

PRELIMINARY REPORT

PROJECT: "SUPPORTING LOCAL CAPACITIES FOR THE CONSERVATION OF THREATENED MAMMALS IN PURACE NATIONAL PARK AND SURROUNDING AREAS"

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1st Booster Grant. ID: 39245-B

Spreading the Conservation Messages:

We support two local broadcasters: one in the indigenous community of Paletará, where we contributed a radio transmitter to activate a station that already had the necessary equipment; and the second in the peasant community of Gabriel Lopez. Here, we implemented our first grant, enhancing this already operational station with new equipment, including a voltage regulator, 300m of duplex cables, a Neutrik male plug, a 12V voltage adaptor, an Oasuva 8" cabin with 100 Wrms, and Behringer headphones 40m (Image 1).



Image 1. Radio Programme Encouraging the Residents of the Gabriel Lopez District to Conserve the Biodiversity in the Area through "Malvasá Stereo" Station

For both stations, we jointly created radio spots such as:

"In the Guanacas Páramo, we share our home with the rabbit deer and other wildlife species. Let's respect their habitat and avoid illegal hunting. Together, we can ensure that our mountains remain teeming with life and beauty."

"The Guanacas Páramo is a fragile and unique ecosystem. Every action we take here has an impact. Let's be responsible guardians. Avoid pollution and degradation. Our commitment is crucial in preserving the purity of this place."

"Community of Gabriel López: our Guanacas Páramo is a legacy we must preserve. Every frailejón plant and stream is part of our history. Together, let's protect this natural sanctuary so future generations can enjoy its beauty and biodiversity."

"Community of Gabriel López: remember that hunting in our Páramo is illegal and harmful to biodiversity. Let's educate our dogs not to engage in hunting activities. Together, let's enjoy the beauty of our surroundings without harming them and ensure a prosperous future for all."

"Responsible dog ownership demonstrates our commitment to conservation. Let's keep our dogs under control and prevent them from interfering with wildlife. In this way, we ensure a thriving and enriching Páramo."

"Dogs are natural guardians of our homes and lands. Let's teach our canine companions not to disturb or chase local wildlife. Together, we can protect the Páramo and keep it free from illegal hunting."

"In our beautiful Páramo, responsible dog ownership is essential for conservation. Let's prevent our loyal companions from participating in poaching. In doing so, we preserve the beauty and wildlife of this unique place."

"The Andean bear and the tapir are natural guardians of our Páramo. Let's take care of them and their spaces. Let's promote the conservation of their habitat so they continue to be an integral part of our natural heritage."

On the other hand, we developed two local festivals "the animals of the mountain and the mist" featuring activities like mural painting, lectures, park reading, video club, and park painting. The third edition of the festival took place in the Piedra León-Sotará district (<https://www.youtube.com/watch?v=xFUfyJndF1Y>), an area with frequent negative interactions between the Andean bear and rural communities. Notably, the Puracé National Natural Park (Image 2 A) managed the donation of books to set up an environmental library at the Piedra León educational institution, conducted a workshop on making wooden signs, and presented lectures on "bioculture and birds", "medium and large mammals associated with the Paletará-Isnos road in PNN Puracé" and "conservation of the woolly tigrillo in the central Colombian Andes" (Image 2 B). The latter was

supported by researcher Juan Camilo Cepeda Duque, who has been implementing the "Andean Tiger Cat Conservation" project and contributed posters, children's masks (Image 2 C), and an environmental awareness talk. To engage children in art activities for biodiversity conservation, two activities were carried out: one where children's faces were painted with animals native to the area (Image 2 D), and the creation of canvas paintings using photographs of animals and landscapes from the Puracé National Natural Park as references (Image 2 E). Additionally, a mural was created depicting endangered species found in the area and targeted for conservation by the project (Image 2F). One of the most notable outcomes is that the administration of this educational institution requested a new version of the festival for 2024, as this event involved 200 students over two days, along with parents and local people.



Image 2. Photographic Record of the III Festival of the Animals of the Mountain and the Mist. A) Puracé National Natural Park team and allies supporting the event. B) Andean Tiger Conservation Project delivering a lecture on the conservation actions for *Leopardus tigrinus* in Colombia. C) Andean Tiger Conservation Project with children and teenagers participating in the festival. D) Face painting for child participants. E) Paintings created by festival participants. F) Mural at the Piedra de León Educational Institution depicting *Neogale felipei*, *Tremarctos ornatus*, *Tephrophilus wetmorei*, *Mazama rufina*, and *Espeletia hartwegiana*.

The fourth edition of the festival took place in the Gabriel Lopez district, Totoró municipality, Cauca. This festival received logistical and financial support from another public environmental entity, the Regional Autonomous Corporation of Cauca, which helped to develop activities such as environmental talks on the conservation of the palma de cerca, the mountain tapir conservation plan in the Cauca department (Image 3 A), and the management actions of interactions conducted in the municipality of Inzá-Cauca. Additionally, 250 postcards related to biodiversity conservation were printed, and 35 students from the municipality of Inzá were mobilized to the event site. This aimed to facilitate an exchange of experiences regarding the environmental actions developed with both groups. In Totoró, we have trained students in the management and installation of

camera traps, while in the municipality of Inzá, biodiversity inventories have been developed, mainly focused on herpetofauna (Image 3 B). We also aimed to raise awareness among participants about the behavior of the Andean bear and strategies for managing negative interactions between the species and the communities, which have been implemented in Ecuador, through the video club with the film "The Secret Life of the Spectacled Bear" (Image 3 C). This exchange of experiences also sought to motivate the development of conservation actions among the participants, where we planted 15 *Espeletia hartwegiana*, a species native to the páramo ecosystem of the Colombian Massif, in an area affected by burning (Image 3 E), and planted 5 wax palms on farms near the event. Three murals were also created, two with our support depicting the spectacled bear, the mountain tapir, the spine-billed hummingbird, the serraja, and the mountain toucan (Image 3 D), the rabbit deer, and the sword-billed hummingbird (Image 3 F), and the other depicting the spectacled bear, the spine-billed hummingbird, the serraja, and the mountain toucan (Image 3 G). All these murals were made with young participants of the event. In this festival, we had the participation of 60 children and teenagers, not counting the participation of parents and interested people from the area.



Image 3. Photographic Record of the IV Festival of the Animals of the Mountain and the Mist. A) Talks on the mountain tapir conservation plan in the Cauca department. B) Exchange of experiences between environmental groups. C) Video club showing the film "The Secret Life of the Spectacled Bear". D & F) Murals created in two educational institutions by this project. E) Planting of frailejones (*Espeletia hartwegiana*) in a páramo

area affected by fires near the event location. G) Mural created by the CRC, focusing on the conservation of the Andean bear.

Conservation Agreements:

We implemented support in conjunction with the CRC on a property with the presence of the Andean bear in the Rio Sucio-Inzá district. This included improving the infrastructure of the house's roof, where we donated 120 ties and 30 red, 6m x 0.8 calibre 30 trapezoidales tiles, and an electric fence with a solar panel for livestock (Image 4 C). The owner contributed labor and fencing. In this property, camera traps were installed, capturing images of the Andean bear (Image 4 A), the mountain tapir (Image 4 B), the red deer (Image 4 D), the puma (Image 4 E), rabbits, and guagua, leading to a conservation agreement (Image 5) between the Puracé National Natural Park, the Ecohabitats Foundation, and the owner Ana Deyva Ramos (Image 4 F).



Image 4. Wildlife records at Villa Esperanza Property: A) *Tremarctos ornatus*, B) *Tapirus pinchaque*, D) *Mazama rufina*, E) *Puma concolor*, where a conservation agreement was made for managing interactions between wild carnivores and people with the owner, C) implementing a solar panel for an electric fence, and F) signing a conservation agreement with staff from the Puracé National Natural Park.

In Sotará municipality, the Smurfit Kappa organization, using our information on negative interactions between the Andean bear and rural communities, supported seven peasant and indigenous families to plan and improve their properties, mainly focusing on livestock management (Image 6). Furthermore, through the study we conducted with the previous grant consolidating information on interactions between the Andean bear and rural communities, the team from the Puracé National Natural Park managed to secure a project through German cooperation for livestock reconversion in the Sotará municipality, benefiting 135 families with land planning and improvement of this productive activity, focused towards sustainable livestock management.

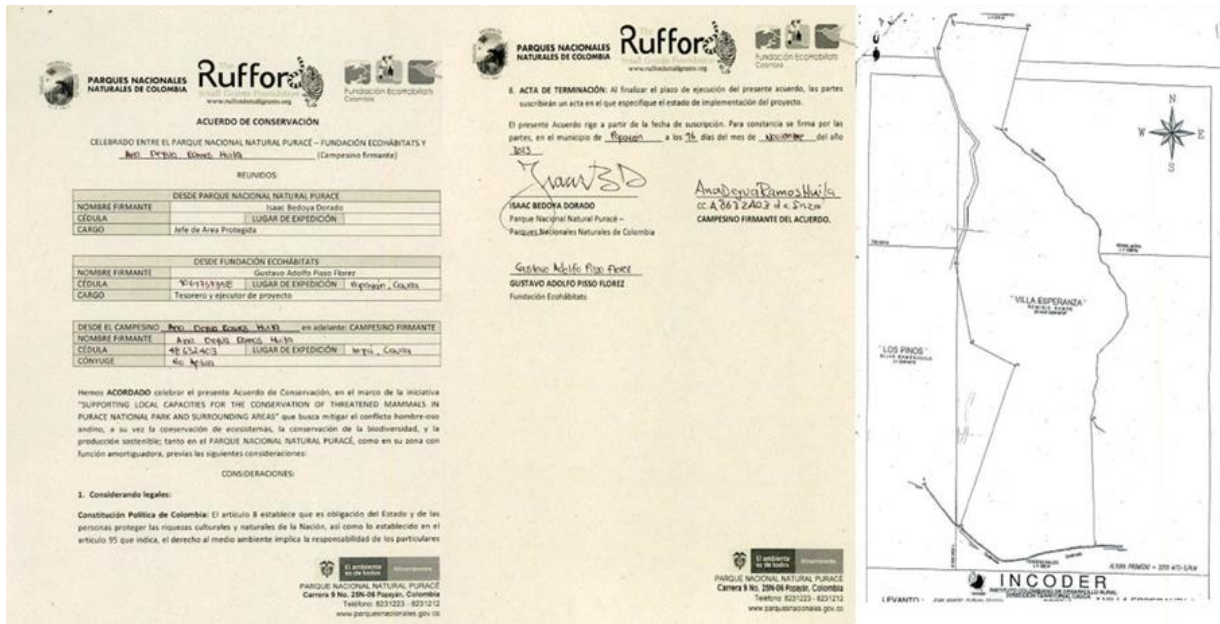


Image 5. Conservation agreement cover, signature, and sketch of Villa Esperanza property owned by Ana Deyva Ramos.



Image 6. Conservation agreements made by Smurfit Kappa in the municipality of Sotará, Cauca: A) Planning meeting for land management, B) Map of the planned property for the future, C) Implementation of watering holes, D) Delivery of supplies.

These partnerships have allowed for a greater impact on managing negative interactions with the Andean bear in the area with the highest number of negative interactions. The environmental awareness workshops have enabled people to recognize the types of attacks according to the species of wild or domestic animals and identify management strategies within their properties.

ID	Species	Date	Location	Interaction Type
44	Ursidae: Tremarctos ornatus	23/11/2022	Selva altoandina	Rasante
45	Ursidae: Tremarctos ornatus	-2,30524	Selva altoandina	Rasante
46	Ursidae: Tremarctos ornatus	2,294905	Selva altoandina	Rasante
47	Ursidae: Tremarctos ornatus	2,505677	Selva altoandina	Rasante
48	Ursidae: Tremarctos ornatus	2,196007	Selva altoandina	Rasante
49	Ursidae: Tremarctos ornatus	2,363858	Selva altoandina	Rasante
50	Ursidae: Tremarctos ornatus	2,413373	Selva altoandina	Rasante
51	Ursidae: Tremarctos ornatus	2,287419	Selva altoandina	Rasante
52	Ursidae: Tremarctos ornatus	2,366313	Selva altoandina	Rasante
53	Ursidae: Tremarctos ornatus	2,287419	Selva altoandina	Rasante
54	Ursidae: Tremarctos ornatus	2,085892	Selva altoandina	Rasante
55	Ursidae: Tremarctos ornatus	2,294905	Selva altoandina	Rasante
56	Ursidae: Tremarctos ornatus	2,196007	Selva altoandina	Rasante
57	Ursidae: Tremarctos ornatus	2,363858	Selva altoandina	Rasante
58	Ursidae: Tremarctos ornatus	2,413373	Selva altoandina	Rasante
59	Ursidae: Tremarctos ornatus	2,287419	Selva altoandina	Rasante
60	Ursidae: Tremarctos ornatus	2,366313	Selva altoandina	Rasante
61	Ursidae: Tremarctos ornatus	2,287419	Selva altoandina	Rasante
62	Ursidae: Tremarctos ornatus	2,026171	Selva andina	Rasante
63	Ursidae: Tremarctos ornatus	2,233093	Selva altoandina	Rasante
64	Ursidae: Tremarctos ornatus	2,182533	Selva altoandina	Rasante
65	Ursidae: Tremarctos ornatus	2,35	Selva altoandina	Rasante
66	Ursidae: Tremarctos ornatus	2,35	Selva altoandina	Rasante
67	Ursidae: Tremarctos ornatus	2,026171	Selva andina	Rasante
68	Ursidae: Tremarctos ornatus	2,158058	Selva altoandina	Rasante
69	Ursidae: Tremarctos ornatus	2,178853	Selva altoandina	Rasante
70	Ursidae: Tremarctos ornatus	2,175177	Selva altoandina	Rasante
71	Ursidae: Tremarctos ornatus	2,178853	Selva altoandina	Rasante
72	Ursidae: Tremarctos ornatus	2,178853	Selva altoandina	Rasante
73	Ursidae: Tremarctos ornatus	2,178853	Selva altoandina	Rasante
74	Ursidae: Tremarctos ornatus	2,357012	Paramo	Rasante
75	Ursidae: Tremarctos ornatus	1,950035	Selva altoandina	Rasante

Image 7. Database of interactions between wildlife and communities surrounding the Puracé National Natural Park.

With these results and partnerships generated to manage negative interactions between the Andean bear and rural communities, there has been an increase in interest in the area to conserve this species and its habitat. The park rangers from the Puracé National Natural Park have been able to support the early warning system to communicate directly with the environmental authority, whether it be the CRC or the CAM, and carry out preventive deterrents, in addition to implementing interaction management actions through private environmental organizations like Smurfit Kappa and ourselves.

Supporting the Protected Area and Impact of Roads:

We successfully installed 40 camera trap stations on two roads, capturing nine species of medium and large mammals, notably *Mazama rufina*, *Tapirus pinchaque*, *Tremarctos ornatus*, *Leopardus tigrinus*, *Cuniculus taczanowskii*, *Sylvilagus sp.*, and *Eira barbara*. On one of the roads, we supported a university degree research project that used these records to identify areas with a higher presence of these animals, identify species vulnerable to the effects of the road, and possible management strategies to improve this infrastructure considering the road (Image 9A). It was determined that *Leopardus tigrinus*, *Tremarctos ornatus*, *Nasuella olivacea*, *Mazama rufina*, and *Tapirus pinchaque* are highly vulnerable to road-associated impacts, while *Eira barbara* and *Neogale frenata*

were considered to have medium vulnerability. Notably, we recorded the mountain tapir and a *Leopardus tigrinus* with a cub on the Puracé-La Plata road, and three juvenile melanistic *Leopardus tigrinus* on the Paletará-Isnos road. Consequently, 10 metal signs (Image 9 B-F) were installed on this road to raise driver awareness of the presence of wildlife. The results were also shared with the Paletará indigenous council to transfer the knowledge gained in this research, enabling them to recognize the biodiversity in their territory. The results of this process, including the species recorded, can be seen in the following link: <https://www.youtube.com/watch?v=ype79pV0Hgw>

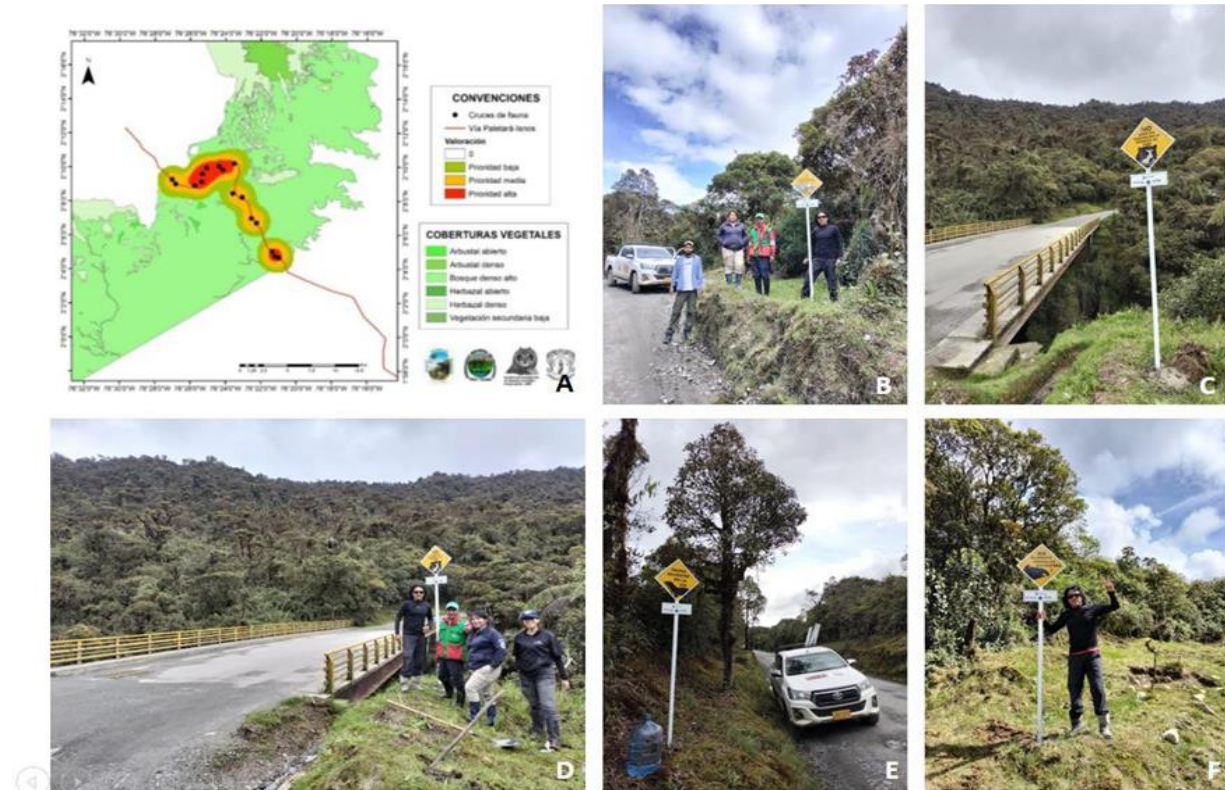


Image 9. Research Results on Threatened Mammals Associated with Roads in the Puracé National Natural Park: A) Map identifying areas with higher priority for managing road effects on recorded mammals. B-F) Installation of metal signs to sensitize drivers about responsible vehicle management.

Additionally, awareness was raised about driver behavior in the presence of the mountain tapir, a frequent visitor to this road and affected by the misconduct of passers-by. This was achieved through the distribution of flyers (Image 10 A and E) and stickers to drivers (Image 10 B-C) traveling through the protected area, conducted over four sessions alongside the Puracé National Natural Park team. During these tours, 7 domestic dogs were observed on the road within the protected area, leading to two vaccination campaigns, one on May 20, 2023, in the eastern part of the road ((Image 10 D), and the last on December 18, 2023, in the western part, both near the first populated centers close to the protected area. These vaccines were donated by the “Andean Tiger Cat Conservation Project,” totaling 60 polyvalent vaccines providing immunity against canine

parvovirus, canine parainfluenza, distemper, and other conditions caused by adenovirus type 2. Thus, we hope to reduce potential disease transmission to wildlife and motivate the Puracé National Natural Park staff to manage these spaces for domestic animals.



Image 10. Conservation Actions for Threatened Mammals Associated with Roads in the Puracé National Natural Park: A and E) Flyer about the mountain tapir and distribution to vehicles on the Paletará-Isnos road. B-C) Distribution of stickers to drivers on the Paletará- Isnos road. D) Vaccination campaign for dogs in the Marmol populated center, east of the Puracé National Natural Park on the Paletará-Isnos road.

Habitat Restoration:

From the flora inventory results, a characterization was conducted with the support of the University Foundation of Popayán and the University of Cauca. In a reference ecosystem for ecological restoration around the Cusiyaco lagoon, a total of 5134 individuals from 78 species, distributed across 34 families and 61 genera, were recorded. The Asteraceae family had the highest number of genera and species, with 10 and 11 respectively, while the Winteraceae family reported only one genus and one species. From these species, the following were selected for nursery reproduction:

No.	Family	Species	Density of Individuals in Reference Ecosystem per-m ²	Number of Individuals per 4m ²	Number of Individuals per Plot: Approach to Real Value	Total, Number of Individuals to Transplant per-20 Plots
1	Poaceae	Chusquea tessellata	0,8	3,3	4	80
2	Poaceae	Calamagrostis effusa	0,4	1,6	2	40
3	Cyperaceae	Cortaderia nitida	0,4	1,7	2	40
4	Asteraceae	Espeletia hartwegiana	0,3	1,4	2	40
5	Hypericaceae	Hypericum cf. laricifolium	0,2	0,9	1	20
6	Myrtaceae	Myrteola nummularia	0,1	0,5	1	20
7	Ericaceae	Pernettya prostrata	0,1	0,2	1	20
8	Asteraceae	Diplostephium hartwegii	0,1	0,2	1	20
9	Asteraceae	Pentacalia andicola	0,01	0,04	1	20
10	Asteraceae	Pentacalia vaccinioides	0,04	0,2	1	20
11	Fabaceae	Lupinus falsorevolutus	0,01	0,02	1	20
12	Cunoniaceae	Weinmannia mariquitae	0,01	0,1	1	20

Two nurseries were supported, one in the Valencia district, which has promoted nursery reproduction of the frailejón, a species native to the páramos of the Colombian Massif, and other species used by the mountain tapir and the Andean bear, such as cerote (*Hesperomeles* sp.) and motilón (*Freziera* sp.), and some used for living fences like aliso (*Alnus acuminata*). The other nursery, located in Gabriel Lopez, aims to share these high Andean vegetation reproduction experiences, supporting with various tools and materials for nursery construction.

On July 4 and August 4, 2023, in the Valencia district, San Sebastián municipality, Cauca, materials were delivered for the improvement of the infrastructure of the three nurseries in the sector (Papallaqta Nursery, Benjamin Herrera Cortez Nursery, and the IE Valencia Nursery); along with this, supplies were provided to support the propagation of native species being implemented in ecological restoration (RE) strategies to recover and conserve important ecosystems in the sector for species like the Andean bear (*Tremarctos ornatus*), mountain tapir (*Tapirus pinchaque*), among others (Annex 2 and Annex 3).

On August 2, in the Gabriel López district, Totoró municipality, Cauca, materials were delivered for the improvement of the infrastructure of the nursery at the Agroindustrial Educational Institution Víctor Manuel Chaux Villamil, along with supplies for the propagation of native species to implement RE strategies in the sector that will allow the recovery and conservation of important ecosystems for species like the Andean bear (*Tremarctos ornatus*), mountain tapir (*Tapirus pinchaque*), among others.



Image 11. Gabriel Lopez Nursery: A) General setup. B) Germination beds established with students from the Victor Manuel Chauz Villamil Educational Institution. C) Germination and bagging of frailejón seedlings. Local Monitoring Groups:

We'll continue working with three monitoring groups focused on biodiversity inventories in their territories using camera traps. We'll make work agreements between the monitoring groups and Puracé National Park rangers designing a monitoring strategy. We'll train two monitoring groups and Puracé National Park staff in making videos through one person from the remaining monitoring group called "Orígenes." We want to spread these activities and the conservation messages, where the videos will be uploaded on YouTube to be published on social media.

We work with three community monitoring groups. Two of them are associated with the Paletará-Isnos road, consisting of the indigenous guard of the Paletará council (Image 12A) and the "Orígenes" monitoring group. With them, we developed a research proposal alongside the rangers of the Puracé National Natural Park, dividing the road into 1x1 km quadrants, and installing between 8 to 10 camera traps over six months, relocating them every two months to cover each of the proposed quadrants, resulting in a total of 29. As mentioned earlier, this proposal was supported by an undergraduate thesis student, aiming to make practical use of the protected area for managing pressures caused by the road on mammals present in this area, which were previously unknown. Thus, areas with a higher presence of medium and large mammals were identified, as well as species vulnerable to road effects, and possible management strategies to improve this

infrastructure considering the road, as previously described. A video of this process was also produced, which can be viewed at the following link: <https://www.youtube.com/watch?v=yep79pV0Hgw>

On the other hand, we trained an environmental group of five students from the “Institución Educativa Victor Manuel Chauz Villamil” with two parents (Image 12B) in the management and installation of camera traps (Image 12C), in the northern influence zone of the Puracé National Natural Park, where species such as the mountain coati (Image 12D), the red deer, and three bird species (Arremon assimilis, Grallaria rufula, Turdus fuscater) were recorded. However, there were difficulties in generating agreements with the park rangers of the protected area, as there is no permanent staff in this zone. These results were a fundamental base in the exchange of experiences conducted at the IV festival of the animals of the mountain and the mist.



Image 12. Activities Training Community Monitoring Groups with Camera Traps: A) Indigenous guard of the Paletará council installing camera traps around the Paletará-Isnos road within the Puracé National Natural Park. B) Panoramic view of the work area with students from the Agroindustrial Educational Institution Victor Manuel Chauz Villamil from the Gabriel Lopez-Totoró district. C) Installation of camera traps with one of the students. D) Record of *Nasuella olivacea* with the students referenced in B and C.

We also formed a partnership with a researcher from the University of Girona, Spain (Salvador Salvador Allué) and a lecturer from the University of Caldas (Hector Ramirez Chaves) to test a tool for tracking the Colombian weasel (*Neogale felipei*), known as the Mustela Box, within the Puracé National Natural Park (PNN Puracé). We installed 10 of these boxes in the northern area of PNN Puracé and set up two conventional camera traps. These captured images of Mice, Shrews, Red Deer, and Ocelots (Image 13).



Image 13. Mammal Records Obtained with Mustela Boxes: A) Caenolestidae: *Caenolestes fuliginosus*. B) Cricetidae: *Thomasomys* sp. C) Nephelomys sp. D) Didelphidae: *Marmosops* cf. *caucae*. E) Rhinocryptidae: *Scytalopus* sp. F) Automatic Cameras: Felidae: *Leopardus pardalis*. G) Sciuridae: *Syntheosciurus granatensis*. H) Cervidae: *Mazama rufina*. I) Work team from the University of Girona, the University of Caldas, and the National Natural Parks of Colombia, where our group took the photo. J) Mustela Box installed near the area referenced in photo I



Here we showcase the flyers used to invite rural communities to participate in the festivals of the animals of the mountain and the mist.