

## Final Evaluation Report

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Your Details	
<b>Full Name</b>	Katherine Whitney Hansen
<b>Project Title</b>	Scent Marking for Wild Dog Conservation: an applied ecology approach
<b>Application ID</b>	36003-1
<b>Date of this Report</b>	17-10-2023

**1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.**

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Run an experiment testing African wild dog pack movement and behaviour				
Incorporate government personnel and communities in experimental procedure				<p>Botswana heavily restricted social science research post-Covid, and communities enjoyed the limited research-intense scrutiny that came from lack of contact. We switched from collaborating directly with community members to working with guides at safari camps. These guides were located more relevantly to where the experiment took place and could communicate results to community members when they went home. Guides were also vital in communicating experimental efforts to visiting tourists, and providing insight and observational notes across the study area when personnel could not always be observing wild dogs in person.</p> <p>Government personnel were not available to for participation.</p>
Calibrate protocol for bio boundary deployment				<p>Results from the experiment have been calibrated to achieve a reduction in ranging behaviour of packs. However, the synthetic product, which was in production parallel to the experiment, has not been finalised. Personnel at the local research site would prefer to use the synthetic version to translocated scent (as it is easier to get access to) and so are waiting on verification experiments for the synthetic compound (i.e., that it works similarly to translocated scent) before testing protocol.</p>

## **2. Describe the three most important outcomes of your project.**

**a).** We successfully created artificial latrines which:

1) Attracted wild dog packs.

2) Elicited a behavioural response. We therefore showed that we could place scent on the landscape, in places where we believed packs would find (based on behavioural and movement data and observation), and they did indeed find it. This is promising for a future where we could a synthetic bio boundary product.

**b).** We successfully ran a repeated measures design experiment with spatiotemporal replication on five separate wild dog packs, and measured multiple behavioural, movement, and spatial metrics to determine whether we could manage wild dog movement by co-opting territorial mechanisms.

**c).** We found that we reduced wild dog ranging behaviour by over 20% on average (across five packs) and induced a change in movement behaviour within exposure areas which demonstrated increased cautiousness in response to scent exposure.

## **3. Explain any unforeseen difficulties that arose during the project and how these were tackled.**

We initially planned to collar six individual wild dog packs, but one of these packs split up at the beginning of the experiment and so they were not a viable experimental unit. We were forced to work with five packs instead but were still able to glean results. We also had a flooding issue, where a river in our system was too high to cross in our field vehicles but acquired a mokoro through a friendly donation from a nearby safari outfitter which we used to cross the river to access two of our study packs.

## **4. Describe the involvement of local communities and how they have benefited from the project.**

Given that our experiment was located principally in tourism concessions, and that we could not perform social science research at the time of experimental set-up due to COVID related restrictions, we incorporated local guides, safari outfitters, and tourists into our experimental protocol when possible. Tourism did not fully open up until the summer of 2022, so we visited guides in the fall of 2022 and handed out flyers, hosted workshops, and communicated with guides about wild dog sightings and behaviour that was relevant to our scent marking experiment. We encouraged guides to bring materials home to their communities (when relevant) for educational purposes. This was strictly done on an ad-hoc basis, with individuals who expressed explicit interest in predator management and had cattle/livestock in their villages. We had a marked increase in communication from guides about wild dog sightings following education on the project and were contacted by several tourists during the experimental procedure.

**5. Are there any plans to continue this work?**

Given the success of the experiment, collaborators in Botswana are attempting to synthetically reproduce urine so that, instead of spending money and time on personnel who must collect translocated scent, they could deploy synthetically produced chemical compounds which mimic scent. Collaborators distilled roughly 13 chemical compounds from dominant wild dog urine and determine which of these compounds were easily acquired, and mass produceable. They have since been experimenting with these compounds using simple observational sessions at known wild dog latrines to determine which compounds elicit a similar behavioural reaction as natural scent. When this is determined, my experiment can be replicated with the synthetic scent.

**6. How do you plan to share the results of your work with others?**

The results of the experiment are currently written up in a manuscript that is in prep and awaiting final co-author approval before submission. I will also present these results at a Wild Entrust fundraising event to share with private donors of the organisation. A report was already sent to the Botswana Ministry of the Environment, Natural Resources and Tourism per the agreement of the research permit allocated to me by the government. The paper, and a colloquial summary of it, will be distributed to the participating safari outfitters when published, although preliminary findings have already been casually communicated to particularly curious safari guides and other collaborators via WhatsApp and email. Lastly, work from this experiment and exposure to fellow researchers prompted the creation of a spatial data visualisation and processing course at the University of Botswana's Okavango Research Institute, where I will use my experiment as a teaching exercise in executing and managing field experiments and analysing the data.

**7. Looking ahead, what do you feel are the important next steps?**

It will be important to determine whether synthetic urine can truly be created. If not, we will need to create a regularised scent-collection protocol and storage method, but a synthetic version would be much preferred. Following that, we should use the synthetic product directly on the one to two packs (varies based on frequent wild dog mortality events) which cross the veterinary fence in our study area and determine how much and whether we reduce ranging behaviour into conflict areas (i.e., south of the veterinary fence, into pastoralist lands).

**8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?**

I did use the Rufford Logo on flyers that were distributed to safari guides describing the experiment. It will continue to be used in future events where I describe experimental results, and referenced in publications which request funding information.

**9. Provide a full list of all the members of your team and their role in the project.**

**K Whitney Hansen** - PI, designed and managed the experiment, and executed the experiment and the analysis.

**Megan Claase** - co-ran the experiment.

Neil Jordan - advised experimental design and management.

**Chris Wilmers** - advised experimental design and management.

**Peter Brack** - field manager of Botswana Predator Conservation field site, assisted in experimental management, provided local knowledge and assistance for vehicle repair, camera trap repair, and facilitated local communication with safari outfitters and guides.

**10. Any other comments?**







