



The Tambopata Macaw Project 2011

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Can't believe it is December and time for the annual migration back to the jungles of Peru. It was a busy year for the Tambopata Macaw Project. Don was promoted to a new position as Assistant Professor of Ecosystem Health at Texas A&M University and after years of collaborating from afar, Dr. Janice Boyd moved to Texas and joined the Schubot Center full time to help strengthen our parrot conservation research program. Meanwhile, fieldwork continued in earnest in the wilds of Peru and beyond. So many things happened that it is hard to sum them up in just a few pages, but we will do our best to give you some of the highlights of 2011. We wish you all a happy macaw breeding season (oh and happy holidays too ! ☺ !)

The Macaw Project Invades the Neotropical Ornithological Conference in Cuzco, Peru

This November, over 1000 leading experts on tropical birds from Brazil, Argentina, Mexico, Peru, US, Australia, Hungary and nearly every country in Latin America came together for the Neotropical Ornithological Conference. It was an energetic and eclectic mix of the brightest and best, where you never knew if the conversation you were joining would be in English, Spanish or Portuguese or what topic or bird species would come up next. The conference was held in Cuzco, Peru the capital of the ancient Inca Empire and located only 160 miles from our project home base of Tambopata Research Center. With so many friends and colleagues from all over the Americas so close to our home site, we wanted to make sure that they got a taste of home-grown Peruvian research. So we pulled out all the stops. There were over 20 members and alumni of the project at the conference and we did all we could to ensure that they got a good introduction to the macaw and parrot research we have been doing for the last 12 years. In total, our research team and collaborators from Texas A&M University gave 11 research talks and presented 4 posters on a wide range of topics including: parrot reproductive success, macaw trapping, parrot breeding season, satellite telemetry, macaw genetics, macaw nesting ecology, parrot abundances, parrot foraging, parrot nutrition, the scarlet macaw genome project, parrot bacteria, and clay licks. Don, along with friend and collaborator Thomas White from the Puerto Rican Parrot Project, organized a symposium which aimed at helping parrot researchers do better science and collect the biological information needed to help conserve



Scarlet Macaw nest at Tambopata Research Center, Peru.

parrots as a group. All in all we had a wonderful time. We learned so much and got to share so much new information with our colleagues and friends from all over the Americas.

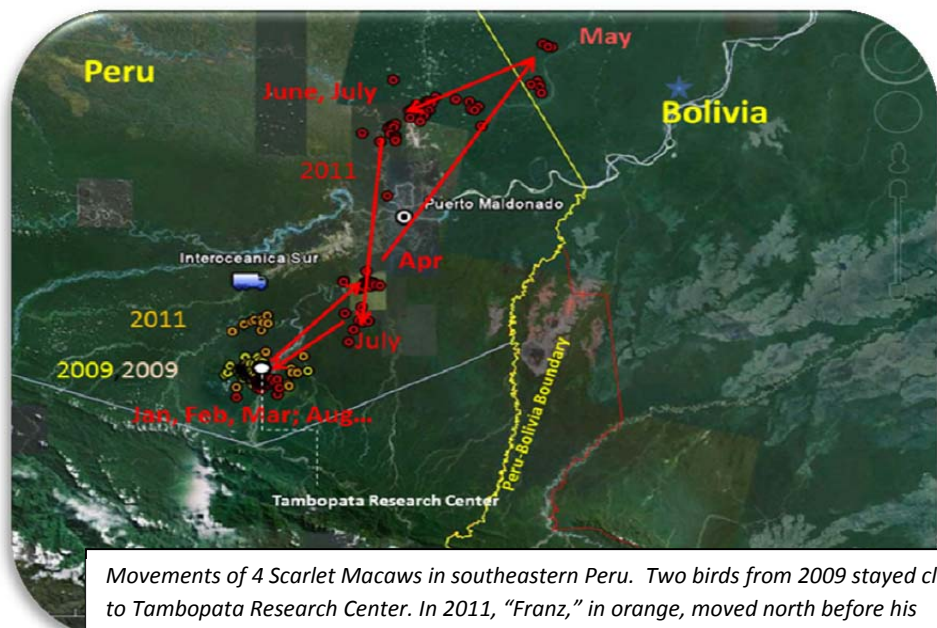
Parrot Nutrition update

Don and his grad student Juan Cornejo have been pushing forward with the research on parrot nutrition with the goals of “using wild parrot nutrition to improve captive parrot health.” In 2011 we processed crop samples from wild Cuban Amazons from Abaco Island, Lilac-crowned Amazons from Mexico, Thick-billed Parrots from Mexico, Scarlet Macaws from Peru, and Green-winged Macaws from Peru. Thanks to Caroline Stahala, Katherine Renton, Sonia Gabriela Ortiz-Maciel, and all the assistants who helped make this happen. Juan also analyzed 15 different commercially available hand feeding formulas. We published a paper on the amino acid content of Scarlet Macaw chick diets from Peru and Juan is currently working on papers on the composition of the hand feeding formulas, fatty acids in wild chick diets, and a comparison among all the different species’ crop contents. The work on the hand feeding formulas has found that there is great variation among products which suggests that there is no consensus among manufacturers of the correct nutrition for growing psittacines and the industry could benefit from more research on parrot chick nutrition. In addition, we found that the manufacturer’s recommendations for how to prepare and feed their products vary widely, and this makes the nutritional differences among products even larger. This suggests that manufacturers put much more effort in to making the powder than they do informing consumers how to use it. Juan is writing up his dissertation now and we hope to have big news on parrot diets by the end of 2012.

Satellite telemetry

An important part of working with parrots is knowing where they go. If they go too far, and stray outside parks and protected areas, then we need more complex strategies to conserve them. For that reason, we have been using special satellite telemetry collars since 2008 to figure out where our large macaws go throughout the year.

Last year we reported on “Charming,” and other Blue and Gold Macaws who traveled around southern Peru and Bolivia, some going as far as 150 km from the point of capture before returning a few months later to their “home turf.” With this we have confirmed that this species uses huge areas of rainforest every year.



Movements of 4 Scarlet Macaws in southeastern Peru. Two birds from 2009 stayed close to Tambopata Research Center. In 2011, “Franz,” in orange, moved north before his transmitter failed in late March. Meanwhile “Angeles,” in red, ranged more than 150 km from his nest site and spent several weeks to over a month at specific sites before returning to TRC in August.

In 2009 we put collars on two Scarlet Macaws, but they both stayed really close to TRC for the entire 8 month study. But despite this general lack of movement, we decided to try again in 2011. So in January we put satellite collars on two more Scarlet Macaws. This time they were trapped at wooden nest boxes, so that we could retrap them in 2012 and remove the collars (if needed).

In 2011, both collared birds remained near their nest sites through March. By late March “Franz” seemed to be moving northward but unfortunately his collar stopped transmitting prematurely. However, much to our surprise, “Angeles” went on a tour comparable to those of the Blue-and-Golds. He went north and west, spending May just across the border in Bolivia, before returning southward in June, July, and August to the area around TRC. Both Franz and Angeles returned to their nests by October and were still wearing their special collars. As part of our research we are working to make the collars more “macaw friendly,” so that they fall off automatically once the batteries die. And right on cue, Franz’s collar came off just as the new nesting season began. Both birds are now at their nests and according to our field team, Angeles’ first chick is hatching as I write this report!

We plan to collar both birds again in January and see what their movements are in 2012. The study of these landscape-level movements is very important for conservation of parrots and macaws, since most parrots and macaws rely on food resources that vary seasonally, and they must move to follow these food resources as they come into and out of season. Their conservation requires that areas be set aside that provide food resources over the full 12 months of the year. Both Charming and Angeles have spent significant time outside of the current protected areas in Peru and Bolivia, which suggests that macaw conservation will continue to be complex.

When do parrots nest?

. . . and why? That is a question that has been bothering us for some time. In the US and Europe, most birds nest in the spring as the weather warms up, insect populations increase, and the days are long. But in the tropics, the seasons are much different and the timing of breeding is much more variable. In both Costa Rica and Peru the macaws nest around the beginning of the year. However, in Costa Rica it is the middle of the dry season and in Peru it is the middle of the wet season. Meanwhile, Blue-headed Pionus from Costa Rica to Peru and everywhere in between always seem to nest in the dry season. For years we have speculated on what could explain these odd patterns. We have always expected that it was related to food supplies, but we have never been able to see how the nesting season changes with food availability in the forest. Until now.



Volunteers check the nests at Tambopata Research Center every 3 - 5 days during the

Working with Peruvian botanist and Macaw Project field leader, Gustavo Martinez we have measured the food availability throughout two years in the forests of TRC. When we compare the food availability with the timing of nesting of the different parrot species, we found was that the total number of parrot species nesting was closely related to the numbers of trees in the forest with fruits and flowers. Food availability peaked around the end of the dry season. Looks like many trees time their fruiting to make sure that the seeds

fall in the early wet season so they can germinate and start growing before the forest dries out again.

When we focus in on Blue-headed Pionus, we find that they nest early in the season just as the food supplies peak. When their chicks fledge there is a still lot of food in the forest for them to feed on. But for Scarlet Macaws, things seem a little more complicated. They too start breeding as the availability of their food items peaks. But, by the time their chicks fledge in March, the amount of food in the forest is nearing its annual low. The temperate equivalent would be like fledging your young just as winter sets in. Our satellite telemetry data suggest that April and May are times when the macaws wander widely like those described above and it seems that even the new chicks accompany their parents on these long trips far from home in search of abundant food supplies. These findings are important for understanding how macaws and other parrots fit in to the ecosystems where they live. Only with this type of knowledge can we understand the birds well enough to help conserve them.

Chick death by starvation

Preliminary investigations show that 50% of the chicks that die at TRC die of starvation. In total over one in four chicks hatched at the site die of starvation. Lone chicks and first chicks in multi-chick broods are the ones that are most likely to fledge while 45% of the second born and 100% of the third and fourth born die of starvation.

What is behind these alarming statistics? In over 250 hours of video analyzed, we found only one incidence of aggression between chicks so direct competition and siblicide are not driving this pattern.

However, these videos do give us some clues: first and second chicks that survived to fledging are fed ~5 times per hour. However, second chicks and third chicks that eventually starved to death are fed on average about once per hour. This was not the only difference in parental care. Sometimes the parents brood only some of the chicks, not all of them. Second and third chicks that eventually starve to death are excluded from the brooding 10 times more than first and second chicks that fledge. What these data suggest is that the parents are specifically choosing which chicks will live and which will die. Those that die they are killed through specific targeted neglect.



Just under half of all second born chicks die of starvation at Tambopata Research Center. In addition nearly all 3rd and 4th chicks also die of starvation.



Three healthy Scarlet Macaw Chicks ready to be weighed and measured by the crew of the Tambopata Macaw Project. All three survived to fledging, a first for the project.

The goal of our research this season is to understand what is driving the parents' decision to let some birds starve. Maybe food supply is not enough to feed more than two chicks or maybe the chick raising process requires too much energy so that it is not possible for the macaw pair to fledge four chicks. The average brood size in the Tambopata area is 1.5 chicks per nest. Perhaps just the older and more experienced pairs are the ones that are able to raise two chicks successfully. If that is the case, why do the parents lay and incubate four eggs. Are those third and fourth eggs a kind of insurance or "back up" plan?

During the 2011 season, a pair of very experienced Scarlet Macaws brought a new piece of evidence to this case. They successfully raised a third chick (see photo). The male of the pair was banded and we knew for sure that he was 18 years old and that he had successfully raised at least six broods before. We monitored this nest closely, measuring chick development and monitoring the parents' and chicks' interactions using video cameras to try to understand why in this particular case the parents were so interested in fledging three chicks. The Texas A&M veterinary team also participated in this experience, monitoring and analyzing the health of the three chicks. Our observations suggest that the first chick's health was not good in the early weeks of life, and it seemed uncertain if it would survive to fledging. Second and third chicks were perfectly fine and growing normally. The video data show that the female was consistent in her care of the second chick, but suggest that she was uncertain about the fate of her other two chicks. This doubt was displayed in her behavior as she selectively ignored the third chick some days and the first chick on other days. However, in the end she provided enough care to both the first and third and for the first time in nearly 20 years, we watched as three chicks successfully fledged from a Scarlet Macaw nest at TRC.

During the 2012 breeding season (currently underway) we are recording macaw behavior inside and around additional nests to gain more insights in to the forces driving this macaw chick starvation. Since October 2011, we have been monitoring 40 macaw cavities (20 natural cavities and 20 artificial nests) of which 26 are being occupied by macaws (19 nest occupied by Scarlet Macaws, 4 by Green-winged Macaws and 2 by Chestnut-fronted Macaws). As of early December 2011, we have 21 eggs and 5 chicks. We have already had our first chick lost due to starvation: a fourth chick from the same pair that fledged three last season. However, the third chick in that nest looks healthy and could be raised to fledging again this season.

Cement nest boxes? . . . really?

In Peru we have been working with nest boxes for years. In fact, building the first nest boxes ever used by wild macaws was the first major accomplishment of Peruvian Eduardo Nycander and his field crews way back in 1990, in the early years of the Tambopata Macaw Project. The project has used nest boxes made of palm trees (but they rotted away in less than a year), wood (but they only last 2 – 3 years) and PVC plastic sewer pipe (but the pipe is really expensive, hard to transport and the tops and bottoms are still a weak link). As a result we have been searching for a quick, easy, cheap and durable way to make nest boxes. In the last year, a colleague from Cuba, Maikel Cañizares shared his little secret with us: cement and burlap can make great nest boxes. At his study site they have been used by both Cuban Amazons and Cuban Conures. This coming year, we plan to modify his designs and build a test group of boxes to see if our macaws will also use them. We are cautiously optimistic that these new designs will

provide us with the cheap and durable boxes we have been looking for. We will let you know if we have any success.

New volunteer opportunities

Would you like to come and be a volunteer on the Tambopata Macaw Project? We now have the ability to take volunteers who are able to spend as little as two weeks or as much as three months. From young biology majors to more mature parrot lovers and even physically fit retirees can now help us do the research that has allowed us to learn so much about the biology and conservation of macaws and other parrots in Peru. If you think you would like to join us as a volunteer, or just want more information on the project, please visit us on the web at www.macawproject.org.



Volunteers are a vital part of the Tambopata Macaw Project. Here observers watch and record Scarlet Macaw behavior at the nest.

Publications available online

Whenever we have new publications about our research, we post them on our webpage, so you can all have direct access to the new science we are producing. Please visit us and see the science behind the Tambopata Macaw Project www.macawproject.org.

How you can help


In Tambopata we are working hard to fill the gaps in our knowledge of parrots so that conservationists throughout the world can have more ways to help save these beautiful birds. It was a busy year but we can only keep up this pace of discovery with help from people like you. Even small donations can go a long way in Peru, so please consider making a general donation to aid the project, or help us by funding a specific item on our wish list.

Wish list

| | |
|--|------------------------|
| <i>Supplies for new cement nest boxes at Tambopata Research Center</i> | <i>\$200</i> |
| <i>Purchase a month of satellite data for the project</i> | <i>\$150</i> |
| <i>Pay a Peruvian assistant to help us check and maintain nests</i> | <i>\$500 per month</i> |
| <i>New climbing rope for checking nests</i> | <i>\$500</i> |

How to donate

There are two ways to contribute to our project

- 1) **Check:** Make payable to “Texas A&M University” and mail to:
Donald Brightsmith / Patty Vychopen
Department of Veterinary Pathobiology
Texas A&M University 4467
College Station, Texas 77843-4467
- 2) **Credit card:**
 - a. Visit us at <http://vetmed.tamu.edu/giving/opportunities/parrot-conservation-research>
 - i. Or click this button: 
 - b. Follow the instructions on the screen and your donation will go directly to support our parrot conservation research at Tambopata Research Center.

Thanks!

Many private citizens have worked as volunteers in Peru, provided encouragement and moral support, and provided donations to help keep us going over the past 12 years, and I would like to thank you all for this help. Thanks to all the assistants, including over 100 young Peruvians, who have helped us with all the field work and organization. Congratulations to Juan Cornejo who has taken a position at the Wildlife Conservation Society/Bronx Zoo working as the assistant to the Curator of Birds. We wish him the best of luck. Thanks also to Lizzie Ortiz for years of faithful service.

