Barba Azul Nature Reserve
August 2016 update report

First ever success of controlling fire at Barba Azul Nature Reserve. Our self-made firebreaks created by our 4X4 John Deere tractor donated to Armonía by American Bird Conservancy and International Conservation Fund of Canada worked. We finally are able the fully protect foraging habitat of the Blue-throated Macaw.

Project photos can be downloaded from:
https://www.flickr.com/photos/128583429@N05/albums/72157657123371838

Introduction

Barba Azul Nature Reserve finds itself in the heart of the 2016 dry season in the Beni savanna of Bolivia, already marked as one of the driest in decades given the lingering impacts of the "El Nino". Ranchers have expressed their concern and asked for help from their local government as cattle are starving as not enough food is available. This results in excessive burning of natural pasture lands to ensure the re-sprouting of grasses all throughout the Beni, Santa Cruz and La Paz Department, threatening local ecosystems and adding greenhouse gasses to the atmosphere. These fires are a direct threat to the Barba Azul Nature Reserve and extra protection measures have to be undertaken.

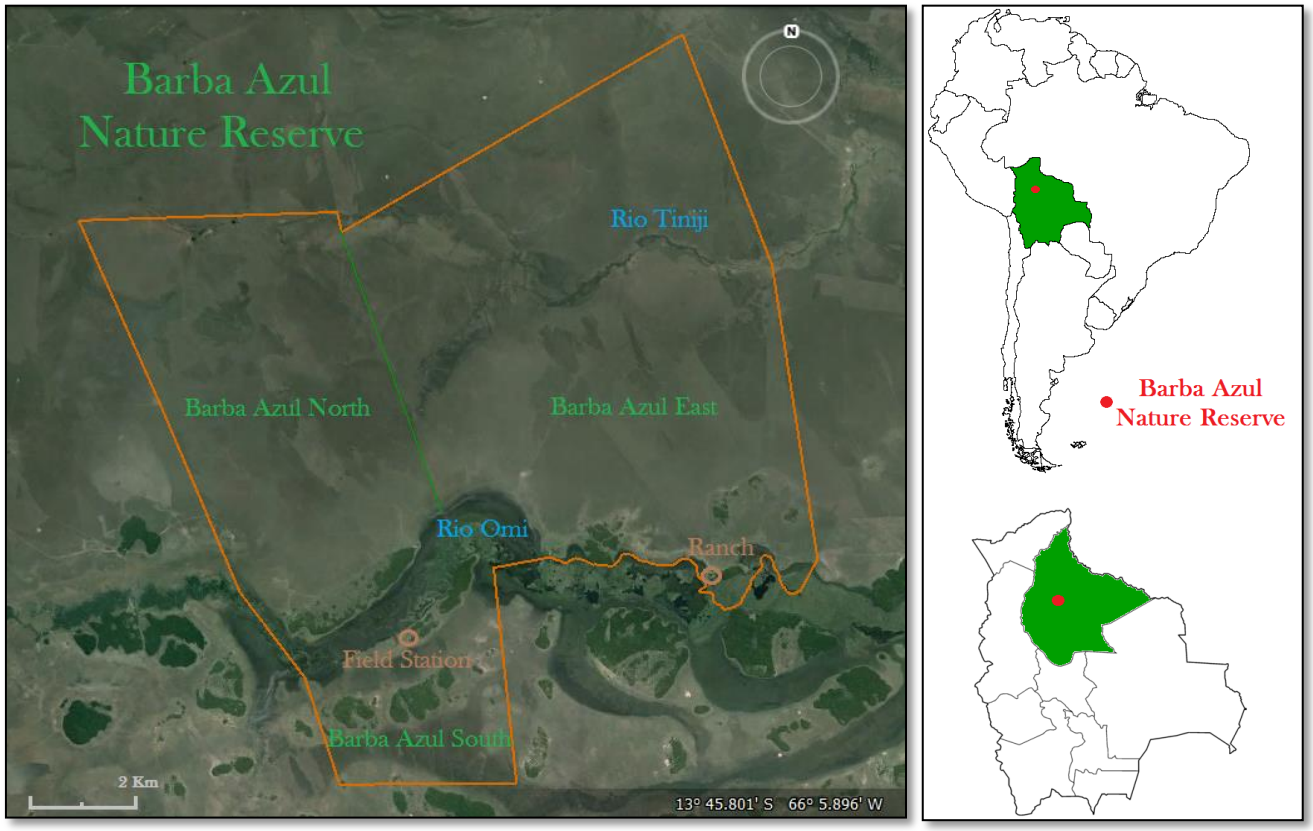

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Figure 1: Rene Cartagena on horseback at Barba Azul North for the annual Blue-throated Macaw nest box monitoring program. Transport was only possible on horseback as most of the savanna was still flooded due to local rainfall. Ladders, field food, equipment and tents were taken along as the monitoring of the entire reserve took up to 5 days. Photo by Tjalle Boorsma

Barba Azul Nature Reserve 2016 Goals

Our main goals for 2016 to ensure a continuous development of Barba Azul Nature Reserve and its infrastructure.

1) Establish Impenetrable firebreaks
2) Complete tourism infrastructure
3) Complete cattle ranching plan and infrastructure
4) Fully fenced boundary
5) Fully reforested Tiniji forest islands
6) Savanna age-class and Motacu palm monitoring program
7) Buff-breasted Sandpiper improved habitat, and foraging data
8) Blue-throated Macaw population monitoring program

Protection

Establishing impenetrable firebreaks

For two months of the dry season over a 1,000 man-made fires start daily in the Beni Department of Bolivia as ranchers burn their natural pasture lands to improve re-sprouting of grass-shouts. This uncontrolled burning goes hand in hand with large losses of savanna and forest habitat in the Endangered Beni Savanna Eco-region. Just this year we had 3 fires at Barba Azul Nature Reserve. One was stopped by our first ever self-functioning firebreak, and a second was controlled by the hard work of the Barba Azul team, investigators, fireman and helpful neighbours.

The upside of this year's extreme dry season is the increased period to execute our management activities. Therefore, we were able to ensure the improvement of firebreaks in Barba Azul North that resulted in stopping a big fire that entered from a northern ranch, protecting the main foraging area of the Blue-throated Macaw, Isla Barba Azul. Over 15 km of firebreak has been improved at Barba Azul North, doubling in size and additional cutting of the grass rooting system to prevent new grasses to grow on these firebreaks.

Also in Barba Azul South approximately 10 km of firebreaks were created. The completion of firebreaks bordering the reserve is removing grass residue with use of a big scraper. This scraper will also raise land in the middle of the firebreak that can be used as a raised road in the wet season. Armonía is not in the possession of this scraper so an additional contractor started executing this activity. Like in 2014, after 40 hours of work his tractor needs repair and additional firebreak improvements are halted.

To be completely equipped to control fires at Barba Azul Nature Reserve we need to find funding for this necessary scraper to fully finish our own firebreaks and not being dependant on contractors that are not able to complete their tasks. Little by little we are able to control this threat and better understand how fires function in this ecosystem.

Figure 2. Recently created firebreak completely successful at stopping the fire from crossing to the reserves boundaries. These firebreaks do still have to be improved as grass residue on the firebreaks has to be removed.

Armonía is looking for funding to be able to purchase this scraper to fully manage fires in the future. We still depend on contractors to execute this task. (picture taken by Eleanor Collinson)

Management

Fully reforested Tiniji forest islands

The Motacu Palm reforestation project for the Tiniji watershed has set the following goals to restore Motacu dominated forest islands with no natural regeneration, ensuring the future survival of this vital habitat type to protect the Critically Endangered Blue-throated Macaw:

1) Trail System for tree transportation
2) Creating 3 artificial forest islands
3) Ringing of parasitic Fig trees using Motacu as host
4) Fencing off 7 Motacu dominated forest islands
5) Planting Motacu of different age classes.

Trail system for tree transportation. Finished

The trail system from Isla Barba Azul where the natural Motacu nursery is located to the forest islands in the Tiniji river system was created in 2015 and is used as main road to get to the north of Barba Azul East. All transportation to the Tiniji area go along this newly created road. Due to extreme dry conditions of this year's dry season, this road became passible around mid-July.

Creating 3 artificial forest islands. Partly Finished

In 2015 we finished 1 of the 3 artificial forest islands. This island turned out to be sufficiently high not to flood during the wet season. The creation of forest islands takes more time than expected and was the main activity in 2015, as we were not able to get fencing material to Barba Azul Nature Reserve due to wet weather conditions.

Because of this year's early dry season and therefore extremely high risks of fires, we are focussing on the creation of firebreaks throughout the reserve and the transportation of fencing material to the Tiniji forest islands so we are fully prepared to start reforesting the islands at the end of September/October.

Ringing of parasitic fig trees. Partly Finished

A total of 4 out of the 7 forest islands that will be reforested with Motacu sapling are cleared from parasitic fig trees that are harming the last surviving adult Motacu trees. These fig trees

dominate the Motacu trees and will eventually kill off their host. These Motacu trees are used as foraging and roosting trees for the Macaws and are therefore an indispensable species for this threatened ecosystem. Ringing of fig trees in the final 3 islands will continue during the planting process at the end of September.

Fencing of 7 Motacu dominated forest islands. Finished

The main progress we made in July/August was the fencing of 7 forest islands in the Tiniji river system, inhibited cattle from entering (figure 3). This action is an important step toward the completion of the project as we are now able to reforest the islands with Motacu samplings and without the threat of cattle destroying the recently planted Motacu. A total of 2,5 km of fence has been placed to ensure fully fenced islands.

The upper and lower wire are without barb to ensure wildlife from crawling under or jumping over the fence. This type of wildlife friendly fencing we tend to place throughout the reserve. The middle two wires are barbed to prevent cattle from trying to enter. As approximately 1,000 head of cattle forage in Barba Azul East, the implementation of fencing was one of the most important goals to ensure a successful completion of this project.

Figure 3. Fully fenced Tiniji forest islands with wildlife friendly fence as the upper and lower wire are without barb, ensuring easy passage in and from the island by local wildlife. Picture taken by Tjalle Boorsma.

Completing cattle ranching plan and infrastructure

Near 80% of the Beni Savanna ecosystem is managed by private landowners principally for beef production according to their traditional livestock management models with very little emphasis on habitat and species protection. We would like to present a sustainable livestock management model that is economically viable, ecological and socially friendly, through the set-up of a pilot ranch at Barba Azul East, functioning as a sustainable example ranch as well as generating sufficient income to protect the Nature Reserve and their conservation activities.

With help from previous funding from MARCH Conservation Fund and American Bird Conservancy, experts visited Barba Azul East in May 2016 to helping Armonía create a sustainable cattle management plan with all the necessary information related to landscape, land use and cattle practices. In August 2016 also a workshop was organized by Armonía with the cattle federation of the Beni Department including presentations of sustainable cattle experts from all over Latin America, presenting local ranchers the possibility of a different and more sustainable land-uses practice.

Figure 4. Rodrigo Soria-Auza (Armonía Director), Gustavo D. Marino (expert from Argentina), Iris Banda (expert from Mexico), Wendy Willis (ABC representative), Ivonne Borunda Carrillo (expert from Mexico) and Alberto Rautenberg (expert from Paraguay) at Barba Azul Nature Reserve observing the gathering of Blue-throated Macaws at Isla Barba Azul. Picture taken by Marton Hardy.

The next phase of the project will be the actual implementation of activities in Barba Azul East to ensure the necessary infrastructure to present the sustainable model ranch. Infrastructure implementation is the main objective for future fundraising to ensure the necessary basis to continue the sustainable cattle ranging business model. A third follow-up proposal has been send to March Fund to ensure the continuation of this project.

The main goal will be the implementation of all separate paddock fences and repairing fixed border fences to ensure the placement of cattle in the subsequent years, without destroying the habitat that has to be protected, and being able to manage the cattle according the sustainable model. Barba Azul East has a small corral that has to be improved and enlarged to ensure the managing of cattle. The corral will be used to check, vaccinate, count and separate cattle to properly manage the herd.

Research

Completed Blue-throated Macaw nest-box monitoring

In order to ensure protection of the complete lifecycle of the Blue-throated Macaw, we have placed in the last 4 years a total of 68 artificial nest boxes for the Blue-throated Macaw. These nest boxes are of a design that have been highly successful for the southern Blue-throated Macaw subpopulation where we have had over 60 successfully fledged chicks.

With the expertise from that area we placed nest boxes with the right entrance hole, size and wood type at Barba Azul Nature Reserve. In 2015 an additional 10 nest-boxes have been placed, increasing the number to a total of 50 nest boxes at Barba Azul East alone. An additional 18 nest boxes are dispersed over Barba Azul North and South

A very important task is the annual monitoring of all these nest boxes to evaluate usage by the Blue-throated Macaw, other users, state of the nest box and other information. Rene Cartagena monitored all 68 nest boxes in a time span of 5 full days, with the help of Luis Miguel Ortega and Hernan Lopez. Long days have been spent travelling with a ladder on horseback through the vast Beni Savanna (fig.1).

Figure 5: Barba Azul Nature Reserve field team (FLTR: Hernan Lopez in his favorite hat, Tjalle Boorsma & Rene Cartagena) monitoring all the Blue-throated Macaw artificial nest boxes in the reserve. Transport was only possible on horseback as most of the savanna was still flooded due to local rainfall. Ladders, field food, equipment and tents were taken along as the monitoring of the entire reserve took up to 5 days. Photo by Luis Miguel Ortega

Blue-throated Macaws have not yet used nest boxes at Barba Azul Nature Reserve. Blue-throated Macaws are intelligent birds with deep learned behavior. We believe they are very tightly following their breeding local pattern, which might be hard to break. It could also be that they are loosely colonial breeding, so less likely to just a pair to breed on Barba Azul alone. This is why it is important for us to find out where they are breeding, and whether it is all one expanded group, or if they nesting dispersed through-out the Beni. The more we know about their breeding behavior, the more we will be able to imitate a similar situation at Barba Azul.

First-ever record of White-eared Opossum for Beni Department, Bolivia

Two nest boxes that have been monitored were occupied by White-eared Opossum (*Didelphis albiventris)*. No documented records of the White-eared Opossum have been registered for the Beni Department (R. Wallace; Medium and Large Size Mammals of Bolivia; 2010). This record of the White-eared Opossum using the artificial nest boxes for the Blue-throated Macaw is the first-ever documented observation for the Beni Department and will soon be published as a short note in a scientific journal (journal yet to be confirmed).

Very little is known on mammal species presence and abundance in the Beni savanna eco-region, making this area one of the few frontiers for species explorations, obtaining valuable knowledge on better understanding their distributions and behavior in order to better evaluate the impact of anthropogenic activities.

Figure 6: White-eared Opossum (*Didelphis albiventris)* using a nest box as a sleeping location. This is the first ever documented record of this species in the Beni Department of Bolivia. Photo by Luis Miguel Ortega.

Research at Barba Azul Nature Reserve

A total of 20 students and researchers have visited Barba Azul Nature Reserve in the last 3 months, ranching from archaeologists from Italy and Spain, 5 local students from Cochabamba, Bachelor students from Scotland and 3 master students from the Netherlands.

Glasgow Students

For the sixth time, Glasgow students have spent two months in the reserve doing 4 different field studies. A total of 8 students have worked on collecting data of Blue-throated Macaw feeding behavior where the birds were filmed, photographed and studied for hours. Also a high-tech monitoring study was executed to see whether the macaws can be studied, counted and monitored from long distances with use of a drone This new methodology will be reviewed to understand it productivity.

Another team has worked on a scavenger study where feral pigs that roam free throughout the reserve (which needed to be controlled) were used as bait to attract scavenger species. These scavengers were monitored through camera traps set up right beside the bait. Another team has spent their two months studying savanna specialist birds in different age grasses of the Barba Azul natural pasture lands.

Figure 7. Glasgow students at Barba Azul Nature Reserve executing their Bachelor thesis study. Picture taken by Tjalle Boorsma

Figure 8. Fist ever observation of King Vulture at Barba Azul Nature Reserve caught on camera trap during the scavenger study executed by the Glasgow University. Picture taken by Glasgow University.

Dutch Master Students

Three student from the Wageningen University of the Netherlands have collected data from all forest island in Barba Azul Nature Reserve to compare the natural regeneration of Motacu throughout the reserve's range, relating this to soil characteristics and fruiting of the Motacu trees. The fruiting is further correlated to the presence of Blue-throated Macaws at Barba Azul. Not only are the large gallery forest islands of Barba Azul South studied, also all small forest islands in Barba Azul North and East are sampled.

The student will finish their sampling in two weeks and will continue data analysis in the Netherlands. One of their goals is to publish all this data. Tjalle Boorsma, former Wageningen student is supervising their work, helping to set up their methodology and discussing environmental factors of interest.

Archaeological research

Umberto Lombardo from Italy, who is an expert on peoples that inhabited Bolivia approximately 10,000 years ago is studying all forest islands at Barba Azul Nature Reserve to prove that these small circular islands are manmade. These islands have up to 3 meters of black soil with charcoal that will be analyzed at a later stage to specify the exact date of occupation by ancient peoples in the Beni. Throughout the reserve all types of land use changes can be found indicating the occupation of large groups of inhabitants.

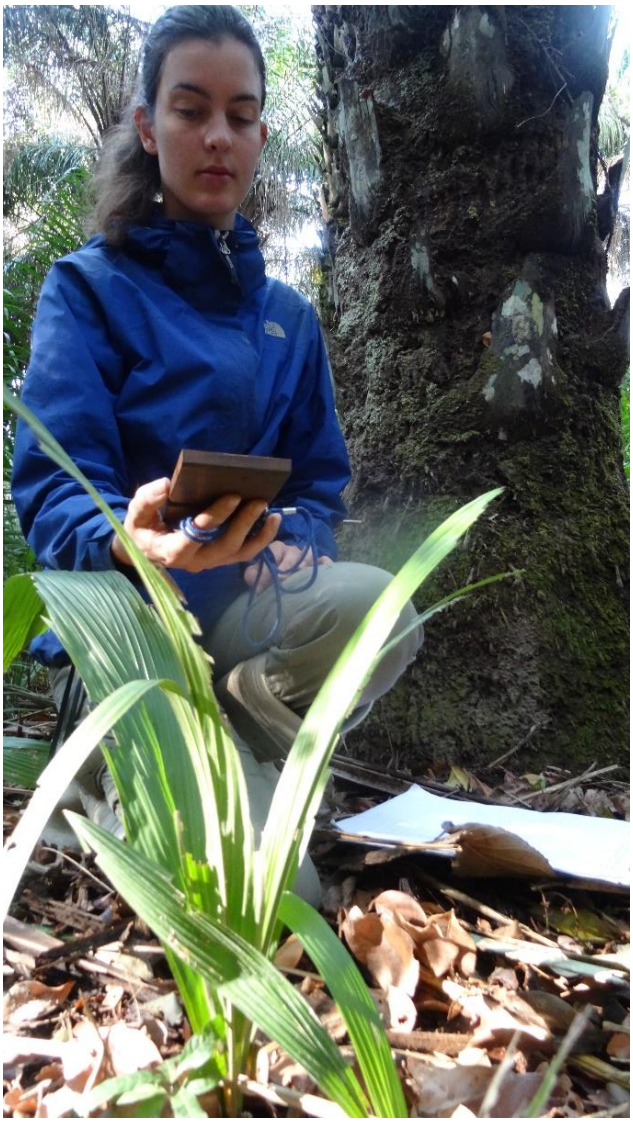

Figure 9: Iris Hordijk, master student from the Wageningen University of the Netherlands conducting her thesis work on the regeneration of Motacu throughout the Barba Azul Nature Reserve. Picture taken by Tjalle Boorsma

Figure 10. Blue-throated Macaws foraging on Totaí Palm at Barba Azul East. This data is collected by Fabian Meijer who is studying the effect of food resource on the presence of Blue-throated Macaws throughout the reserve. Picture taken by Fabian Meijer.

Cochabamba students

The Buff-breasted Sandpiper have arrived at Barba Azul Nature Reserve and 5 local students from the Cochabamba University are waiting for them to monitor. This is the 5th annual sandpiper survey with the main emphasis on the Buff-breasted Sandpiper, of which we analyze their numbers and feeding behavior of individuals that pass through the Barba Azul Nature Reserve.

The first Buffies arrived in the first week of September. This year we have one student who will spend an entire month in the reserve to evaluate the peak of sandpipers fattening up at Barba Azul before continuing their journey further south. The other team will study the sandpiper in 4 fixed points for a two-week period. This year additional information is collected on feeding preference. The students will now count all cattle, horses or pig presence where the Buffies are feeding to compare this with a non-grazed area. Also taller grass areas have been mowed to evaluate whether we can manage, improve and increase foraging habitat for the Endangered Buff-breasted Sandpiper.

Figure 11. Buff-breasted Sandpipers have arrived at Barba Azul Nature Reserve. Groups of over 45 have been witnessed coming down to the reserves territory after heavy rainfall. There they forage rapidly to continue their journey further south. The Beni is one of the most important stop-over sites and Barba Azul Nature Reserve is recognized as Western Hemisphere Shorebird Reserve Network (WHSRN) site. Picture taken by Daniel Alarcon.

Tourism

Complete tourism infrastructure

The upside of this early and extreme dry season is that many conservation and maintenance activities can be started earlier than expected. Last year we were barely able to reach Barba Azul Nature Reserve at the start of August, while this year we have transported heavy construction material on the 15th of July to start improving the cabins to ensure full comfort for visiting tourists that help conservation activities at Barb Azul through their stay in the reserve.

The roofs of the cabins have been extended with over 3 meters to ensure complete prevention of rain from entering the cabins. This directly gives a cozier atmosphere to the cabins as well as keeping them cooler during the hot mid-day hours. Also all mosquito netting has been improved with a finer maze preventing insects from getting in. Only one last cabin will have to be improved to fully finish this project.

Figure 12. Improved cabin at Barba Azul Nature Reserve presenting the extended roofing which ensures a cozier and rustic vibe to the cabin, shade during mid-day, preventing rain from entering, as well as creating possibilities of placing hammocks outside. Picture taken by Tjalle Boorsma.