Genstat®

VSNi

CASE STUDY: SAVE THE ELEPHANTS

> "We needed a solution that would allow us to work quickly and effectively, in order to protect the farming families and native elephants of Kenya."
>
> - Dr. Lucy King, PhD

Client Benefits

- Genstat features the complex algorithms and models required for the analysis of Lucy's data

- Genstat cuts experiment time down, keeping costs low

- Allows users to conduct on-the spot analysis in the field without the hassle

- Provides detailed designs with which to present findings

- Keeps everything in one place for ease of use

Zoologist Dr. Lucy King uses VSNi's Genstat solution for breakthrough elephant research

In Kenya, pastoralists encouraged to settle and grow crops has seen a rising number of farms spring up in what used to be open country.

Native elephants are not confined to parks or reserves. Roaming wild across the territory, elephants would break onto farm properties, raiding valuable food stores and damaging crops. Not only was this threatening the farmers' livelihoods and safety, but it placed the elephants in danger as well, when cases of prevention such as spearing,

poisoning, and even shooting of the animals came to light.

Save The Elephants Zoologist Dr. Lucy King wanted to find a way to prevent these incidents in a safe and cost-effective way. She began to explore Kenyan folklore claiming that elephants were afraid of bees, enlisting the help of local bee keeper Lukas from the Ndorobo tribe, to see if a solution therein could be found. The research yielded vast amounts of data, which required detailed and specific analysis.

The Challenge

Studies had shown that elephants avoided trees with beehives in the wild. Dr. King took this idea, together with her team, created a perimeter fence incorporating several traditional log hives, designed to deter elephants and protect farmland. Honey could be harvested from the hives, and the fences did not need to be electrified, making the solution both economically and environmentally friendly. What Dr. King needed to establish next were what factors - such as temperature, wind direction, time of day, etc. - made the beehive fence more or less effective.

Challenges facing Dr. King:

- Data would be generated by both the bees in the hives AND the elephants, meaning that Dr. King would require a statistical analysis solution capable of processing large datasets as quickly, efficiently, and accurately as possible

- Dr King would require the use of Generalized Linear Modelling (GLM) functionality in order to run the types of analyses her research demanded

- A data analysis package which did not rely on internet connection would be vital, as Dr. King would largely be working on site in rural surroundings, where access to the world wide web is scarce

The Solution

Having used Genstat during her studies at the University of Oxford, Dr. King knew that it featured everything she needed for her statistical analyses. She contacted VSNi, who promptly issued a software license, enabling her to use the standalone package immediately.

Genstat incorporates the GLM functionality and several additional models that would prove essential to Dr. King's analyses, such as non-linear models, analysis of variance, REML analysis and multivariate analysis.

With one analytics suite, Dr. King now had all the tools she required.

Client Results

- During the initial 43-month trial, analyses using Genstat revealed that the hive occupation rates of wild African Honey Bees started to rise with the onset of the biannual rainy seasons, triggering both crop and natural vegetation growth that provided ample water and foraging sources to attract wild bee swarms to the beehive fences.

- Rainfall also influenced when elephants approached the farms. 70% approached and broke the fences during the driest periods. However, during times of heavy rainfall, only 6 elephants approached, none of which broke a single fence.

- Out of 65 events where elephants went within 10m of the fences, 39 elephant groups turned away at the beehive fence line. (http://elephantsandbees.com/)

Genstat®

> I learnt on Genstat 11 when I was doing my MSc and DPhil at Oxford, and have not found another program that I find as easy to use. What a life saver it is!
>
> - Dr. Lucy King