

Final Evaluation Report

Your Details	
Full Name	Alvaro García Olachea
Project Title	Coexisting Around Humans: Effect of Exotic Species on Native Mammals of The Cerros de Amotape National Park, Peru
Application ID	28557-2
Date of this Report	August 17, 2022.

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
Workshops:				We had to postpone this activity for almost 2 years because of Covid-19. The workshops with the schoolchildren went really well, but the ones with the adults were difficult to achieve because gathering them in the same place, day and time were challenging. Fortunately, the children that participated in the workshops influenced in their decision to meet with us.
Interviews:				We conducted 113 interviews in three towns in the buffer area of the Cerros de Amotape National Park. We just interviewed the villagers a month before the national lockdown because of Covid-19, so we made it face to face with any problems.
Exotic species sampling				On our grant application, we proposed mainly using track plates for sampling the exotic species, but because of Covid-19 we could not spend too much time in the field checking the track plates, so instead, we used more camera traps for the sampling. We were able to register the exotic and native medium-to-large sized mammals that inhabit in the Cerros de Amotape National Park, six and nine species, respectively.

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

- a) The schoolchildren that participated in our workshops (13 and 14 years old) recognised the importance of the Cerros de Amotape National Park and the benefits it provides them. Despite living very close and visiting it periodically, they do not have access to general information, such as the wildlife that the national park harbours, the ecosystem services it provides, and the threats it faces. It should be noted that this result is reflected in the messages they wrote as well as in their drawings. In the first drawings, they did not capture any specific details of the national park, however, in their final drawings they even described the species that live there.

Something very important for us was to see how the winner of the photography contest had an innate ability to capture nature through her lens, and now she thinks that it could be an option for her to study photography professionally, just like other students who saw the potential to study tourism or biology as a career for their future.



Figure 1: Schoolchildren during the field visit to the Cerros de Amotape National Park. They were taking photos of wildlife and birding.



Figure 2: Schoolchildren with their drawings after the field visit of the Cerros de Amotape National Park



Figure 3: The winners of our photo contest among the schoolchildren.



Figure 4: Meeting with local people

- b) Of the total of interviewees (113 villagers) from three towns of the buffer area of the Cerros de Amotape National Park, 44% of them say that they have some conflict with wildlife. Nevertheless, just the 56% of them have concrete evidence, such as visual records. They mentioned that cougars (*Puma concolor*) prey on goats, but just the 11% have really seen a predation event.

Also, most of the interviewers (76%) are confident that Sechuran fox (*Lycalopex sechurae*) and common opossum (*Didelphis marsupialis*) prey on poultry and eggs, while the 16 % of the interviewers said that a hawk (non-identified species) prey on chicks. Most of them (70%) do nothing to prevent any conflict with these animals, but the 17% use dogs as guardians, 8% put their poultry inside chicken coops that do not always prevent predation, and 5% said that they killed or tried to kill the wild animal. It is worth mentioning that after our interviews, we were notified by a park ranger that local people killed a cougar in retaliation because it was preying on goats (Figure 6).



Figure 5: Interviewing local people to understand their attitudes and perception towards wildlife.



Figure 6: A cougar killed by local people in retaliation for preying their goats.

- c) We identify six exotic mammal species, and nine native medium-to-large sized mammals in the Cerros de Amotape National Park (Table 1). By far, the most common species was the goat (*Capra hircus*), being almost three times more relatively abundant than the most common native species, the Sechuran fox (*Lycalopex sechurae*). Also, the goats were present at all our camera trap stations (N = 16). We recorded exotic and native mammals in the same camera traps, such as dogs, goats, pampas cats, cougar, and foxes (Figure 7). Preliminary, we found evidence of moderate to high temporal overlap between dogs and tayras, dogs and pampas cat, dogs and white-tailed deer and goats and white-tailed deer (Figure 8).



Figure 7: A pampas cat, cougar, goat and dog in the same camera trap in the Cerros de Amotape National Park.

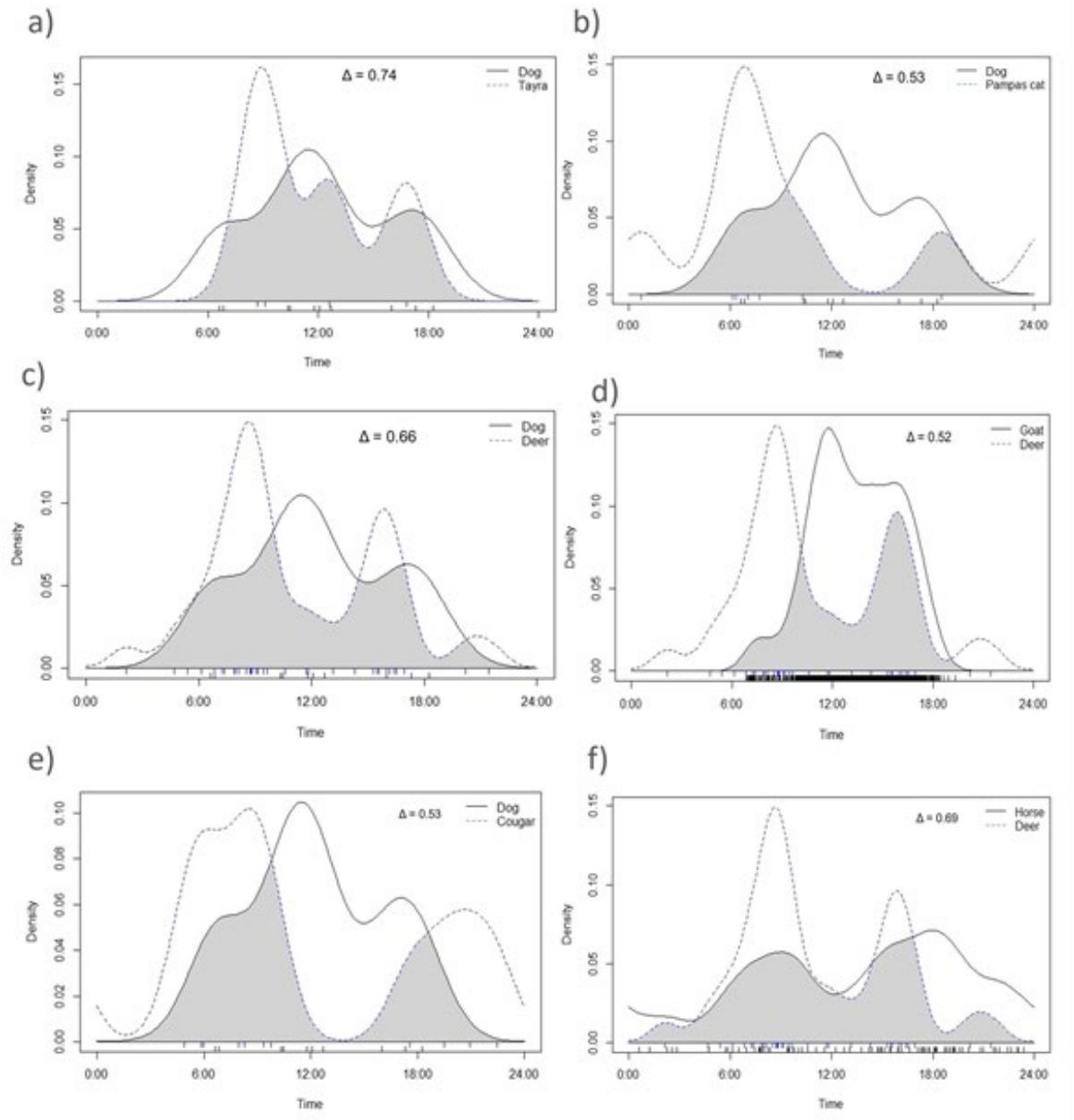


Figure 7: Temporal overlap between the exotic and native mammals with moderate (Δ between 0.5 and 0.75) or high overlap ($\Delta > 0.75$) in the Cerros de Amotape National Park. a) dog vs tayra, b) dog vs pampas cat, c) dog vs deer, d) goat vs deer, e) dog vs cougar and f) horse vs deer.

Table 1: Exotic and native medium-to-large sized mammals in the Cerros de Amotape National Park, indicating the Number of independent events and the Relative Abundance Index (RAI)

N	Common name	Species	N events	RAI
1	Goat*	<i>Capra hircus</i>	1156	766.07
2	Sechuran fox	<i>Lycalopex sechurae</i>	424	280.98
3	Horse*	<i>Equus caballus</i>	86	56.99
4	White-naped Squirrel	<i>Simosciurus neboxii</i>	50	33.13
5	Donkey*	<i>Equus asinus</i>	49	32.47
6	Northern tamandua	<i>Tamandua mexicana</i>	43	28.50
7	White-tailed deer	<i>Odocoileus virginianus</i>	36	23.86
8	Domestic dog*	<i>Canis familiaris</i>	20	12.63
9	Cow*	<i>Bos taurus</i>	14	9.28
10	Cougar	<i>Puma concolor</i>	11	7.29
11	Pampas cat	<i>Leopardus garleppi</i>	7	4.64
12	Pig*	<i>Sus scrofa</i>	5	3.31
13	Tayra	<i>Eira barbara</i>	4	2.65
14	Common opossum	<i>Didelphis marsupialis</i>	1	0.66
15	Ocelot	<i>Leopardus pardalis</i>	1	0.66

*Exotic species

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

Definitely, the pandemic Covid-19 affected the development of our project and we had to postpone several activities. When we were planning to start the workshops and camera trapping, the pandemic started, and we were not able to conduct those activities. In November 2020, when the national park opened again, we were able to set up the camera traps that were collecting data until 2021. We were expecting to develop the environmental education workshops with schoolchildren in 2021, but all that year the school was still closed due to the pandemic, so we could not do it on-person and we had to wait until the beginning of the next school year, April 2022. In 2021, we tried to do online workshops, but there are no Wi-Fi connections in the towns and the cellphone internet is really limited.

Another difficulty that we had was the lack of organisation in the local community and their internal conflicts. Because of this, it was difficult to carry out the workshops with adults on the scheduled dates, we had to have other strategies of announcements to be able to count on them during the workshops.

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

Despite the organisational difficulties, the main authorities and decision makers were involved in the project, especially those who had their children participating in the environmental education workshops. The students motivated and demanded to

their parents to participate in the meetings because of the valuable information that we had to share. Finally, one villager was the field guide that helped us to set up the camera traps in the field.

5. Are there any plans to continue this work?

Yes, we are planning to keep working on this sector of the Cerros de Amotape National Park, where there are several towns in its buffer area with human-wildlife conflicts and poor knowledge about the importance of flora and fauna. To achieve these goals, we will apply for new funds, either from national or international entities.

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

We will send a report about the current status of native and exotic mammals, human-wildlife conflicts, and the environmental education activities to the managers of the Cerros de Amotape National Park. Thus, they can use the information on their management plans to protect wildlife while keep creating awareness among local people. Additionally, the information that was gathered from the interviews will be an undergraduate thesis to obtain a degree in Biology from the Universidad Peruana Cayetano Heredia, while the camera trapping data is part of a PhD thesis from the University of British Columbia (Canada) that will be presented to April 2023. Also, we are writing a manuscript to be submitted in a peer-review journal and, finally, we will present the main outcomes on the upcoming "I Congreso Internacional de Investigación en Áreas Naturales Protegidas del Bosque Seco" I International Congress of Research in Protected Natural Areas of the Dry Forest (November 23-25, 2022) and in the next Peruvian Mammalian Congress to be hold at the end of 2023.

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

Because there were some camera traps that record exotic and native mammals (such as domestic dogs, goats, pampas cats, Sechuran foxes, etc) in the same spot, we consider that is important to develop a vaccination and deworming campaign for domestic goats and dogs. It is well known that disease transmission between exotic and wild animals has a negative impact on wildlife, so we would like to tackle this "invisible" threat. Also, another important next step is to help the villagers to reduce their losses of poultry and livestock, by improving their chicken coops and implementing a deterrent to decrease cougars attacks on goats. Finally, we would like to keep doing workshops with schoolchildren, because of the enrichment experience that we had spending time with them, teaching them about wildlife, the importance of protecting it and how to reduce the threats that are facing.

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 each workshop the logo was used on the slides, and it was explained to the participants where the funds to execute the project came from. In the environmental education materials (such as cardboards) and in the spreadsheets

used in the interviews the logo was printed. We also printed the logo and pasted inside of the classrooms, where we took photos of the students with their drawings and photos. Finally, we had posted these activities on the social media of our NGO (BioS), acknowledgment and using the logo of The Rufford Foundation.

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

Alvaro García: I coordinated the full project. I set up the camera traps and conduct the data analysis. Also, I designed and conducted the interviews to local people and participated in workshops.

Zoila Vega: She organized and participated in the workshops given to school children and conducted the interviews to local people.

Cindy Hurtado: She helped with the camera trapping analysis and coordinating the workshops.

Rocío Lopez: She designed the interviews and synthesized its information.

Alvaro Ponce: He was part of the team that conducted the interviews, and he synthesized the data gathered in the interviews.

Renzo Ojeda: He was part of the team that conducted the interviews, camera trapping and participated on the workshops

Gina La Torre: She was part of the team that conducted the interviews and camera trapping.

Luigi Carrasco: He was part of the team that conducted the interviews and camera trapping.

10. Any other comments?

We are truly thankful for the opportunity and confidence in this project. Despite of the inconvenient that we faced because of different factors, we achieved our objectives and currently the local people are aware of the important of wildlife and the threats thar are facing. With this second grant, The Rufford Foundation allowed us to work towards the conservation the Cerros de Amotape National Park and its buffer area.