

Friends of Barba Azul Nature Reserve August 2017 update report



Barba Azul Nature Reserve was purchased in 2008 (Barba Azul North) and consisted of approximately 3,700 hectares. Since then it has grown to a reserve of 11,000 hectares, protecting the most important foraging and roosting habitat for the Critically Endangered Blue-throated Macaw. We would like to thank **American Bird Conservancy, International Conservation Fund of Canada, IUCN Netherlands, Loro Parque Fundación, Neotropical Migratory Bird Conservation Act of the U.S. Fish and Wildlife service, Rainforest Trust** and **World Land Trust** who helped Asociación Armonía in developing the Barba Azul Nature Reserve with our welcome sign in the heart of the Beni savanna.

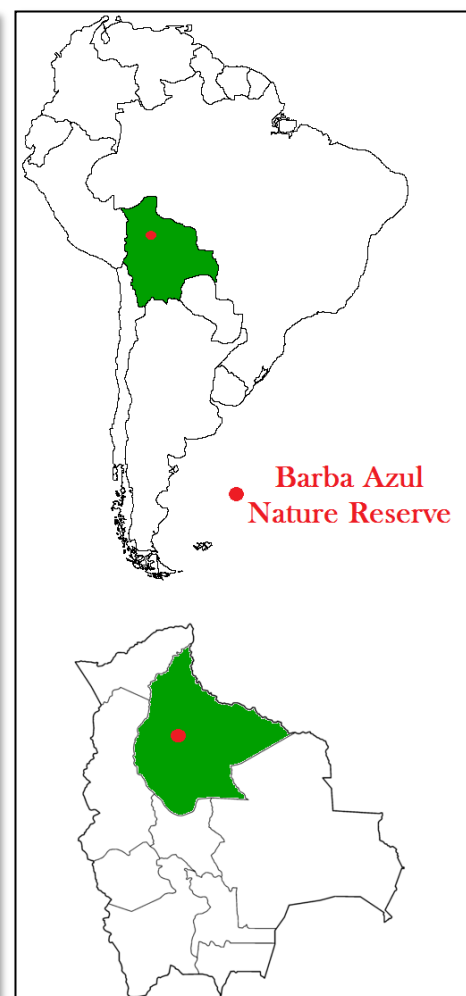
Project photos can be downloaded from:

<https://www.flickr.com/photos/128583429@N05/albums/72157657123371838>

Introduction

The start of the 2017 Blue-throated Macaw conservation season is highlighted by the discovery of the natural breeding grounds of the Macaws. We finally have a better idea where the Barba Azul Nature Reserve Macaws migrate during their wet season breeding period. In March, the first big groups of Macaws returned to Barba Azul and where we recorded at least 10 juveniles. We are pleased to know that the birds are reproducing successfully and find their save haven back in Barba Azul during the dry season.

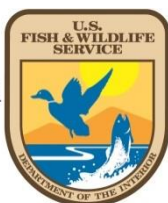
Many of our activities for 2017 are focussed on the sustainability of the Barba Azul Nature Reserve, from finalizing tourism infrastructure with building a dining facility, to constructing the basis for cattle ranching at Barba Azul East. These improvements will guarantee income in the near future, assuring the reserve's sustainability and will reflect in improving habitat protection for a wide range of species in the heart of the Llanos de Moxos.



Conservation and development of the Barba Azul Nature Reserve in 2017 is supported by:



A grant from the
Neotropical
Migratory Bird
Conservation
Act



Barba Azul Nature Reserve 2017 Goals

Our main goals for 2017 to ensure a continuous development of Barba Azul Nature Reserve and its infrastructure are:

1. Establish impenetrable firebreaks throughout the reserve.
 - Parallel backburn firebreaks for perimeter (60m width)
 - Grid firebreaks (20m width)
2. Complete tourism infrastructure.
 - Establish a dinner with the new design
 - Finish cabin improvements (interior and exterior design)
3. Barba Azul Nature Reserve infrastructure
 - Worker house for part-time staff and visiting construction workers
 - Present staff house improvements

4. Complete trail design through all habitats for visitors
5. Complete cattle ranching infrastructure
 - Paddock and perimeter fencing of Barba Azul East
 - Corral creation
6. Research
 - Blue-throated Macaw breeding site explorations
 - Blue-throated Macaws breeding site research project for master students
 - Buff-breasted Sandpiper habitat improvement and research



Figure 1. Orinoco Goose (*Neochen jubata*) posing at the Barba Azul field station where they successfully occupy nest boxes especially made for this near threatened species. Picture taken by Aiden Maccormick

Protection

Establishing impenetrable firebreaks

In 2016 a tremendous progress was made building fire breaks in Barba Azul North and Barba Azul South, resulting in our first successful stopping of a man-made fire that originated northwest of the Barba Azul Nature Reserve, protecting the most important feeding area of the Blue-throated Macaws. These fire breaks will be maintained and improved by cleaning them of all grass residue. Also, a parallel backburn firebreak will be established around the border of the reserve where an additional 60 meters of savanna will be backburned to reduce fire threats. Also, firebreaks are being built in Barba Azul East.

In July, the two main fire breaks protecting crucial habitat for feeding Blue-throated Macaws were finished. Also, new firebreaks have been established in Barba Azul East protecting dry forest habitat and the Barba Azul East infrastructure. Fire breaks further north in Barba Azul North and Barba Azul South will be maintained and improved in August/September.



Figure 2. The first and most important firebreaks of Barba Azul North are maintained and improved. Two large firebreaks will prevent man-made fires originating in the north, from burning crucial feeding habitat for Blue-throated Macaws at Isla Barba Azul. Also, new firebreaks have already been established in Barba Azul East. August onwards we would like to maintain and improve firebreaks further north of Barba Azul North (still too wet soil conditions) and maintain the firebreaks of Barba Azul South (waiting for river Omi to drain its water to ensure crossing). Pictures taken by Tjalle Boorsma

Firebreak creation and maintenance is a continuous and long-term work in progress where tall-grass savanna habitat, which is extremely hard to get through, has to be ploughed. The initial firebreaks are hard to create, though follow-up maintenance is less difficult but has to be repeated annually. Figure 3 shows the maintenance of already existing firebreaks. Additional smaller firebreaks will be established at the borders of the reserve, and the tall-grass savanna will be burnt in between to lower fuel loads to slow down raging fires.

There is only a small period during the dry season (July until November) in where firebreaks can be established. In the first 2 months when fires aren't a severe threat yet, most of the lower elevated savannas are still flooded or soil conditions are still too wet. Those areas are located mainly in the north of Barba Azul North are hard to reach. A different approach must be undertaken to ensure fire stops in those areas.



Figure 3. The Barba Azul John Deere tractor improving firebreaks in Barba Azul North. Along the borders of the reserve a smaller parallel firebreak will be established to burn 60 metres of grassland adjacent to the firebreak to lower fuel loads to fully block fires. This is a long-term work plan as building firebreaks is a tedious task and can only be executed in a short window of time when soils are dry. Some areas are inaccessible at the far north of Barba Azul North and different strategies must be undertaken. Picture taken by Tjalle Boorsma

July is the start of the fire season. Fire can be seen all around the reserve and are often far away. Most of the lower elevated savannas are still flooded (fig. 4) inhibiting fires from getting out of control. Distances from fires that are set close to the reserve are harder to estimate in distance and severity. To assess the severity of the fire, actual presence is needed to evaluate actions to be undertaken.

In September 2016, **Glasgow University** donated a Phantom 3 advanced drone to the Barba Azul Nature Reserve. This drone is now used as one of the main management tools to assess fires near the reserve. In July, a fire originated south of Barba Azul South where we could not estimate the distance from the field station. With use of the drone all doubts were taken away as Figure 4 clearly shows that the fire is away from the forest patches (it was at the border of Barba Azul South), burning away from the reserve.

The drone has also been used to take footage of wildlife and landscape to promote the Barba Azul Nature Reserve for visitors and researchers. Please check our new beautiful Black Caiman video on the Armonía facebook page:

<https://www.facebook.com/armoniabolivia/videos/vb.234034113014/10154735234783015/?type=2&theater>



Figure 4. Drone footage of a fire southwest of Barba Azul South. At the field station, this fire looked like it was originated within the reserve's boundaries. With use of the drone, which now becomes an important patrolling tool, we could determine that the fire was in a neighbouring ranch moving in southwards direction, not threatening the reserve. Picture taken by Tjalle Boorsma

Tourism

New field team

Since March 15th Carlos Roca replaced Rene Cartagena as the new Keeper of the Wild for the Barba Azul Nature Reserve, supported by **World Land Trust**. Rene and Rosario left their position as guardians of Barba Azul because their son Luis (6 years old) needs to go to school.

Carlos Roca (26 years old) and his wife Yuri Vaca (28 years old) are a young couple from Santa Ana de Yacuma with several years of field experience working in ranches throughout the area. They are very enthusiastic and willing to learn about conservation and eco-tourism. After a two-week training period, together with the Barba Azul coordinator, they have received the first tourist who left the reserve incredibly pleased, indicating that they have had their best Bolivia experience at Barba Azul, thanks to the service they received.

They have passed the 3-month trial period showing a very proactive attitude, willing to learn and understand the conservation goals of the Barba Azul Nature Reserve. The first months were dedicated to get acquainted to the reserve and neighbouring ranches. As activities are still mainly dormant due

to the flooded savannas, the

principal activities will start in mid-July/August.

We would really like to thank the **Neotropical Migratory Bird Conservation Act** of the **U.S. Fish and Wildlife Service** for supporting our field staff.



Figure 5 & 6. Yuri Vaca and Carlos Roca are since March 15th the new field staff at the Barba Azul Nature Reserve, replacing Rene and Rosario who worked 3 full years enthusiastically for Armonía. Pictures taken by Tjalle Boorsma.

Complete tourism infrastructure

With the incredible help from **International Conservation Fund of Canada** and **American Bird Conservancy**, we can start constructing the Barba Azul dinning facility. The Barba Azul coordinator will start organizing the transportation together with the main contractor at the beginning of August, to ensure all construction material will be present at the reserve. There is a short window of only 4 months where heavy transportation is able to reach the reserve. Construction can then be continued during the rainy season. The funding from ICFC and ABC holds for 70% of the total budget. This is enough to start the construction activities. Armonía will continue to fundraise for the remaining 30% (\$ 35.000). We have not been able to raise the funds to improve the cabins.

Figure 7. Design of the dining facility to be constructed at Barba Azul Nature Reserve to complete the tourism infrastructure. This dinning facility will overlook at river Omi and surrounding wetlands and marsh habitat.



Barba Azul Nature Reserve infrastructure

The present staff house will be improved in August/September. The Barba Azul coordinator obtained all the construction activities that must be implemented to ensure maintenance to the staff house and field station. No funding is yet found to build a worker house for part-time staff and visiting construction workers.

Complete trail design through all habitats

The two main trail systems that will be made are through the cerrado forest north of Isla Barba Azul, and a trail system going out to the tall-grass savanna to see the Cock-tailed Tyrant. These trail systems will be made in the beginning of August with use of the tractor and plough, creating trails through these habitats. These trail systems will be established together with the Barba Azul coordinator to ensure the best possibility to observe the most emblematic bird species and wildlife that Barba Azul can offer.

Barba Azul East cattle ranching

Complete cattle ranching infrastructure

With help from the [March Conservation Fund](#) and [American Bird Conservancy](#) we will start building paddock fences and improving the existing Barba Azul East coral to establish the basis for a sustainable cattle ranching model in Barba Azul East. Fence posts are being bought and transported to the reserve to ensure fencing right away when the savanna habitat is sufficiently dry. The year 2018 will be characterized by the first purchase of cattle to start our sustainable ranching model and generating income to pay for our conservation activities.

A total of 2,200 hardwood post have to be purchased for the sustainable cattle ranching program at Barba Azul East. Approximately 500 posts have been purchased though buying tends to become increasingly difficult. To overcome this challenge, we are considering a concrete post maker that will produce concrete posts instead of having to get a hold on scares hardwood timber posts. We hope to have more information on this in the beginning of August.

Even though hardly any rain has fallen in the last 2 months and surrounding savannas are drying up quickly, the river Omi's water levels remains high. In 2016, we could cross the tractor from Barba Azul East through the river Omi to reach Santa Ana de Yacuma. This year it has been a full month later that the tractor was able to cross the river Omi. Although no transport activities of fencing posts were possible from June-July, a serious head start has been made on maintaining the fire breaks of Barba Azul North and creating firebreaks in Barba Azul East.

Management

Motacu continuation plan



Part of the **World Land Trust** supported Motacu protection program for Barba Azul South, is the improvement of habitat for the Motacu palm, the most important foraging species for the Blue-throated Macaw. This part of the reserve has several large Mango forests that are exotic to Bolivia. The undergrowth of these forest patches is deprived of all regeneration of native tree species. Mainly light and water competition are the driving factors behind the prevention of other trees to grow in these patches. To improve Motacu habitat, large gaps were created by removing the large exotic Mango trees. These gaps have sufficient light for Motacu trees to regenerate naturally. Also, Motacu seedlings will be planted in these gaps to favour this species in these forests. The timber of the Mango trees will be used to build furniture for sofas at resting sites along trails, tables for the cabins and a base structure to repair an old trailer within the reserve. The sustainable logging of this timbre is not only improving habitat conditions, it also saves high maintenance costs and the purchase of a new trailer (800 USD).

Figure 8 & 9. Tjalle Boorsma is improving Motacu habitat by creating gaps within the exotic Mango stands where the trees are felled directionally and timber is used for maintenance purposes. Pictures were taken by Marc Meeuwes and Tjalle Boorsma respectively



Aliso live fencing program

Hundreds or years of intensive private land ranching in the Beni Savannas of Bolivia has heavily affected the few hard wood trees in the area. Resources for ranching infrastructure are plummeting, leaving behind deforested habitats. Therefore, the Aliso live fencing project funded by **World Land Trust** is an innovative and experimental project where Aliso Trees (*Vochysia sp.*) are used as live posts for fencing in the Barba Azul Nature Reserve. This will provide an alternative to the continuous deforestation of local hardwood timber for cattle production fencing infrastructure. Aliso is a fire and flood resistant tree species found throughout the flooded hyper-seasonal savannas of the Beni department.

Not only is this tree part of the local ecosystem and adapted to the harsh climate of the Beni Savanna Eco-region, it also is an important food source for the Critically Endangered endemic Blue-throated Macaw (*Ara glaucogularis*). When the Aliso tree produces fruit in September/October, Blue-throated Macaws congregate in high numbers to feed on its fruits. Not only does this tree provide a lifetime fence post, it also halts deforestation when proved successful as there will be no need for unsustainable timber harvests. The halt of deforestation and the planting of trees will sequester carbon to mitigate climate change. There is also a practical cattle management benefit as it will provide shade for livestock during harsh sunny days and block cold front during the southern winters. These natural fence post will also minimize ranching costs as they are much cheaper in maintenance costs.

This two-year project aims to experiment in planting Aliso trees as fencing posts. A total of 1,000 trees will be planted to provide posts for 10-kilometre border and paddock fencing. A local nursery will be created to start producing Aliso trees that in the future can be sold as fence post to neighbouring ranches, helping the reserve in generating income to pay for management costs.

Figure 10. Aliso tree, an abundant fire and flood resistant trees species in the Beni savanna that will be used for the live fencing experiment funded by Wold Land Trust. Picture taken by Tjalle Boorsma





Figure 11. Marc Meeuwes (Dutch reforestation expert) together with Tjalle Boorsma planted sticks of Aliso trees in flooded river edge habitat to experiment whether the Aliso tree can be vegetatively reproduced (form of asexual reproduction of trees where roots originate in bark tissue). Picture taken by Tjalle Boorsma

The first Aliso live fencing activities have been taken place in July. A natural nursery of Aliso trees has been discovered in Barba Azul South and these regenerating trees are planned to be translocated to the new fence that will be placed at the eastern most border of Barba Azul South. Each hardwood post will be accompanied by an Aliso sapling to ensure a full-grown tree in the upcoming 10 years that will replace the post with a live fencing tree post that will last for the upcoming 100 years.

Also, a vegetative reproduction experiment has been started where Aliso branches are planted in flooded river edge habitat to see whether these branches will produce roots and can therefore be used to plant as a tree for live fence post. A total of 30 branches of different sizes have been planted and will be reviewed in a month to evaluate root development. This asexual form of reproduction could be a cost and effort efficient form to translocate Aliso trees.

Research

Blue-throated Macaws breeding site discovery

The Critically Endangered and Bolivian endemic Blue-throated Macaw (*Ara glaucogularis*) inhabits the seasonally inundated Llanos de Moxos ecoregion of northern Bolivia. It frequents palm forest islands and gallery forests where it primarily feeds on Motacu palm fruit (*Attalea phalerata*). The Barba Azul Nature Reserve is the most important dry season congregation site where a total of 118 birds were observed in September 2016. The Barba Azul population uses the reserve solely to forage and sleep at specific roosting sites. These birds leave Barba Azul at the beginning of the rainy season (October/November) to unknown breeding grounds. The main question is: where do these birds breed?

Two expeditions (each 2 weeks) have been executed to search breeding Macaws in the Yacuma province of Bolivia. A total of 5 nests have been discovered in native palm trees; *Mauritia flexuosa* (3) and *Acrocomia aculeata* (2). Also, an unknown roost was discovered with 10 birds 40 km north of the expected distribution range. Based on the collected information on site, from local people and habitat evaluation, we expect that the main breeding habitat is in *Mauritia* palm stands (breeding) near *Attalea* stand (foraging) along the Yata river area bending down to the eastern border of the Yacuma province. An additional four potential breeding sites have been selected for future explorations to verify the *Mauritia/Attalea* breeding hypothesis. This successful study was funded by [American Bird Conservancy](#) and [Cincinnati zoo & botanical garden](#). Funding for a 2017-2018 rainy season breeding habitat exploration in the four potential breeding sites is sought for. A proposal has been sent out to experiment with nest boxes that are more like the natural breeding trees we found during the expedition. This will hopefully

attract Blue-throated Macaws to breed at Barba Azul.



Figure 12. Discovery of breeding Blue-throated Macaws in the flooded savanna of the Llanos de Moxos Bolivia (right dead *Mauritia flexuosa* snag, upper cavity). Drone footage was taken by Tjalle Boorsma

Blue-throated Macaw GPS tracking study

In continuation of the discovered natural breeding sites of the Blue-throated Macaws, we will intent to capture 3 Blue-throated Macaws in the Barba Azul Nature Reserve to allocate GPS trackers with use of a harness in September, just before the bird's migration to their wet season breeding grounds. This study will be executed by Lisa Davenport who has been testing different types of trackers and harnesses on captive birds at **Loro Parque Fundación** in Tenerife, to ensure the right equipment for this study.

In order to capture the birds, an 8-meter-high platform has been built that will function as a feeding station where corn and ripe Motacu fruits will attract the Macaws to this specific site. From this canopy feeding station, we will attempt to catch up to 3 birds to place GPS trackers to follow their local movement at Barba Azul and surroundings, and to see where the birds migrate during the breeding season in one of the most inaccessible areas in the Beni savanna.

The platform was built completely out of resources from the Barba Azul Nature Reserve. This Large Bamboo is introduced to Bolivia for its durability, the right wood to use to build the platform. Tjalle Boorsma and Marc Meeuwes (reforestation expert from the Netherlands) harvested the Bamboo from Barba Azul south, transported it to Barba Azul North and constructed the platform in 2 days. This sturdy feeding station can hold up to 3 people and a camera trap is positioned to evaluate to foraging activities of the Macaws.

Figure 13. The 8-meter-high platform, fully secured and able to hold 3 people, was build out of local resources from the Barba Azul Nature Reserve. We used the exotic bamboo to not harvest native tree species, and for its durability. Picture taken by Tjalle Boorsma



Buff-breasted Sandpiper monitoring

We also continue with our annual Buff-breasted Sandpiper study supported by the **Neotropical Migratory Bird Conservation Act**, where we evaluate to use of critical stopover foraging habitat by comparing different factors in grazing regimes of cattle and horses. This will be the 6th year in row where we collect vital Buff-breasted Sandpiper data in the Barba Azul Nature Reserve.

In the first week of September, Buff-breasted Sandpipers will be monitored throughout the Barba Azul Nature Reserve. A team of local ornithologists from Cochabamba who have several years of experience of surveying sandpipers at Barba Azul will return.



Figure 14. We would really like to thank **American Bird Conservancy** for the donation of this completely new Nikon telescope for the Barba Azul Nature Reserve. This tool will be used for our annual Buff-breasted Sandpiper monitoring to evaluate the use of critical stopover habitat by these threatened birds. Picture taken by Tjalle Boorsma

Doctoral research at Barba Azul

This year is highlighted with 2 doctoral research studies that are being executed in the Barba Azul Nature Reserve. Jo Kingsbury from Scotland who has visited Barba Azul 4 times before during Glasgow expeditions, started in July her 5-year study on indicator factors that explain the cerrado/savanna gradient and what bird species are associated to these specific habitats. She will experiment with cattle pressure and fire frequencies on the presence and abundance of savanna bird species. This year she will mainly focus on bird monitoring along the cerrado/savanna gradient.

Javier Ruiz-Perez from Spain visited Barba Azul Nature Reserve last year for a short pilot study to evaluate forest islands in the reserve for indicators of human origin. This was a successful pilot study where they found forest islands with over 6 metres of black managed soils. This year they will start an archaeological excavating study on one of these potential forest islands in Barba Azul South to study in detail its origin.



Figure 15. While reforesting forest islands with Motacu palm saplings at the Tiniji area at Barba Azul East in 2016, we discovered parts of ceramics indicating the human origin of these small circular forest islands. Picture taken by Tjalle Boorsma