

# Twenty New Nest Boxes

## IN THE BARBA AZUL NATURE RESERVE



**Figure 1. Setting up nest boxes along the forest islands of Rio Tiniji, Barba Azul Nature Reserve, Beni, Bolivia.**

In December 2013, Asociación Armonía extended the Barba Azul Nature Reserve with the addition of 15,000 acres (red border—Figure 2) creating a protected area of 27,000 acres. This acquisition was made possible through the combined support of many organizations and individuals: American Bird Conservancy, Patricia and David Davidson, International Conservation Fund of Canada, IUCN National Committee of the Netherlands (supported by the Dutch Postcode Lottery), Loro Parque Fundación, Neotropical Migratory Bird Conservation Act of the U.S. Fish and Wildlife Service, Rainforest Trust, Robert Wilson Charitable Trust, and World Land Trust.



**Figure 2. The New 27,000 acre Barba Azul Nature Reserve in the tropical savanna area of Beni, Bolivia. The red outline shows the purchased extension in December 2013.**

An important part of the extension of Barba Azul is the Tiniji River found in the centre of the area. This area holds 15 isolated forest islands that appear ideal for nesting habitat for the Blue-throated Macaw. The macaws avoid nesting in large forest areas because of the high number of potential forest predators adapted to climbing trees. These isolated forest islands are far away from the majority of climbing predators, and in this area, are surrounded by water much of the breeding season (figure 3). The Blue-throated and Blue-and-yellow Macaws know the sanctuary of these islands, as at dusk each day over 200 individuals fly to these remote areas after foraging throughout Barba Azul to take advantage of these safe islands for roosting.

**Figure 3. Isolated Palm forest islands along Rio Tiniji in the recently acquired 6,000 ha Barba Azul Nature Reserve.**



But through 150 years of intensive ranching, these forest islands have not been able to offer a safe breeding area. The Blue-throated Macaw requires a nesting cavity in a tree to breed, and ideally a large nesting cavity. Such cavities were abundant in the past when trees were allowed to grow very old, and even die while standing. But ranching activities in the area over time has logged all the old growth deciduous trees, and cut out most of the larger trees.

During Armonía's research in July on these forest islands, we found no potential natural nesting cavities and a sad high decrease in natural Motacu Palm Tree regeneration—the favorite fruit of the Blue-throated Macaw. But seeing the importance of these palm forest islands as roosting sites, secured the idea that the macaws know these sites as safe, and if we were able to offer large nesting cavities, it is very possible the Blue-throated Macaws will nest on the reserve.



**Figure 4. Blue-throated Macaws using an older large holed nesting box in Marban Province.**





**Figure 5. Three Blue-throated Macaws tightly growing up in a nest box in the Marban area in 2010.**



**Figure 6. Placing nest box materials along each of the islands for nest box placement.**

The Blue-throated Macaw conservation program has had great success with our nest box program supported by Bird Endowment and Loro Parque Fundación. These boxes are placed for the isolated population of the Blue-throated Macaws south of the city of Trinidad. Unfortunately this southern population appears to have a small range and does not mix with the more widespread northern population. The highly disturbed habitat around the city of Trinidad appears to act as a wall between the two populations. For five years we have had an average of 8 Blue-throated Macaw chicks fledging from these boxes in the province of Marban, witnessing a dramatic quadrupling of the local population.

Through the years, we have been improving and adapting the nest boxes to be ideal for the Blue-throated Macaw, and not as popular with the Blue-and-yellow Macaw—which is its direct aggressive nest site competitor. We have changed the entrance hole, from a natural nest copy of a wide elongated hole, to a 14 cm hole (figure 4), then 12 cm hole, and now a perfect fit 10 cm hole (figure 7). We have experimented with many types of wood, finding a local species of softwood the sturdiest. In other Macaw studies nests have been created using PVC plastic tubing, but that has not been successful in the Beni open savanna region. Nest boxes were lengthened to help avoid toucan predation, and the size has remained large as that appears to be a factor in how many large chicks a pair of macaws can have. Each year at least one pair of Blue-throated Macaws has successfully fledged three chicks (figure 5) in the Marban area.



**Figure 7. Assembling the nest boxes at Motacu palm forest islands along Tiniji River.**

The Blue-throated Macaws on the Barba Azul Nature Reserve arrive in high numbers in May and tend to forage on Barba Azul until late December. From there, the pairs tend to disperse widely through-out the private ranch lands of Beni searching for a large cavity in a safe place to breed. Presently no Blue-throated Macaws breed on Barba Azul.

The object of the project is to offer nesting cavities on Barba Azul by placing nest boxes on Rio Tiniji palm forest islands. The nest box project is supported by American Bird Conservancy, Bird Endowment, BirdLife International's Preventing Extinction Programme, The Mohamed bin Zayed Species Conservation Fund and Loro Parque Fundación; and is part of Barba Azul Nature Reserve management which is also supported by International Conservation Fund of Canada, Neotropical Migratory Bird Conservation Act of the U.S. Fish and Wildlife Service, and the World Land Trust's Keepers of the Wild Ranger Programme. We created the wooden planks in Loreto with carpenters who are very experienced with the right nest box design and wood. The cut planks were transported to Barba Azul by truck, across the river by boat, half way to Rio Tiniji by tractor, and then to the final destination by horse back to place the planks for each box at the designated forest island.

In late August 2014, Hernan Lopez and Rene Cartajena placed 20 new nest boxes in palm forest islands along Rio Tiniji. We placed 4 boxes in island 3B, 4B, and 5B, 3 boxes in island 6B and 7B and two boxes in island 8B. All of these Motacu palm

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Figure 8. The isolated Motacu palm forest islands where numbered and evaluated in July 2014.

forest islands are popular roosting sites for the macaws in the region; they are known safe places away from forest predators. At each forest island we built the boxes and placed them on Motacu Palm trunks strong enough to hold their weight.

Macaws are very fussy breeders, and may take time to adjust to these new boxes. As an intelligent bird, a lot of their behaviour is learnt from their parents and their environment. Most likely chicks that hatch from a certain type of nest cavity will look for that same type of cavity. But also, birds learn from the actions of other birds. We suspect that the key to the success of this program will be the first pair of Blue-throated Macaws that uses one of these nest boxes. That will be the difficult hurdle, but very likely when that first pair is established, the chicks from that box and others watching and learning will also try to breed in the nest boxes. The breeding season starts around December to January. It might take a year or more for the birds to clearly get to know and trust the boxes as a potential breeding site.

Our difficult part now is finding a way to review the boxes during the breeding season. Most of the area will be under some form of flooding, whether the expansion of the river, grassland flooding, soggy grassland, or deep mud. We will need to review the best cost/efficient method to review these nesting boxes. We have just purchased a two person canoe that might be the best option to visit these forest islands when the river is high during the rainy season. We will also review a floating 6x6 vehicle, canoe/horseback, and perhaps using a drone.

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Figure 9. Nest boxes are placed on old Motacu palms at the height of successful boxes.

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