

SAVE THE ELEPHANTS GSM ANIMAL TRACKING PROJECT

PROJECT DETAILS

Save the Elephants with the support of Safaricom Foundation is developing a GSM / GPS Animal Tracking for wildlife tracking in Kenya, which will radically improve our knowledge of how animals move.

“With modern tracking technology we are on the threshold of a revolution in the way we follow animals and understand their motivation through their movements”, says Dr Iain Douglas-Hamilton, the chief executive of Save the Elephants.

The specific objectives of the project are to:

- To develop state-of-the-art miniaturized radio-collar animal tracking tags using GSM mobile phone technology, for monitoring endangered wildlife in Kenya.
- To deploy and pilot test these collars on elephants in the Samburu-Laikipia rangelands, making full use of existing Safaricom and Save the Elephants infrastructure in the area and in collaboration with KWS and other major stakeholders.
- To develop custom software modules which analyse the movements recorded by the collars.
- To test the units on elephants and later modify and deploy them for other endangered species in the greater Samburu-Laikipia rangelands.
- To explore the possibility of deploying the GPS-GSM tag technology in other sites in Kenya as well as on other critical wildlife species.

Since 1965 Dr Douglas Hamilton has pioneered radio tracking in Africa to provide insights into how animals use their environment. Save the Elephants is currently tracking over 50 individual elephants not only in Northern Kenya but also throughout Africa in forest, desert and savannah using state-of-the-art GPS technology.

The support from Safaricom will radically improve existing GPS radio-tracking and help to provide the technical basis for this kind of decision making, by assisting researchers to determine movements, in a far more accurate and cost effective way than ever before, and will throw new light on:

- Wildlife movements and corridors;
- Wildlife behaviour within these areas and in particular in conflict zone areas;
- Faster prediction - response systems for wildlife entering potential conflict zones.

“It is a good example of how technology, conservation and corporate responsibility can come together”, says Douglas-Hamilton.”

Elephants are ecologically important animals which shape the ecosystem where they reside. Their presence is a key indicator of the health of the environment. Where they do well so do numerous other species in the ecosystem. The presence of peaceful elephants indicates that all is well, but when elephants are nervous they are indicators of some wider disturbance often a security problem.

GPS technology has been pioneered by Save the Elephants for elephant tracking in Kenya. Once a collar is placed on an animal, an ‘animal position’ is recorded by the GPS positioning system. The chip inside a GPS unit can store a fixed amount of measured positions, so before this project downloading was necessary approximately every three months. The data from the chips inside the collars were downloaded by a VHF (very high frequency radio) system.



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Save the Elephants monitors 900 individually known elephants, and had radio collars on 30 in 2003. STE thus has already assembled a considerable database of movement and behavioural patterns of elephants in the greater Laikipia - Samburu elephant population, the second largest elephant population in Kenya. Key findings include:

- The actual ranges of African elephants are smaller in area, but larger in distance covered than previously thought;
- Elephants tend to “streak” rapidly between one area and another, and these long distance movements tend to be at night. Sometimes these movements are preceded by a reconnaissance lasting a few days followed by a general move a week or so later;
- Elephants seem to be aware of danger, and transit dangerous areas at speed;
- All crop raiding is done at night, and monitoring is helping to determine the minutiae of their crop raiding schedules;
- Elephants usually travel about 10km a day, but may sometimes walk 30kms or more;
- Elephants are more likely to go to sleep lying down on the ground two hours before dawn.

The new generation of radio collars developed by the project will be more effective. They will utilise a combination of GPS and GSM technology. Safaricom now has GSM network coverage across much of the Samburu-Laikipia rangelands

It is expected that the new collars will be lighter, cheaper and longer lasting than the previous GPS - VHF or satellite collars, due to the mass production of GSM tags for use in a wide variety of applications worldwide.

The anticipated advantages of the GPS - GSM collars are:

- Positioning possible 24 hours a day;
- Easy access to data without having to approach the animal by land or air;
- Continuous GPS data updates;
- No risk of losing data if animal temporarily moves out of the area covered by GSM
- Cost effectiveness as less field work needs to be done for making data downloads;
- Fast localisation of the animal;
- Little impact on the animal’s behaviour;
- Increased battery life, longevity and cost effectiveness of the GPS – GSM collars;

Examples of improved decision making which could be facilitated by the new system include:

- A deeper knowledge of critical habitats used by animals and their fundamental needs
- More accurate delineation of animal corridors and crucial feeding and drinking locations;
- Better fence positioning to lessen animal-human conflict in high risk zones;
- Re-routing animals or humans to forestall a human-animal conflict;
- Faster detection and action response times against potential threats;
- Enhanced early warning systems to detect any changes in poaching levels;
- Better definition of sites for potential reintroduction of animals.

These new techniques for gathering movement data will also provide critical information for the National Elephant Strategy planned for Kenya by the Kenya Wildlife Service with whom Save the Elephants has a close working collaboration. They will also be developed for other species in collaboration with other researchers and stake holders with the Lewa Conservancy