

# Elephant Partners

*ElephantVoices Maasai Mara  
conservation initiative*

**Report for Quarter 1 & 2, July 2014**



## 1. Elephant Partners - Background

All previous reports are available on <http://www.elephantvoices.org/mara-reports.html>. You can download *ElephantVoices Mara Report 2013* report directly using [this link](#) and you will find a presentation of the project [here](#). For a more detailed discussion of elephant sightings please see *ElephantVoices Mara Report 2013*. Information regarding how to use the [Mapping](#) function to access the sightings data can be found [here](#).

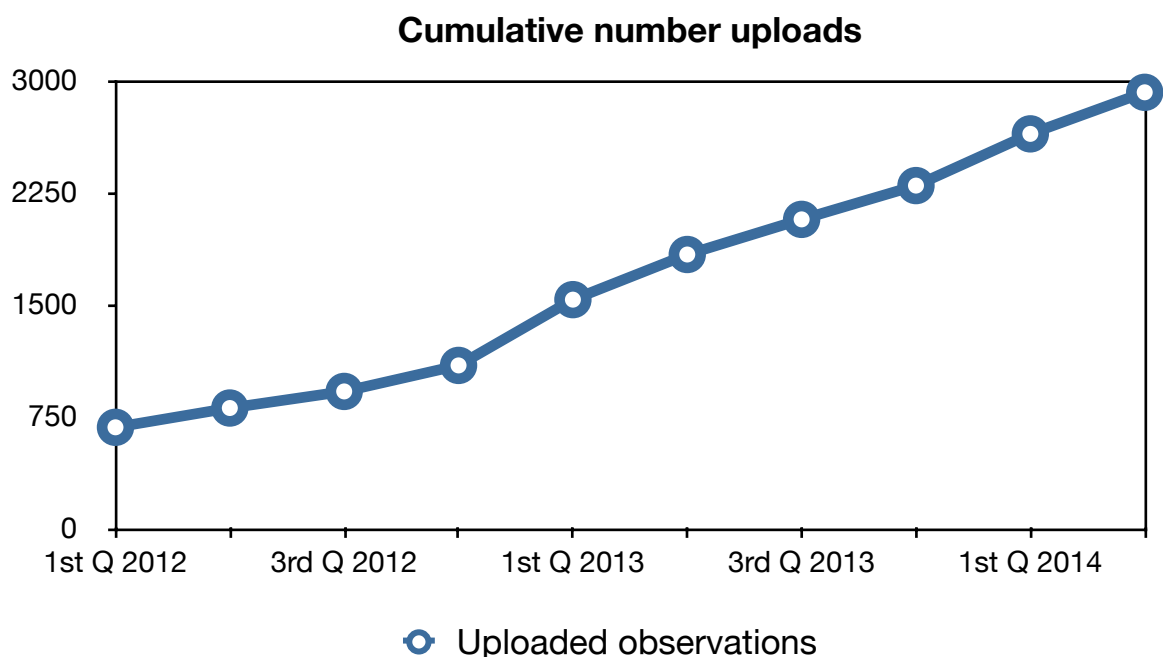
## 2. The observations

As of 30 June 2014, 2,922 observations had been uploaded to the [Whereabouts Database](#) (Table 1). These observations consisted of lone males, bull groups of greater than one individual, family groups with or without associating males, groups of unknown type, signs of elephants and mortalities. In early 2014 we redesigned and reprogrammed the Mara EleApp to allow for the collection and upload of elephants signs, permitting us to expand the project to critical areas where elephants are elusive. This development was important for our collaborative work with the Tanzania Kenya Elephant Borderlands Initiative and our expansion into the Naimina Enkiyio Forest, a key habitat for elephants and biodiversity. The combination of forest cover and severe poaching means that it is not possible to collect any meaningful data from sightings of elephants. As of June 30 a total of 382 signs of elephants had been collected from the Naimina Enkiyio Forest and uploaded to the database since the new version of the app was made available.

*Table 1. Number of observations as of June 30 2014*

Group type	Cumulative number of observations
Overall	2922
Single males	346
Bull groups > 1 individual	242
Family groups with or without associating males	1834
Unknown group type	47
Mortalities	71
Signs	382

*Figure 1. Cumulative number of observations uploaded to the Mara Elephant Who's Who and Whereabouts*



### 3. The participants

For a more detailed discussion of the participants please read *ElephantVoices Mara Report 2013*, which can be found [here](#).

The cumulative number of people who have participated in the collection of data continues to rise (Figure 2). A total of 24 different individuals contributed data to the online database during the second quarter 2014. Some individuals collected only a few observations, while others collected many. Some places are easier to observe elephants than others and in the Naimina Enkiyio Forest participants are collecting elephant signs and mortalities.

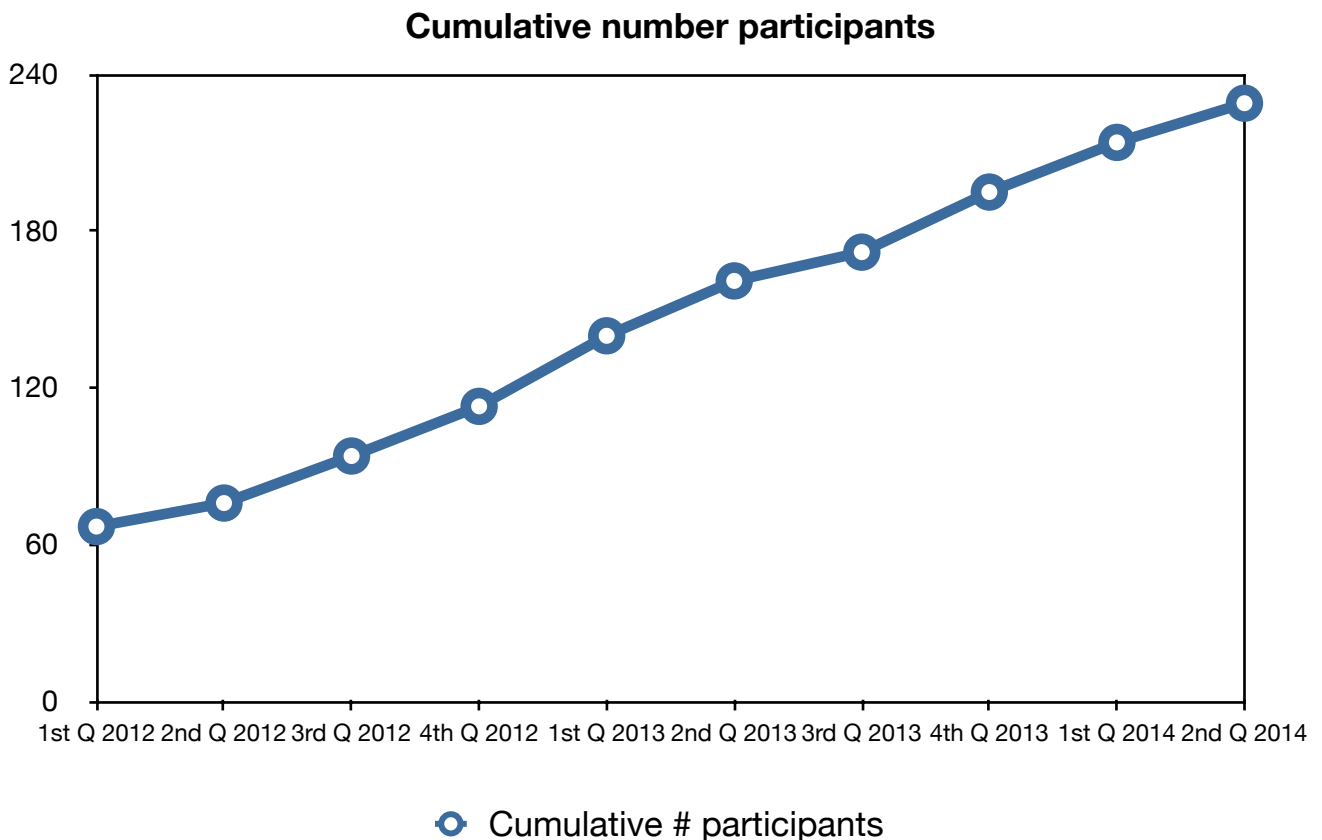
Eight scouts have now been trained by SORALO/ACC and are stationed in and around the Naimina Enkiyio Forest. ElephantVoices' Alfred Mepukori and the ACC team have trained them to use the Mara EleApp and they are beginning to contribute to a better understanding of the movement of elephants and the threats to them in and around the forest.

A picture of the distribution of the different types of participants can be seen in Table 2.

*Table 2. Participants include volunteers from African Impact (AI), Conservancy Representatives (CR), ElephantVoices (EV), Elephant Aware (EA), Guides, Kenya Wildlife Service (KWS), Mara Elephant Project (MEP), ACC/SORALO (A/S), Community members (com), Researchers (R), Tourism Operators (TO), Tourists, Veterinarians, and Other (Film makers, other NGO etc).*

AI	CR	EV	EA	Guide	KWS	KGS	MEP	A/S	COM	R	TO	Tourist	Vet	Other
148	12	2	1	25	1	0	3	6	8	4	2	13	1	3

*Figure 2. Cumulative number of participants to the Mara Elephants Who's Who and Whereabouts as of 30 June 2014*



## 4. The elephants

### a. Registration

For a more detailed discussion of the registration of elephants, age structure and sex ratio of the population and conservation implications please *ElephantVoices Mara Report 2013*, which can be found [here](#).

As of 30 June 2014 a total of 1,204 elephants had been identified, individually characterised, given an age estimation and been registered on the [Mara Elephants Who's Who Database](#). Of these 1131 are adults over 15 years of age of whom 57 % are adult females and 43 % are adult males (Table 3). The rate of new individuals slowed during the first quarter due to the fact that we had other priorities in the field. We caught up with new registrations in the 2nd quarter (Figure 3).

Figure 3. The cumulative number of registered elephants

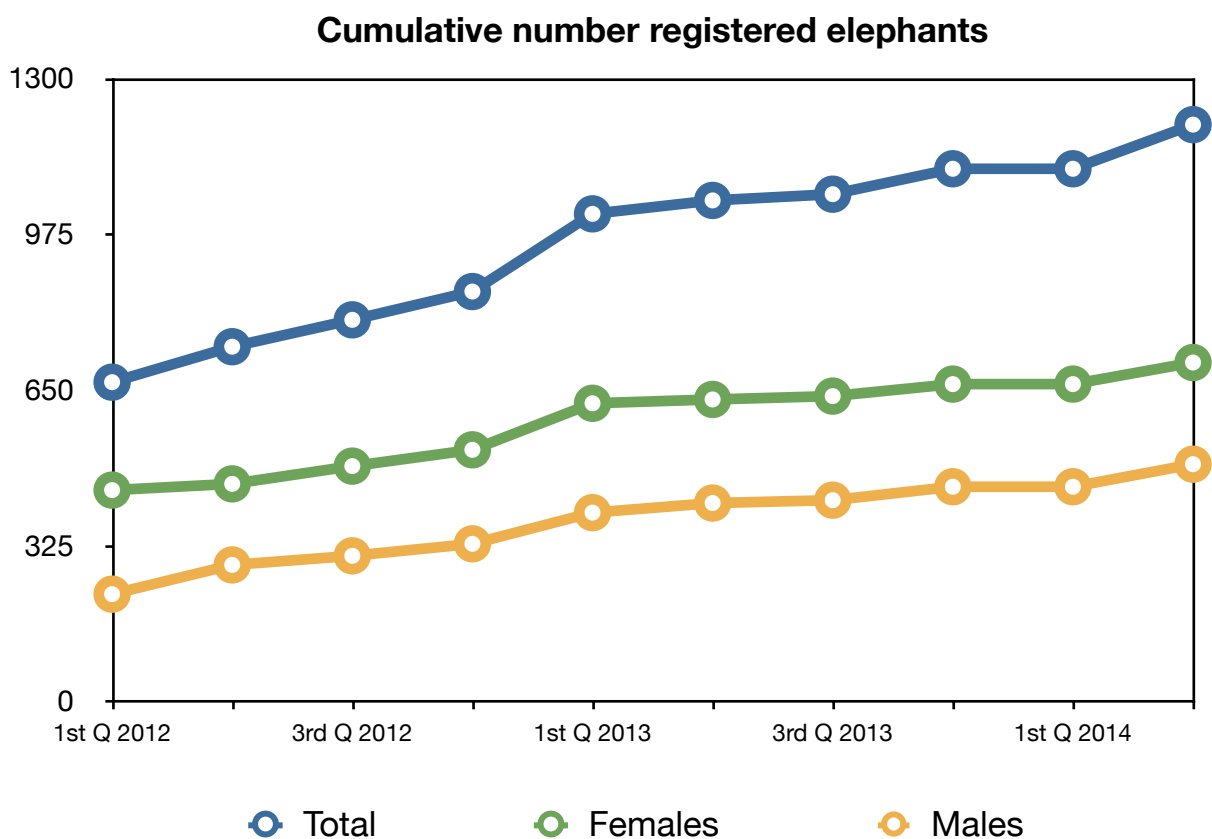


Table 3. Number of elephants individually recognised

	Registered online	Adults	%	10-15 years
<b>Total</b>	1204	1131	100	73
<b>Male</b>	496	490	43	12
<b>Female</b>	708	647	57	61

**b. The population size**

It is clear from our data and from aerial counts that it is not possible to give a population size for the Mara elephants; rather one can give a) a figure for the number of individual elephants who use the Mara or northern extension of the Serengeti-Mara ecosystem as well as b) an approximate figure for the number of elephants occupying this area at any given time.

We have now registered 1,131 "adult" elephants over 15 years of age (see Table 3) of which 647 are female and 490 are male. Based on field work, we have determined that the ratio of adult females to immatures is 1:2, thus we have accounted for some 2,431 individuals ((647x2) +647 + 490).

In our 2013 end year report we used "mark recapture" methodology of known individuals for a second time to give an estimate of 4,132 as the population of elephants using the Mara side of the ecosystem (our ElephantVoices Mara Report 2013 contains an explanation of our "mark-recapture" method, [here](#)). We will reassess the population in our 2014 end year report. Furthermore, we are collaborating with a team from WCS India who have developed a method to analyse population size based on mark-recapture data collected by citizen scientists. We hope that this will provide us with a better estimate of the number of elephants utilising the Mara side of the ecosystem. We do expect, however, that this figure will remain over 4,000 elephants and we would like to put our current understanding of the Mara population into the context of the historical aerial censuses (total counts) carried out by the KWS and Tanzanian authorities since 1986 (KWS, 2010, TAWIRI, 2010, and TAWIRI, KWS, WWF, FZS and Paul G Allen Foundation 2014). In doing so we assume that the count figures are relatively accurate.

In the years leading up to and immediately following the enactment of the ivory trade ban in 1990, the combined Mara-Serengeti ecosystem population hovered between 2,000 and 2,100 elephants (see Table 4 and Figure 4). The population grew slowly during this period (by approximately 1.5% per year; see Table 5) and this low rate may reflect the high level of poaching that was characteristic of these years.

By 1994, however, the combined population was 2,874 elephants suggesting that between 1992 and 1998 the population began to grow at an extremely rapid 10% per year (Table 5), a rate that is more than double the average sustained growth rate for elephants (i.e. 4.2%; see Wittemyer et al. 2014). Based on aerial counts this level of increase continued until 1998 (six years) when the population was counted as 3,634 elephants. This rate of increase is possible to sustain over a couple of years (if, for example, birth rates were very low prior to this period and rainfall was favourable the large majority of adult females in the population might conceive during the same interval producing a very large cohort of calves), but not more. Thus, the continued rapid increase through to 1998 must include significant immigration - or inaccurate counts.

After 1998, however, the population held relatively steady, even declining, to 3,457 in 2000, and to 3419 by 2006 (Table 5 and see figures from the northern and southern sides of the border in Table 4). We know from other areas of Kenya (e.g. Amboseli) that this was a period when elephants began to expand beyond protected areas into range that had been occupied by elephants prior to the poaching of the 1980s, and it is quite possible that the lack of growth during this time is indicative of elephants migrating beyond the boundaries of the aerial count.

Although the 2010 count indicates a dramatic increase in numbers from the 2006 census, this count was not carried out simultaneously and the next coordinated count was not until 2014 (TAWIRI, KWS, WWF, FZS and Paul G Allen Foundation 2014). Between 2006 and 2014 the population once again grew dramatically to 7,535 elephants. To achieve this rate of increase the population would have had to grow at an average rate of increase of 10% per annum for nine years. As argued above, such increase cannot be accounted for by natality alone. The numbers, therefore, indicate that there has been massive immigration from other areas. The most likely explanation is that settlement and heavy poaching in outlying areas caused an influx of elephants into the more protected habitat of the Serengeti National Park and Grumeti GR, Maasai Mara National Reserve and adjacent conservancies. Based on records received from KWS and Mara Elephant Project the illegal killing of elephants was already substantial in the Mara ecosystem in 2011 and has been very high since that time with PIKE figures ranging between 70% and 90%.

Considering just the number of elephants counted on the Kenya side of the border, our capture-recapture analysis so far reveals a significantly higher population of elephants than the official (very high) count of 2010 (3,162). And our absolutely known individuals (2,431 including immatures) is higher than the official 2014 count of 1,448. And we continue to register new elephants.

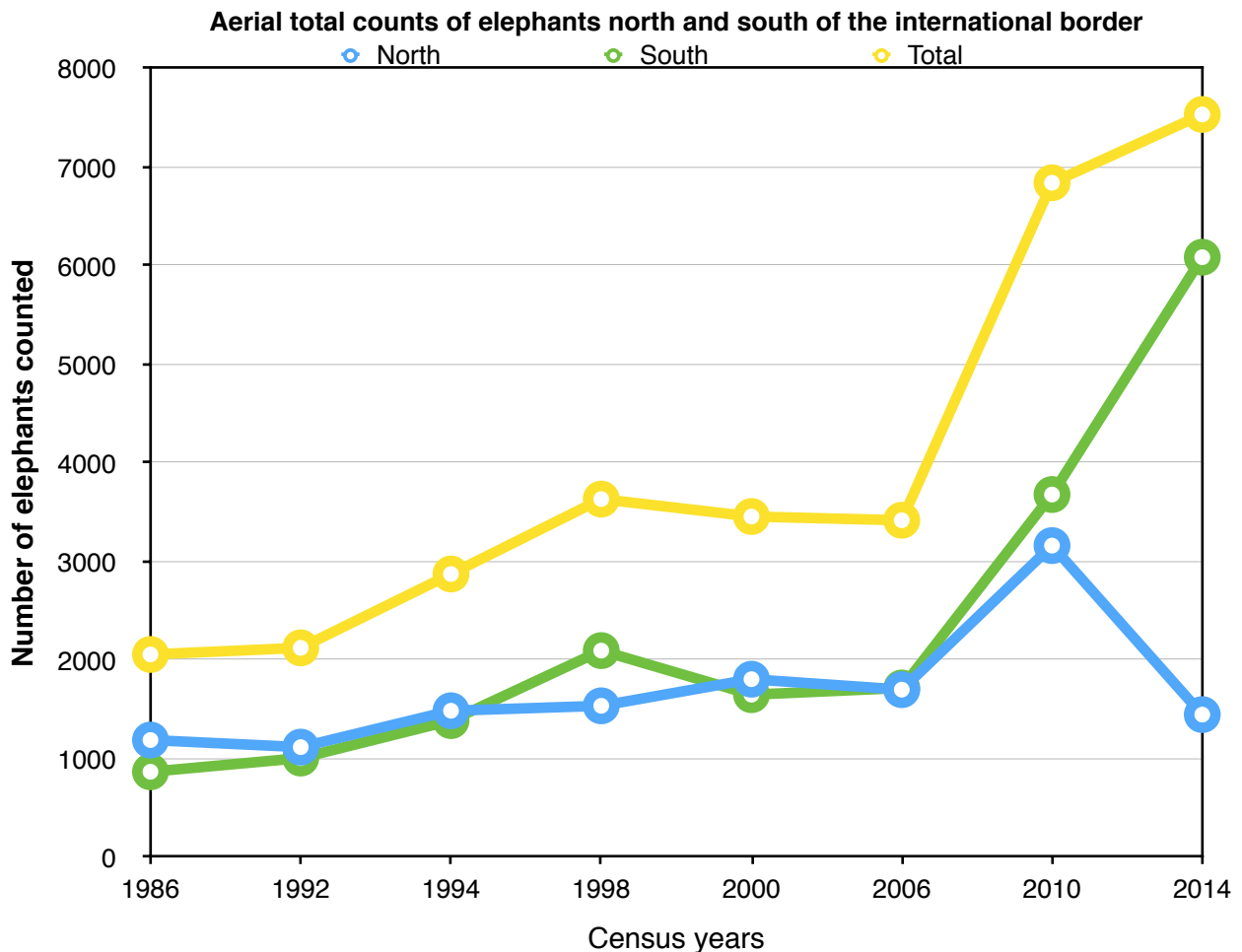
The higher population estimates that we are finding through individual identification and mark-recapture indicates a large cross-border flux of elephants. Save the Elephants tracking data also suggests that some

elephants move regularly back and forth across the Kenya-Tanzania border. It is therefore clear that monitoring of this population must be done by close collaboration between the two countries.

*Table 4. Elephant total count years north and south of the international border in the Mara-Serengeti ecosystem. All years represent simultaneous counts except 2010 when Tanzania's count was in November 2009 and Kenya's was in June 2010. (source: KWS, 2010, TAWIRI, 2010 and TAWIRI, KWS, WWF, FZS and Paul G. Allen Foundation, 2014).*

Location	1986	1992	1994	1998	2000	2006	2010	2014
North	1190	1118	1487	1537	1807	1701	3162	1448
South	868	1007	1387	2097	1650	1718	3680	6087
Total	2058	2125	2874	3634	3457	3419	6842	7535

*Figure 4. Aerial total counts of elephants from 1986 through 2014 (source: KWS, 2010, TAWIRI, 2010 and TAWIRI, KWS, WWF, FZS and Paul G. Allen Foundation, 2014). Note the time scale is not linear.*



*Table 5. Censuses, population size and calculated population growth rate between 1986 and 2014. Starting with a base population of 2058 in 1986 we have calculated the growth rate necessary to match the later counts.*

<b>Years</b>	<b>Census count</b>	<b>Population size</b>	<b>Nativity &amp; immigration</b>	<b>Growth rate</b>
<b>1986</b>	<b>2058</b>	2058	31	1.5%
1987		2089	31	1.5%
1988		2120	32	1.5%
1989		2152	32	1.5%
1990		2184	33	1.5%
1991		2217	33	1.5%
<b>1992</b>	<b>2125</b>	2250	270	10.2%
1993		2520	302	10.2%
<b>1994</b>	<b>2875</b>	2823	155	10.2%
1995		2978	164	10.2%
1996		3142	173	10.2%
1997		3315	182	10.2%
<b>1998</b>	<b>3634</b>	3497	-7	-0.2%
1999		3490	-7	-0.2%
<b>2000</b>	<b>3457</b>	3483	-7	-0.2%
2001		3476	-7	-0.2%
2002		3469	-7	-0.2%
2003		3462	-7	-0.2%
2004		3455	-7	-0.2%
2005		3448	-7	-0.2%
<b>2006</b>	<b>3419</b>	3441	413	10.0%
2007		3854	385	10.0%
2008		4240	424	10.0%
2009		4664	466	10.0%
<b>2010</b>	<b>[6842]</b>	5130	513	10.0%
2011		5643	564	10.0%
2012		6207	621	10.0%
2013		6828	683	10.0%
<b>2014</b>	<b>7535</b>	7511		

### **c. Elephant mortality**

In this report we give a short summary of the mortality data thus far uploaded to the database (Table 5). This represents a minor proportion of the elephant mortality data from the Mara with the majority held by KWS and Mara Elephant Project. We present it here to document ongoing trends, not as an accurate indication of numbers.

The project began in late 2011, thus there are only two mortalities from that year (included in Table 5). In 2012, 26 mortalities were uploaded, 27 in 2013 and 19 thus far in 2014 for a total of 74. In Table 5 we have categorised these mortalities by cause - illegal, Natural, Management (Euthanized) and Unknown. Illegal killing accounts for 61 of the 74 uploads or a PIKE of 82%.

In the first six months of 2014, ten geo-referenced elephant carcasses were uploaded via the Mara EleApp. Of these six were determined to have been illegally killed, three were unknown and one was a natural death. Of the ten carcasses six were male and four were of unknown sex. All except one were adult. In the months of July and August 2014 another nine mortalities were uploaded. All were from Naimina Enkiyio Forest and the Mosiro area and all were illegally killed, bringing the PIKE figure thus far for 2014 to 75%. Although these are outside our reporting period, we want to underscore that while the KWS countrywide figures and the Mara Elephant Project figures indicate a decline in the number of illegally killed elephants in 2014, there is still heavy poaching continuing in some areas. The Naimina Enkiyio Forest and Mosiro are two such areas and everything must be done to bring this under control.

In October we will be meeting with MEP and others who are collecting mortality data to harmonise our findings to submit these to KWS.

*Table 5. Elephant mortality uploaded to Who's Who and Whereabouts databases*

<b>Cause</b>	<b>Male</b>	<b>Female</b>	<b>Unknown</b>	<b>Total</b>
<b>Illegal</b>	46	12	3	61
<b>Natural</b>	2	2	1	5
<b>Euthanized</b>		1		1
<b>Unknown</b>	3	1	3	7
<b>Total</b>	51	16	7	74

## **5. Other activities**

### **a. Alfred Mepukori**

In February we recruited Alfred Mepukori who interned with us in 2013 in a "work-study" capacity. Mepukori will begin a degree program in Wildlife Management at Maasai Mara University starting in September 2014. We are covering the costs of Alfred's program in exchange for work for the project. He is working full-time from 1 February to mid September 2014, after which he will continue on a part-time basis.

During the first and second quarter Alfred has been a valuable asset, particularly in reference to ElephantVoices work in the Loita. As one of many examples, in March 2014 Alfred Mepukori travelled to Olkiramatiem to train the SORALO scout trainers how to use the Mara EleApp. In June 2014 eight community scouts were deployed to the Naimina Enkiyio Forest and Elangata Enderit/Mosiro to monitor and protect elephants and they will use the Mara EleApp to collect data.

### **b. Interns**

In February 2014 we engaged two interns, Patrick Ritei and Patrick Murkuk, from Maasai Mara University diploma course to help define critical habitat/corridors between the Maasai Mara and the Naimina Enkiyio Forest. They worked under the guidance of Alfred Mepukori.

### **c. Dickson Ole Kaelo and Daniel Sopia to Olorte**

In February 2014 we took Dickson ole Kaelo, CEO Kenya Wildlife Conservancies Association, and Daniel Sopia, Maasai Mara Wildlife Conservancies Coordinator, to the Olorte area of the Loita Forest to introduce the



concept of conservancies to members of the local community. Alfred Mepukori and leaders from the Olorte Community Development Trust, participated.

**d. Meetings attended**

In February we attended a two-day workshop in Arusha, Tanzania as part of the collaborative monitoring of elephants by the Tanzania Kenya Elephant Borderlands Initiative.

**e. Articles written**

In April we contributed an article about the Mara elephants to National Geographic blog, A Voice for Elephants: <http://newswatch.nationalgeographic.com/2014/04/11/gift-to-the-masai-mara-a-male-elephant-is-born/>

## References

KWS, 2010. Aerial count of Large Herbivores Masai Mara National Reserve and the Surrounding Areas. Report edited by Bernard Kuloba, Lekishon Kenana, Daniel Muteti, Evans Mwenda. Report 27 pp.

TAWIRI, 2010. Aerial census in the Serengeti ecosystem, wet season, 2010. Report 60 pp.

TAWIRI, KWS, WWF, FZS and Paul G Allen Foundation 2014. Aerial total count of elephants and buffaloes in the Serengeti-Mara Ecosystem. Written and edited by Mduma H, Musyoki C, Maliti Kyale D, Nindi S, Hamza K, Ndetei R, Machoke M, Kimutai D, Muteti D, Maloba M, Bakari S, and Kohi E. Published by WWF. Report 32 pp.

Wittemyer, G., Northrup, J.M., Blanc, J., Douglas-Hamilton, I., Omondi, P., Burnham, K.P. 2014. Illegal killing for ivory drives global decline in African elephants. [www.pnas.org/cgi/doi/10.1073/pnas.140398411](http://www.pnas.org/cgi/doi/10.1073/pnas.140398411)