

## Final Evaluation Report

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Your Details	
<b>Full Name</b>	UZABAHO Eustrate
<b>Project Title</b>	Understanding Native Carnivore Community at the interface between Park and Local Communities along Volcanoes National Park, Rwanda
<b>Application ID</b>	34794-1
<b>Date of this Report</b>	30th April 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
To provide baseline information on existing carnivores using the edge and community land				<p>We have identified six native and one exotic carnivore species during this study. The side striped jackal <i>Canis adustus</i>, appeared to have a more occupation than any other species with an estimated occupancy of 0.90, followed by the serval cat <i>Leptailurus serval</i> and the African golden cat <i>Caracal aurata</i>, with estimates of occupancy of 41.5% and 19.8%, respectively. Low occupancy estimates were found in the servaline genet <i>Genetta servalina</i> (4.4%), slender mongoose <i>Herpestes sanguineus</i> (8.7%), and the spotted hyena <i>Crocuta crocuta</i> (2.2%). Additionally, a high occupancy rate of 63.7% for feral dogs was noted. The probability of finding a side-striped jackal was 45%, a serval was 25%, a hyena was 16%, and a golden cat was 6%.</p>
To document the effect of land use and habitat types on the distribution and occurrence of native carnivores.				<p>It was found that occupancy is slightly higher in the areas used for farming, followed by the grazing area while the forested strand is poorly occupied. But when considering different farming uses, the estimates showed low occupancy in sites located in areas used for industrial agriculture, for direct consumption and area not cultivated. The areas used for livestock keeping are highly attracting native carnivores compared to areas covered by crops, and agroforestry. Considering the habitat types inside the protected area, the estimated occupancy was high in Neoboutonia, followed by mixed forest, bamboo and Hagenia.</p>

<p>To assess the temporal and spatial patterns of carnivores at the interface of the park and surrounding community land.</p>			<p>High overlapping activity between native carnivores and other wildlife varied greatly between species. The serval cat had a high degree of activity overlap with the jackal (<math>\hat{A}=0.86</math>), feral dog (<math>\hat{A}=0.84</math>), bushbuck (<math>\hat{A}=0.69</math>), and duiker (<math>\hat{A}=0.69</math>). The jackal activity overlapped with feral dog (<math>\hat{A}=0.78</math>), bushbuck (<math>\hat{A}=0.69</math>), and duiker (<math>\hat{A}=0.62</math>). The golden cat had a high overlap with genet (<math>\hat{A}=0.73</math>), buffalo (<math>\hat{A}=0.73</math>), porcupine (<math>\hat{A}=0.67</math>), bushbuck (<math>\hat{A}=0.64</math>), and hyena (<math>\hat{A}=0.69</math>). The mongoose had a high activity overlap with gorilla (<math>\hat{A}=0.64</math>), livestock (<math>\hat{A}=0.67</math>) and human (<math>\hat{A}=0.74</math>). Hyena overlapped with porcupine (<math>\hat{A}=0.66</math>), buffalo (<math>\hat{A}=0.69</math>) and genet (<math>\hat{A}=0.71</math>). The genet overlapped with porcupine (<math>\hat{A}=0.91</math>), and buffalo (<math>\hat{A}=0.89</math>). Both livestock and humans showed medium activity overlap with jackal (<math>\hat{A}=0.40</math>, and <math>\hat{A}=0.44</math>), and serval (<math>\hat{A}=0.33</math>, <math>\hat{A}=0.41</math>), and very low overlap with golden cat (<math>\hat{A}=0.10</math>, <math>\hat{A}=0.17</math>), hyena (<math>\hat{A}=0.04</math>, <math>\hat{A}=0.06</math>) and genet (<math>\hat{A}=0.05</math>, <math>\hat{A}=0.06</math>).</p> <p>In terms of daily activity partitioning, the serval and side striped jackal are active throughout the day, but crepuscular; while the African golden cat showed a night presence, together with the spotted hyena, servaline genet, porcupine.</p>
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## 2. Describe the three most important outcomes of your project.

The outcomes of this project include having baseline information on native carnivores, it was believed that carnivores being elusive are rarely coming to the edge. In addition, there are information on current resources use and implications of carnivores interacting with humans and livestock. Thirdly, we have found that dog is also using the edge. One of the parks management decisions was to start recording the incidences caused by native carnivores if were identified and awareness campaigns to start on management of free roaming dogs need to be initiated.

Having baseline information on native carnivores and couple this with existing interactions with humans, livestock, and pets.

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

Some of the field equipment, such as camera traps, memory cards, and batteries, were stolen or damaged during the project implementation. Unidentified people destroyed one camera trap equipment at 14 different locations - which has affected our data collection efficiency. We believe that these people were using the edge or had a poor opinion/perception of the park's importance. Other than negotiating with communities about the need to return the stolen ones, there was little we could do about this kind of behaviour. We have conducted five mobilisation field visits to request to anyone who might have taken our equipment to bring them; we tried to tell them that the project is for research purposes.

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

Apart from employing some community members, the communities were also informed on the presence of carnivores in the park and the possibility of having them involved in livestock – carnivore conflict. This message was delivered to community representative in different other meetings held by the host organisation.

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

The plan to continue this work would be to investigate whether the community at large have been affected by the native carnivores through conducting a survey to document the effect of carnivores on the livestock keeping. Secondly, is to put in place a support project to help the communities to have strong structures to keep their livestock and make them safe from attacking carnivores including the free roaming dogs and improve their livelihoods.

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

I am planning to start attending workshops and conferences and present key findings. I am also planning to publish this in a peer reviewed journal.

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

The next step, include making a study design to better support the local communities to adopt coexistence with native carnivores through establishing strong structures for their livestock, avoiding retaliations in case of livestock predation, and reduce illegal activities that might affect native wildlife inside the protected area.

**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?**

Yes – during the presentation I make I display the Rufford Foundation logo.

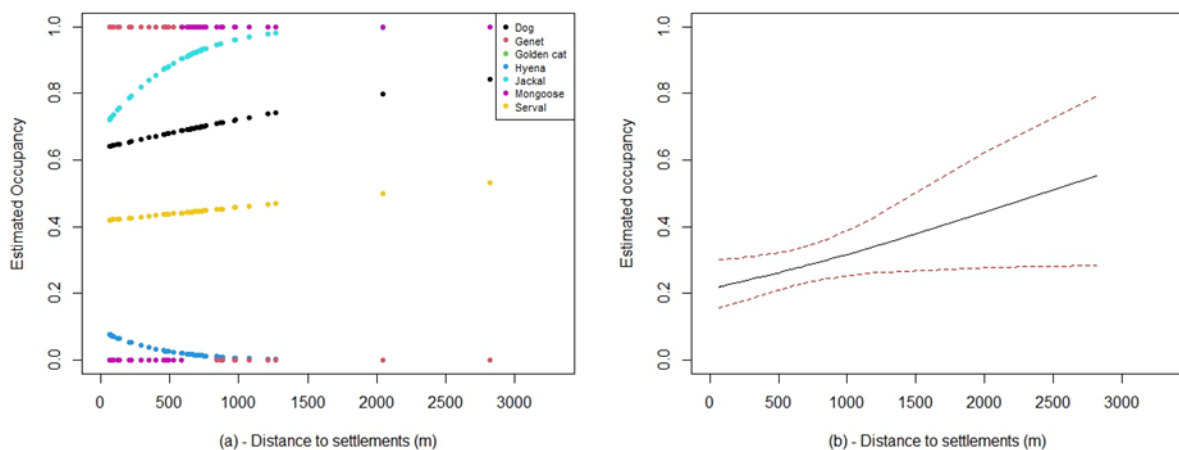
**9. Provide a full list of all the members of your team and their role in the project.**

**Jean Damascene Hakizimana:** Research and Monitoring Warden helped with logistics, field operations arrangements with park staff and availing the accompanying rangers.

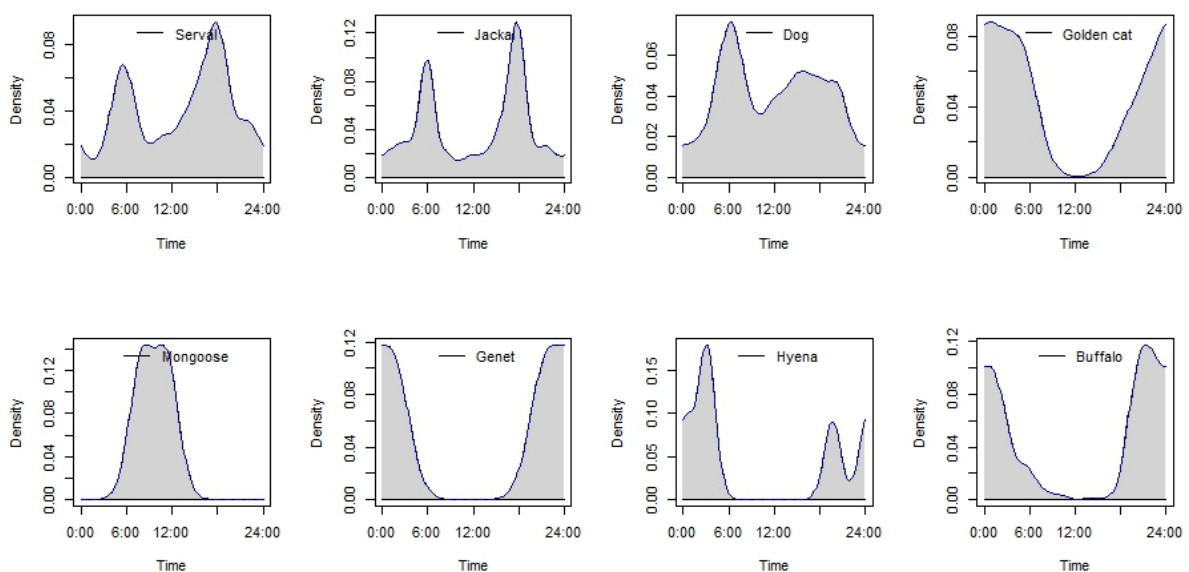
**Kwizera Noel:** Field data collection – he helped with equipment preparation, calibration.

**10. Any other comments?**

I much appreciated the funds that were given to me since it enabled me to contribute to our understanding on carnivores living along the Volcanoes National Park to conduct my research project.



**Fig.1: Relationship between estimated occupancy and the distance from the nearest settlements in all carnivores recorded along the park edge.**



**Fig.2: temporal activity patterns of carnivore species along the park edge.**

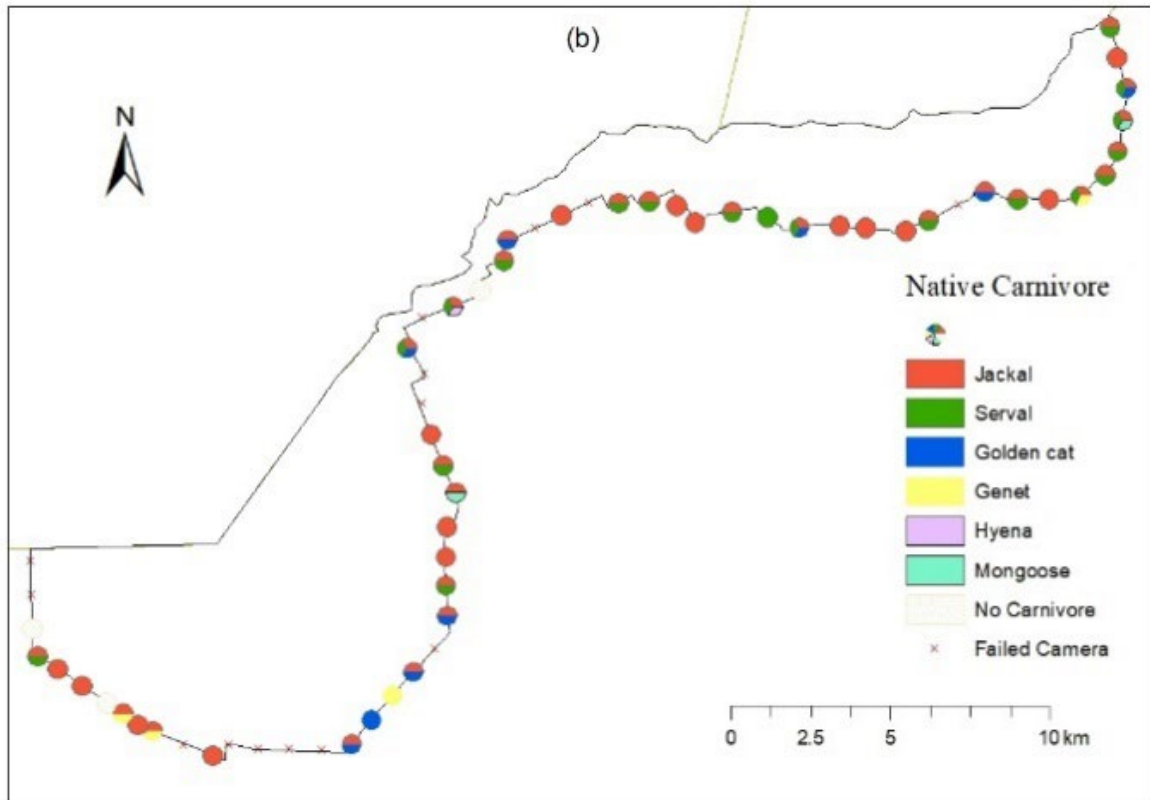


Fig. 3: Native carnivore species distribution along the park edge.



Fig. 4: Participants who attended the information sharing workshop.





**Fig. 5:** Camera trap image of a spotted hyena one of the powerful carnivores rarely believed to live in the park.