Final Evaluation Report

Your Details	
Full Name	Mariana Bueno Landis
Project Title	Human-tapir coexistence in Serra do Mar, Atlantic Forest
Application ID	42296-B
Date of this Report	23rd March 2025

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 mitigate the impact of crop-raids by tapir			X	With the installation of electric fencing, we were able to effectively protect crops from tapirs.
To reduce people's negative attitudes and perceptions towards tapirs			X	Involvement with small producers, to lead the search for solutions to protect crops, allowed them to engage in conservation actions.

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

a) Development of an Effective Physical Barrier Strategy to Reduce the Impact of Crop-Raiding by Tapirs

The strategy for implementing a physical barrier in grape cultivation areas aimed to prevent tapirs from accessing and consuming the fruits, which cause losses for small-scale farmers and put the animals at risk of being killed. Based on information collected from the properties, we designed an electric fencing system for each farm and presented it to two farmers to obtain their validation and proceed with the system's installation.

The two systems were installed and monitored during the last two years using camera traps. Additionally, two other properties, where electric fences like our design were installed by the farmers themselves, were also monitored last year. During monthly visits, maintenance and adjustment needs were made, and cases of tapirs accessing the cultivated areas were reported.

Based on data collected from camera traps and conversations with farmers, we assessed tapir behavior in response to electric fencing, as well as its effectiveness as a physical barrier.

With a sampling effort of 1,193 trap-days, we recorded 647 mammal detections, including 103 tapir detections. Among the recorded behaviors, 87% indicated the proper functioning of the fence as a physical barrier for the species. However, in 13% of the cases, tapirs were detected inside the cultivated area, suggesting a potential failure in the system.

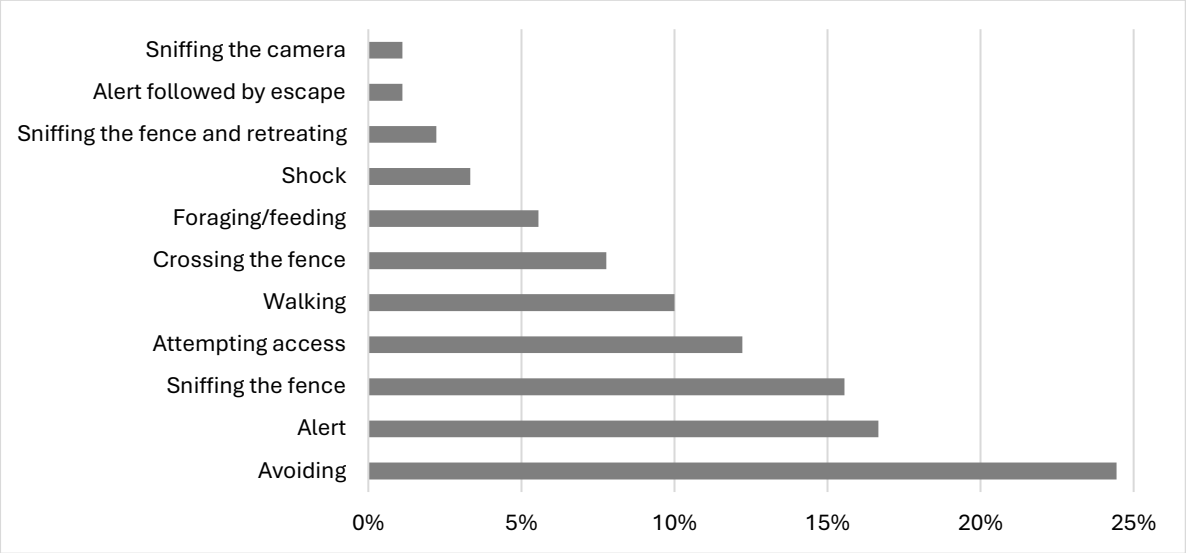


Figure 1. Proportion of behavior performed by tapirs (*Tapirus terrestris*) in an electric fence area recorded during monitoring with camera traps.

During our monthly visits, in conversations with the landowners, we were able to understand that the recorded failures occurred when the owners left the electric fences turned off. Therefore, these failures were largely attributed to poor management by the landowners, who kept the electric fences off during periods of tapir activity. Our records suggest that tapirs can detect when the fence is turned off and take advantage of the opportunity to access the crops. However, eliminating failures in system activation could result in a 100% effective system, ensuring the absence of the species within the cultivated areas. Therefore, special attention was given to explaining to the farmers their responsibility in ensuring the system's effectiveness by activating the electric fence before the tapirs' activity period.

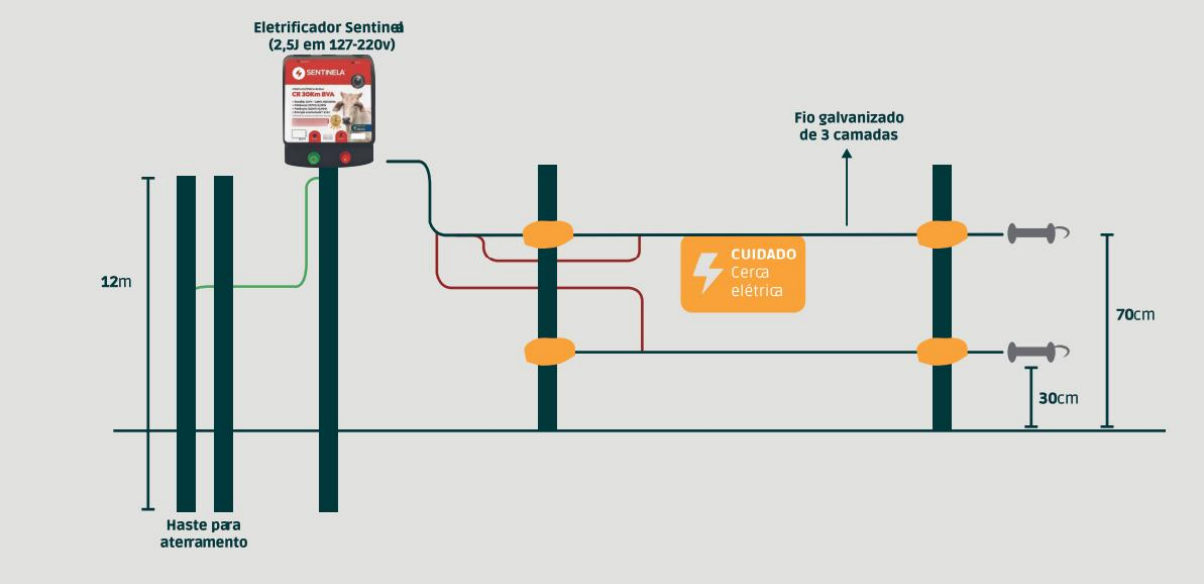
Behavioral records can be viewed at the following link: Tapir behavior records

Regarding the cost-benefit ratio of the electric fencing, we obtained a value of approximately 3.55, which indicates a significant economic benefit due to the losses prevented, as the ratio is greater than 1. The total benefit over the 10-year lifespan of the fence is R$4,000.00, based on the value of the preserved grape crates.

Grape growing area located directly around the Carlos Botelho State Park

Technical visit to properties selected for the implementation of the electric fencing system.

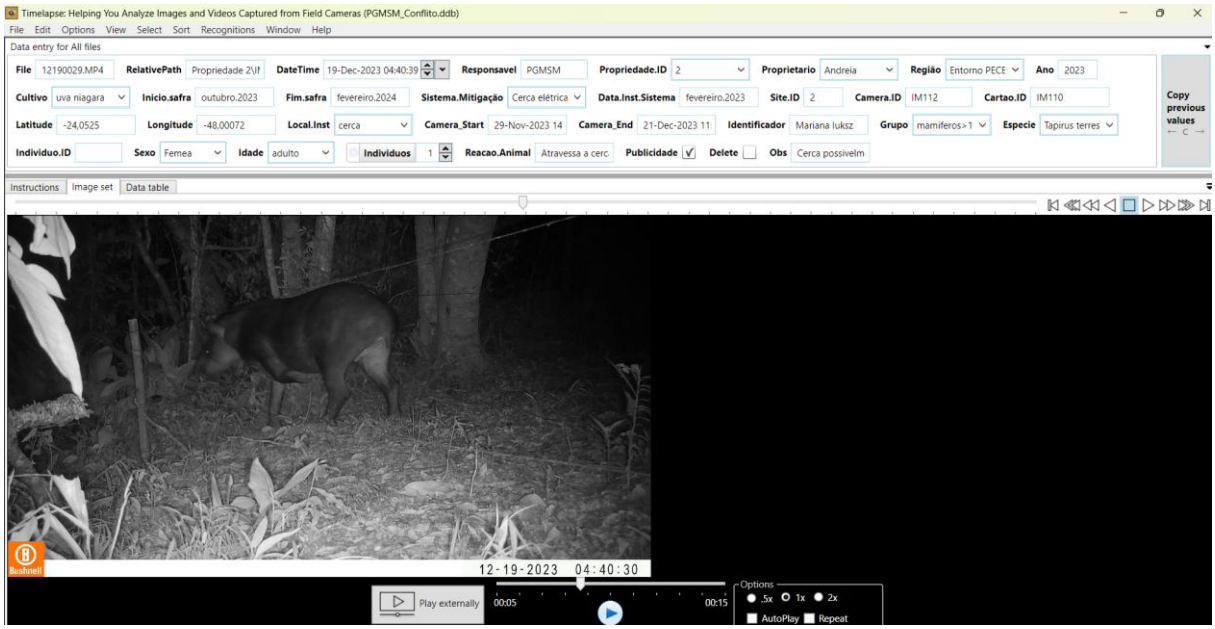
Installation of electric fencing carried out by electricians.



System sketch with all items that must correspond to the system and appropriate measurements

Electric fencing system implemented on property 1. A) Wooden platforms with connectors through which the wires pass. B) Gate handle installed to open and close the system for the transit of people/machines. C) Identification plate for pedestrian safety.

Camera trap maintenance



Timelapse 2 Software work screen for inserting records of tapirs and other species.

b) **Local Farmers Engaged in Human-Tapir Coexistence Actions**

On May 25, 2024, we held a workshop for local farmers on one of the properties where we installed the electric fencing. The objective was to present the implemented system to the attendees, showcasing the equipment used and the installation details. A **total of 12 farmers participated** in the event, along with the manager of Carlos Botelho State Park (CBSP).

The event highlighted the strong interest of residents in the topic, especially as they understood how the proposed mitigation system could be practically implemented on their properties with low installation and maintenance costs. At the end of the event, we analysed the process and defined together new actions to ensure the long-term sustainability of mitigation efforts. As a result, we identified the existence of a municipal fund for farmers, which could be used for the installation of electric fencing across all communities. Additionally, participants considered the possibility of establishing a compensation mechanism, like the aid provided for natural disasters, to support farmers when they lose crops due to events like hailstorms.

The presence of these participants demonstrates the **local community's interest in our coexistence initiatives and their engagement in the evaluation and decision-making process.**

All participants expressed satisfaction with the results, giving positive feedback on the implemented system, its installation cost, and the management guidelines shared (Figure 2).

Figure 2. Assessment of the community opinion at the Coexistence Workshop regarding the information presented during the event.

Based on the validation of the systems, we began developing the **GUIDE TO HUMAN-TAPIR COEXISTENCE**, aimed at providing practical and accessible guidelines for farmers, protected area managers, regulatory agencies, and others interested in mitigating conflicts arising from human-tapir interactions.

In addition to offering clear guidance on human responsibilities in wildlife conservation, the guide will also introduce new perspectives on coexistence with the species, highlighting the benefits—including economic ones—that tapirs can offer.

The initial proposal for the guide focused solely on managing conflicts between tapirs and people. However, considering all the knowledge we have gained about the threats and conservation opportunities for tapirs, we decided to create a more comprehensive resource covering all known human-tapir interactions. The content has been developed and formatted, with only a final review remaining before its completion and release.

Interview locations and the presence (green) and absence (red) of conflict with tapirs on the properties.

c) Assessment of people' attitudes towards tapirs

A total of 37 rural landowners were interviewed across four different neighborhoods: Abaitinga (46% of respondents), Guararema (32%), Turvinho (11%), and Pedra Branca (11%). Most respondents interviewed are farmers (86%) and do not have any other source of income (78%).

Presence of Conflict

Among the respondents, 70% observed *Tapirus terrestris* on their property and 57% of residents reported having experienced conflicts with tapirs in their agricultural production, leading to financial losses. Among those who reported human-tapir conflict, 35% reside in the same community and results indicate that conflict occurrences are more common in properties closer to the CBSP.

Knowledge of Risks and Mitigation Strategies

The conflict situation is well known within the communities, as 65% of respondents know someone who has experienced issues with tapir on their property. Additionally, through shared community experiences and independent attempts to resolve the conflict, only 14% do not know what an appropriate solution to the problem would be. Most respondents (81%) identified electric fencing as the most effective method to prevent tapir from entering productive areas. Other alternatives considered effective by residents included mesh fencing, sound cannons, conventional fencing, and

growing crops on trellises. Among those who reported conflicts, 54% implemented some measures to reduce the issue, with 46% of them using electric fencing. Some respondents adopted other measures, such as installing mesh fences around crops (16%), but reported high costs associated with this method, making it financially burdensome as well as challenging in terms of installation and maintenance.

People's Perception about Tapirs

Despite the existing conflict, the respondents recognize the importance of tapirs and views their presence positively. In fact, 84% of respondents stated that they would feel sad if all tapirs disappeared. The 5% who said they would be happy if the species disappeared are those directly affected by conflicts with tapirs.

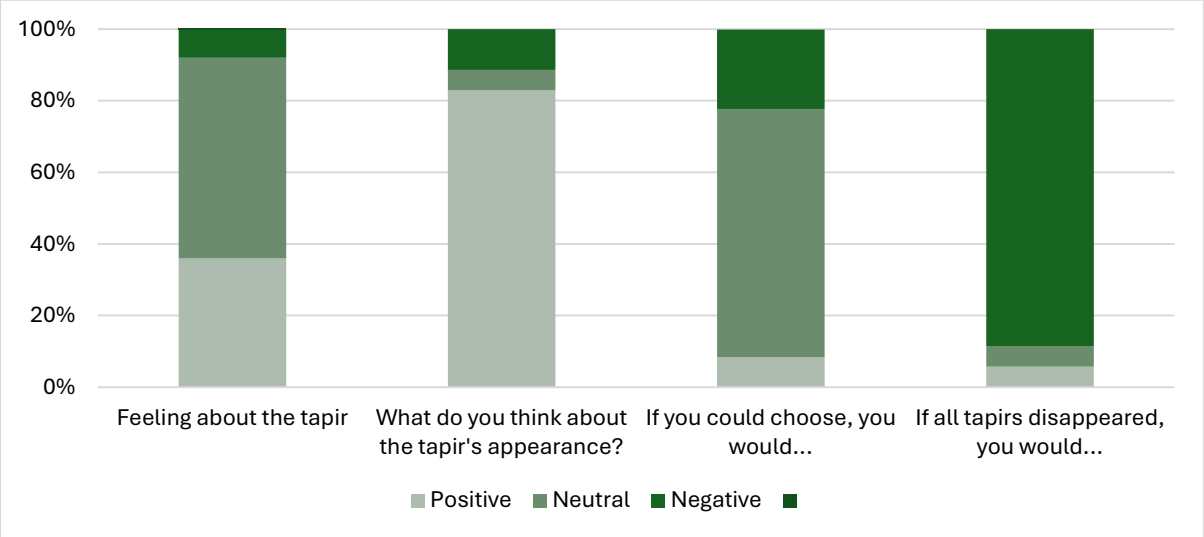


Figura 1. Perception of the local residents interviewed about the species

Despite understanding the importance of the species and not wanting it to become extinct in the region, throughout the interviews, it was possible to observe how the perception of the species' conservation status is misguided. This is because the region hosts a relatively large tapir population, which, in turn, shares the same spaces as the residents. Some statements obtained during the interviews reflect how, although the majority view the extinction of the species negatively, the local community does not fully understand that the species is experiencing a population decline.

> *"I don't know why they keep saying that the tapir is extinct and this concern you have. I don't understand, I don't see that happening. Look how many tapirs are here." (local people)*

Loss Proportion

The measurement of the damage caused by tapirs in productive areas is highly variable. During the interviews, it was observed that there are no precise metrics to assess this damage, as 30% reported

some form of loss, but there was no standardization of responses. The losses quantified by the farmers were reported in terms of the number of grape rows consumed by tapirs each night, the number of grape crates lost every night, the number of grape rows consumed by tapirs with each visit to the property, and percentages, which ranged from 1% to 40% of the total production lost. Among those who reported a conflict, 38% considered it negligible.

Other associated problems

As interviews with farmers who reported conflicts and/or significant damage from tapirs revealed how this situation discourages them from continuing their grape production, as the losses caused by tapirs are compounded by other challenges. These include the presence of diseases and pests that damage the entire productive area, prompting the use of chemical pesticides, which increase maintenance costs and seem ineffective. As a result, some farmers ceased grape production after the 2024 harvest due to unmanageable costs and poor productivity. Additionally, farmers depend on intermediaries to sell their products to larger markets, facing unstable prices and manipulation by middlemen. Moreover, they lack support from local government and agencies, especially financial incentives for their crops. One farmer mentioned the high cost of electric fencing, making it difficult to prevent tapirs from entering their productive areas. The challenges faced by farmers, including the discouraging financial return, lead to a distorted perception of the conflict with tapirs, sometimes exaggerating their negative impact. Even those who never faced conflicts with tapirs reported difficulties in grape production in recent years. The situation calls for improvements in working conditions and market access, which could reduce the perception of conflict with tapirs, allowing farmers to achieve profitable production more easily.

The results of this assessment highlight the complexity of human-tapir interactions in the region, revealing both the economic challenges faced by farmers and the community's overall positive perception of tapirs. Addressing these challenges requires a multi-faceted approach, including effective mitigation strategies like electric fencing, financial incentives, and improved agricultural conditions. By fostering collaborative efforts between farmers, conservationists, and policymakers, it is possible to reduce conflicts while ensuring the coexistence of tapirs and local communities.

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

One unforeseen difficulty we encountered was gaining the trust of the farmers, as they initially did not understand why we were concerned about them. In their view, biologists are typically only concerned with animals, and they were unsure why we were focused on mitigating conflicts between them and tapirs. To address this, we took time to explain the broader environmental context and how protecting both their livelihoods and the local wildlife is crucial for long-term sustainability.

Another challenge was ensuring that the farmers took full responsibility for the electric fencing system. It was important for them to understand their role in maintaining its effectiveness, such as

contacting us if there were any malfunctions, regularly trimming the grass to prevent power loss, and ensuring the fence was turned on before tapirs' active hours to prevent them from entering and becoming trapped. We addressed this through clear communication, providing detailed instructions and offering ongoing support to make sure they were fully aware of their responsibilities in the process.

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

The local community was involved throughout all stages of the project. The development of physical barriers using electric fencing came from the results of a previous study and was confirmed in this one, thus ensuring that we were not doing something new, but rather something that the community already considers effective, but with improvements and technology.

The entire process of designing the fencing, the area to be fenced, and the fieldwork team involves the producers. This includes the electrician hired to perform the electrical installation and the permitted maintenance, who is a resident of the community. The monthly visits and monitoring with camera traps were also extended with the support of the residents, who accompanied us and reduced critical access points and safe locations in the field. All the records obtained were given to them, so that they could be aware of the animals that live on their farms. Finally, the community was able to validate the system in our workshop, also bringing suggestions for next steps to continue our efforts to promote coexistence between people and tapirs in the region.

With participatory planning and execution, the owners benefited from the exchange of experiences they developed during each visit and in the workshop and acquired knowledge about what an effective physical barrier system for tapirs and sustainable grape management should be, ensuring the health of the environment and their families. The participants also received the electric fencing system, at no cost to them for installation and maintenance.

The local community and all communities that coexist with the tapir will benefit from the Coexistence Guide that will be launched soon.

World Tapir Day, April 27, has become an opportunity to carry out educational activities for the local community in support of species conservation in partnership with Carlos Botelho State Park (PECB).

We held a lecture at Vereador José Camargo School, located in the Abaitinga neighborhood of São Miguel Arcanjo. The presentation covered information about the species, its distribution, its ecological importance, and the local community's experiences with it, with an emphasis on tapir occurrences specifically in São Miguel Arcanjo. The lecture was delivered to three different classes, reaching 45 students aged 5 to 10.

A group of 22 high school students from PEIEE Professora Maria Elisa, a school located in downtown São Miguel Arcanjo, visited PECB. On this occasion, the students received a presentation like the one

delivered the day before but adapted for their higher education level. This allowed for more technical details to be shared, including discussions on human-tapir coexistence efforts in the region. The visit also aimed at conducting a field activity to search for tapir signs along a trail near the Park's headquarters. During this activity, students had the opportunity to document signs such as footprints, measure them using technical methods, and even install camera traps, experiencing a typical field day in a monitoring context.

The presentations in these two distinct settings—one at a rural school in Abaitinga for young children, and another for high school students from the urban center—highlighted how even within the same municipality, access to information and experiences with wildlife are heterogeneous. Students from the rural school tend to have more frequent contact with wild species, with some having observed iconic Atlantic Forest animals, including tapirs, on their family properties. One student, for instance, had seen a tapir in the wild on the property of a partner where we recently installed an electric fence. In contrast, students from the urban school had, for the most part, only seen wild animals in captivity. Furthermore, the younger children living near the park showed a more emotional connection to nature, likely because they've grown up surrounded by this biodiversity. Nevertheless, the high school students remained engaged throughout the activities and showed commitment during the fieldwork.

Some students whose families own land in Abaitinga and surrounding rural areas were already aware of the conflict between tapirs and agricultural activities, while students from urban backgrounds were unfamiliar with such issues. Overall, as also observed in interviews, residents of the municipality tend to have a positive attitude toward tapirs, despite the damage the species may cause. It was evident that students were engaged during the presentations and showed genuine interest in the species.

A) Presentation about Tapir Day for fourth grade children. B) Presentation about Tapir Day for fifth grade children.

Students from PEIEE Professora Maria Elisa during a Tapir Day visit at PECB. A) Theoretical presentation about the species and its presence in the region. B) Explanation about footprint identification. C) Student identifying a footprint. D) Students and staff participating in the practical part of the event. E) Explanation about the use of camera traps. F) Students identifying footprints along the trail.

Although we were not able to carry out a tapir-watching activity at the Trápaga Private Natural Heritage Reserve (RPPN) due to the observation season being in July, we consider the objectives of the initiative to have been successfully achieved.

5. Are there any plans to continue this work?

Yes, based on the defined system and our understanding of people's perceptions of tapirs, our challenge now is to expand the use of electric fencing to as many properties as possible. Additionally, we need to address the strengths and threats associated with these perceptions to continue promoting human-tapir coexistence.

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

Our efforts are only meaningful if we reach people and share information with them. That's why, in our project, we are deeply committed to disseminating our results effectively. Thus, during the course of the project, many actions were carried out to disseminate information on a local, regional and global scale, for the lay population, conservationists, researchers and managers of Protected Areas. Below are some of our announcements already made and planned.

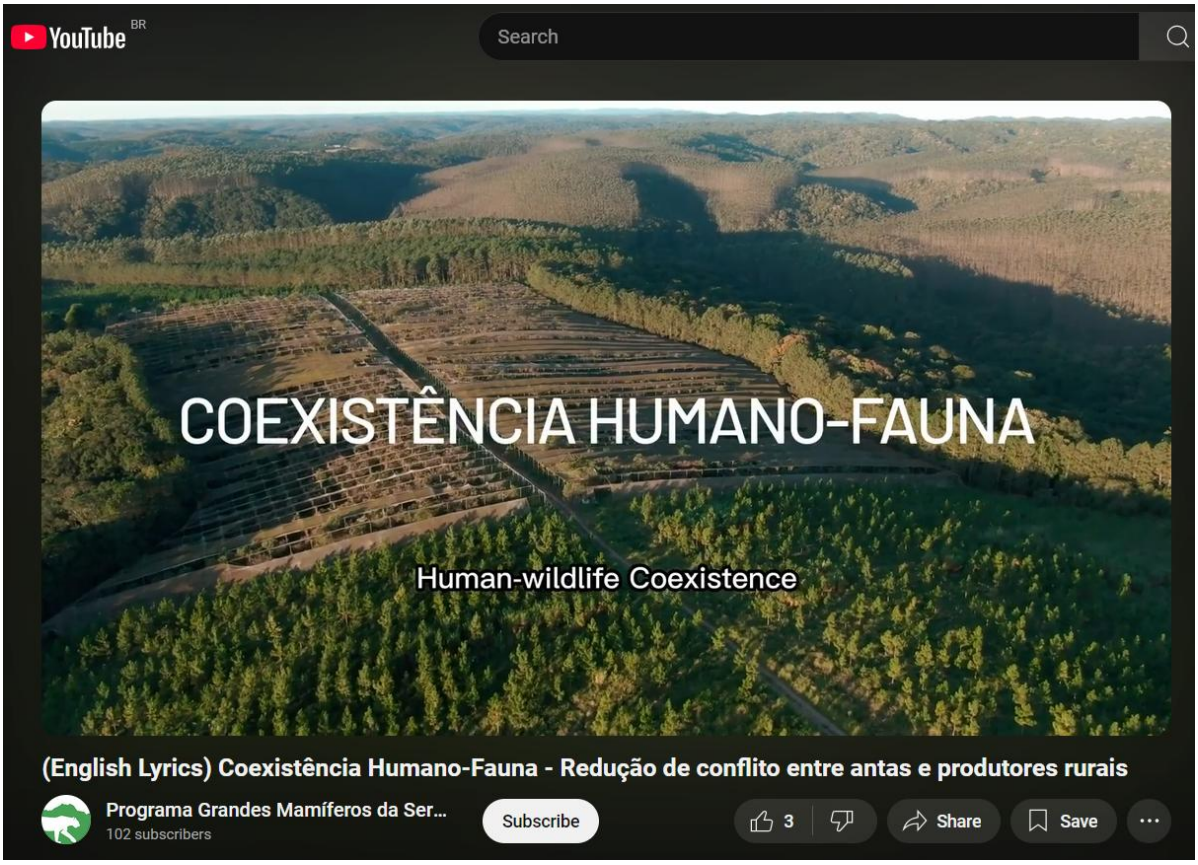
MEDIA COVERAGE

We conquered a 19-minute report on the "Terra da Gente" program, one of the most respected environmental programs in the country.

The report, entitled "Management technique allows harmony between rural producers and tapirs in the interior of São Paulo: Installation of electric fences that are not harmful to animals prevents losses in grape cultivation and reconciles agriculture with wildlife preservation", had an excellent national impact and can be watched at the following link:

Watch the full video here.

PROMOTIONAL VIDEO



Last year, we launched the official promotional video for this line of action of the Program, directed by Gabriel Marchi. The video contains testimonials from the producers included in the solution, in addition to the purpose of the line of action. The video was widely shared by the Monitoring Network, on social media and through the Program's contacts via WhatsApp. The video was also shown at the International Tapir Symposium, which took place in Campo Grande, MS, in July 2024.

Watch the full video here

In addition, it has been toured national and international festivals, being a semi-finalist in the “Best Short Documentary” category in two festivals:

- Semi-finalist “Best short documentary” – International Short Film Festival on Cultural Tourism
- Semi-finalist “Best Short Film International” – Webseries & Film Festival
- Nominee “Best Documentary Short Film” – Vianatur Environmental Film Festival
- Official Selection on Fest Amazônias 2024

SOCIAL MEDIA

Several actions and results of the program were publicized on social media, below are some highlights:

- Workshop disclosure: Click here
- We highlight a "collab" between the Program and Terra da Gente: Click here
- Publicity of Rufford's support: Click here

TECHNICAL and SCIENTIFIC RESULTS

The *Human-Tapir Coexistence Guide*, developed through a participatory process, will provide guidelines and practical tips for managing cultivation in ways that are both effective and community-validated. Additionally, it will serve as a key resource for addressing emergency situations, such as roadkill incidents, poaching, and handling sick or injured animals.

Our results were also shared in meetings and technical meetings with researchers working in the Atlantic Forest, and in the mapping of actions of the National Action Plan for the Conservation of Ungulates.

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Next year, with more effort in field we also expect to write a paper with evaluation of the effectiveness of the tested systems. At this stage, we have not yet decided on a journal for submission. However, Oryx is a relevant option, particularly given the alignment of our work with their focus and the availability of full publication fee waivers.

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

First, expanding the interventions is crucial. This includes not only the continuation of electric fencing but also the development of other strategies. A priority is the continuation of regular visits to farming areas to monitor any changes in tapir movement routes. With the installation of fences around certain properties, tapirs may shift to neighboring, unfenced areas, potentially transferring the conflict and creating tensions between producers. To address this, ideally, all properties near the PECB should be fenced to provide a more comprehensive and efficient solution for coexistence between tapirs and farmers. Additionally, the assessment of financial incentives and mechanisms to address human-tapir conflict is a possible way. Finally, strengthening and promoting wildlife observation tourism can help create sustainable economic opportunities for local communities, while also educating the public on the importance of wildlife conservation. These next steps, collectively, would foster a more harmonious relationship between local communities and the environment.

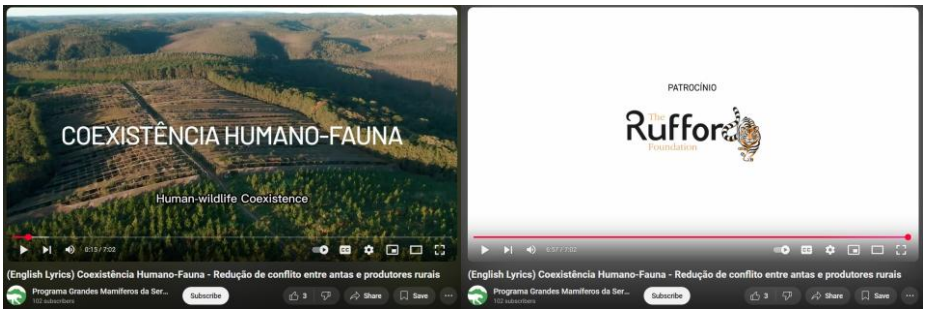
Beyond conflict issues, we need to support the implementation of strategies to manage domestic dogs, mitigate roadkill, and combat poaching to ensure the conservation of tapirs and other wildlife in the region.

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?

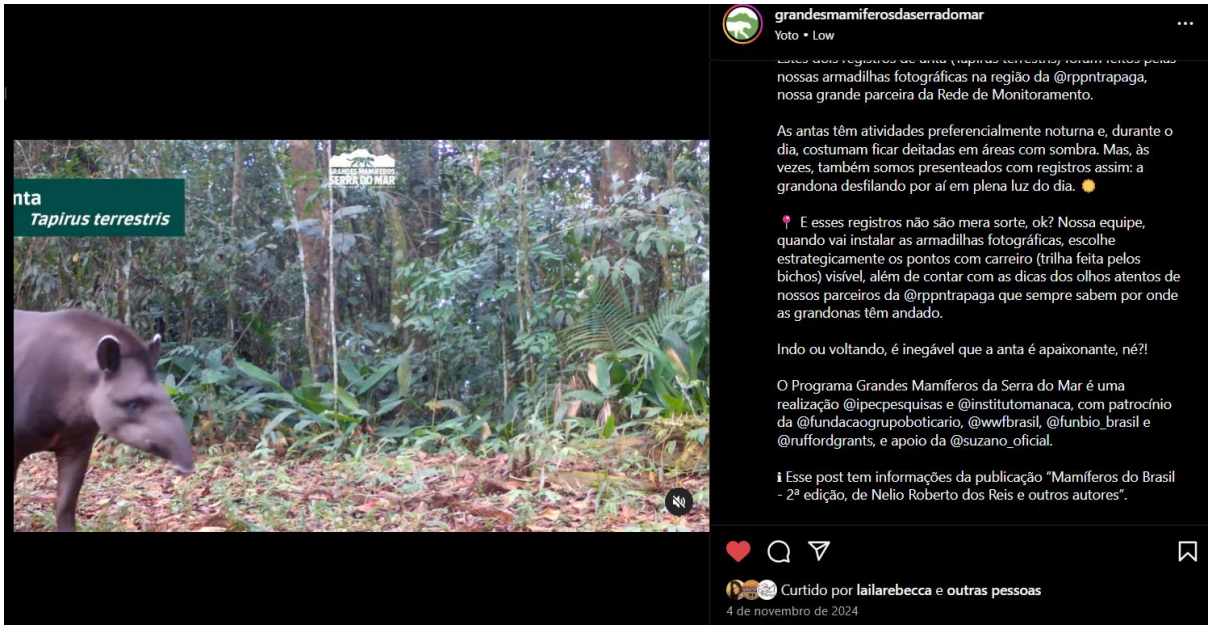
Yes. The Rufford logo has been inserted throughout all publications and will be included in the Human-Tapir Coexistence Guide.

Below is our cover and the Program's partners and supporters page to illustrate its use:

The logo was also included in the official promotional video:



The institution was mentioned and tagged on our social media in the announcements made throughout the development of the project. The posts can be viewed on Instagram: @grandesmamiferosdaserradomar.



The logo was also included in all lectures held, including where we orally presented the results "Human-Tapir Interactions in a Protected Area of the Atlantic Forest, Brazil", at the International Tapir Symposium.

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

Mariana Landis – Coordinator
Mariana Iukzs – Field Biologist
Hiago Ermenegildo – Field Assistant
Laila Rebecca – Communications Coordinator
Roberto Fusco Costa – support in analysis

10. Any other comments?

I would like to thank The Rufford Foundation for this invaluable support, which allows us to address a critical conservation challenge and initiate meaningful change—transforming human-tapir conflict into coexistence.