

BVA Overseas Travel Grant Summary Report

Prevalence of the Brown Dog tick, *Rhipicephalus sanguineus*, in a population of dogs in Zanzibar, and its role as a vector of canine tick-borne disease.

Bethan Warner and Hannah Smith, 2016

After extensively researching places abroad to see practice at, we decided to travel out to Zanzibar to assist at a small vet clinic we had been put in touch with. When the travel grants were advertised, we thought this time in Zanzibar would be the perfect opportunity to undertake a research project. After talking to the vets and staff at the clinic via e-mail, they said ticks infestation in dogs was a huge problem for them and many dogs constantly had heavy burdens of ticks, even when staff tried to remove them daily. As a result of this, we developed our research project to investigate the prevalence of tick infestation and the effect that infestation had on the tick-borne disease burden in a population of dogs in Zanzibar.

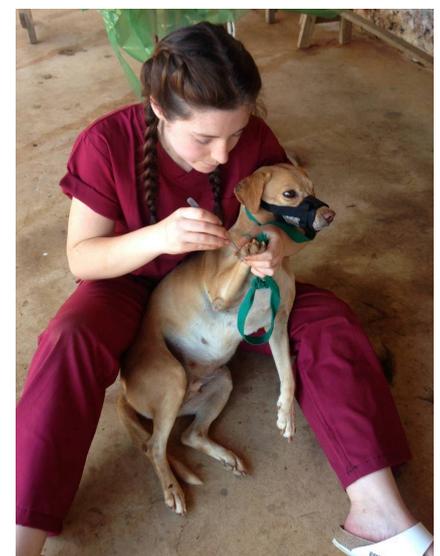
Zanzibar is a small, semi-autonomous island off the coast of Tanzania, approximately 53 miles long and 24 miles wide. Its main industries are spice, raffia and tourism. About half of the population lives below the poverty line, and life expectancy is 57, which is significantly lower than the 2010 world average of 67.5.

Due to the small size of the island, we were able to sample dogs from many different areas and get a population of dogs representative of the whole island. We began by asking members of the local community to bring their dogs to the clinic for sampling. We removed all the ticks from each dog and identified the ticks as *Rhipicephalus sanguineus*, 'other', or as 'can't tell'. We then took a 1ml cephalic blood sample from each dog in order to run a 4Dx SNAP test to test for *Ehrlichia canis* and *Anaplasma platys*. We also asked owners to complete a short questionnaire to gather information about variables such as ownership, age, neuter status, medical history, and their perception/knowledge of ticks.

In our population of 56 dogs, we found all were infected with *R. sanguineus*, with a mean of 20 ticks per dog. We



Hannah and Bethan with local dog owners



Bethan removing ticks from one of the ZASSO rescue dogs

found 58.9% of dogs were positive for *Ehrlichia canis* and 17.9% were positive for *Anaplasma platys*. Nine out of the ten dogs positive for *Anaplasma platys* were also positive for *Ehrlichia canis*.

Our questionnaire identified four main types of ownership of dogs in Zanzibar: stray/un-owned dogs, pet dogs, dogs in rescue centres and hunting dogs. The hunting dogs were groups of dogs that were shared between local families and used to hunt local wildlife such as birds. The questionnaire showed only 19 out of the 56 dogs were neutered, with most of these being pets or from rescue centres. Thirty-three out of 56 dogs had received one or more vaccinations. Encouragingly all owners thought it was important to remove ticks from dogs and all said they knew how to remove them. Many owners also said they actively checked their dogs for ticks and removed them daily.

In summary, we found that *R. sanguineus* is the most common species of tick in the canine population in Zanzibar. We found prevalence of *Ehrlichia* to be very high (72%). The most likely group of dogs to test positive for *Ehrlichia* were dogs from rescue centres, and the least likely to be positive were the hunting dogs. This correlated with our questionnaire results, as owners of hunting dogs were very vigilant with their tick removal, whereas rescue centres only removed ticks once weekly and all dogs residing there were once stray dogs who would have likely had very high tick burdens. Although 59% dogs tested positive for *Ehrlichia* and 18% of dogs tested positive for *Anaplasma spp.*, no clinical disease was apparent suggesting infection to be subclinical.

Our full report can also be found on the BVA website so please refer to this for all the details of our project!

Overall, we had an incredible experience in Zanzibar and can highly recommend undertaking a BVA student research project. We learnt so much about clinical research, as well as improving our clinical skills and knowledge. Not to mention how fantastic it is to learn and experience such a different culture to ours here in the UK. We quickly learnt to adapt to challenges such as language barriers, lack of equipment, car problems, power cuts and many more!! Zanzibar's beautiful beaches, weather, friendly people and laid-back way-of-life made our time there so enjoyable though and our three weeks there flew by.



Hannah running the SNAP 4Dx tests and recording data

Lastly and very importantly, we would like to thank the British Veterinary Association and IDEXX Laboratories for their generous grant and SNAP test donation, without both of which this project would not have been carried out. We also thank the Veterinary Pathology and Parasitology departments of the University of Liverpool for their support with this project. Lastly, we would like to thank Dr. Flavianus Ferdinand and all the staff at the ZAASO clinic, for their assistance and kindness during our time in Zanzibar.