Summer // 2020 // Issue #2

Conservation News

Update on Scarlet Macaw Project in Chajul Station

The American Federation of Aviculture, Inc. (AFA) is a not for profit organization dedicated to all aspects of aviculture.
The AFA has provided funds through our small grants programs to benefit wild-bird conservation and the study of their biology since the mid-1970s.
www.AFAbirds.org

Biologist Rodrigo Leon receives the brooder and incubator donated through the AFA Conservation Fund. A total of two nursery brooders, a travel brooder, stainless steel leg bands, and one egg incubator were purchased for the project in 2019.

The nursery at the Chajul station.

The 2020 season at the Chajul Station has been the most productive so far.

Chajul Station 2020

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Rick Jordan
June 2020

The Covid-19 epidemic prevented me from my plans to work at the Chajul station in 2020, but we managed to send the much-needed nursery equipment to assist the biologists with juvenile scarlet macaws into the wild.
Nest poaching remains the biggest pressure facing the scarlet macaw in southern Mexico and northern Guatemala. If the biologists of Chajul did not intervene in the nesting process, 100% of the wild nests in the area would be poached and fail to fledge chicks. In fact, an artificial nest box placed less than 500 feet from the station entrance was poached this year, losing two viable chicks. Due to the good work and dedication by the crew at the Chajul station, at least another dozen scarlet macaws were fledged into the wild this season.

It may seem like a losing battle to save the macaws in this area of Mexico, but with several dozen pairs nesting along the river each year, and the assistance provided by the crew, the wild population is slowly increasing. Birds raised at the station and fledged back into the wild over the past decade are now nesting and producing a second generation in the area as well.
Small projects, such as the Chajul station, rarely receive the attention, and subsequently, the funding needed to carry on with their important work. Thank you goes out to all who donated to the AFA conservation effort to save the scarlet macaws of Mexico. The project still needs equipment and supplies, and much of their government funding has now dried up.
Donations for this cause are still being accepted through the AFA conservation fund. Go to www.AFAbirds.org to contribute.

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Blue-throated macaw conservation	*Scarlet macaws in Peru*	*Texas's native parrots*

The Tejano Parrot Project

Conservation Research on Texas's Native Parrots

By Simon Kiacz and Donald J. Brightsmith, Schubot Exotic Bird Health Center, Texas A&M University

Red-crowned Parrots are known by many names including Mexican Redhead, Loro Tamaulipeco, and Green-cheeked Amazon. In fact, its scientific name *Amazona viridigenalis* translates directly to Green-cheeked Amazon! It is no surprise that this beautiful medium sized green-and-red parrot has been popular in the pet trade since the 1980's, but unfortunately this has translated to a decrease in the wild population due to poaching to supply the aviculture demand. As a result, this parrot is considered endangered by the International Union for Conservation of Nature (IUCN) and by the country of Mexico.

In 2008, Friends of Animals decided that the species should also be listed by the United States Fish and Wildlife Service (USFWS) and submitted a petition requesting Red-crowned Parrots be listed under the Endangered Species Act. Three years later, the USFWS added the Red-crowned Parrot to its candidate species list, and although in 2019 they decided against listing the parrot as an endangered species, these actions paved the way to the state of Texas adding the parrot to its list of "native" species. Whether the parrots got to south Texas from their native range in northeastern Mexico on their own or were released/escaped from the pet trade we cannot know for sure, but many assume that a mixture of those two options are likely. Regardless, Texas's actions allowed funding for research on Red-crowned Parrots and thus gave rise to the Tejano Parrot Project.

The Tejano Parrot Project started in the spring of 2016 with the goal of understanding the status of Red-crowned Parrots living in the Lower Rio Grande Valley of Texas. Although studies have been done on the population in the state of Tamaulipas in northeastern Mexico, the population in south Texas is completely urbanized and living within the confines of the major cities along the south Texas border with Mexico. Therefore, understanding how these parrots are thriving in this anthropogenic environment is important so humans can help conserve and manage these valuable urban populations. The Tejano Parrot Project focused our research on how well the south Texas population is reproducing, the types of habitat they depend on, and the threats they face including poaching and habitat change.

Above: One sure way to attract parrots to your yard in south Texas is by offering shell-on peanuts at your feeding station. These adults were collecting peanuts to make peanut butter to feed their hungry fledglings who were begging in the tree overhead.

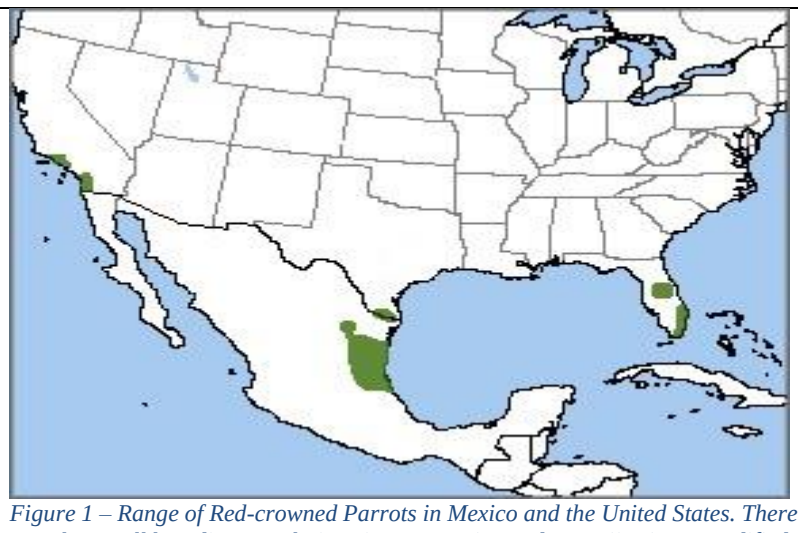


Figure 1 – Range of Red-crowned Parrots in Mexico and the United States. There are also small breeding populations in Puerto Rico and Hawaii. Figure modified from https://abcbirds.org/bird/red-crowned-parrot/

Red-crowned Parrots are found mainly in the four largest cities in south Texas including Brownsville, Harlingen, Weslaco, and McAllen. The easiest way for bird watchers to see these birds is by visiting the neighborhoods in these cities where hundreds of parrots congregate on a nightly basis to roost. The roosts are not only important for the birds, providing social dynamics important to this gregarious species and protection against predation, but also to researchers who want to tally the total number of birds in south Texas. As long as we can find all of the roosts, we can count the total number of birds at each one, add them together, and have an accurate estimate for the total population size in south Texas. All we have to do is drive around the neighborhoods a bit before sunset and listen for screeching Amazons - once we find the roosting group, we can quickly count birds as they flock together or line up on powerlines to preen and duet. Luckily for us, each city has only one main roost and they have always been in the same general area over the duration of our four-year study. The roosting areas desired by Red-crowned Parrots are generally in the nicer neighborhoods that have lots of trees; native or non-native, it doesn't matter. Large Live Oaks, bushy Ashes, or tall Eucalyptus are the ideal trees for a group of roosting Red-crowned Parrots. And it's not just Red-crowns that come to the roosts – there are also some Lilac-crowned, Yellow-headed, Red-lored, and White-fronted Parrots who call the LRGV home. Although not yet as numerous as Red-crowned Parrots, we have found nests and seen fledglings of all of these species, so it may be only a matter of time before they become as numerous as Red-crowned Parrots.

In total, we have found that there are roughly 700 Red-crowned Parrots that live and breed in the LRGV. This is quite the number considering that there were no Red-crowned Parrots in south Texas before the mid-1970's! Estimates of the total wild population, including naturalized populations in California and Florida, at around 12,000 – 15,000 birds. While the 700 in south Texas make up only about 5% of the total population, it is nonetheless an important genetic reservoir for this declining species.

Right: Red-crowned Parrots, like most other Amazons, are rather messy eaters! This individual is enjoying one of the local favorites, fresh prickly pear cactus, known as "nopales" to the locals. This variety of cactus was bred to have no spines, making it easier to harvest.

Texas Parrots Continued: A year in the life of Red-crowned Parrots starts off during the winter when normally food is in its shortest supply. During January and February, flocks of parrots will disperse from their home roost and visit the flocks in neighboring cities. These mega flocks, numbering over 400 parrots, benefit the birds by providing protection from predators and allows the birds to efficiently take advantage of food sources that may be localized and patchy in distribution throughout the LRGV.

As part of the Tejano Parrot Project, we wanted to track exactly where individual birds were travelling to during this time. After affixing a few parrots with VHF radio-transmitters, we have been able to track them venturing from Harlingen to Weslaco, a roughly 30-mile trip one way, where they flocked with their neighbors for a month or two from December into February. In addition to providing food and protection, these flock meet-ups may also be a way for young birds to meet potential mates and provides a means of genetic admixture amongst the entire population.

As far as food sources are concerned, these urban parrots will try just about anything they can fit into their mouths. Some of their regular food sources include prickly-pear cactus and citrus seeds, as well as buds and seeds of almost every type of tree in the valley - their favorites are pecans, freshly budded Ash tree seeds, and pulp from the seedpods of guamúchil trees, which are native to Mexico.

One of the reasons the parrots enjoy their urban haunts is because of all the food options home owners provide them in the way of native and non-native plants which provide flowers, buds, and fruits throughout the year. In addition, some home owners even provide platform feeders full of peanuts and even a bird bath with some fresh water!

Red-crowned Parrots enjoying a refreshing drink in a local front yard. Parrots and other local wildlife surely appreciate this homeowners' efforts as temperatures well into the 100's are a regular occurrence in south Texas.

After February, most birds are starting the nesting season. Parrots are forming bonds with new mates or reinforcing their relationships with their partners during this time. In March and April, pairs will allopreen and duet with each other to help build strong bonds. During this time, they also must protect their nest cavity from other parrots trying to interlope. Nest cavities are usually in dead, non-native Washingtonia palm trees but they also nest in living Ash trees, human-made nest boxes, and even in the sides of buildings! There is much competition for these valuable resources - Red-crowned Parrots not only have to defend their homes against other Red-crowned Parrots but also European Starlings, Green Parakeets, and Black-bellied Whistling Ducks who are all vying for a safe place to lay their eggs.

Property owners play an important role in the maintenance of these nest sites. Things like refraining from removing dead or dying trees, building and maintaining nest boxes, or planting trees to ensure access to nest sites are all important to guarantee that these parrots have the resources they need going into the future.

By May, most parrots have laid their eggs and females are steadfast with their incubation duties. For over 30 days the females only leave their eggs twice a day for just a few minutes at a time - once in the morning and once in the evening when their partner returns to the cavity to feed her. Even after the eggs hatch, the female incubates the nestlings until they gain the ability to thermoregulate.

It is almost another two months until the chicks are ready to fledge. Chicks fledge around July and will congregate in "nursery" areas. These nurseries are in dense stands of trees which provide protection and it is here where the fledglings will gain stronger flight abilities until they can finally follow adults to roosts. Generally, by mid-August, roosts are filled with adults constantly being chased by fledglings begging for food.

During mid-to-late August, all fledglings are attending roosts with their parents. This offers researchers an excellent opportunity to collect some crucial breeding information – yearly productivity. Usually with birds, researchers wishing to obtain breeding information must find and monitor individual nests over the entire breeding season, which can be costly and time consuming. Instead, since we have already been monitoring roosts, we can just take the ratio of juveniles and adults in attendance to get a glimpse at the population's productivity for the year. Over four fledging seasons from 2016 through 2019, Red-crowned Parrots averaged 16% productivity indicating that the birds are successfully breeding in the Lower Rio Grande Valley at a rate similar to other *Amazona* parrots throughout Latin America.

Overall, the population did not increase or decrease during our four-year study which tells us that 16% yearly productivity can maintain this population, at least over the short term, but other factors are stopping this population from increasing. If we want this population of Red-crowned Parrots to grow beyond the current level of 700 birds, then productivity needs to increase. As part of the Tejano Parrot Project, we analyzed poaching, the potential for hybridization, and habitat change as potential threats to this population.

Local building owners add a bit of flair to attract business. Red-crowned Parrots are the official city mascot of Brownsville, Texas and the locals are proud of it!

Poaching is one of the most common threats to parrot populations worldwide. Although there are laws against poaching in the major cities of the LRGV, it is still taking place and is at a level that can possibly reduce population growth. Throughout our four years in the LRGV, we monitored local flea markets where we witnessed the selling of nestling and adult Red-crowned Parrots that were poached from the surrounding areas. We also noted direct evidence of poaching, such as nesting cavities cut open to access chicks inside as well as whole trees felled in order to obtain nestlings. One of the more abhorrent poaching events took place in San Benito, where a home owner cut down an entire tree and placed glue traps at the nests now cut open entrance in an attempt to catch nestlings fleeing the nest or adults attempting to enter. After informing the landscaper of the property of the illegality of poaching within the city, the traps where removed. Whether any parrots were caught prior to removal is unknown, but a Red-crowned Parrot was witnessed in a large outdoor cage a year later at the same property. Enforcement of current local laws, as well as the recently passed legislation by the State of Texas placing the Red-crowned Parrot on the states threatened species list, should help curb the exploitation of this population. Additionally, educating the public and law-enforcement officials of the birds protected status may also help limit poaching.

An interesting pair to say the least! This Lilac-crowned Parrot (left) has chosen a hybrid parrot as a partner. Judging by the yellow on the head and the larger size of the hybrid, at least one parent was a Yellow-headed Parrot, while the dark cere and orange iris are characteristics of Lilac-crowned. These two were duetting with one another and will likely have some interesting offspring of their own later this year!

Hybridization can sometimes be an issue for species that have expanded their range and have had similar species introduced into their range. This is true for Red-crowned Parrots in south Texas, as well as the naturalized populations in Florida and California. We have witnessed hybridization of Red-crowned Parrots mainly with Lilac-crowned Parrots, which have been introduced from the pacific coast of Mexico. Although levels of hybridization are currently low (we have witnessed upwards of 10 mixed pairs in total, mostly Lilac-crowned Parrots with Red-crowned Parrots), managers of this population do need to decide how much hybridization is tolerable and what possible remedies there are if that threshold is breached.

Texas Parrots Continued:

Habitat change is generally a major factor in declining parrot populations. However, in urban areas people generally seem to desire the same things parrots do. That is, flowering and fruiting trees year-round that the parrots can use as food sources and large healthy trees that can be used for roosting. The main difference is that parrots don't mind dead and dying trees, and in fact need them for nesting structures, while humans tend to think of them as ugly or a liability. While we have noticed small-scale tree trimming throughout the LRGV, the largest issue is with the removal of dead trees. Since nesting structures are so important to parrots, it is imperative that home owners contribute to their local parrot populations by not removing dead or dying trees, especially palm trees, and by limiting the amount of tree trimming on their properties.

Lastly, educating locals on the importance and uniqueness of their local parrots will help build a desire to maintain this population for generations to come. The city of Brownsville has declared the Red-crowned Parrot its official mascot and the local enthusiasm for "their" birds is readily noticeable throughout the city. Highway overpasses are adorned with cemented parrots and parrot art is used by locals as a way to spruce up their buildings and encourage patronage. In Harlingen, the yearly Rio Grande Valley Birding Festival, one of the largest of its kind in the world, hosts parrot trips nightly for festival goers to witness the spectacle of hundreds of parrots roosting in a local's front yard.

Through the Tejano Parrot Project, we have unearthed useful information for the betterment of Red-crowned Parrots in the Lower Rio Grande Valley. Our data collected over the last four years will be utilized to help sustain local populations in Texas as well as provide meaningful baselines for this population going forward. Understanding habitat use and threats to this urban parrot population not only helps Red-crowned Parrots in south Texas, but other urban and naturalized parrot populations as well by bringing forward the important role that these populations may play in sustaining biodiversity in an ever-urbanizing world. The Tejano Parrot Project will continue to monitor the population levels of Red-crowned Parrots in south Texas, and new projects, such as analyzing the longevity of nesting structures in the face of an urban landscape, are being developed to further our support of the wild parrots of Texas.

Almost 200 Red-crowned Parrots dropping into a Eucalyptus tree at Oliveira Park in Brownsville, Texas. This park is famous among bird watchers across the country as the most reliable spot to see Red-crowned Parrots in south Texas – they have roosted here every night for at least the last 5 years!

Reserva Barba Azul

Barba Azul Nature Reserve Update 2019

On the 31st of August, Lisa Davenport together with Luciene Carrara, Lucas Carrara and Tjalle Boorsma finally succeeded in capturing the first Blue-throated Macaw in the Barba Azul Nature Reserve for Armonía's satellite telemetry tracking study. These trackers give crucial insight in the species local movements and finding their breeding sites. In total we succeeded in capturing four Blue-throated Macaws of which three Macaws were equipped with a tracker (project had 3 satellite telemetry trackers). From all four individual's, basic anatomical information was collected, as well as blood samples for future DNA analysis. Now we start to know where our Barba Azul birds fly to in the rainy season. Another mystery solved.

It took us three years to finetune the capturing technique sufficiently bird friendly and logistically feasible within the vast savanna landscape. We studied typical flight patterns and discovered perching sites. Studying these perching sites, we observed their behavior to evaluate the best capturing technique. We have collected more than 90 days of movement data which will soon be published in a scientific journal. This project was in the past supported by the American Bird Conservancy and the Mohamed Bin Zayed Species Conservation Fund. We would like to specially thanks Lisa Davenport for her incredible perseverance and willingness to complete this project with her amazing Brazilian team (Luciene and Lucas Carrara) who made this a big success.

The 2019 effort were covered by Lisa Davenport, Friends of Barba Azul Nature Reserve and the Neotropical Migratory Bird Conservation Act (NMBCA) grant.

Please donate to the AFA today. We strive to keep you updated on the important work being accomplished with wild birds. Go to https://www.AFAbirds.org and make a donation today.

Armonía
CONSERVACIÓN DE AVES EN BOLIVIA

LANEY RICKMAN BLUE-THROATED MACAW FUND

Long-Term Sustainability of the in situ Saving the Blues Program

In August 2017, Laney Rickman died unexpectedly. In honor of Laney's life's work and undying passion for environmental conservation and protection of the Blue-throated Macaw, part of Bolivia's cultural heritage, the Bird Endowment, Laney's family, Asociación Armonia (Bolivia), and the American Bird Conservancy (USA) partnered to establish the Laney Rickman Blue-throated Macaw Fund with the goal of sustaining long-term support for the Blue-throated Macaw and Nido Adoptivo TM nest box program in Bolivia. Your contributions support ongoing research and resource management in the expanding Barba Azul Reserve and Laney Rickman Reserve.

To make a donation to save the Blue-throated Macaw from extinction:
https://abcbirds.org/rickman-fund/

Breaking News: "A dramatic love story in Barba Azul"

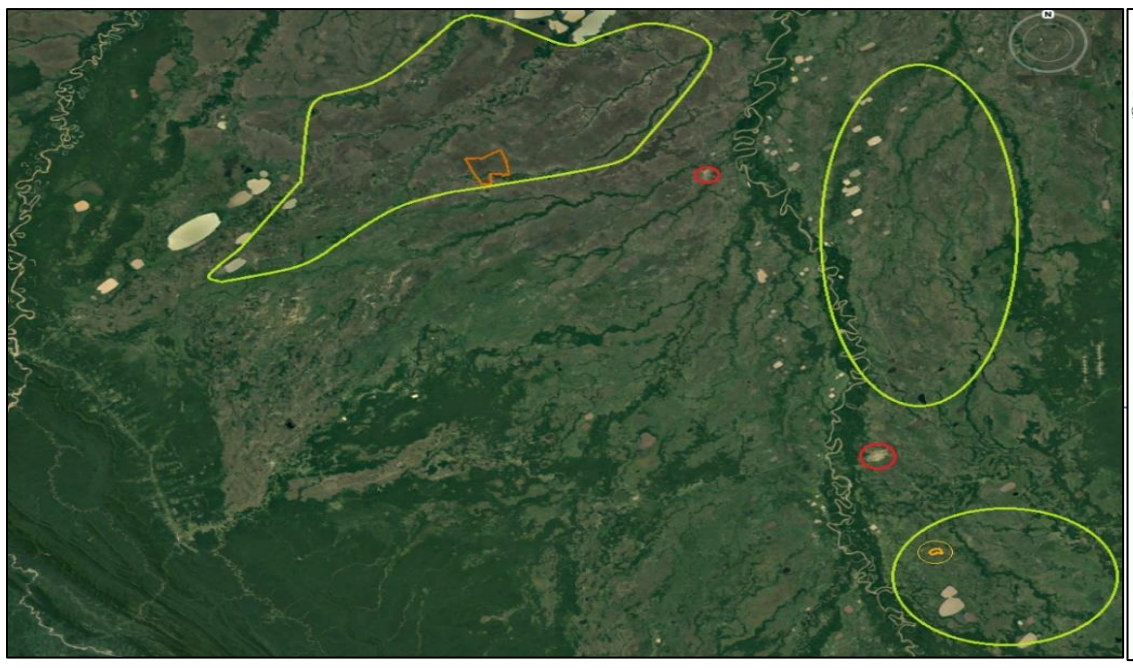
In May this year, Carlos Roca brought ground breaking news. Our Barba Azul Keeper of the Wild observed three pairs of Blue-throated Macaws exploring the newly created breeding habitat in the Barba Azul Nature Reserve. These elevated "penthouse" nest boxes were placed in August 2018 and mimic the breeding habitat that Armonía discovered in 2017 (http://armoniabolivia.org/2017/03/17/armonia-discovers-new-breeding-area-for-the-critically-endangered-blue-throated-macaw/). Macaws are known to identify breeding cavities many months before they are ready to breed, so we kept a watchful eye on these penthouse nest boxes.

All looked extremely positive. A pair was seen daily on top and within the nest box, defending it from possible intruders. They had to quickly kickout a pair of Orinoco Goose (*Neochen debilis*) who also found this penthouse a promising nesting site. But our pair conquered. They chewed away on their entrance, the roof and the sides to prepare a soft bed of wood chips to lay their eggs. This was all too good to be true.

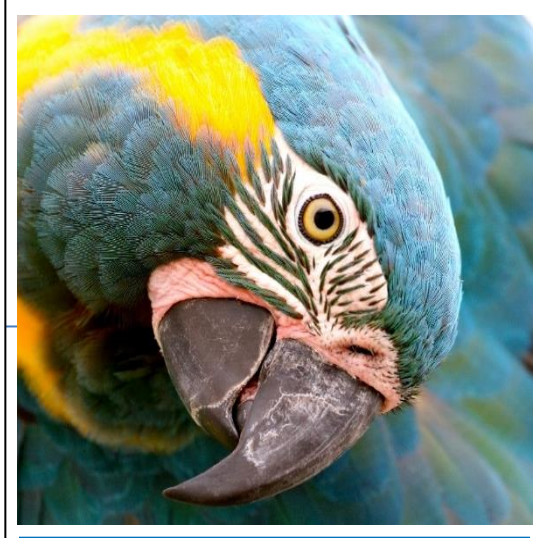
Terror hit Barba Azul! Weather conditions went from a peaceful hot afternoon, to a diabolical thunderstorm with horizontal rain and lighting crashing down. This is part of this extreme ecosystem and is often needed as the dry season is intensely dry. The next day, Tjalle Boorsma could not believe his eyes. Two of the penthouse nest boxes were completely shattered and pieces of timber were scattered all round the river-edge shortgrass. A pair of Blue-throated Macaws were sitting on top of the leftovers of their nest, desperate to enter their preferred new home.

Quickly a new nestbox was erected at the same location but sadly is was not as good as the so preferred nestbox they have been making their home. Although this sounds sad, we learned a lot about this new breeding site experiment. It is clear that we need to place lighting rods or some kind of lightning deterrent to prevent this from happening again. Also, other nestboxes were occupied by bees. We noticed that our birds chewed the roof, making a hole. This would prevent bees from making it their house as they need a closed cavity. But the best news is: The Macaws showed that they like these nestboxes and were preparing to breed. We know that when they learn to use them, proved by the successful nestbox program in the Laney Rickman Reserve, they will use them forever. We are about to achieve protecting the entire lifecycle of the Blue-throated Macaw in Barba Azul.

Above: Pair on penthouse nest box by Luciene Carrara



The Barba Azul Nature Reserve is located in the north of the Llanos de Moxos, 75 kilometers west of Santa Ana de Yacuma and 213 kilometers northwest of the newly created Laney Rickman Blue-throated Macaw Reserve. Armonía protect vital Blue-throated Macaw habitat in 2 isolated subpopulations (estimated Blue-throated Macaw subpopulation range indicated in light green circles).



Blue-throated Macaw by Shane Hancock, Australia

Nido Adoptivo™ Is Building On Achievements, Moving Forward

The Nido Adoptivo™ nest supplementation project was originated and developed in 2007 by Bird Endowment's founder Laney Rickman in partnership with the Bolivian NGO Asociación Armonía to support the Blue-throated Macaw Conservation Program in the El Beni state of Bolivia, which is the endemic birds' natural range. This effort is in cooperation with "Saving the Blue-throated Macaw Ara glaucogularis: A Species Recovery Plan," developed by Asociación Armonía and Loro Parque Fundación. The objective of Nido Adoptivo™ is to increase the annual reproductive output of the Blue-throated Macaw wild population through a strategy, utilizing nest boxes attached to trees. Each $250 USD donation to sponsor a next box for a year covers the costs of materials to build the nest boxes as well as field work to locate and establish appropriate nesting areas where artificial nest boxes would be accepted by wild breeding pairs.

Since the program's inception in 2007, 81 Blue-throated Macaws have fledged from the nest boxes, the majority of which are on the newly dedicated Laney Rickman Reserve (formerly Esperancita Ranch). For the first time, in 2017, a second-generation chick was raised by parents who both had fledged from these nest boxes. In 2019, five breeding birds were confirmed to be ringed individuals, having fledged from these nest boxes in previous years and returning to breed, demonstrating the success of this program and promise of future population growth.

Although the majority of BTM Nido Adoptivo chicks have fledged from the southern subpopulation that breeds on the Laney Rickman Reserve, new and ongoing efforts to provide nesting habitat for the northern subpopulation of BTM are underway. This nest site supplementation project empowers in-the-wild conservation for domestic aviculturists, bird lovers and conservationists. Each nest box sponsor is honored as an "El Beni-Factor™" for a year and listed under our "Supporters."

To SPONSOR A NEST BOX for the 2019-2020 breeding season, please click here.

Fostering Hope

A quick tour through a wild macaw fostering journey
by Gaby Vigo Brightsmith, PhD

In 2004, I went to Tambopata during the breeding season for the first time. At that time the research project leader Dr. Brightsmith was documenting macaw chick survival. There was a lot to learn there: bird songs to recognize parrot and macaw species by sound, climbing trees to check on macaw nests, and measuring chicks to document their growth. As a newly graduate Bachelor of Science, I was full of energy, but I was also full of questions.

As many other parrot researches have noticed in the past when they studied different parrot species in different corners of the planet; Dr. Brightsmith had noticed that macaws don't raised to fledge all the chicks that hatch. This phenomenon is called "brood reduction" and it has been well studied in the bird scientific community for almost 80 years. In the case of the parrot order, it has been recorded in the wild in at least 20 different species; from small to large, across all body sizes and in all the continents parrots exist. In all the Psittaciformes species recorded, younger chicks of the broods died by starvation at a very young age, usually in the first weeks of life.

Gaby with Mark Moore evaluating scarlet macaw chicks from the nest in Peru.

I remember how difficult it was to witness apparently normal chicks hatch and then starve in the nest. It was mother nature acting in its most disturbing and heartbreaking form. Every time I witness a chick starved to death I wondered, WHY was this happening. Since then and with the support of Dr. Brightsmith, I centered my research on studying the breeding biology and behavior of the Scarlet Macaw (*Ara macao*), which is the most common macaw species nesting in Tambopata in southeastern Peru where we worked.

The scarlet macaw is one of the most magnificent members of the Order Psittaciformes and an important flagship species of the neotropical forest. Like many other members of the order, the scarlet macaw shows chick starvation related to brood reduction. My studies show that it is the leading cause of chick mortality in Tambopata, resulting in 24 % of all chicks' deaths. Even though the species laid 1 to 5 eggs per nest and 1 to 4 of them hatched; just 1 to 2 chicks fledge per nest per breeding season. Moreover, in my study area, all fourth hatched chicks starve, nearly all third hatched chicks and over 22% of second hatched chicks starve to death.

I was just starting with my PhD studies in Texas A&M University back in 2010 and the fact that 22% of chicks that hatched per year were lost due to chick starvation became the central topic of my investigations on macaw breeding behavior. It became kind of a personal obsession. I remember the time I tried to convince Dr. Brightsmith to help those chicks that starved "We don't have enough scientific evidence to convince the Peruvian government to give us research permits to do it", he said. "Well, I will need to get that evidence then", I thought… and I did it. I found a few comprehensive scientific studies of brood reduction related to chick starvation in parrots that guided me throughout my journey. They all agree on three facts: 1) chick starvation related to brood reduction happens only in nests with more than one chick, 2) it is related to hatching order, and 3), it is higher for the last members of the brood. I also started communications with Rony Garcia from WCS Guatemala, leader of the in-situ conservation team working with macaw foster parents to recover the endangered population of scarlet macaws

Researchers working with Scarlet macaws share their knowledge with each other. Gaby, Mark Moore, and Rodrigo Leon from the Chajul Station in Mexico work together to evaluate the health of wild Scarlet chicks in Tambopata Reserve, Peru.

in the rainforest of Guatemala. With these "two feathers in my cap" and the aid of a team of volunteer assistants, I intensively studied the macaw chick starvation phenomenon with the goal to understand the reasons behind it. It took me almost ten years to put all the pieces together, but in 2007, I came up with a plan to "trick nature" and avoid losing those valuable chicks. Now, with the evidence on hand and Dr. Brightsmith by my side, we got our research permits to do our chick manipulations with the goal of increasing macaw reproductive rates.

How did we do it? We used what we have learned from our observations of breeding macaws feeding their chicks inside the nests. Wild scarlet macaws display a characteristic parental care behavior. They directly allocate food to their chicks disfavoring the younger chicks of the brood and this ultimately results in the starvation and death of the younger ones. In Tambopata, chick starvation linked to brood reduction occurs only in the first quarter of chick's life in the nest, when chicks are 25 days old or younger. Moreover, we discovered that the age difference between first and second chick was key for survival of the second chick. In simple words, the bigger the age difference between the first and second chicks, the higher the chance the second chick will starve to death. Indeed, when the first and second chick age difference was under 2 days, the chance the second chick starves is only 6% but the probability of starvation jumps up to 80% when the age difference is over 4 days. Using these three key pieces of information, we built up our wild chick manipulations procedures with the goal of decreasing chick starvation using wild macaws as foster parents. Foster parenting is a well-known technique that has been successfully practiced in aviculture for many years. In the wild, it was used with the endangered Puerto Rican Amazon and the Yellow-shouldered Amazon in Venezuela as a population recovery tool. It was also used to study parent-offspring interactions in the Galah and the Crimson Rosella in Australia. Besides, it has been successfully used by the WCS-Guatemala team to help scarlet macaw populations to recover in the wild.

Dr. Vigo (Gaby) holds a well-fed foster chick for inspection. The project goals are to supplement the wild population by saving chicks that might naturally starve in the nests, assuring they fledge into the wild.

Fostering Hope Continued: I carefully pieced all our knowledge together to focus on three key aspects: select the right chicks, select the ideal foster parents, and make sure foster chicks were accepted by foster parents. To select macaw chicks, we used individuals with high chances of death by starvation. The perfect candidates were chicks that hatched 4 days after the first chick of the brood, chicks that started to show signs of starvation, and chicks that hatch as third and fourth chicks in their broods. Selecting the ideal foster parents was not easy. I wanted to make sure the pair had previous breeding experience and had fledged at least one chick before. Besides, the pair needed to have just one chick in their nest because I didn't want to create broods that were bigger to the natural average of the species. The chick acceptance aspect was one of the most challenging ones of the project. The few foster parent studies done with wild parrots and macaws were not truly convincing on timing to place foster chicks in foster nests and how to determine chicks has been accepted by foster parents. So, based on what it was done with the Puerto Rican Amazon project, my studies on chick starvation, and our experience with parrot behavior, I decided to place foster chicks after they have opened their eyes (around 20 days old) and to give foster chicks and foster parents 10 days to adjust to each other, using on our video systems from inside macaw nests to check on parent/chick interactions at every moment.

I knew the biology, we had a meticulous plan on paper and a team of 15 assistants in the field to help us monitor nests, hand raise macaw chicks, and take behavioral data inside macaw nests. Dr. Sharman Hoppes from Texas A&M and Dr. Maria Belen Aguirre were our vets in charge to make sure foster chicks were hand-raised properly in our field nursery. After a very exhausted first season and four initial foster chicks successfully accepted, we decided that it was too difficult to hand-raise macaw chicks in field conditions. We needed an expert. Here is when Dr. Janice Boyd from Texas A&M University brought in Mark Moore from Hill Country Aviaries. Mark, an extraordinarily knowledgeable aviculturist and macaw breeder came to the rescue. He taught us how to hand-raise macaw hatchlings in very basic conditions with unreliable electricity, in a remote area with no access to a pharmacy, and on a low budget. Thanks to Mark's lessons and help we tested and refined the macaw foster parenting technique for two more breeding seasons and 24 foster chicks more.

During three breeding seasons, the whole team in the field worked extremely hard to give every single foster chick the best chance it could possibly have. For weeks, nest video cameras ran 24/7 and we climbed 100-foot-tall trees twice per day, sun or rain, even before sunrise to make sure foster chicks were being accepted. Mark helped hand-feeding chicks around the clock both in our nursery and in their nests during the acclimation period. Thanks to all the hard work by Mark and the rest of the team, we are very proud to announce that the technique of macaw foster parents was categorically successful. All relocated foster chicks were successfully accepted by their foster parents (28 chicks across 3 seasons). Every foster chick accepted in a foster nest was a personal battle won because I felt like we were really "tricking nature" by helping chicks survive that were otherwise destined to die.

We were surprised to discover that foster chick acceptance by foster parents was a slow process. Foster chicks were initially fed less than resident chicks, but feedings progressively increased until both chicks were fed similarly 10 days after being put in the nest. Interestingly, it took close to 5 days until we found that the chicks were being consistently well fed (crops were half-full or more every time we checked). I also discovered that foster chicks were very similar to wild chicks that were raised all along by their own wild macaw parents because the growth rates were statistically similar, and both foster and natural chicks reached similar maximum weights.

A total of 89% of our foster chicks fledged. Even though all were accepted by their new parents, unfortunately we lost three chicks to predators and lightning. Every foster chick that fledged was more than a personal victory; it meant our technique to increase reproductive success was truly working. Our data show that the wild macaws as foster parenting technique increased the reproductive success of my study population. Fledgling success per available nest increased from 23% to 43% and chick starvation decreased from 35% to 6%. Every foster chick that fledged meant HOPE. With some fine tuning and adjustments, we may possibly be able to "trick the species out of extinction" by using this technique in areas where macaws are truly endangered.

The Scarlet Macaw is not doing well in the wild. Despite its wide distribution, from Southeastern Mexico to Brazil and Bolivia, populations are rapidly declining throughout the range, especially in Central America. Along my wild macaw fostering journal I was lucky enough to get to know and visit other macaw researchers and conservationist that are working on the "front lines" of wild macaw population recovery and conservation. People such as Rodrigo Leon from Natura Mexicana that works with the last wild population of Scarlet Macaws in Mexico and Chris Vaughan that works on the recovery of the central pacific population of Scarlet Macaw in Costa Rica. Their work, plus that of Rony Garcia and WCS-Guatemala were my constant inspiration and a reminder that testing management techniques like wild macaws as foster parents was important because conservation work done in the wild could be directly helped by our findings.

It is been twenty years that The Macaw Society (formerly known as the Tambopata Macaw Project) has been studying macaws and parrots in the southeastern Peru. During this time, Dr. Don Brightsmith and I have not just tried to understand wild macaw natural history, breeding ecology, and nesting behavior. We have also worked to find ways to use this new knowledge to aid implementing in situ conservation management actions to help recover endangered wild parrot populations worldwide. Sixteen years after I first arrived in Tambopata I have now finished my PhD. With this new knowledge, my degree in hand, and a great network of friends and collaborators I am confident that we can continue to foster hope for declining and endangered parrot populations around the world.

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FOA Level I provides a foundation for the emerging science of aviculture. It is presented in nine chapters ranging from anatomy and physiology to avian behavior, from laws and regulations affecting aviculture to how to provide proper housing and prevent illness of birds in our care, and much, much more. Admission is $45 for current members of the American Federation of Aviculture Inc. (www.fundamentalsofaviculture.com)

FOA II, Intermediate Aviculture, was written by Rick Jordan with editorial and content contributions by the following individuals: Donald Brightsmith, PhD, Juan Cornejo PhD, Jason Crean PhD, Jim C. Hawley, Jr, Jeannine Meisle, Lyrae Perry, Matt Schmit, Linda Seger, and Robin Shewokis.

The FOA Level II Course is offered in 15 chapters covering conservation and research, courtship and nesting, basic avian genetics, color mutations, hybrids, breeding stimuli, incubation, hand-rearing, non-parrot studies, basic microbiology, illnesses, first-aid, avian enrichment and more. Admission to this Level II course requires that all students complete Level I prior to enrollment. The introductory admission fee for the Level II course will be $75 for current AFA members. (www.fundamentalsofaviculture.com)

Thanks to AFA, Golden Conure down listed to threatened under the U.S. Endangered Species Act

By Janice Boyd, PhD

In August 2014, AFA submitted a petition to the Director of the Fish and Wildlife Serve to delist or at least down-list the Golden Conure (*Guaruba guarouba*) from Endangered to Threatened under the US Endangered Species Act (ESA). After nearly 6 years of persistent requests for action by AFA and a threat of a lawsuit, the Fish and Wildlife Service issued a final rule, effective on May 26, 2020, to "reclassify the Golden Conure from Endangered to Threatened with a Section 4(d) Rule allowing interstate commerce with the species."

Why was the Golden Conure ever listed as Endangered? On May 22, 1975, the Fund for Animals, an animal rights organization submitted a petition to the FWS to list as Endangered under the ESA all 216 species of animals and plants that were listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES} and that did not already appear on the U.S. Lists of Endangered Wildlife and Plants. The Fund contended that signature and ratification of CITES by the United States was an acknowledgment of the endangered status of these species and that they therefore should appear on the lists pursuant to the Act.

In response to this petition, the Golden Conure (and the other species mentioned in the petition) was proposed by the FWS to be listed as Endangered under the ESA. They apparently did not even consider listing species as threatened. In the "Proposed Endangered Status for 216 Species Appearing on Convention on International Trade" (Federal Register, vol. 40, 44329-44333, Sept 26, 1975) the FWS wrote that correctly responding to the petition would involve a lot of work to do proper status assessments so they determined they would only use comments responding to the Federal Register posting.

As a result, on June 14, 1976, 159 species of animals were listed under the ESA as Endangered. Thirty-nine years later AFA actually did the work to evaluate the status of the Golden Conure. After multiple letters asking about the status of our petition and finally with help from the Pacific Legal Foundation to threaten the Government with a lawsuit, the Fish and Wildlife Service did the work to evaluate the status of the Golden Conure and agree that it was not threatened with immediate extinction. Their assessment – which is actually quite well done and thorough – may be read at (https://www.govinfo.gov/content/pkg/FR-2020-04-23/pdf/2020-07571.pdf.

The five (quite reasonable) factors FWS must consider when assessing the status of a species are: (A) Threats to its habitat; (B) Overutilization for any purpose; (C) Disease or predation; (D) Effectiveness of existing regulatory mechanisms; (E) Other natural or manmade threatening factors. The FWS concluded that factors A and D in Brazil were the main threats to the Golden Conure at present, especially E because of lax enforcement of the many good Brazilian regulations and laws existing to protect the environment. But they noted that at present population size estimates indicated the species was not yet threatened with extinction but could be in the future. Factor B involving poaching for the pet trade was no longer important, they concluded, because captive breeding of the species for the Brazilian pet trade was now legal and international laws implemented over the past decade or two have significantly reduced international demand for the species which is being largely satisfied by CITES-registered captive breeding facilities in the Philippines and United Kingdom.

Because of this ruling, you may now sell or buy Golden Conures (Queen of Bavaria Conures) across state lines without getting an ESA permit (as long as they are captive bred). Also, you can import or export captive bred birds if you get the proper CITES and Wild Bird Conservation Act paperwork.

We thank the Pacific Legal Foundation for pro-bono help in threatening the Fish and Wildlife Service with a lawsuit if they did not respond to our petition. See Pacific Legal's announcement at https://pacificlegal.org/golden-conure-recovered/

This publication is being produced by the American Federation of Aviculture, Inc. (AFA) Questions or comments can be directed to AFA, P.O. Box 91717, Austin, Texas 78709, or email to AFAoffice@AFAbirds.org.