

Red-fronted Macaw Conservation Program Update Report - 2025



Pair of Red-fronted Macaws perched on a Carapari (*Neoraimondia herzogiana*), an endemic cactus of Bolivia, in the Red-fronted Macaw Community Reserve: Mileniusz Spanowicz

Across 2024 and early 2025, Asociación Armonía made important progress for the Critically Endangered Red-fronted Macaw (*Ara rubrogenys*). At the Red-fronted Macaw Community Reserve (Mizque basin), we documented 28 active natural nests—the highest number ever—with over 70 Red-fronted Macaws calling it their home due to our peanut supplementary feeding program. Community tourism generated in 2024, USD 13,260 for Quechua families. In El Palmar National Park (Grande basin), we installed 25 new nest boxes (total 75), recorded 12 natural nests, and fenced 23.2 hectares of Pasopaya Palm Forest. Additionally, 5,700 palm seeds were planted with 80% germination rate. In Torotoro (Caine basin), we supported 12 park rangers, monitored 16 active nests, reached over 1,000 children with conservation education, and consolidated the first Beekeepers' Association in Potosí, now uniting 60 members. Finally, in the Pilcomayo basin, our expedition surveyed 70% of palm forests, identified seven potential nesting trees, but found no active Red-fronted Macaw nests during the breeding season. These achievements strengthen both macaw conservation and sustainable community livelihoods across the species' range.

The Red-fronted Macaw Conservation Program in 2024 and 2025 is supported by:



Project photos can be downloaded from:

<https://flic.kr/s/aHBqjBtYdD>

Introduction and goals

The Red-fronted Macaw (*Ara rubrogenys*) is one of two macaws endemic to Bolivia, found only in a small region of the dry inter-Andean valleys in the heart of the country. Unfortunately, it is **Critically Endangered**, with a population of about 1,200 individuals according to the 2021 population census conducted by Armonía (Herzog *et al.*, 2023 - more information [HERE](#)).

Since 2003, Asociación Armonía has worked to secure the future of the Red-fronted Macaw. Building on early success in the Mizque River basin—where a combination of education, tourism, and sustainable farming eliminated illegal trafficking—we are now replicating these strategies across the species’ entire range. Our program combines scientific monitoring, habitat restoration, environmental education, and community-based development, ensuring that local families are part of the solution.

In 2024, we reached key milestones across the Mizque, Caine, and Grande basins and laid the groundwork to expand into the Pilcomayo basin. We have set the following goals in 2024/2025:

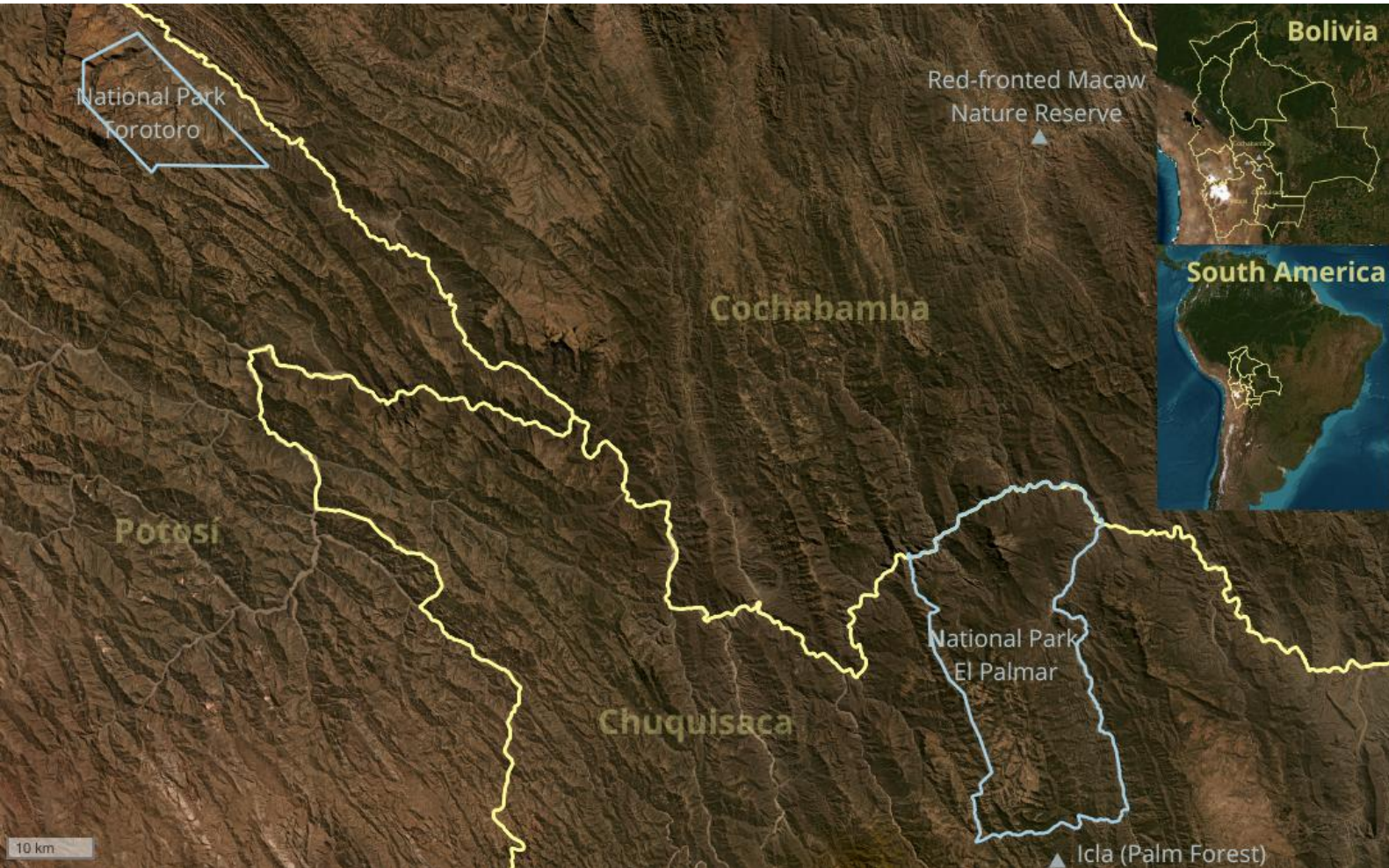
To protect the Red-fronted Macaw we have set the following goals for 2024/2025:

Rio Mizque – Red-fronted Macaw Community Natural Reserve		
1	Improve tourism infrastructure	Achieved
2	Install arrival signage for self-driving visitors	Achieved
3	Promote the Reserve lodge as a sustainable ecotourism hub	On-going
4	Construct two Red-fronted Macaw blinds for close-up photography	On-going
5	Monitor natural nests and installed nestboxes	Achieved
6	Place climate measurement tools in nests to study breeding conditions.	On-going
7	Launch a multi-year habitat restoration program to restore 2,000 hectares.	To be fundraised for
Rio Grande – El Palmar National Park		
8	Monitor 50 nestboxes in collaboration with park staff	Achieved
9	Develop and test three new nestbox designs to evaluate macaw preferences	Achieved
10	Restore 20 hectares of Janchicoco palm forest	Achieved
11	Plant 2,500 Janchicoco seedlings	Achieved
12	Develop a Janchicoco-based product to generate local income	Achieved
13	Implement Armonía’s Environmental Education and Awareness Plan	On-going
Rio Caine – Torotoro National Park		
14	Monitor Red-fronted Macaws in cooperation with Torotoro NP staff	Achieved
15	Develop a honey association to support local beekeepers.	Achieved
16	Assist families benefiting from Armonía’s program in maintaining eco-friendly food production	Achieved
17	Support the newly established Red-fronted Macaw tourism program	Achieved
Rio Pilcomayo – Icla		
18	Explore the Icla palm forest to locate breeding Red-fronted Macaws.	Achieved
19	Assess threats to the Red-fronted Macaw to develop a new conservation project for this isolated subpopulation	Achieved
20	Implement Armonía’s Environmental Education and Awareness Plan and distribute antitrafficking material	To be fundraised for

Armonía's Red-fronted Macaw Conservation Work Areas

The Red-fronted Macaw is native to the dry inter-Andean valleys of Bolivia, found in the departments of Cochabamba, Chuquisaca, Santa Cruz, and Potosí. The species' main breeding sites are concentrated along the Mizque, Caine, Grande and Pilcomayo River basins, where Armonía's conservation programs are currently active to ensure the survival of this Critically Endangered

Armonía is working at four locations within the Red-fronted Macaw's distribution to prevent its extinction: The Red-fronted Macaw Community Natural Reserve (Mizque basin), Torotoro National Park (Caine basin), El Palmar National Park (Grande basin), and the Icla region (Pilcomayo basin).



The Red-fronted Macaw Program team (left to right): Tjalle Boorsma, Conservation Program Director; Guido Saldaña, Program Coordinator; and Romeo Rojas-Estrada, Conservation Program Assistant: Asociación Armonía

Protecting Bolivia's Most Important Breeding Cliff (Mizque basin)

The Red-fronted Macaw Community Reserve, established in 2006 in partnership between Armonía and three Quechua communities, protects the most important breeding cliffs of the species and is found along the Mizque River. Once threatened by poaching, the area is now a conservation stronghold, and during the 2024–2025 season it reached a record 28 active nests, including a pair that fledged three chicks—an extraordinary achievement for this endangered macaw. Beyond safeguarding the cliffs from trafficking, the Reserve has become a national model of community-based conservation, where tourism provides sustainable income while strengthening cultural pride and local stewardship. This collaboration ensures the survival of Bolivia's endemic macaw while demonstrating that conservation and community development go hand in hand.

Tourism:

In 2024, the Red-fronted Macaw Community Reserve welcomed 73 visitors (106 nights), generating a community profit of USD 13,260. Although fewer tourists came compared to 2022 and 2023, this still represents an important contribution for the communities and demonstrates the resilience of the tourism model. We believe the post-COVID tourism boom has stabilized, and that international crises and economic uncertainties are now the main external factors affecting foreign tourism.

With the continued support of partners such as Zoological Society for the Conservation of Species and Populations (ZGAP) and Dresden Zoo, we have made improvements to the lodge, upgraded signage, and promoted the Reserve nationally so that tourism numbers grow and community income continues to rise. We are currently building two blinds that will offer a unique opportunity for close-up photography of the Red-fronted Macaws.

Table1. Red-fronted Macaw Community Reserve tourism statistics from 2019 to 2024.

Tourism Results Red-fronted Macaw Community Reserve						
	2019	2020	2021	2022	2023	2024
Number of visitors	35	8	24	94	104	73
Number of tourist nights	61	17	36	155	218	106
Income (USD)	9,195	1,379	2,588	22,444	33,202	18,543
Costs USD	2,161	934	1,278	7,129	8,856	5,283
Costs (%)	23%	67%	49%	32%	27%	28%
Total Community Profit (USD)	7,033	445	1,310	15,315	24,346	13,260

Please see our Red-fronted Macaw Community Reserve Tourism Video: [HERE](#)



Panoramic view of the Red-fronted Macaw Community Reserve and the world's most important breeding cliff: Marizol Hurachi

Red-fronted Macaw Nest and Nestbox Monitoring:

NEW RECORD OF RED-FRONTED MACAWS NESTS: During the 2024–2025 breeding season, we recorded 28 active natural nests, 10 possible nests, and 70 permanently present Red-fronted Macaws—the highest numbers ever documented in the Red-fronted Macaw Community Reserve—underscoring its status as the species’ most important breeding stronghold. We believe our supplementary feeding with community-grown peanuts helps the macaws feed their chicks and remain in the reserve.

Table 2. Red-fronted Macaw breeding activity at the Red-fronted Macaw Community Reserve from 2019 to 2024.

Red-fronted Macaw Nest Monitoring (Red-fronted Macaw Community Reserve)						
	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Active nests	Pandemic	20	21	23	20	28
Possible nests	Pandemic	3	1	7	1	10
Active nestboxes	Pandemic	-	-	0	0	0
Total Breeding Pairs	-	23	22	30	21	38

With the support of Dresden Zoo, we also carried out the first in-depth monitoring of artificial nest boxes, generating valuable insights into their use and effectiveness. The nest boxes were occupied by Cliff Parakeet (3 boxes), Mitred Parakeet (1 box) and bees (1 box) but have not yet been used by Red-fronted Macaws. As a next step, and thanks to the support of the Mohamed bin Zayed Species Conservation Fund (MBZ), we placed dataloggers (small devices that record climatic data) inside both natural and artificial nests to capture microclimate conditions for the first time. With this information we will develop and introduce 10 new nest box models, currently being developed, aimed at providing the right breeding conditions for the macaws.



Climbing team inspecting and maintaining nest boxes in the Red-fronted Macaw Reserve: Guido Saldaña

Habitat Restoration:

The Red-fronted Macaw Community Reserve continues to experiment with restoring the unique dry forests of the inter-Andean valleys. With support from Zoo Dresden and close collaboration with local communities, we are combining ecological restoration with sustainable land-use practices. In 2024, community members cultivated 0.8 hectares of peanuts, which improved soil quality and provided

an important supplementary food source for the macaws during the dry season. This effort helped increase Red-fronted Macaw numbers and we counted 70 macaws within the Reserve. The harvest yielded approximately 1,725 kilograms of peanuts, half of which was reserved for the birds, and required over 130 days of community labor, reflecting strong local engagement in conservation.



A community member proudly presents the peanut harvest from earlier this year: Guido Saldaña

At the same time, we continued reforestation with native fruit-bearing species and carried out new plantings of pomegranate (*Punica granatum*), a species well adapted to the area that enriches biodiversity and attracts hummingbirds, adding value to the Reserve's ecotourism experience. We are also monitoring the growth of previous reforestation plantings of Chañarillo (*Geoffroea decorticans*), Tuna (*Opuntia ficus-indica*), Cupesí (*Neltuma chilensis*), and Chañara (*Ziziphus mistol*) to ensure their establishment and long-term contribution to habitat restoration. Together, these trees will provide natural food resources for the Red-fronted Macaw and strengthen the resilience of the dry forest ecosystem.



Red-fronted Macaw feeding on peanuts in the Community Reserve: Rodrigo Soria-Auza

Environmental education

With support from Dresden, we held an environmental education workshop in the Red-fronted Macaw Reserve on illegal wildlife trafficking, a major threat to the species. Local authorities, social organizations, and community members discussed prevention, law

enforcement, and economic alternatives through community tourism. Researcher Ricardo Céspedes shared insights on the Omereque culture, connecting the Reserve's archaeological heritage with biodiversity conservation and revealing new opportunities to enhance its tourism offerings (more information [HERE](#)).

In addition, thanks to Bioparc, we carried out educational activities with 61 children from the schools in each of the Reserve's communities. Every child received a coloring book in Quechua with information about the Red-fronted Macaw, together with colouring pencils and a T-shirt featuring the species, designed to connect cultural identity with conservation awareness. In coordination with their teachers, we also provided posters and illustrated materials to display in classrooms throughout the year, ensuring that conservation remains present in their daily learning. To encourage recreation, the schools also received football and basketballs for the children to enjoy.



Children and teachers from the community of Perereta proudly receiving Red-fronted Macaw T-shirts and educational materials, handed out by Guido Saldaña to strengthen conservation awareness: Simon Pedrazas

Halting Illegal Red-fronted Macaw Trafficking in the Caine Region (Caine basin)

Armonía completed a three-year program to combat the illegal trade of Red-fronted Macaws in the Caine River basin and Torotoro National Park, supported by the Illegal Wildlife Trade Challenge Fund (IWT) from the United Kingdom with great results. Over three years, Armonía reduced trafficking, raised awareness through education and media campaigns reaching millions, and promoted sustainable livelihoods via tourism, eco-agriculture, and beekeeping, benefiting 13 communities and 131 families. Key outcomes include halted illegal trade, improved local economies, reduced human-macaw conflict, and strengthened community-led conservation. (you can read the final report: [HERE](#)).



The board of the first Beekeepers' Association receiving equipment for honey collection, together with Romeo Rojas-Estrada and Guido Saldaña: Wilder Calahuma

First Potosi beekeeping association created: By the end of 2024, we achieved an important milestone for sustainable livelihoods with the establishment of the first Beekeepers' Association in the department of Potosí. The foundation brings together around 60 beekeepers from project beneficiaries and local Indigenous communities, creating new economic opportunities while reducing dependence on activities that threaten wildlife. To strengthen this initiative, we produced two promotional video spots highlighting both the association and the new community-based tourism routes in Matansería–Jala Jala (watch the videos: [HERE](#)). These efforts are opening new doors for Torotoro as a destination that combines biodiversity conservation with local development.



Group photo of participants in the forest fire prevention workshop, taken just before the practical training with real fire Marizol Huarachi

Environmental education: Bolivia's only local donor, Laboratorios Bagó, supports the Ciane/Torotoro program throughout 2024, allowing us to continue our conservation work in this region. Their contribution made possible the monitoring of 16 active Red-fronted Macaw nests, direct support to 12 park rangers and staff, and the delivery of personalized uniforms and equipment to strengthen field monitoring. Bagó also supported environmental education, reaching over 1,000 children with coloring booklets in Quechua, and backed reforestation efforts in six communities with 1,000 native seedlings. Additionally, their support enabled a forest fire prevention workshop with more than 40 key participants and the cleaning and improvement of over 1 km of the birdwatching trail at Matansería–Jala Jala, which welcomed 64 visitors since its creation.



Children from the Rodeo Escalón community school in Torotoro proudly showing their colouring books: Romeo Rojas-Estrada

Red-fronted Macaw futsal championship: Thanks to the ongoing partnership with Play for Nature, Torotoro became in 2025 the stage for the Red-fronted Macaw Futsal Championship (last year El Palmar was the stage), a sports event organized during the anniversary of the Torotoro National Park that combines conservation with community celebration. A remarkable achievement was the participation of all 10 communities, turning the championship into a hub that connects local communities with the National Park. This innovative initiative promotes pride in the species, fosters youth engagement, and strengthens Torotoro's identity as a place where nature and people thrive.



Custom-made Red-fronted Macaw trophies, presented at the launch of the Torotoro Futsal championship: Romeo Rojas-Estrada

Protecting the Palm Breeding Red-fronted Macaw population (Grande basin)

During the 2021 population census of the Red-fronted Macaw, Asociación Armonía found nests in Janchicoco palm trees (*Parajubaea torallyi*, a threatened and endemic palm species) in El Palmar National Park, Chuquisaca. This is the only site where the Red-fronted Macaw breeds in palm trees; elsewhere, they typically nest on cliffs. In 2022, Armonía installed 50 nest boxes in palm trees for the first time to increase the number of available nesting cavities and support the reproduction of this Critically Endangered species. No macaws have used the nest boxes yet, though they are beginning to inspect them more frequently.



A couple of Red-fronted Macaws visiting our new nest box design (half-roofed): Park Ranger Felix Laime

Nest boxes with new models

Thanks to Bioparc and ZGAP's continued support, we installed 25 new nest boxes in September 2024, bringing the total to 75. We are experimenting with new designs which include three innovative models: half-open roof, completely open, and closed-roof boxes. To encourage adoption, each box was camouflaged with dry Pasopaya palm bark and filled with the same sawdust-like material found inside natural palm cavities.

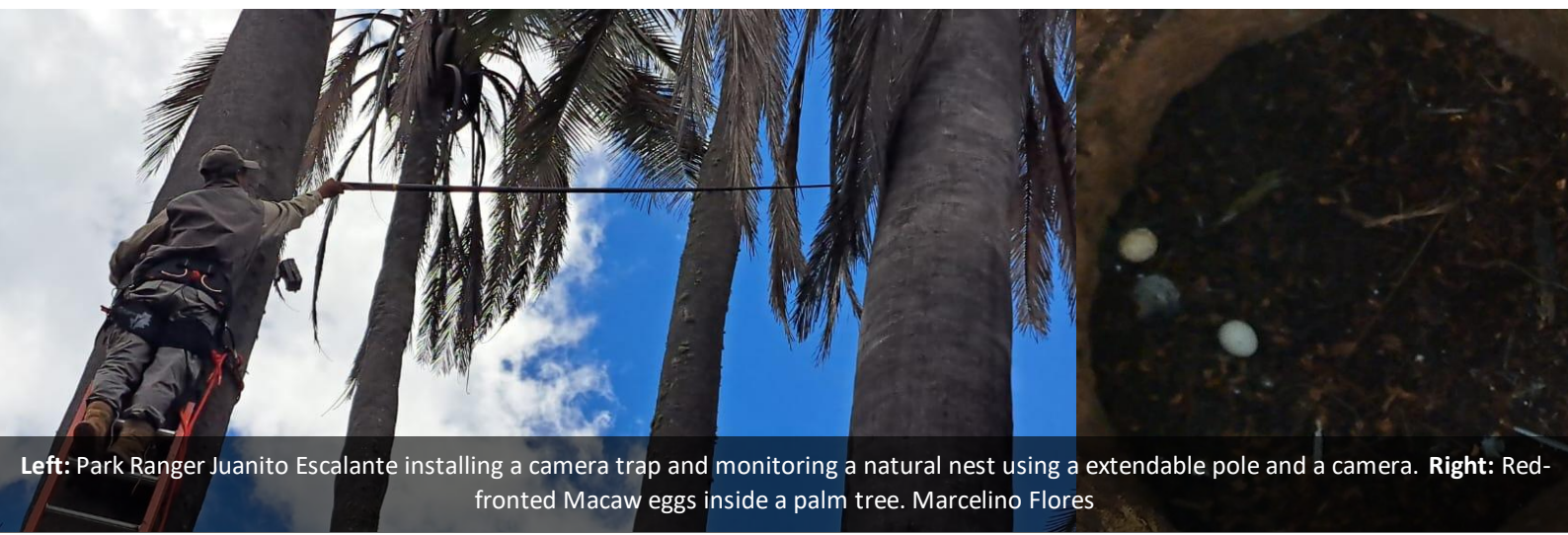
The installation was carried out in close coordination with El Palmar's park rangers, with valuable support from community member and former park guard Marcelino Flores. All boxes were successfully installed and prepared for the 2024–2025 breeding season, which runs from November to April.

Monitoring the natural nests and nest boxes

During the 2024–2025 breeding season, our monitoring brought very positive and encouraging results, particularly highlighting the attractiveness of the new nest box models. In December, a pair of Red-fronted Macaws visited one of the half-roof boxes (Box #25), and we recorded signs of activity at the entrance holes (peck marks) in four additional boxes (#13, #18, #19, and #20). This increased activity, along with visits from other parrot species such as the Blue-crowned Parakeet (Box #16), indicates that the new designs are more appealing and that our efforts are yielding promising results. These developments give us strong optimism that Red-fronted Macaws will adopt a nest box in the upcoming 2025–2026 breeding season.

In parallel, we monitored natural nests in palm trees using camera traps, an Insta360 camera with an extendable pole, and safety harnesses for climbing. For this breeding season, we recorded 12 natural nests in El Palmar National Park, confirming the presence of eggs in 10 of them.

Left: Park rangers covering nest boxes with dry bark. **Right:** View inside a nest box filled with sawdust-like material from the Pasopaya palm. Marcelino Flores

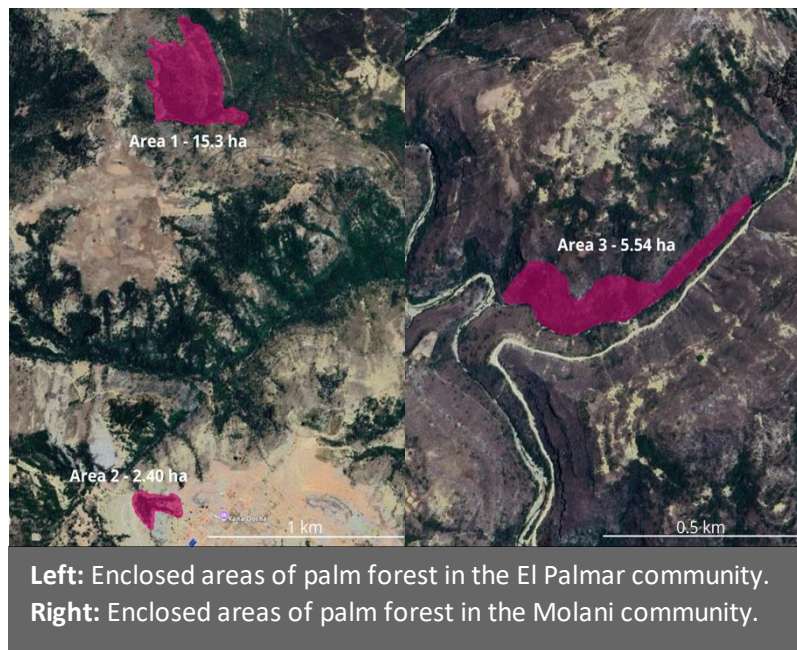


Left: Park Ranger Juanito Escalante installing a camera trap and monitoring a natural nest using a extendable pole and a camera. **Right:** Red-fronted Macaw eggs inside a palm tree. Marcelino Flores

Fencing and protection of Pasopaya Palm forests

Through coordinated efforts with the staff of El Palmar National Park and the commitment of local communities, we successfully fenced 23.24 hectares to protect the sections of the last remaining Pasopaya Palm forests from livestock and to facilitate their natural regeneration. To minimize the impact on the landscape, we used stone fencing — a technique historically employed by ancient Quechua communities — complemented with posts and barbed wire. The conservation areas were established in the communities most important for palm forests: El Palmar (15.3 ha and 2.40 ha) and Molani (5.54 ha). This participatory process, involving both park rangers and community members, was crucial to ensure the long-term conservation of the endemic Pasopaya Palm, a key habitat for the Red-fronted Macaw. These efforts were made possible by ZGAP and MBZ.

In December 2024, we planted 5,700 Pasopaya Palm seeds in the enclosed areas of the El Palmar and Molani communities, as well as in two neighboring communities, Rodeo El Palmar and Chajramayu. This large-scale effort relied on the active participation of local communities—without their commitment, the planting would not have been possible. By placing the seeds directly in sites with suitable humidity and temperature, germination success has been high. Previous plantings carried out a decade ago by El Palmar National Park achieved a 70–80% germination rate, and today those palms already reach one meter in height. These results reinforce the expectation that the newly planted seeds will successfully restore the palm forests essential for the Red-fronted Macaw.



Left: Enclosed areas of palm forest in the El Palmar community. **Right:** Enclosed areas of palm forest in the Molani community.



Left: Pasopaya Palm seeds previously soaked for 48 hours to improve germination success. **Right:** Guido Saldaña (coordinator of the Red-fronted Macaw Program) planting a seed. Romeo Rojas

Education, sustainable use, and community engagement

In addition to habitat protection and nest monitoring, we advanced education, sustainable livelihoods, and awareness in El Palmar National Park and the municipality of Presto, expanding the impact of our efforts, thanks to the support from ZGAP (2024) and new support from Bioparc.

Environmental education: In February 2025, we held a workshop with 34 school directors, including the district director, to integrate Red-fronted Macaw conservation into school curricula. We distributed 3,000 colouring booklets in Quechua and created a new mascot featuring Pasopaya Palm. Additionally, we produced the first-ever bird guide for El Palmar National Park, printing 2,000 copies that will be sold by local communities to generate income and promote birdwatching tourism.



Guido Saldana delivering the bird guide to council members of the Municipal Council of Presto. Romo Rojas

Sustainable use of palm products: To support the Pasopaya Palm Cookie Producers Association, we delivered an industrial blender, replacing traditional stone-based processing and greatly improving production efficiency. We also developed a new product packaging design featuring the Red-fronted Macaw, Pasopaya Palm, and Andean Bear. Once approved by SERNAP, this redesign will both strengthen local marketing and highlight conservation.

Promoting conservation and tourism: To showcase El Palmar’s unique biodiversity — including the Red-fronted Macaw, Pasopaya Palm, spectacled bear, and Andean Condor — we produced a promotional video and radio spots in both Spanish and Quechua (watch the video [HERE](#)). These messages are being broadcast across Bolivia’s dry valleys, raising awareness of sustainable practices and the importance of conserving this critical habitat.



El Palmar beekeeping program: With support from Bioparc, in 2025 we launched a beekeeping program to promote sustainable development in communities of El Palmar National Park. On August 29, we met with the Director, Head of Protection, and park rangers to select participating communities and review quotes for materials and equipment. The project will produce honey from the endemic Janchicoco palm flower. Fifteen families will receive one of the 18 hives purchased, while three hives will be managed by park rangers. The program is currently in the procurement phase, preparing for full implementation and community engagement.



Forest firefighters Rilver Condori and Camilo Maldonado during practical training in the El Palmar community. Guido Saldaña

Fire prevention and resilience: In April 2025, we organized a forest fire prevention and response workshop for communities and park rangers, led by professional firefighters from Cochabamba's risk management unit. The training introduced the Bolivian Incident Command System (SCI-B), with participation from 30 community members of El Palmar, Molani, and Chajramayu, together with nine park rangers. The event was recognized nationally and featured in *Los Tiempos* newspaper (you can read the article [HERE](#)).



Red-fronted Macaw family in El Palmar. Ernst Udo Drawert

Discovering Palm Forest Habitat for the Red-fronted Macaw (Pilcomayo Basin)

In April 2025, with support from ZGAP, the Red-fronted Macaw Conservation team conducted its first expedition into the palm forests of the Pilcomayo region. Over ten days, the team surveyed the municipality of Icla, focusing on Ruditayuq, Thaygata, and Cantar Gallo, aiming to locate Red-fronted Macaw nests and populations. While no active nests were found, seven palm trees with potential nesting cavities were identified, usable by macaws or other species such as Blue-crowned Parakeets. Surveying 70% of the palm forests revealed a patchy distribution, likely less suitable for Red-fronted Macaws than the palm forests in El Palmar National Park. The expedition also provided an important opportunity to engage local communities and discuss strategies for conserving both the palm habitat and its wildlife.



Top: Marcelino Flores searching for Red-fronted Macaws in the landscape. **Left:** Panoramic view of the landscape with Palm forests. **Right:** The expedition team, from left to right: Marcelino Flores (Assistant), Arianna Barra (Assistant), Guido Saldaña (Coordinator), and Bladimir Garrado (Guide)

Red-fronted Macaw 2025-2026 Program Goals

For 2025–2026, Asociación Armonía aims to grow the Red-fronted Macaw Conservation Program by consolidating work in all four basins and advancing livelihood initiatives, scientific monitoring, habitat restoration, and community engagement and set the following goals:

Mizque Basin – Red-fronted Macaw Community Natural Reserve

- Monitor natural nests and nest boxes.
- Collect scientific data from nests using dataloggers.
- Establish beekeeping as a community income source linked to habitat restoration.
- Launch a multi-year habitat restoration program to recover 2,000 hectares.
- Organize the Red-fronted Macaw Futsal Championship to strengthen community pride.
- Promote the Reserve to increase national and international tourism.
- Train local staff for improved Reserve and lodge management.
- Complete birdwatching hides to secure close-up Red-fronted Macaw photography.
- Continue the annual Environmental Education and Awareness Program

Caine Basin – Torotoro National Park

- Monitor natural nests and Red-fronted Macaw populations with park staff.
- Support the honey association to expand sustainable beekeeping.
- Promote community-based tourism led by local families.
- Continue the annual Environmental Education and Awareness Program.

Rio Grande - El Palmar National Park

- Monitor natural nests and 75 nest boxes.
- Evaluate all nest box models to identify the most effective designs.
- Place climate sensors in palm nests and nest boxes to understand breeding conditions.
- Establish beekeeping initiatives with local communities.
- Promote El Palmar as a biodiversity and cultural tourism destination.
- Continue the annual Environmental Education and Awareness Program

Rio Pilcomayo – Icla

- Monitor potential nesting sites and assess threats to this isolated subpopulation.
- Continue the annual Environmental Education and Awareness Program, including antitrafficking materials.

Cross-cutting Actions

- Continue annual fire prevention workshops across all basins to reduce habitat loss.
- Strengthen community participation in conservation and sustainable development.