Red-fronted Macaw Nestbox Program

(Asociación Armonía - December 2021)

Red-fronted Macaw (*Ara rubrogenys*). Paul B. Jones

Summary

In early 2021, Asociación Armonía conducted a complete global Red-fronted Macaw breeding population census in the dry Andean valleys of Bolivia where this endemic and Critically Endangered macaw occurs. A total of **159 nests were registered** and **1,160 Red-fronted Macaws were counted**. The Red-fronted Macaw Community Reserve created by Armonía in 2006 was confirmed as the most important reproductive site with a total of 20 nests.

To understand breeding conditions and to increase key breeding sites through nestboxes in the Red-fronted Macaw Community Reserve, we have studied the physical characteristics of 5 nests along 70-meter-tall cliffs with use of a burrow scope. We discovered that nests are within deep cavities (up to 2.6 meters in depth) at a distance of 70 cm on a sandy/rocky surface, with an entrance hole of 40 cm (horizontal) by 30 cm (vertical).

We placed **10 wooden nestboxes at the Red-fronted Macaw Community Reserve** that mimic the size and characteristics of their natural nests. Within the nestboxes, the walls and surface were covered with a mixture of clay and sand to mimic the rocky characteristics of the inside of a natural nest. Camera traps were placed to study the macaw activities. Armonia seeks support to continuously monitor the nestboxes during the breeding season to evaluate project success (US$ 3,500), and to increase food availability for breeding pairs through our Red-fronted Macaw Reserve reforestation program (US$ 5,000).

Project photos can be downloaded from:

https://www.flickr.com/photos/128583429@N05/albums/72157657466293166

Program Introduction

The Red-fronted Macaw (*Ara rubrogenys*) is a Critically Endangered species from a small region in the Inter-Andean valleys of Bolivia. The just-over-1,100 individuals (according to the National Census of 2021; read more **HERE**) live nowhere else on Earth. The species is threatened by the destruction of native dry forests, persecution by local farmers because they eat crops (maize and peanuts), and poaching to supply the illegal pet trade.

Asociación Armonía has worked on the conservation of the Red-fronted Macaw for over 15 years. Our efforts stopped the illegal trade of the Red-fronted Macaws Rio Mizque population over a four-year period through an intense education program, tourism development, and community agriculture development programs. The success we achieved with indigenous communities motivated the municipality to enact stronger legal persecution of traffickers.

The problem of habitat loss and trafficking has been addressed through the creation of the Red-fronted Macaw Community Reserve in 2006. Situated among and administered by the communities of San Carlos, Perereta, and Amaya with support from Armonía, the Reserve protects the largest known breeding colony of Red-fronted Macaws in the world. Community members are actively involved in conservation decisions, protection and habitat restoration. Read more about Armonía's Red-Fronted Macaw work **HERE**.

Key breeding holes and safe breeding sites are often a limiting factor for large cavity breeders. We have observed this to be true with the Bolivian endemic Blue-throated Macaw that upon placing nestboxes, started to actively use the artificially created nesting sites. To date, 105 Blue-throated Macaw chicks have fledged Armonia nestboxes (read more **HERE**). Therefore, we will experiment for the first time ever with nestboxes for the Red-fronted Macaw at the Red-fronted Macaw Community Reserve to develop a method of increasing key breeding sites for this endemic macaw of the dry Andean Valleys.

Red-fronted Macaws in flight over the Mizque river at the Red-fronted Macaw Reserve. Mileniusz Spanowicz

Red-fronted Macaw Distribution

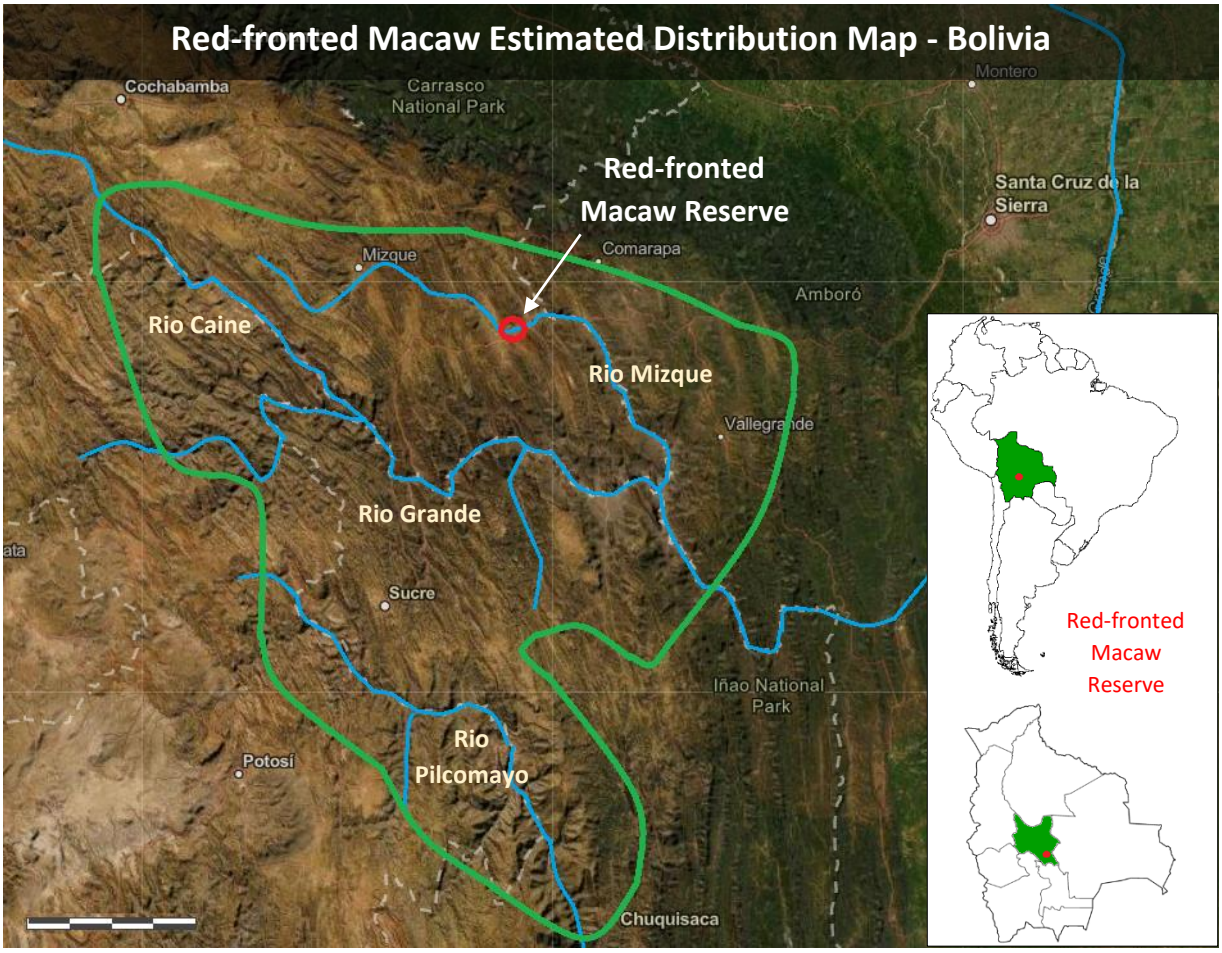

Figure 1. The dark green line indicates Red-fronted Macaw estimated distribution range. This Macaw is endemic to the Bolivian dry inter-Andean valleys in four Departments (Cochabamba, Chuquisaca, Santa Cruz and Potosi). The core reproductive sites are along the Mizque, Grande, Caine and Pilcomayo River basins. The red circle indicates the Red-fronted Macaw Community Reserve at the Omereque Municipality in the Cochabamba Department managed by three communities (San Carlos, Perereta, Amaya) and Asociación Armonía. The Red-fronted Macaw Community Reserve holds the largest reproductive site for the species.

Typical Red-fronted Macaw habitat with steep breeding cliff along rivers. Rodrigo Soria-Auza

Red-fronted Macaw Reserve Nestbox Program

Natural Nest Inspection

Before being able to build the right Red-fronted Macaw nestbox for a species that is adapted to rock and cliff breeding, we have to inspect natural nests to understand the breeding requirements. We purchased a burrow-scope in order to film within the natural nests (burrows) along the cliffs at the Red-fronted Macaw Community Reserve where we have monitored breeding macaws for many years and where we know exactly the cavities that are being used. The Red-fronted Macaw breeding census conducted in early 2021 provided crucial information on cavity occupancy.

For the first time ever Red-fronted Macaw nests along cliffs have been inspected and data was gathered. Asociación Armonia contracted an expert rock-climbing team that helped Armonia staff to abseil down along 70-meter cliffs to reach these natural nests in July. With use of the burrow-scope and measuring tape we gathered key information on nest characteristics. This data helped us to build the right nestbox type that we placed along the cliffs in December 2021.

Natural nest result: Cavity depth ranges from 1.60m to 2,60m. Entrance dimensions of the most preferred nests are around 40 (horizontal) by 30 (vertical) centimeters. Location of the actual nests were found around 70cm within the burrow. All nests were horizontal with a sandy/rocky surface. Nest dimensions within the burrow were approximately 30 (horizontal) by 20 (vertical) centimeters.

Tjalle Boorsma (Conservation Program Director) studying natural Red-fronted Macaw nests along 70-meter-tall cliffs. Rodrigo Soria-Auza

Creation and Placing off Nestboxes

Based on the gathered Red-fronted Macaw nest data, we developed 10 wooden nestboxes: 120 cm in length, 45 cm in height and 45 cm in width. Five nestboxes received an entrance hole of 40 by 30 cm and five nestboxes a 10 by 10 cm entrance to study selection preference. Armonía's Blue-throated Macaw nestbox program proved that cavity size (10X10 cm) is extremely important to stop competition between species and prevent predators from entering. The nestboxes were made out of wood in order to lower the weight of the artificial breeding sites in order to minimize the risk of the nestboxes falling down.

Red-fronted Macaw nestboxes to be transported to the Red-fronted Macaw Community Reserve: Guido Saldaña

Within the nestboxes, the walls and surface received a mixture of clay and sand to mimic the natural nest conditions. Macaws tend to scrape the walls with their strong beak in order to create a sandy surface used as a breeding bed on which they lay their eggs. We decided to create nestboxes that are horizontal so they do not stick out too much from the cliff wall, lowering the risk of rocks falling on the nestboxes.

The nestboxes were carefully placed with the help of expert rock climbers along the 70-meter cliffs in the Red-fronted Macaw Community Reserve in early December. They were placed away from naturally occupied cavities. The nestboxes were sustained with metal wires that were bolted in the cliff wall. Camera traps were placed strategically near the nests to capture the usage of the nestboxes. Our Red-fronted Macaw Reserve Park guard will have to monitor the nestboxes twice a month to study the interest of the macaws in these artificial breeding sites.

Símon Pedrazas and Guido Saldaña preparing the nestboxes with a mixture of sand and clay to mimic natural nest walls: Asociación Armonia

Expert rock climbers placing the Red-fronted Macaw nestboxes along cliffs: Guido Saldaña

Nestboxes placed in the Red-fronted Macaw Community Reserve: Guido Saldaña

Next Steps

Monitoring Nestboxes

In order to evaluate project success will have to continuously monitor the nestboxes. It is crucial to have Armonía's Red-fronted Macaw expert (Guido Saldaña) together with the Red-fronted Macaw Reserve Park Guard (Símon Pedrazas) evaluate the nestbox usage every two weeks (according to Blue-throated Macaw nestbox program protocol). With the help from the climbing experts, we will have to analyze the camera traps every three months and change their batteries. Armonia seeks support of US$ 3,500 to travel to the Red-fronted Macaw Community Reserve in order to continuously monitor the nestboxes.

Increasing Red-fronted Macaw foraging habitat

Armonia created a large goat-free enclosure at the bottom of the Red-fronted Macaw breeding cliff in 2020. In this enclosure we started experimenting with peanut production to provide the macaws with an additional food source, attracting them to the protected Red-fronted Macaw Reserve where they can safely breed. This turned out to be a hit as Red-fronted Macaw were observed feeding daily on peanuts to feed their chicks (see video **HERE**). Apart from an additional food source for the Macaws, the nitrogen fixing ability of the peanut itself will help recuperate barren and nutrient poor soils within the reserve that are simultaneously being restored with native tree species. In order to continuously secure this additional food source at the moment the macaws have chicks, we are seeking US$ 5,000 to maintain the peanut plantation and to continuously reforest the area with native tree species.

Símon Pedrazas and Guido Saldaña monitoring Red-fronted Macaws at the Red-fronted Macaw Reserve: Guido Saldaña