

# Elephant Partners

*ElephantVoices' conservation initiative Maasai Mara*



Year End Report  
December 2012



## Introduction to Elephant Partners

Using web-based technology, ElephantVoices has developed a unique model for citizens to monitor and help protect elephants. The *Mara EleApp* (<http://elephantvoices.org/mara-eleapp.html>) permits the collection and upload via cell-phone of geospatial, group size and association data to the searchable, publicly available *Mara Elephant Who's Who & Whereabouts Databases* (<http://www.elephantvoices.org/maraelephants-whos-who.html>; <http://www.elephantvoices.org/maraelephants-whereabouts.html>) with Mapping functionality (<http://www.elephantvoices.org/maraelephants-mapping.html>). A registered user can submit the same type of data online with one or more photographs.

With this system we are growing a dedicated, caring community of guides, scouts, researchers, photographers, and tourists who are collecting data on, sharing information about, and working together to sustain the Mara elephants and to inform conservation management. ElephantVoices is mentoring and training these "citizen scientists" expanding their numbers via on-the-ground representation, word-of-mouth and social media. A presentation of the Mara elephant conservation initiative can be seen on "[The Elephant Network](#)" a talk by Joyce Poole during the National Geographic Explorers' Symposium in June 2012 for the session, "Envisioning a Better Tomorrow".

ElephantVoices is supporting the Moi University Masters field research of David Kimutai (KWS MIKE/ETIS officer). Once David has completed his obligations for KWS he will be working in the field helping to train participants and putting special focus on areas of strategic importance. All data uploaded are being monitored, updated and corrected, where necessary, by ElephantVoices via the databases' backend. Joyce Poole and Petter Granli are carrying out this work. The online databases and the *Mara EleApp* were conceptualized and designed by ElephantVoices, and programmed by Verviant Consulting Services in Nairobi (<http://verviant.com>).

The *Mara Elephant Who's Who and Whereabouts Databases* went online in October 2011. This report represents what the system has revealed about the Mara elephants as of the end of 2012.

## Cumulative Results

### *The participants*

As of 31 December, a total of 113 different individuals had contributed data to the online databases (Figure 1). Participants have included guides, tourists, volunteers, conservancy representatives, Kenya Wildlife Service representatives, veterinarians, researchers. The system is set up so that people can collect data via the *Mara EleApp* (freely available for download [on the Android Market](#)) and, once registered, they can upload their observations from their smartphone directly to the [Mara Elephant Who's Who & Whereabouts Databases](#). Alternatively they can enter their observations and photographs online via "My Observations". Thus far the bulk of observers have been from short term African Impact volunteers based at Mara Naboisho Conservancy, which is now "self-going" under the guidance of Lincoln Njiru (Table 1). Our aim is to increase the number of Mara residents contributing to the databases and to expand representation to outlying areas of the Mara ecosystem.

Figure 1. The accumulated number of participants

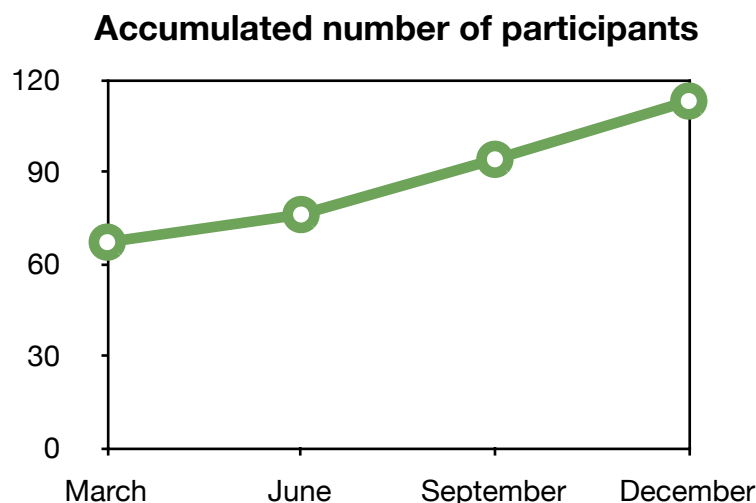


Table 1. Participants include volunteers from African Impact (AI), Conservancy Representatives (CR), ElephantVoices (EV), Elephant Aware (EA), Guides, Kenya Wildlife Service (KWS), Mara Elephant Project (MEP), Researchers (R), Tourism Operators (TO), Tourists, Veterinarians, and Other (Film makers, etc).

AI	CR	EV	EA	Guide	KWS	KGS	MEP	NCC	NGO	R	TO	Tourist	Vet	Other
72	5	2	1	10	1	0	1	0	1	2	1	10	1	3

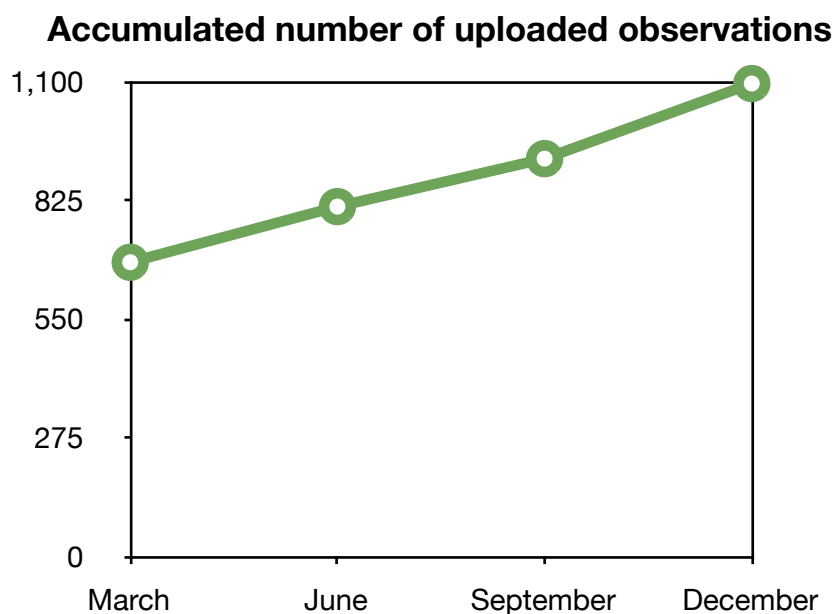
### The observations

As of 31 December 2012, 1,095 elephant observations had been uploaded to the Whereabouts Database (Table 2). The observations consisted of lone males, bull groups of greater than one individual, family groups with or without associating males and groups of unknown type (n=37). In addition, 27 mortalities had been uploaded. Figure 2 shows the accumulated number of uploaded observations at each quarter.

Table 2 Number of observations or mortalities uploaded as of 31/12/2012

Group Type	Number of observations
Overall	1095
Single males	167
Bull groups > 1 individual	136
Family groups with or without associating males	728
Mortalities	27

Figure 2. The accumulated number of uploaded observations in 2012.



### The Mara elephants Who's Who: Numbers and sex ratio

The Who's Who Database is fully searchable. An elephant may be identified by selecting a number of traits (sex, age, home area, ear, tusk, tail and body characteristics) that best describe the elephant and which are defined and presented in a number of slideshows available through the [Features Guide](#).

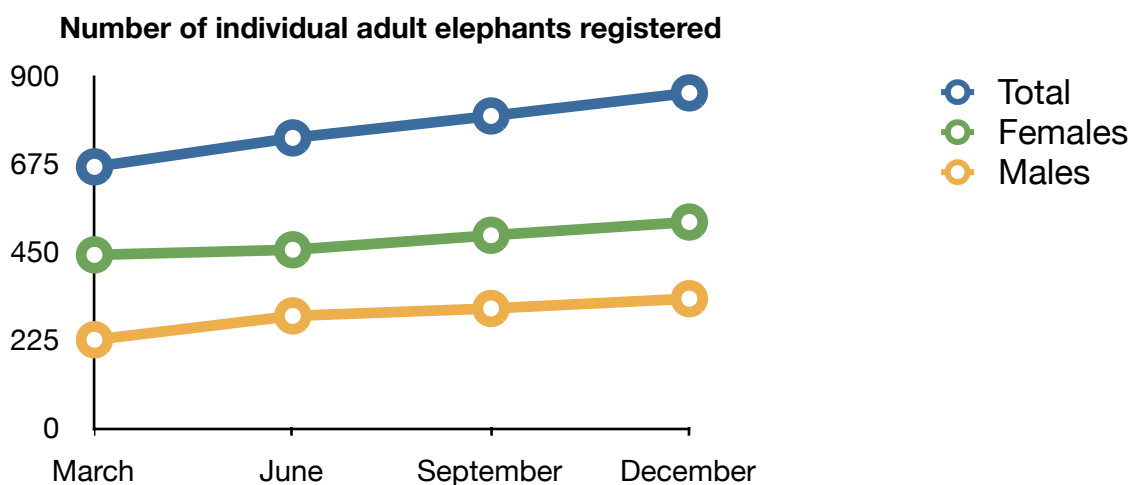
As of 31 December 2012 a total of 856 adult elephants had been identified, individually characterized, given an age estimation and been registered on the [Mara Elephants Who's Who Database](#). It is immediately clear that the population is skewed toward females. Of these individuals 526 (61.4%) are adult females and 330 (38.6%) are adult males (Table 3). While a bias toward females is typical of elephant populations (males suffer higher levels of mortality as calves, at independence and as they enter reproductive maturity), the skew is exaggerated in the Mara due to extra pressures on males caused by human-elephant conflict and ivory poaching. As additional elephants have been added to the database the sex ratio of 3:2 females to males continues to hold.

Table 3. Number of elephants individually recognized

Mara elephants registered online 31 December 2012		
Total	856	100%
Male	330	38.6%
Female	526	61.4%

Figure 3 shows the number of individually registered adult elephants of both sexes at each quarter: end March, end June, end October and end December. What is clear from this graph is that, so far, there is no tapering off of the rate of acquisition of new elephants. At the time of writing, after a three week field trip in the Mara the number of registered individuals has jumped considerably higher and we expect the 1st quarter 2013 number to show an upward inflection in the number of identified elephants.

Figure 3. The number of individually identified adult elephants registered



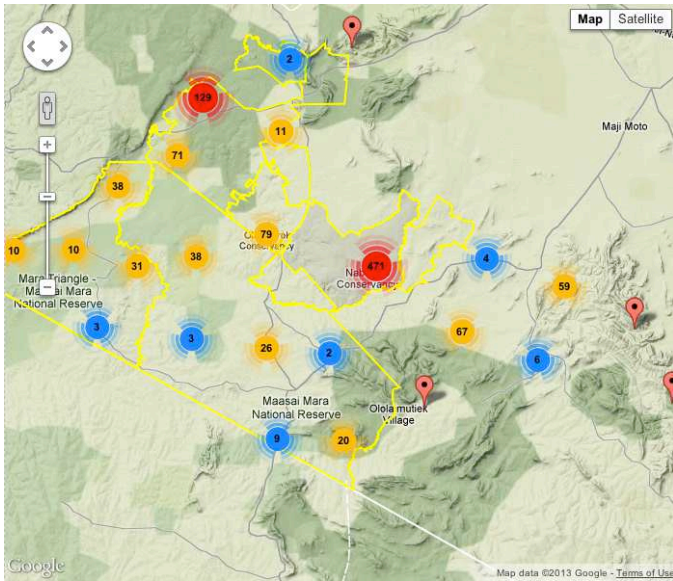
#### The number and distribution of group sightings

Figure 4 a, b, c and d illustrate the number and distribution of elephant group sightings of different types: all groups, family groups with or without associating males, all-male groups and lone males. The numbers inside the circles (see Figure 4) indicate the number of groups seen. The colors represent: red tear-drop single observation; blue 2<10 sightings; yellow 10<100 sightings; red 100<1000 sightings. The locations of these circles indicate clusters of sightings.

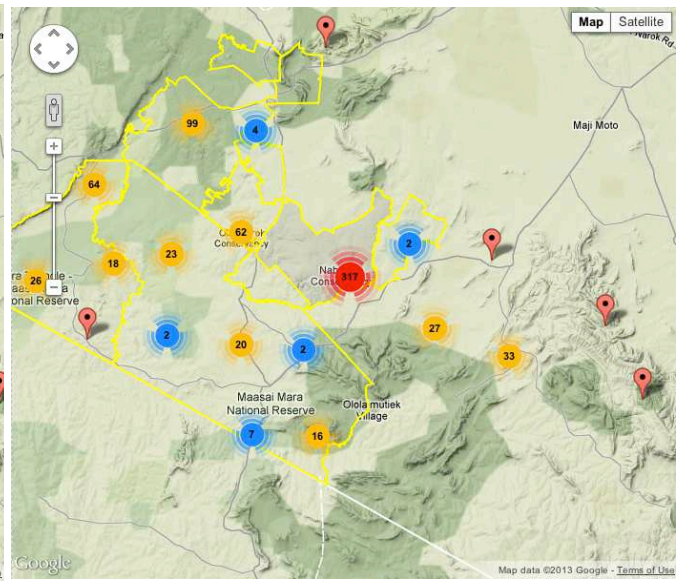
The distribution of family groups (Figure 4b) overlaps with that of lone males (Figure 4c), while groups of males appear to have a different distribution (Figure 4d). Lone males include both sexually inactive and active individuals. Those who are sexually active are in search of females and their distribution, therefore, overlaps with that of family groups. By contrast, bull groups are typically composed of sexually inactive males. During this phase of their cycle males occupy areas of high biomass in order to bulk up for their next sexually active period. These areas tend to be those with plenty of bush coverage (e.g. Mara Naboisho, Siana, Motorogi) or, in the case of Mara North, areas providing easy access to crops.

Figure 4. Number and distribution of elephant group sightings: Figure 4a All groups; Figure 4b family groups with or without associating males; Figure 4c lone males; Figure 4d all-male groups

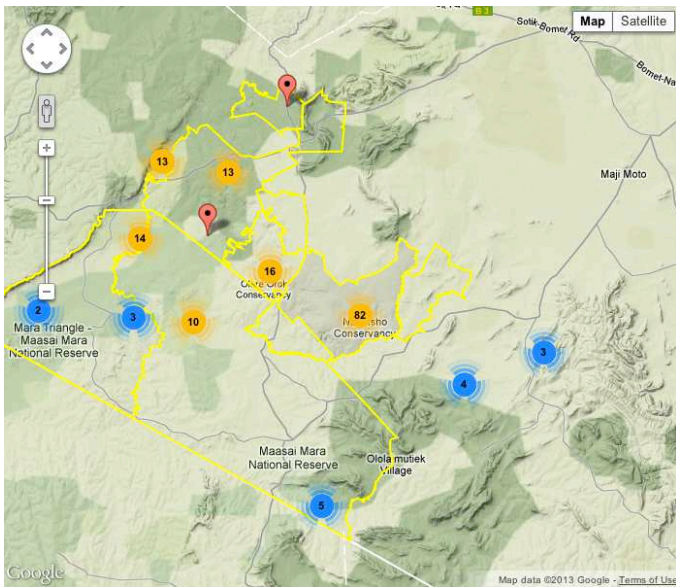
4a



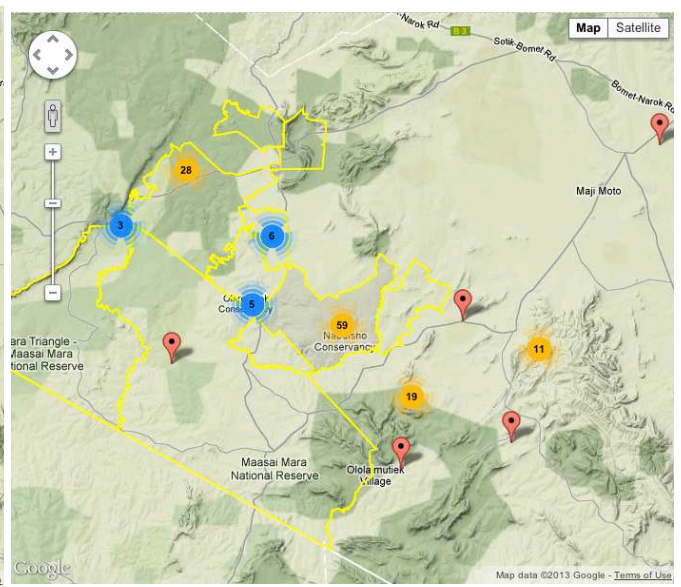
4b



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4d



### **The distribution of large groups**

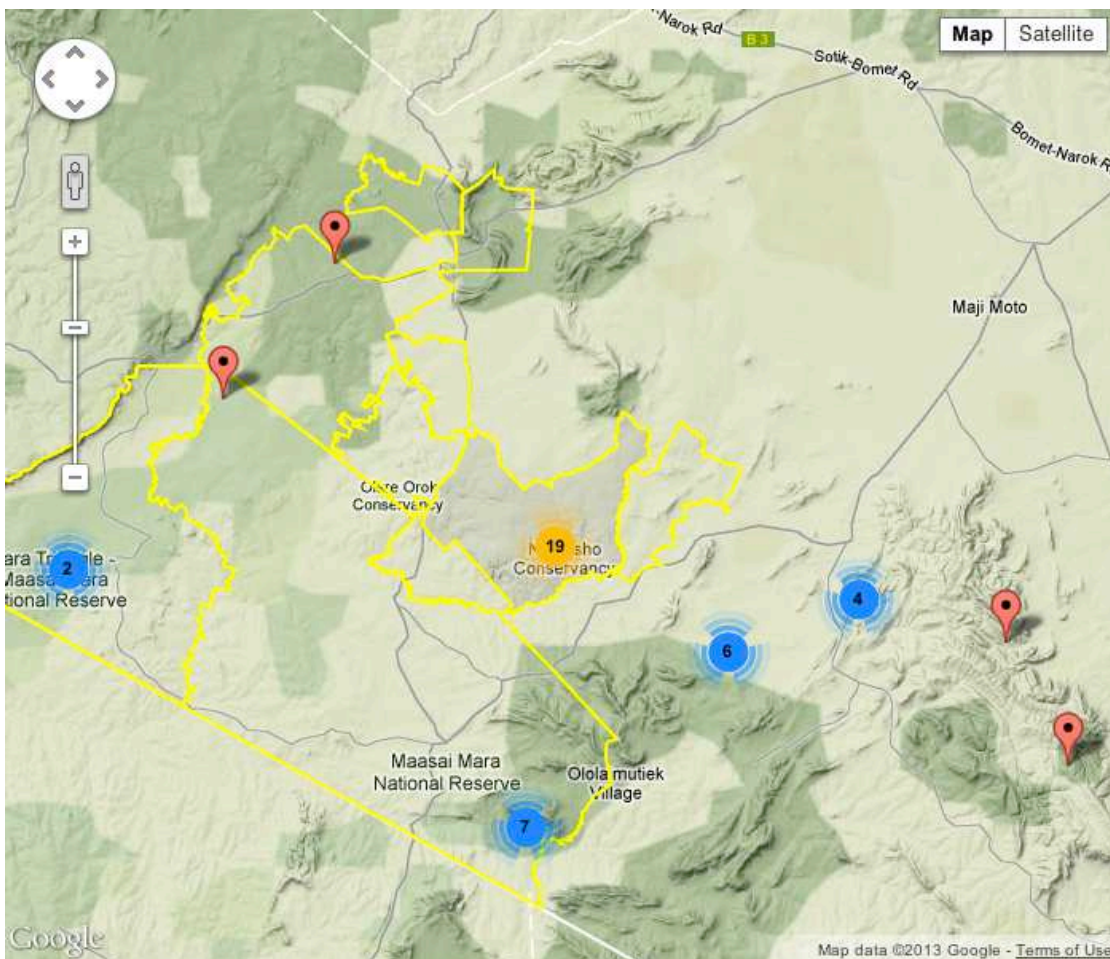
In examining the distribution of family groups (with or without associating males), we noted in our 2012 First, Second and Third Quarterly Reports to Kenya Wildlife Service that the location of large groups (those greater or equal to 50 individuals) is not evenly distributed across the ecosystem. This tendency continues to hold (Table 4; Figure 5) although the proportions are shifting a bit as the sample sizes increase.

Very few large groups have so far been recorded in Mara North, Olare Orok, Maasai Mara NR Central (between Sekenani and Musiara) and Mara Conservancy, while a relatively high percentage of groups observed on Naboisho, Siana and the South Eastern part of the National Reserve are large (Table 4; Figure 5).

Table 4. Location of large aggregations

Location	No. groups > 50	Total No. groups (excluding all male)	% groups > 50 individuals
Overall	42	728	5.8%
Mara North	1	99	1.0%
Olare Orok	0	58	0%
Maasai Mara NR Central	1	89	1.1%
Mara Naboisho	19	315	6.0%
Siana	12	63	18%
Maasai Mara NR SE	7	19	36.8%

Figure 5. Distribution of large aggregations  $\geq 50$

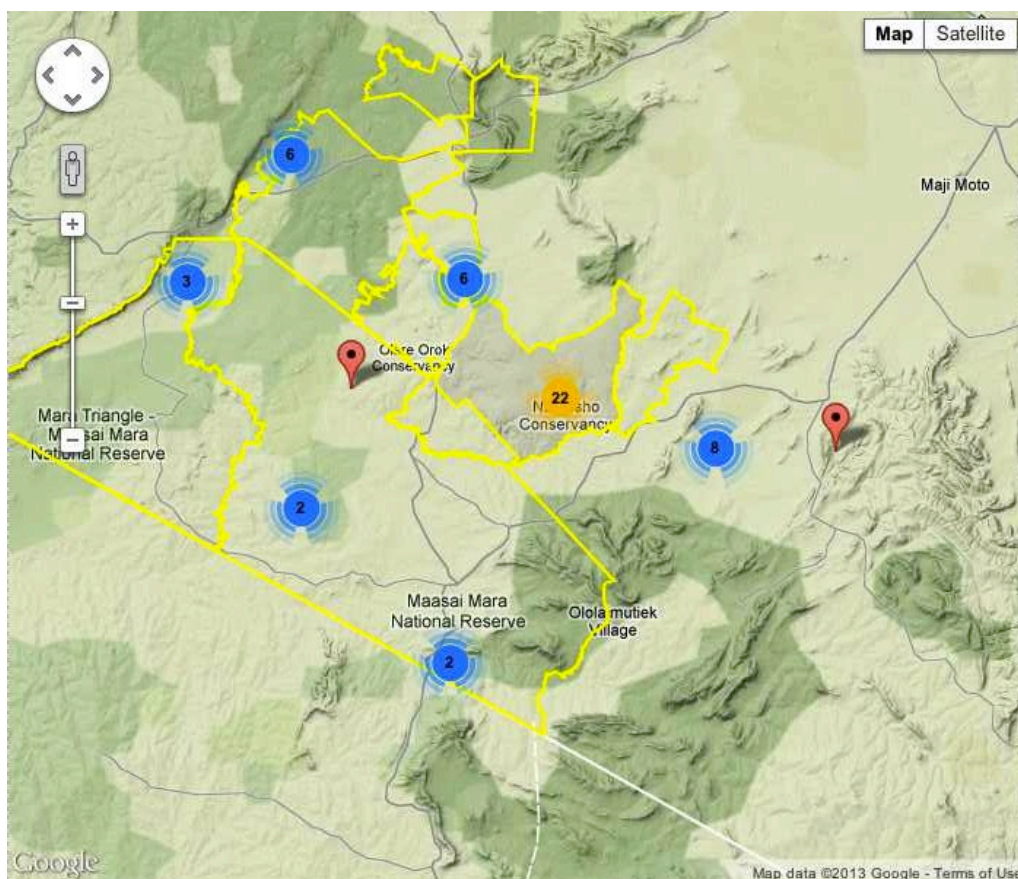


### Distribution of wounded elephants

The database allows the upload of information on wounded elephants as well as on elephant mortalities. Such wounds vary from noticeable, but healing, abscesses to arrows and snares still lodged in the animal (Figure 6). To date these data have not been collected very systematically, as not all observers make note of wounds. The system is set up so that when a wounded elephant is observed, and this information is included in the data uploaded, an email will automatically be sent to those agreed between ElephantVoices and Kenya Wildlife Service.

A total of 49 cases had been uploaded up to the end of 2012. Of these 36 cases were males, 11 cases were females and 2 were calves of unknown sex.

Figure 6. The distribution of wounded elephants



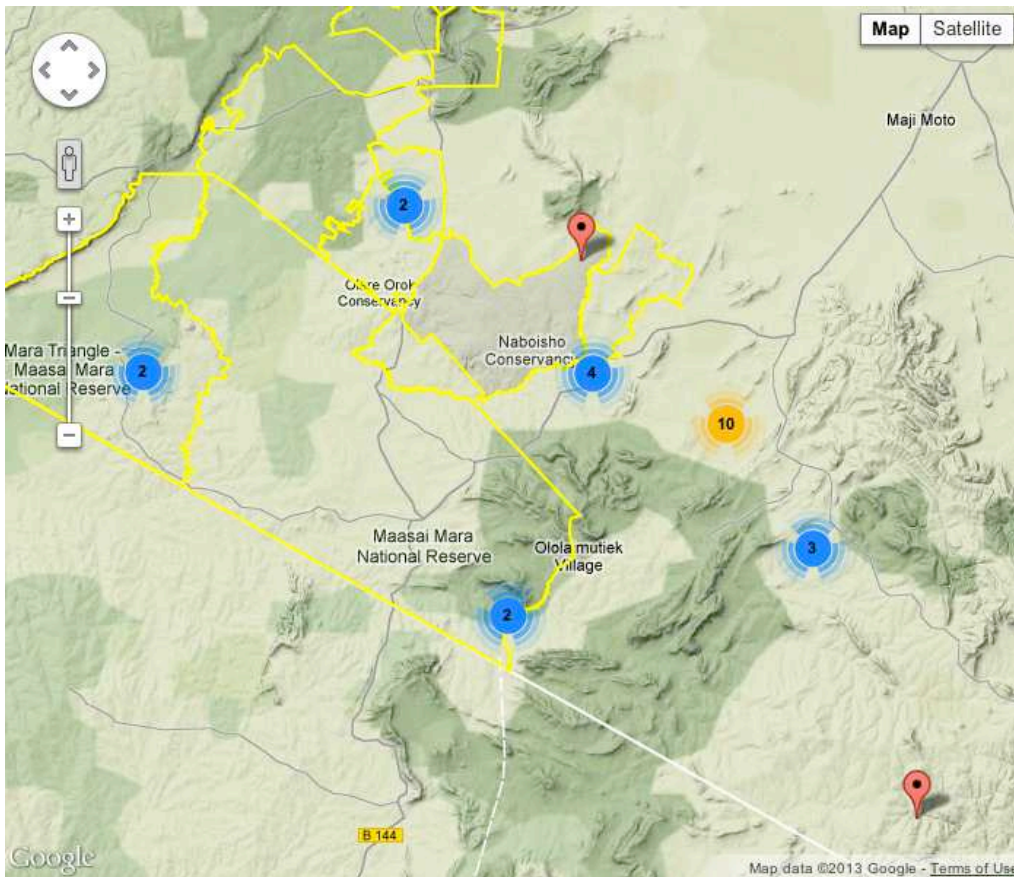
### Mortalities

Up to the end of 2012 a total of 27 mortalities had been uploaded to the database (2 in 2011). Of these 17 (63%) males and 5 (19%) females were determined to have been killed illegally for their tusks. Table 5 shows the sex and cause of death for the 27 uploaded mortalities. The approximate distribution of these is shown in Figure 7.

Table 5. Elephant mortalities uploaded to the database

Cause	Male	Female	Unknown	Total
Illegal ivory	17	5	1	23
Natural mortality		1		1
Euthanized		1		1
Unknown	2			2

Figure 7. Approximate distribution of uploaded mortalities.



## Implications of the data for elephant conservation and management

### *Estimating the size of the Mara elephant population*

The June 2010 KWS aerial count estimated the size of the Mara elephant population to be 3162 elephants. This figure, represents an increase of 1000 elephants over the 2008 count, which can not be accounted for by natality. It is likely that some of this apparent increase is caused by movement (temporary or otherwise) of elephants into the Mara from areas such as the Mau, Serengeti, Loliondo or the Loita Hills, which lie outside the area normally covered by the count.

Indeed, since the aerial count does not include the forested areas to the east of the Mara it is possible that the entire population (including the Loita Forest and Loita Hills, but excluding those elephants who reside primarily in Tanzania) may be as high as 3500-4000 individuals. We have so far identified 856 individual *adult* elephants. Including calves and estimating an average of 2 calves per adult female, the number already accounted for is likely to be in the region of 1,900 elephants. As we begin to approach total registration of adult elephants we should begin to see the rate of new individual begin to fall; there is no sign that that is beginning to happen and our current estimate of the population of elephants using the Mara ecosystem is that it is well in excess of 3,000 individuals. We are also now beginning to record the age structure of family groups such that we will be able to use these data to estimate of the number of calves and thus to approximate the total population size. We have noticed that while there is movement of individual elephants across broad areas of the ecosystem it is also the case that as we move into new areas we find largely unregistered elephants.

### *Bulls and bull areas*

The data continue to suggest that adult males primarily visit the National Reserve when they are sexually active and in search of females and that they otherwise depend on the surrounding bushland for foraging and socializing. As we expand the area covered by Elephant Partners we expect to find that bulls are dependent upon habitat that is less well protected than that frequented by the majority of family groups, and puts males at special risk.



If we are to ensure the long-term conservation of the Mara's adult males and the population as a whole we must, therefore, find ways to protect the bushland surrounding the national reserve. Some of these areas, such as Mara Naboisho, Motorogi and now Olderkesi have recently been made conservancies and are afforded better protection, but greater conservation effort - both anti-poaching and habitat protection - are needed if we are to prevent the continuing attrition of males as indicated by the skewed sex ratio, by the relatively high levels of wounded males and by the male dominated KWS mortality data. In the months ahead we will be putting greater effort into outlying areas such as Naikarra, Maji Moto, Siana and Loita.

### ***Elephant hubs***

As mentioned in previous reports Mara Naboisho Conservancy appears to be a hub for elephants. While many families and bulls appear to have made this relatively new elephant "safe-haven" home, others pass through the conservancy coming to and from Siana, Ol Kinyei, Olare Orok, Motorogi, Mara Conservancy, Mara North and the National Reserve. Many elephants arrive in Naboisho with fresh and infected arrow wounds suggesting that some of these elephants are coming in from less protected areas such as Ol Donyo Erinka, Maji Moto, the Loita Hills, the Lemek Hills and elsewhere. The recent elephant deaths in and around Mara Naboisho indicate the rising pressure on the Maasai Mara as a consequence of the ivory trade and poaching.

Another elephant hub appears to be the SE corner of the Mara including the newly formed Olderkesi Conservancy. Here we are informed that elephants move into the Reserve from Siana, Naikerra and Olderkesi group ranches in October, after the wildebeest have departed, and leave again in June as the wildebeest return. We will be focusing greater effort on this corner of the Mara in the coming year.

### ***Large groups, small groups - what can they tell us?***

The data collected thus far on elephant group size indicates a significant discrepancy in the proportion of large groups (those over 50 individuals) between different areas. The tendency for elephants to aggregate can be influenced by social, reproductive, ecological and security factors, and families may aggregate for different reasons in different populations, in different habitats and at different times of the year.

Although the observed differences in our data may be related to sampling error (i.e. the relatively low numbers of sightings recorded in Siana and SE Maasai Mara) this cannot fully account for the sightings observed. It is likely that ecological differences and/or the level of threat experienced by elephants is also influencing group size in the different areas.

Large groups of elephants are apparently a common sight in the south eastern corner of the Mara and on Olderkesi GR at certain times of the year. We are informed that when elephants arrive from Siana, Naikarra and Olderkesi in October, they do so in large aggregations, only splitting up as they move across the Sand River into the Reserve. In June, when they depart, they once again aggregate before moving out of the Reserve. The elephants in this area also cross back and forth from Tanzania and more observations are necessary before we can conclude on the factors affecting group size here. However, the heavy use of the national reserve by livestock, the poaching incidents and the proximity to the Tanzania border, indicate that lack of security is a likely contributor to the aggregations.

The behavior of elephants on Siana, too, suggests to us that elephants may be in large groups for protection. There has been rather high levels of poaching in and around Siana and the elephants there are particularly agitated by the presence of people, seeking the security of the thick bush when approached. Naboisho, too, has a relatively high proportion of large groups. Together Naboisho, Siana and Olderkesi all represent areas that link elephants to the Loita Hills and the Naimena Enkiyo Forest and, perhaps, therein lies another key to group size.

Although poaching has been equally high, if not higher, in the Lemek Hills and surroundings, the heart of Mara North itself is relatively secure. There family groups are surprisingly small. It is likely that the open nature of the habitat combined with the relatively short grass (often grazed down by livestock) does not facilitate the formation of larger aggregations of elephants.

### ***Wounded elephants***

The data we have collected on wounded elephants represent a considerable underestimate. Three times as many males as females were observed wounded. Since there are many more females than males in the population, wounding is clearly disproportionately skewed toward males.

Previous studies have highlighted human elephant conflict hotspots, but it would appear that elephants are being wounded across the ecosystem with very little difference in the wounding rate between groups seen inside or outside the reserve. Such wounds may be received in the course of crop raiding, but it may also represent attempts at ivory poaching.

Based on re-sightings of individual elephants we can see that many of these wounds, left untreated, fester for years. For example, collared male Omondi M0148, was first photographed in October 2011 with a wound on his right side. More than a year later that wound is still exuding pus and appears larger. Many, many elephants have abscesses that are infected and are clearly bothering them: they frequently touch these wounds and in many cases their gait is affected.

Since elephants have enormous capacity for memory, are capable of distinguishing between different types of people and are able to retaliate, this level of wounding is a cause for concern and we will be looking at this more closely in the months to come.

The stationing of a permanent vet in the Mara would seem to be a matter of urgency.

### ***The online sharing of elephant data***

Finally, in view of the increasing rate of poaching, there has been concern expressed regarding the online sharing of elephant data. We, therefore, include as part of this report a statement presenting ElephantVoices perspective and what we have done to limit access to these data (Appendix I).

### **Elephant Partners - priorities ahead**

As stated in our previous report, very little is known about the movement, occupancy, numbers and group size of elephants from Maji Moto, Siana and Olderikesi Group Ranches eastwards toward the Naimena Enkiyo Forest. If the movement of elephants is to remain unobstructed across the South Rift, the protection of this area and knowledge of its elephants is crucial. We aim to expand our activities in this region and to collaborate with KWS to carry out an elephant survey of the Naimena Enkiyo Forest. We will continue to strategically recruit and train data contributors both locally and among visitors to the Mara either via tourism entities in the Mara or online.

There is room for further improvements when it comes to the online Google Earth-based [mapping function](#), particularly related to base maps and basic presentation of data, and further effort will be put into this.

A holistic, collaborative approach to elephant conservation in the larger Mara-Serengeti ecosystem is important as is elephant monitoring all along the borderlands between Kenya and Tanzania. As a follow up to the Arusha workshop, [Elephants in the Borderlands](#), arranged by African Conservation Centre and Liz Claiborne & Art Ortenberg Foundation in mid February 2012, we will be attending a second meeting at Olkiramati on 11th and 12th February 2013.

### **Acknowledgements**

The Mara Elephant Who's Who and Whereabouts has now been operative for over a year. During this period Elephant Partners was supported by the JRS Biodiversity Foundation, Conservation Trust of the National Geographic Society, the Northern Europe Global Exploration Fund of the National Geographic Society, Liz Claiborne Art Ortenberg Foundation (LCAOF), Fondation Franz Weber, A&K Philanthropy, IFAW, Friends of Conservation, and several generous individuals. The success of this initiative depends upon the volunteer participation of many people whose names and affiliations appear online. We are grateful for the broad and enthusiastic support received.

ElephantVoices, Joyce Poole/Petter Granli, 4 February 2013,  
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## Appendix I

### ElephantVoices statement: The online sharing of wildlife data

Social media, such as Facebook, has been and is increasingly instrumental in engaging local communities in conservation. Information shared includes news, the exchange of ideas and views, solutions to problems, poaching incidents and the location of wildlife. Without such information sharing, wildlife has no future.

Recent reports in the media have, however, raised concerns that poachers may be using social media to track down and kill elephants. Members of the public have echoed these concerns. Since our project involves participation by the public and the sharing of data on elephants we wish to contribute our perspective on this serious topic.

There are many sources where relatively precise information about elephant locations can be found, and it is impossible to keep such information out of the public domain. Visitors to protected areas use their GPS-enabled cameras and phones, and they post on Facebook, blogs, Flickr, Google Earth and elsewhere. The sharing of information in our digital age, including crowd sourcing and data aggregators, is increasing and is without boundaries or limits, and this we cannot control.

In the Mara, elephants are being killed with spears and arrows by individuals from the local community who don't need the help of social media to find elephants. In the real and gruesome world of poaching, the whole chain of people involved, from the buyers, cartels, smugglers and middlemen, rely on the knowledge and willingness among local poachers to track down elephants. People within this chain could, in principle, ask these individuals to source ivory from specific areas that they feel might be lucrative. Even the slightest possibility that anyone involved in the illegal ivory trade might use social media to gather information about elephants for their own, criminal purpose is obviously of concern.

Our perspective is that the sharing of knowledge and the engagement of people in conservation is the only way we can protect elephants in the long term. Unfortunately elephants cannot hide anymore, and we shouldn't try to hide them - we need to know them, share their stories and protect them where they are. That said we cannot risk that data collected by ElephantVoices might be used by middlemen to source elephants. We have from the beginning had in place a time delay on the locational data. However, with poaching escalating and the Mara seeing increasing numbers of elephants being killed, we have implemented an extra layer of protection. Those wishing to use it will have to register with us with certain personal information, and their IP-address will be collected. We believe this will reduce the possibility of misuse of data significantly.

*ElephantVoices, Joyce Poole/Petter Granli, November 2012*