from values measured back to February 2000.

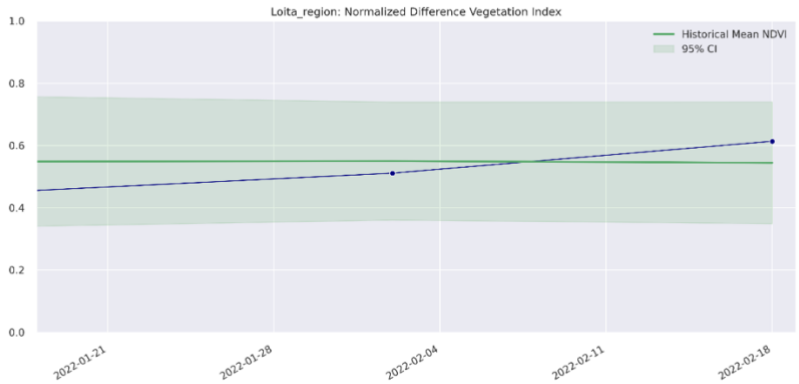
Greater Mara Ecosystem (GME)



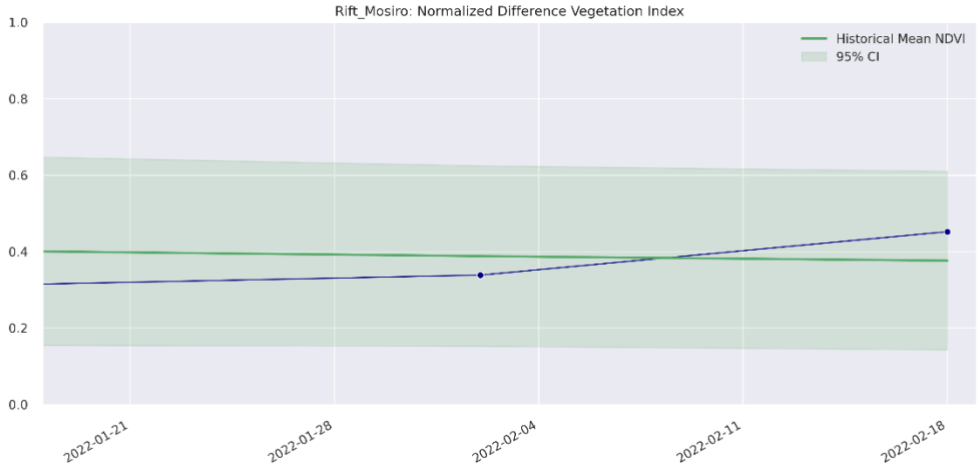
Mau Forest

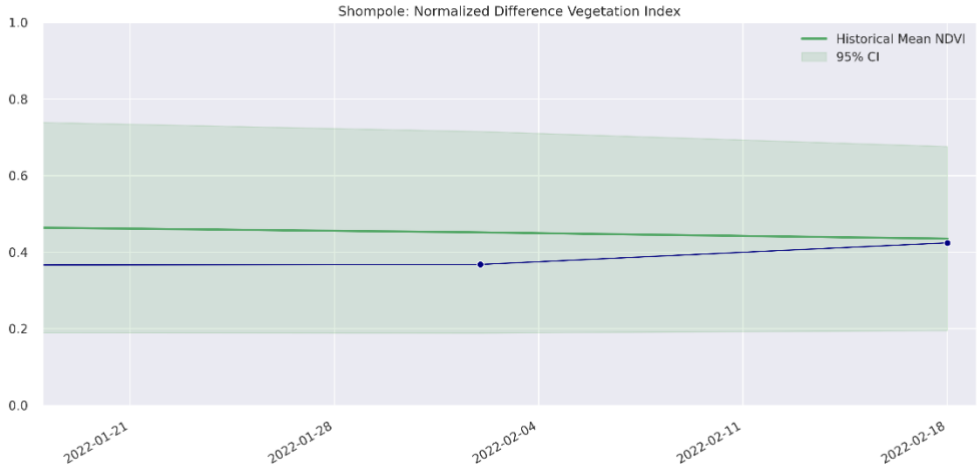


Loita

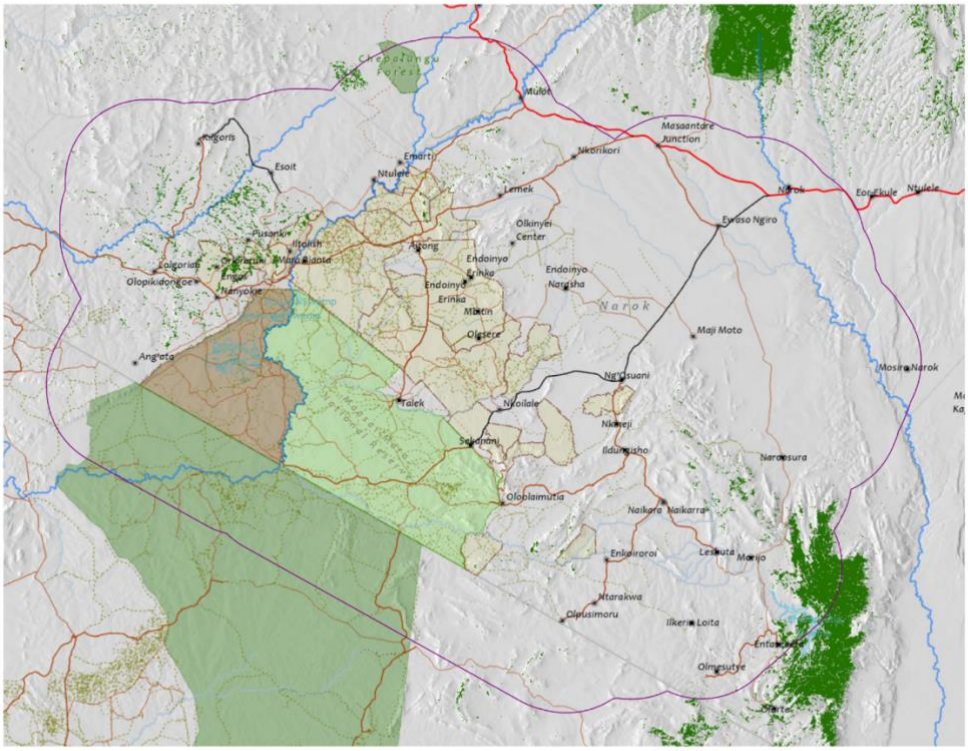


Rift Valley


Rift_Mosiro: Normalized Difference Vegetation Index
Historical Mean NDVI
95% CI
1.0
0.8
0.6
0.4
0.2
0.0
2022-01-21
2022-01-28
2022-02-04
2022-02-11
2022-02-18


Shompole: Normalized Difference Vegetation Index
Historical Mean NDVI
95% CI
1.0
0.8
0.6
0.4
0.2
0.0
2022-01-21
2022-01-28
2022-02-04
2022-02-11
2022-02-18

ENVIRONMENT: Burn/Fire Areas



Red blocks indicate burn areas as measured by NASA's FIRMS dataset during the period February 1 - March 1, 2022. Accessed through Google Earth Engine.