

**George Powell**  
**Domestic dog vaccinations, Tanzania**

Rabies is responsible for the deaths of approximately 24,500 people each year in Africa. The disease is maintained by domestic dog populations, which then transmit it to humans, livestock and wildlife. This effect has been demonstrated by long-term studies in the Serengeti ecosystem in Tanzania, where human deaths occur and farmers suffer livestock losses. Rabies has also been implicated in the local extinction of African wild dog (*Lycaon pictus*), which are currently in the process of recovering.



Lincoln Park Zoo run an ongoing project with the aim of eliminating rabies from the Serengeti. Each year, veterinarians and field staff carry out a vaccination campaign targeted at domestic dog populations in the villages surrounding the Serengeti National Park. In the past such annual campaigns have proven successful in controlling rabies, but in order to maintain population level immunity in-between campaigns – and thus eliminate the disease – there is an empirically derived consensus that a vaccination coverage of 70% must be achieved. Therefore, in order for the project to be successful it is crucial that a reliable and economically sustainable method to estimate vaccination coverage is established.

In November and December of 2013 I joined a student from the Nelson Mandela Institute of Science and Technology in Tanzania. Funded by a Travel Grant from the Society of Biology, our research sought to compare different methods for assessing vaccination coverage in the agro-pastoralist villages bordering the West of the Serengeti National Park.



In each village three different methods were employed for comparison. The first was a village-wide census in which every household was visited and the number of vaccinated and unvaccinated dogs was recorded. Although this method was the most costly and time-consuming, it was deemed the most reliable. Therefore, we made this the basic standard against which other methods would be assessed. The second method was a questionnaire-survey in which the proportion of vaccinated and unvaccinated dogs was estimated based on a sample of households from each village. The final method involved marking vaccinated dogs with livestock spray and visible collars, after which transects were driven through the villages and the number of marked and unmarked dogs seen were recorded.

Considering the burden of rabies, our research will be valuable to the biological sciences insofar as it will hopefully contribute to more effective vaccination campaigns in the future – in the Serengeti and perhaps even elsewhere. Given the prevalence of rabies in Africa this is a pressing avenue of research. However, it was also extremely important to my own development.

From an academic perspective, the application process for the Society of Biology Travel Grant was a useful introduction to the financial requirements that underlie the research process. More importantly, the research itself helped to bring together all the elements that are involved in fieldwork, enhancing my understanding of the 'real world' application of various methods. However, the insights that one gains from protracted fieldwork of this kind are as much personal as academic; it brings into sharp relief the fact that the two elements are intertwined, and spending several months in the alien environment of a series of African villages makes clear just how much this kind of work infiltrates one's personal life. I have no doubt that the experience will be formative as I move forward with my objective of establishing a career in research biology.