

Building knowledge, tools and capacity for mammal conservation in Chaco agroecosystems of Argentina

Project ID: 7700

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Host Country: Argentina

Site location: Salta Forestal Sector IV, Anta, Salta, Argentina.

Dates in the field: February 2024 to April 2025

This project addressed the conservation of medium- and large-sized mammals in human-modified landscapes of the Argentine Dry Chaco, and improved it a particular site, through ecological monitoring, participatory interventions, education, and capacity building. We developed a technical handbook, a monitoring protocol, and implemented livestock protection measures with local families. The project expanded to 12 farms, reduced retaliatory killings, and led to three scientific publications, conference presentations, and training opportunities for team and community members.

Conservation Leadership Programme: Final Report

Report Layout

Title Page

1. CLP project ID & Project title
2. Host country, site location and the dates in the field
3. Names of any institutions involved in organising the project or participating
4. The overall aim summarised in 10–15 words
5. Full names of author(s)
6. Permanent contact address, email and website
7. Date which the report was completed

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Project Partners & Collaborators

Please list and acknowledge all of the project's collaborators, including individuals, organisations and government departments. Please provide a brief description of how each was involved in the project.

CREA (Consortios Regionales de Experimentación Agrícola) – A nationwide network of farmers promoting sustainable land management. CREA was the main organizer of the transdisciplinary workshops and co-developing management recommendations for biodiversity conservation in agroecosystems. CREA also led the creation and dissemination of a technical handbook and a biodiversity monitoring protocol.

INTA (Instituto Nacional de Tecnología Agropecuaria) – Participated in the transdisciplinary workshops organized by CREA, contributing to the discussion and development of biodiversity-friendly management practices in farming systems.

Farmers from Salta Forestal – Large-scale landowners operating farms within the project area supported the deployment of camera traps and expressed interest in biodiversity-friendly practices. Their collaboration was essential for establishing long-term monitoring at the farm level.

Local campesino families (Salta Forestal) – Community members living in forest households ("puestos") played a central role in co-developing and implementing the intervention to reduce livestock predation. Their participation ensured the relevance and legitimacy of proposed actions and contributed to local capacity building.

Universidad Nacional de Tucumán (UNT) – Through the Instituto de Ecología Regional (IER), UNT served as the home institution of the project. Many students participated in fieldwork, data analysis, and outreach activities.

CONICET (National Scientific and Technical Research Council) – Provided institutional backing through the affiliation of project members. CONICET researchers contributed to scientific design, supervision of students, and academic dissemination of results.

Local schools of Salta Forestal – Collaborated in the design and implementation of educational activities aimed at raising awareness among children and youth about local biodiversity.

Conservation Biogeography of the Geography Department (Humboldt-Universität zu Berlin, Germany). Many researchers from that institution participated in the conceptualization and development of Nanni et al. (2024). A PhD student from the institution visited the project site (with their own funding).

Section 1:

Summary (max 200 words)

Our project had the overall goal of contributing to improve medium-large mammals' conservation in agroecosystems of the Argentine Dry Chaco (a global deforestation hotspot). Although we faced some challenges, we believe we have largely achieved this, through the progress made regarding our proposed conservation results: 1. Development of a guideline on management practices for medium-large mammal conservation in Dry Chaco agroecosystems - through our previous partnerships with INTA (agricultural state agency) and CREA (farmers' NGO), we have elevated this goal to developing a technical handbook about biodiversity conservation in agroecosystems (to be presented in Buenos Aires, in May 2025); 2. Application of management initiatives in at least 3 farms – we have worked with 2 farms of the area and 12 farms of the whole region, through our partnership with CREA; 3. Application of interventions to reduce livestock depredation in four households of the study site – we have applied interventions in eight households; 4. Increasing tolerance towards mammals for 50% of the local social actors – no retaliatory behaviours have taken place in the area since the project started.

Our key results also include high-impact publications, conference presentations, workshops with local actors, and educational activities, among others.

Introduction (max 500 words)

Achieving biodiversity conservation in human-modified landscapes is a global challenge. The Argentine Dry Chaco harbours the largest subtropical dry forest in the world and is recognized as a global deforestation hotspot (Kuemmerle et al., 2017). As a result, many mammal species in the region are under threat or even ecologically extinct (Romero-Muñoz et al., 2020). Protected areas cover less than 7% of the land, meaning the future of many species depends on their ability to persist in human-modified landscapes such as agroecosystems. Given that further land transformation is expected, it is crucial to identify and implement management strategies that enhance biodiversity conservation in these productive landscapes. Such strategies are typically more effective when developed jointly with local stakeholders. We aimed to improve the conservation of medium- and large-sized mammals in a critical area of this region by addressing two major drivers of their decline: poor biodiversity management in farmlands and local intolerance towards wildlife, particularly carnivores. Our project area, Salta Forestal, is a Key Biodiversity Area encompassing ~500 km² of communal dry Chaco forest surrounded by agricultural and cattle farming lands. It is inhabited by approximately 30 families living in forest homesteads ("puestos") organized under a civil association (Fig. 1). It harbours more than half of the Chaco region's medium- to large-sized mammal species, including threatened species like the giant anteater (*Myrmecophaga tridactyla*) and endemic species such as the Chacoan peccary (*Catagonus wagneri*). The region also hosts two apex predators: pumas (*Puma concolor*) and jaguars (*Panthera onca*). However, jaguars are considered ecologically extinct in the Chaco (Quiroga et al., 2014), while pumas persist at low densities due to a combination of habitat loss and retaliatory hunting following livestock predation (Nanni, Teel, et al., 2021; Quiroga et al., 2016). Livestock predation, particularly by pumas, is also the leading cause of livestock losses for local families, making it vital to co-develop effective interventions to reduce attacks, mitigate retaliatory responses, and ultimately foster coexistence between people and carnivores. Key partners of the project include both large-scale farmers and smallholder *campesino* families living in the area. Large landowners, who manage extensive portions of the landscape, are essential for implementing conservation-friendly practices at scale. Campesino communities, organized in a civil association and living in forest households ("puestos"), play a critical role in co-developing locally grounded strategies. Their day-to-day experience with the land and close interactions with wildlife provide invaluable insights for promoting coexistence. In addition, we collaborate with strategic partners who, while not based exclusively in the project area, contribute meaningfully to its broader impact. These include CREA, a nationwide network of farmers that promotes sustainable land management, and the local university and National Research Council (CONICET), which supports the project through academic collaboration and by engaging students in fieldwork, research, and outreach activities. These partnerships enhance the technical strength of the project and help expand its reach beyond the immediate site.

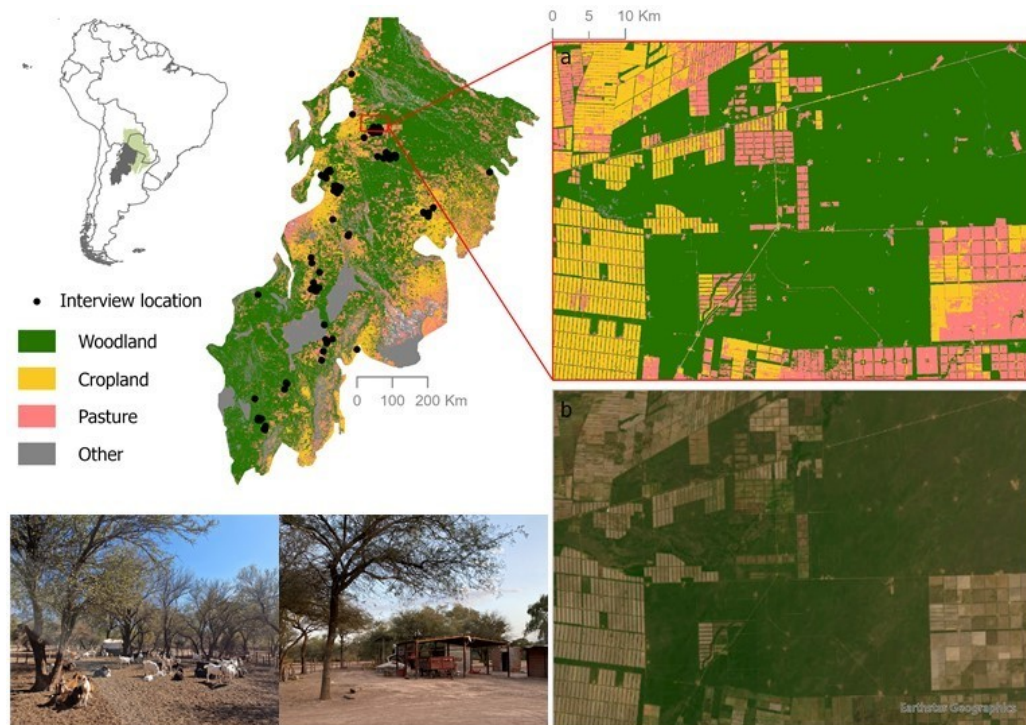


Fig. 1. Location of the project site (left panel) and general land-cover map of the Argentine Dry Chaco (upper right), depicting locations of the interviews we have gathered so far. Pictures of the area are shown in the lower right.

Project members

List the project members, giving brief details of their relevant qualifications, experience, current occupation and employer, and their main roles in the project. Where relevant give an indication of the age group.

A. Sofía Nanni

Team Leader

PhD in Ecology, Assistant Professor at the Universidad Nacional de Tucumán. She has broad experience in mammal conservation, land-use change, and participatory research in the Dry Chaco. She coordinated project implementation, research design, and stakeholder engagement. Age: 39.

Pedro D. Fernández

Interactions with farmers

Agronomist and postdoctoral student at Humboldt University, Berlin, Germany. He provided expertise on silvopastoral systems and supported the implementation of farm-level conservation actions, acting as a key liaison with landowners.

Ana Lucía Dip

Participatory Activities

PhD student. Building on her experience in participatory conservation and social sciences, she collaborated in the design of participatory activities and educational workshops.

Mauricio Nuñez Regueiro

Participatory Methods and Research advisor

The Nature Conservancy Gran Chaco lead. During the project, he transitioned to this job position in TNC, for which he could not participate in field activities. However, he provided strategic guidance and advice throughout the implementation, contributing his expertise in conservation planning and participatory methods.

Carlos A. Gómez

Field Sampling and Data Analysis

Natural Resources Engineer and CONICET PhD student. Supported camera-trap sampling and data analysis.

Laura Gabriela Gattino

Camera-Trap Training and assistance in first workshop

Biologist with experience in camera-trap monitoring and work with local communities.

Contributed to fieldwork and community engagement in the first workshop.

Section 2:

Aim and objectives (max 200 words)

Provide a statement of the main aim and underlying objectives of the project as described in initial project outline or explain any changes or adaptations to the original statement.

This project sought to improve medium-large mammals' conservation in agroecosystems of the Argentine Dry Chaco, a global deforestation hotspot with a long history of anthropic use, where deforestation and hunting exert great pressure on biodiversity. The underlying objectives of the project were to (1) generate a guideline on best management practices for the conservation of medium-to-large mammals (MLM) in Dry Chaco agroecosystems; (2) implement concrete management initiatives to support MLM conservation; (3) apply interventions to reduce predation on livestock by pumas in Salta Forestal, and (4) increase tolerance towards the presence of MLM in the area. The main modification to the original plans involved Objective 2. While we initially proposed to implement management practices at our specific project site, our partnership with CREA and INTA allowed us to upscale this objective and work jointly across 12 farms throughout the Chaco region (see section below). This change ultimately enhanced the overall impact of our project, as it enabled the development of outputs relevant to the entire Argentine Dry Chaco, rather than being limited to the original study area.

Changes to original project plan (max 200 words)

Please give details of any changes to the original project plans, including any objectives that were not fully delivered and explain how this impacted the delivery of the project. Describe how any problems were addressed and what solutions were found to deal with these issues.

The main change to the original project plan involved Objective 2. We had originally proposed to implement management practices at our project site, but through our partnership with CREA and INTA, we were able to scale this up and work across 12 farms in the whole region. As part of this process, we produced a technical handbook on biodiversity conservation in private lands, which has already been published. The team leader also participated as editor of a book on biodiversity management in agroecosystems, developed by CREA, to be launched in May 2025. Although these outputs were not funded by CLP, the experience gained through project

implementation was key to achieving them. The original activities under Objective 2 will still be carried out in 2025, with separate funding already secured. We also replaced individual interviews (3.1) with focus groups, based on advice from collaborators and considering that we had already collected interview data in previous studies. Activity 4.2 could not be completed due to time constraints, but will be finalized this year. Finally, Argentina's economic crisis and the breakdown of our institutional vehicle significantly increased costs. Fortunately, we had anticipated this in our proposal and were able to reallocate funds accordingly.

Methodology (max 500 words)

For each objective please describe in concise and specific statements all project methodologies. Including any relating to ecological and social science research, as well as activities involving project stakeholders such as education & outreach, livelihoods, policy or capacity building. This section should provide adequate detail so as to enable the study to be repeated.

Objective 1: medium-large mammal (MLM) conservation in human-modified landscapes of the Dry Chaco

We processed pre-existing camera-trap data of ~160 stations in 10 Dry Chaco agroecosystems (from a previous project led by Nanni). Following Nanni et al., 2021 we depicted a 3-km buffer around each camera-trap within which we derived landscape and anthropogenic variables known to affect MLM. We addressed the influence of these variables on MLM using occupancy models (e.g. MacKenzie et al., 2006) and GLMs (Nanni et al., 2023). We developed and applied a protocol for biodiversity baseline sampling in the Argentine Dry Chaco (Aragón et al. 2024), and shared it among stakeholders of the project site. We also participated in the development of a handbook about biodiversity conservation in agroecosystems edited by CREA.

Objective 2: Development of management initiatives to conserve MLM in Salta Forestal

We carried out two in-person transdisciplinary workshops jointly with CREA staff, farmers and researchers in Santiago del Estero, Argentina, to collectively derive management recommendations for participant farms, including a farm in Salta Forestal area. We jointly established camera-trap monitoring (10 cameras) in Salta Forestal, active since October 2022. Through a novel conceptual and methodological framework co-developed with researchers from Humboldt University (Germany), we upscaled the estimation of anthropogenic resistance to the whole Argentine Dry Chaco by combining interview, camera-trap and land-cover data, which resulted in a "social-ecological landscapes of coexistence for people and pumas" map for the region (Nanni et al., 2024).

Objective 3: Implementation of interventions to reduce livestock predation by pumas

We developed and implemented a five-stage participatory framework in Salta Forestal to address livestock predation (Nanni et al., under review). Intervention selection occurred through a workshop in October 2022, using a multi-criteria prioritization process that led to the adoption of studded leather collars. Their effectiveness was tested for a year (2022–2023) via a randomized controlled trial (RCT) (Treves et al., 2019) in which half of each herd was collared. Results showed a tenfold reduction in depredation. In 2024, we fully deployed the collars and continued monitoring, confirming sustained effectiveness. Community members participated throughout, and ethical standards were upheld. Monitoring included visits every 45–60 days.

This was the first participatory process to implement a depredation mitigation intervention in the region.

Objective 4: Increasing tolerance towards MLM in Salta Forestal

We trained 10 people (farm employees and community members) in camera-trap deployment, and we carried out a specific activity with school children about camera-trap use and deployment. Due to time constraints and heavy rain during the period in which we were going to establish the nature trail, we have not done this so far but we have secured funding (a Rufford Completion Grant) to that end. We carried out six educational activities at the two local schools, which involved a “mammal corner”, a story-telling workshop (high school), and a drawing activity (primary school). Some of the stories written will be sent to a contest at the next mammal conference. We shared stickers, calendars and drawing sheets with school students.

Outputs and Results (max 500 words)

For each objective please provide details of all the quantifiable results of the project's activities. For quantifiable research outputs of you should include presentation and data analysis of the results, with tables and graphs to summarise where suitable. For quantifiable outputs of activities involving stakeholders you should include, for example, the number of publications or posters and their distribution, the number of workshops and participants, the number of stakeholders engaged, evidence of behaviour change, funds raised etc. Include photos where appropriate.

Objective 1.

Articles

Nanni, A.S., Regolin, A.L. et al. "Woody cover and pasture within the surrounding matrix drive puma (*Puma concolor*) occupancy in agroecosystems of the Argentine Dry Chaco." *Journal for Nature Conservation* 75 (2023): 126475 (Appendix 1).

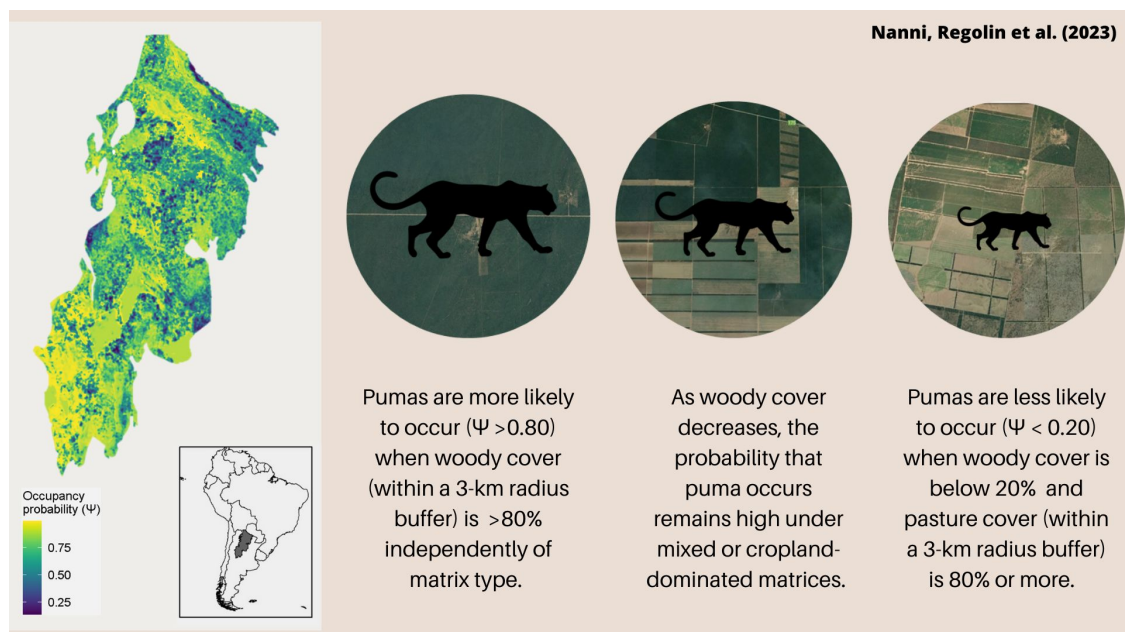


Fig. 2. Main results of Nanni, Regolin et al. (2023). The panel (far left) shows occupancy probability of pumas throughout the Argentine Dry Chaco.

Press release: [link](#)

Conference presentations

- From biodiversity conservation to human- wildlife coexistence in agroecosystems of the Argentine Dry Chaco. Nanni, A.S.; Fritz, F. 2022 SRI Congress – Pretoria, Africa (remote assistance). June, 2022.
- Conservar mamíferos en agroecosistemas chaqueños: aprendizajes y desafíos. Nanni, A.S., Martello, F., Dip Yordanoff, A.L., Regolin, A.L. XXX Reunión Argentina de Ecología. San Carlos de Bariloche, Argentina. October, 2023.
- Patrones de diversidad de mamíferos carnívoros (Orden: Carnivora) en paisajes modificados del Chaco Seco Argentino. Cuadrado, L., Nanni, A.S., Mangini, G., Regolin, A.L. XXXV Jornadas Argentinas de Mastozoología. San Luis, Argentina. November, 2024.

Reports

Aragón, R., (...), Nanni, A.S., et al. Monitoreo de biodiversidad en el Gran Chaco. CREA. (Appendix 2).

Local activities

10 community members engaged in camera-trap deployment (Photo 1).

Report shared locally.



Photo 1. Camera-trap deployment with community members (top), and transdisciplinary workshops co-organized with CREA (bottom).

Objective 2

Scientific articles

Nanni, A.S. et al. "Mapping opportunities and barriers for coexistence between people and pumas in the Argentine Dry Chaco." *Diversity and Distributions* 30.10 (2024): e13920. (Appendix 3).

Workshops (Photo 1)

- 1st CREA workshop on biodiversity conservation in farms. Santiago del Estero, Argentina. June, 2022
- Follow up CREA workshop on improvements for biodiversity conservation in farms. Santiago del Estero, Argentina. June, 2023.

Objective 3

Scientific articles

Nanni, A.S. et al. "A comprehensive framework for managing human-wildlife conflicts: the case of smallholder livestock depredation by puma (*Puma concolor*) in the Argentine Dry Chaco". *Advanced review stage in Biological Conservation* (submitted 02/14/2025) (Appendix 4).

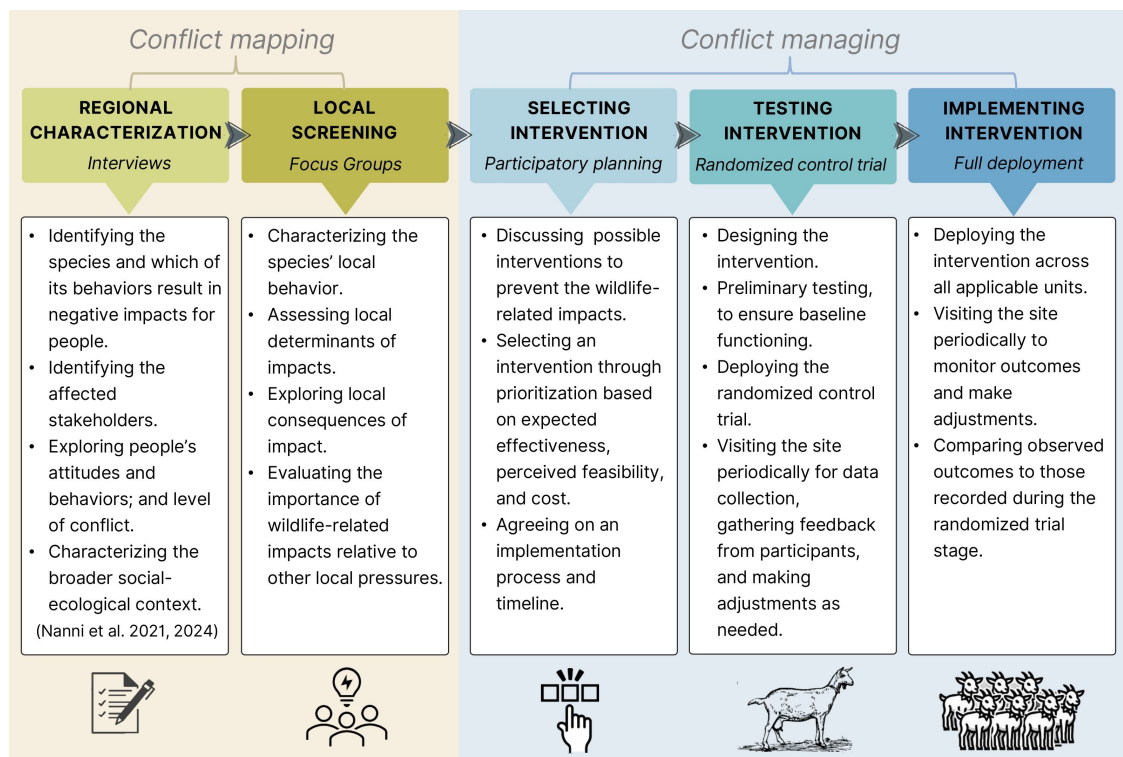


Fig. 3. Proposed framework for addressing wildlife-related impacts and subsequent HWC, in emerging from our work in Salta Forestal.

Conference presentations

- Selección y testeo de una intervención para reducir la depredación de ganado por puma (*Puma concolor*) mediante un proceso participativo junto a familias campesinas de una localidad del Chaco Seco de Argentina. Nanni, A.S. et al. XXXIV Jornadas Argentinas de Mastozoología. Jujuy, november 2023.

- From conservation to coexistence: accounting for human-carnivore conflicts in Chaco livestock ranching systems. Nanni, A.S. et al. GLP 5th Open Science Meeting. Oaxaca, Mexico. Noviembre, 2024.

Workshops (Photo 2): one held in October 2022 to present the project and define the intervention and a follow-up workshop in November 2023.

Local activities: permanent monitoring of intervention from 2022 to 2025.



Photo 2. Intervention-related workshops at Salta Forestal (top and middle). Studded leather collars applied on goats and sheep (bottom).

Objective 4

Local activities: training on camera-trap deployment (Photo 1); six school activities (Photo 3).
Outputs: “mammal corner”, 25 stories by students about MLM, drawings, stickers, and pocket (appendix 5) and wall calendars (appendix 6).



Photo 3. Some of the activities held at the local schools of the project site.

Communication & Application of results (max 200 words)

Please explain how the project's results have been communicated and how they have been applied to addressing the project's conservation problem.

We shared the project's results through a combination of scientific, technical, community-based, and digital communication channels, aiming to make our findings both accessible and actionable. Scientifically, we published peer-reviewed articles and presented at national and international conferences, contributing to broader discussions on mammal conservation and human-wildlife coexistence in modified landscapes. On the technical side, we co-developed a biodiversity monitoring protocol, distributed through our partnership with CREA, and a handbook on conservation practices (to be released soon) for agroecosystems. These tools are already informing improved management on 12 farms across the region. At the community level, results were discussed in participatory workshops and applied through close collaboration with local families. A key intervention, studded leather collars to reduce livestock predation, was co-developed and implemented, leading to a tenfold reduction in attacks. This directly addressed one of the main conservation challenges: retaliatory hunting of pumas. We also carried out school-based educational activities and shared updates, photos, and key messages regularly on social media. This helped reach broader audiences and keep both local and external stakeholders informed and engaged. Through this multi-level communication strategy, our results were not only widely shared but also translated into practical conservation impact.

Monitoring and Evaluation (max 200 words)

What Monitoring and Evaluation activities were carried out to assess the effectiveness of the project's activities?

For ecological outcomes, we are using camera-trap monitoring to assess the presence and activity of medium-to-large mammals in Salta Forestal. This includes baseline assessments and continued monitoring, which will allow detecting potential shifts in species presence/activity due to management or behavioural changes. To evaluate the effectiveness of the studded leather collar intervention, we designed and carried out a randomized controlled trial with participating households. Collars were applied to half of each herd, and data on livestock losses were collected during field visits every 45–60 days. This allowed for a robust comparison between collared and uncollared animals during the trial, as well as between the trial period and the following year when all animals were collared. We also detected no retaliatory killing events since our project started, which likely shows an important behavioural change. For social outcomes, our participatory workshops and regular visit to the community households served as qualitative indicators of community ownership and trust. In our education component, we used storytelling activities with students before and after our interventions. While we have not formally analysed these stories yet, they may reflect changes in how students perceive local fauna. We also monitored participation and engagement during school activities.

Achievements and Impacts (Max 500 words)

Please list the most important Achievements and Impacts of the outputs listed in the previous sections and explain the significance of each one in relation to the overall aim of the project. If possible you should try to come up with a single sentence for each achievement and follow it with a description and explanation of how this achievement contributes to the project's objectives and overall goal

Objective 1 – We published a peer-reviewed article on puma occupancy in agroecosystems of the Dry Chaco, offering concrete evidence on how woody cover and land use influence large carnivore presence. These results contribute to conservation planning in human-modified landscapes. Findings were also presented at national and international conferences, helping position the project within global discussions on biodiversity in Chaco’s agroecosystems.

Jointly with an important farmer NGO, CREA, we developed and delivered a technical biodiversity monitoring protocol, co-authored with academic and institutional partners. It was shared to other stakeholders and will serve as a reference for biodiversity monitoring in private lands for a non-academic audience. Alongside this, ten local residents were trained in camera-trap deployment and data collection, building local capacity and strengthening community engagement.

Objective 2 – We published a regional analysis identifying areas of opportunity and barriers for human–puma coexistence across the Dry Chaco. This publication is a strategic tool for prioritizing intervention towards coexistence in the area. To support practical application, we held two participatory workshops with CREA staff, researchers, and farmers, co-developing tailored recommendations for 12 farms. These events helped address conservation practices in farming systems across a wider region than originally planned.

Objective 3 – We completed and submitted a scientific manuscript describing our participatory framework to reduce livestock predation, representing a novel contribution to the field of human–wildlife conflict management. The approach was presented at two major conferences, facilitating exchange with other researchers and practitioners working on coexistence. Two on-site workshops were held with local families to co-design and evaluate the intervention. Based on this process, studded leather collars were adopted and applied. The intervention’s effectiveness was assessed through a randomized controlled trial and follow-up monitoring, showing a tenfold reduction in livestock losses. These results helped build trust, reduce retaliatory responses, and support long-term conservation goals. It is the first time such an initiative is carried out in the region.

Objective 4 – We organized six educational activities in two local schools, including storytelling, drawing workshops, and the creation of a “mammal corner.” These experiences helped increase awareness and appreciation for local wildlife among children and youth. To explore how perceptions may shift, we used storytelling exercises before and after the sessions. While these stories have not yet been formally analyzed, they provide a rich source of insight for future evaluation. In addition, we produced and shared printed outreach materials—such as wall and pocket calendars and stickers—with students and families, reinforcing messages around mammal conservation.

Finally, we secured additional funding to complete planned activities (like the nature trail) and to continue our work with schools and communities. This ensures continuity and deeper impact beyond the CLP grant period. We also engaged a large number of local and international students, beyond our project team, through field visits and research collaboration, contributing to capacity building and expanding the network of young professionals involved in Chaco conservation.

Capacity Development and Leadership capabilities (Max 250 words)

Please describe how the project contributed to improvements in capacity of the project team members in relation to specific skills and leadership capabilities.

The project significantly contributed to strengthening the skills and leadership of team members. Team members gained practical experience in designing and applying social science methods, particularly through participatory workshops and focus groups. This expanded our capacity to work with communities and apply interdisciplinary approaches. Internal knowledge exchange was also important. One team member provided training in statistical analysis and ecological modelling, which was applied in scientific outputs. Another team member participated in an external university course, enhancing her understanding of conservation tools and frameworks. Throughout the project, the team also learned from external advisors who brought valuable expertise in participatory methods and human-wildlife conflict. Beyond the core team, the project engaged at least four international MSc and PhD students who participated in fieldwork, gaining hands-on experience in Chaco conservation. Additionally, over ten undergraduate students from the local university joined field activities at different stages, developing practical skills in biodiversity monitoring and a deeper appreciation of the ecological and social context of the region. Overall, the project fostered both individual and collective growth, while contributing to capacity building for a wider community of early-career conservation professionals.

Section 3:**Conclusion (max 250 words)**

Provide accurate, detailed and specific conclusions, avoiding general inferences and interpretations. Describe the overall project's contribution to its central conservation aim and answer questions raised in the introduction, highlight any new information exposed by the project process.

This project contributed significantly to improving the conservation of medium- and large-sized mammals in the Argentine Dry Chaco, a region where most of the landscape lies outside protected areas and is subject to intense human use. From the beginning, we recognized two major barriers: the lack of conservation-oriented management in private lands, and local intolerance towards wildlife, particularly carnivores, due to livestock losses. In response, we combined ecological research with community engagement. We generated new insights into the conditions that allow large carnivores like the puma to persist in agroecosystems and translated that knowledge into practical tools, such as a coexistence map. We also contributed to the development of a biodiversity monitoring protocol. These outputs are already informing management practices across a broader network of farms. At the local scale, the implementation of a participatory intervention to reduce livestock predation led to fewer losses, no retaliatory killings, and increased trust between families and researchers. This confirms that solutions co-developed with local actors are more likely to be effective and sustainable. Beyond our project site, and building on such process, we developed a framework for addressing wildlife-related impacts and human-wildlife conflict that can be applied in other regions and contexts. The project also showed how partnerships (among communities, farmer organizations, and research institutions) can help scale up impact. It highlights the importance of investing in capacity, dialogue, and shared knowledge to achieve conservation in productive landscapes. The

groundwork laid here will continue to grow through follow-up activities and collaborations already underway.

Problems encountered and lessons learnt (max 500 words)

The purpose of this section is to provide information on lessons learned during the project work that can be usefully applied to other CLP projects. Please answer the below fields:

- *Which project activities and outcomes went well and why?*
- *Which project activities and outcomes have been problematic and in what way, and how has this been overcome?*
- *Briefly assess the specific project methodologies and conservation tools used.*
- *Please state important lessons which have been learnt through the course of the project and provide recommendations for future enhancement or modification to the project activities and outcomes.*

Activities under Objective 1 were very successful, thanks to a solid foundation of prior data collection and the analytical skills within the team. Our collaboration with CREA and INTA was particularly valuable: it both strengthened the scientific outputs and allowed us to go beyond the original plan by co-developing a technical handbook on biodiversity management in agroecosystems and a monitoring protocol, both of which will be key tools for future conservation initiatives. Objective 3 also went very well: we implemented the participatory intervention to reduce livestock predation with eight families instead of the four originally planned. This success was largely due to the strong relationship of trust built with the local community and their willingness to test solutions to a pressing issue. Furthermore, our continued presence and engagement in the area appear to have contributed to attitudinal changes, as no retaliatory killings have been reported in the last two years. We faced some challenges with some of the activities proposed in Objectives 2 and 4. For Objective 2, our plan to develop management practices in three specific farms met obstacles: a change in land ownership and limited engagement from some landowners made implementation difficult at the local scale. However, these limitations led to a positive outcome—we were able to scale up this objective through our partnerships with INTA and CREA, reaching 12 farms across the region, which expanded the impact of our work. In the case of Objective 4, we had less time than expected to complete the nature trail. Given the urgency of the depredation issue, we prioritized interventions that directly addressed community concerns. These educational components will be completed with a Rufford Completion Grant we already secured, and other sources. One important lesson in this regard is that educational activities must be designed and delivered by professionals with specific expertise in environmental education. While our school efforts were meaningful, we recognized that to deepen their impact, they need to be more structured and pedagogically grounded. This is something we will prioritize in upcoming funding proposals. Another key learning is the value of flexibility—being able to adapt to changes (like inflation, logistics, or shifting landowner priorities, particularly in resource-limited countries and areas such as our own) was crucial to maintaining project progress. Finally, building trust with local communities takes time, but it becomes the strongest foundation for lasting conservation outcomes, and we believe we were very successful in this. We applied a combination of ecological, statistical, and participatory methods: camera-trap monitoring, GLMs and occupancy modelling, focus groups, workshops, and the co-design and testing of interventions through randomized controlled trials. The participatory process was essential to ensure community relevance and foster ownership. The leather collar intervention, in particular, was well accepted

and showed clear benefits over two years of trial. We believe there is still a great deal to be done, but we now have a solid foundation and partnerships in place to continue and expand this work.

In the future (max 200 words)

Please explain what efforts you will be taking to sustain this work beyond the grant period and what further work would be useful for the conservation of the target species/area.

We are committed to ensuring the continuity and long-term impact of this work. This new phase builds directly on the results and outcomes reached through our CLP grant, strengthening and expanding key components. In the short term, we are implementing a follow-up project funded by a Rufford Completion Grant recently awarded to S. Nanni, which incorporates agent-based models to explore complementary interventions to further reduce livestock depredation. The project also includes camera-trapping in a new site close to the area, participatory camera-trap training, education workshops, and the development of a wildlife encounter protocol to promote responsible wildlife management. In parallel, we have submitted a proposal to the Kate Stokes Memorial Award focused on strengthening conservation leadership among local youth and deepening outreach efforts through school-based initiatives, such as co-created educational materials. Beyond these initiatives, we will continue collaborating with key partners such as INTA, CREA, and the local university to support biodiversity conservation on private lands. Together, these efforts aim to consolidate Salta Forestal as a model landscape for sustainable human-wildlife coexistence in the Dry Chaco. We also plan to continue mentoring early-career conservationists and sharing our results through publications and conferences to maximize learning and impact across the region.

Financial Report

Please copy and paste the summary sheet from your financial report here. Please also send a copy of your spreadsheet attached to your narrative report.

READ THIS INFORMATION: COMPLETE THIS SPREADSHEET TOGETHER WITH YOUR MAIN WORKSHEET (FINANCIAL REPORT WORKSHEET). The column TOTAL CLP SPENT is filled automatically using the figures entered into the MAIN WORKSHEET. DO NOT attempt to enter any additional information in this column.					
Itemized expenses	Total CLP Requested (USD)*	Total CLP Spent (USD)	% Difference	Details & Justification (Justification must be provided if figure in column D is < -10% or > 10%)	Proposed Spending (Preliminary Report Only)
PHASE I - PROJECT PREPARATION					
Communications (telephone/internet/postage)	1,100		-100%		
Field guide books, maps, journal articles and other printed materials					
Insurance	60.00	97.40	162%	The amount was lower than expected because we did not develop the nature trail. Also, because the community spent higher than expected in insurance because prices increased and varied widely throughout the project.	
Visas and permits	0.00		#DIV/0!		
Team training	800.00	1079.00	134%	The flight ticket for our Brazilian team member was slightly more expensive. We thus covered team training with a flight ticket.	
Reconnaissance					
Other (Phase I)					
EQUIPMENT					
Scientific/field equipment and supplies	2,800	861.06	-69%	We only bought 1 camera-trap (out of 12), mainly because we wanted to prioritize local community needs and reallocated some of these funds to collar purchase and truck rental (see "Changes of original plans"). We did buy batteries for our camera-traps.	
Photographic equipment					
Camping equipment	200.00	30.95	-85%	As per above, we did not prioritize camping items since on the first place we stayed with one of the families from the area.	
Boat/engine/truck (including car hire)	1,000.00	4876.62	387%	This was one of our largest changes respect to our original requested budget because our institutional truck (by boat) was not available.	
Other (Equipment)					
PHASE II - IMPLEMENTATION					
Accommodation for team members and local guides	300.00	91.00	-70%	We spent lower than originally requested in this item because accommodation was mainly provided by a local host.	
Food for team members and local guides	1,620.00	2022.22	25%		
Travel and local transportation (including fuel)	3,000.00	1237.40	-59%	Fuel costs were lower than expected, which allowed us to reallocate these to truck rental.	
Customs and/or port duties					
Workshops	1095	194.60	-82%	The amount spent was lower than expected but note that food items for workshops were purchased within the project budget.	
Outreach/Education activities and materials (brochures, posters, video, t-shirts, etc.)	200.00	184.44	-8%		
Other (Phase 2)	1,500.00	3869.11	158%	This was also one of the biggest changes compared to our original budget, since the intervention part of the project was not fully implemented.	
PHASE III - POST-PROJECT EXPENSES					
Administration	700.00	102.90	-85%	Administration fees were lower than originally expected. This allowed reallocating these costs to truck rental and other equipment.	
Report production and results dissemination					
Other (Phase 3)					
Total	14,735.00	14,736.70			

Section 4:

Appendices

Please include important additional information not required in the main text along with:

- *Completed CLP M&E measures table (see below)*
- *Raw field data: if large amounts of data were generated, include them here and summarise results using tables and statistics in the main text.*
- *Copies of any newspaper/magazine articles relating to the project.*
- *Papers published or manuscripts proposed based on project data*

Output	Number	Additional Information
Number of CLP Partner Staff involved in mentoring the Project	0	
Number of species assessments contributed to (E.g. IUCN assessments)	5	We contributed to the national 2024 mammal assessment, to be released this year
Number of site assessments contributed to (E.g. IBA assessments)	0	
Number of NGOs established	0	We however worked with two NGOs (CREA & TNC)
Amount of extra funding leveraged (\$)	23500	RSG Completion Grant
Number of species discovered/rediscovered	1	In 2021, we identified a species whose distribution did not fall within the region (<i>L. colocolo</i>) (Nanni et al., 2020)
Number of sites designated as important for biodiversity (e.g. IBA/Ramsar designation)	0	
Number of species/sites legally protected for biodiversity	0	
Number of stakeholders actively engaged in species/site conservation management	30	
Number of species/site management plans/strategies developed	3	
Number of stakeholders reached	50	
Examples of stakeholder behaviour change brought about by the project.	- 100%	No retaliatory killing events occurred throughout project execution
Examples of policy change brought about by the project	0	
Number of jobs created	0	
Number of academic papers published	3	
Number of conferences where project results have been presented	5	

Appendix 4.1 CLP M&E measures

Bibliography

List all the sources that you used, highlighting the most important ones. Also include the publications and communication outputs from the project as well as papers being prepared for publication by project members.

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